SECTION d

Curriculum

ARTS EDUCATION – VISUAL ARTS

KINDERGARTEN

PERFORM

Standard 1:	**Apply skills and knowledge to perform in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***
ART.VA.I.K.1	Identify and explore a variety of materials to communicate personal experiences.
ART.VA.I.K.2	Work with materials and tools safely with environmental awareness.
ART.VA.I.K.3	Explore the elements of art through playful sensory experiences.
ART.VA.I.K.4	Prepare, complete, and sign finished artwork.

CREATE

Standard 2:	**Apply skills and knowledge to create in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***
ART.VA.II.K.1	Explore the basic uses of art materials to produce artwork.
ART.VA.II.K.2	Use a variety of lines, colors, and basic geometric shapes and patterns to creatively express feelings and personal experiences.
ART.VA.II.K.3	Participate in discussions of the aspects of environment, family, and home in the creation of art.
ART.VA.II.K.4	Select subject matter and communicate a personal story in a painting or drawing.
ART.VA.II.K.5	Express thoughts and ideas through the creation of artwork.
ART.VA.II.K.6	Experiment with different technologies.

ANALYZE

Standard 3:	**Analyze, describe, and evaluate works of art. (VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)**
ART.VA.III.K.1	Explore and discuss why artists create.

ART.VA.III.K.2 Recognize that art can be created for self-expression or fun.

ART.VA.III.K.3 Describe the sensory qualities in a work of art.

ART.VA.III.K.4 Describe a personal artwork.

ART.VA.III.K.5 Illustrate a personal experience.

ANALYZE IN CONTEXT

Standard 4: Understand, analyze, and describe the arts in their historical, social, and cultural contexts.
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.IV.K.1 Understand that humans from all cultures, past or present, have created art.

ART.VA.IV.K.2 Identify and talk about artwork found around the world.

ART.VA.IV.K.2 Share student's family and culture through discussion and artwork.

ANALYZE AND MAKE CONNECTIONS

Standard 5: Recognize, analyze, and describe connections among the arts; between the arts and other disciplines; between the arts and everyday life.
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.V.K.1 Identify and discuss art in the student's environment.

ART.VA.V.K.2 Identify and speak about artists as people who generate new ideas and create art.

ART.VA.V.K.3 Identify how pattern, shape, rhythm, and movement are used throughout the arts.

ART.VA.V.K.4 Explore connections between the visual arts and other curriculum.

GRADE 1

PERFORM

Standard 1: **Apply skills and knowledge to perform in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.I.1.1	Identify and experiment with materials to communicate ideas related to the student's world.
ART.VA.I.1.2	Demonstrate the responsible use of project materials with environmental awareness.
ART.VA.I.1.3	Recognize and illustrate the elements of art to communicate personal experiences.
ART.VA.I.1.4	Use revision strategies to enhance personal artwork.

CREATE

Standard 2: **Apply skills and knowledge to create in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.II.1.1	Explore and experiment with materials and processes while creating artwork based on personal routines, activities, or environments.
ART.VA.II.1.2	Explore the use of knowledge of the elements of art.
ART.VA.II.1.3	Explore and discuss how artists construct ideas in artworks.
ART.VA.II.1.4	Plan and create artwork using subject matter selected from personal experiences.
ART.VA.II.1.5	Understand how artists/illustrators use images to tell stories.
ART.VA.II.1.6	Explore the computer as another tool for creating art.

ANALYZE

Standard 3: **Analyze, describe, and evaluate works of art.** **(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)**

ART.VA.III.1.1	Explore and discuss reasons behind personal artwork.
ART.VA.III.1.2	Identify the purpose of community art.

ART.VA.III.1.3	Demonstrate respect for the value of other opinions in discussion.
ART.VA.III.1.4	Describe the artwork of classmates using art terminology.
ART.VA.III.1.5	Discuss why people use art as a creative outlet.

ANALYZE IN CONTEXT

Standard 4:	**Understand, analyze, and describe the arts in their historical, social, and cultural contexts.** ***(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)***
ART.VA.IV.1.1	Identify symbols, trademarks, icons, emblems, and other visual motifs in student's culture.
ART.VA.IV.1.2	Describe how the subject matter of artwork may be connected to the environment in which it was created.
ART.VA.IV.1.3	Give examples that illustrate how artwork of different groups is influenced by the environment in which it was created.

ANALYZE AND MAKE CONNECTIONS

Standard 5:	**Recognize, analyze, and describe connections among the arts; between the arts and other disciplines; between the arts and everyday life.** ***(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)***
ART.VA.V.1.1	Recognize art forms created for functional and recreational purposes.
ART.VA.V.1.2	Identify artists in the community.
ART.VA.V.1.3	Identify similarities between the visual arts and other arts disciplines.
ART.VA.V.1.4	Discover connections between the visual arts and other curriculum through student artwork.

GRADE 2

PERFORM

Standard 1: **Apply skills and knowledge to perform in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.I.2.1	Identify and use various materials and techniques using a sequential process.
ART.VA.I.2.2	Demonstrate the safe use of a variety of materials, tools, and processes with environmental awareness.
ART.VA.I.2.3	Compare and explore elements of art and principles of design to communicate ideas related to personal environment.
ART.VA.I.2.4	Use revision strategies to modify personal artwork and then mount it to enhance its presentation.

CREATE

Standard 2: **Apply skills and knowledge to create in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.II.2.1	Demonstrate how materials, techniques, and processes can be used creatively to communicate ideas.
ART.VA.II.2.2	Combine the use of elements of art and principles of design to communicate ideas.
ART.VA.II.2.3	Understand and recognize how artists create and construct multiple solutions to visual problems in artworks.
ART.VA.II.2.4	Use symbols to create artwork that expresses and communicates meaning.
ART.VA.II.2.5	Compare and contrast how artists convey ideas through the creation of artwork.
ART.VA.II.2.6	Demonstrate how artwork can be created using computers and electronic media as a tool for creative expression.

ANALYZE

Standard 3: **Analyze, describe, and evaluate works of art. (VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)**

ART.VA.III.2.1 Develop a visual vocabulary.

ART.VA.III.2.2 Recognize that art is created to fulfill personal and/or social needs.

ART.VA.III.2.3 Share personal experiences and preferences in response to works of art.

ART.VA.III.2.4 Evaluate personal artwork using art terminology.

ART.VA.III.2.5 Reflect on how art expresses ideas, feelings, and opinions.

ANALYZE IN CONTEXT

Standard 4: **Understand, analyze, and describe the arts in their historical, social, and cultural contexts.** ***(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)***

ART.VA.IV.2.1 Compare symbols, trademarks, icons, emblems, and other visual motifs in various cultures.

ART.VA.IV.2.2 Discuss the subject matter of artwork from particular cultures at specific times.

ART.VA.IV.2.3 Debate images of a past or present culture.

ANALYZE AND MAKE CONNECTIONS

Standard 5: **Recognize, analyze, and describe connections among the arts; between the arts and other disciplines; between the arts and everyday life.** ***(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)***

ART.VA.V.2.1 Describe how art is used in everyday life.

ART.VA.V.2.2 Investigate and identify visual art careers that relate to children.

ART.VA.V.2.3 Identify similarities among the arts including vocabulary, elements of art, and principles of design.

ART.VA.V.2.4 Demonstrate connections between the visual arts and other curriculum through student artwork.

GRADE 3

PERFORM

Standard 1: **Apply skills and knowledge to perform in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.I.3.1 Compare the use of various materials to communicate ideas and sensory experiences in an artwork.

ART.VA.I.3.2 Demonstrate control and safe use of a variety of art tools with environmental awareness.

ART.VA.I.3.3 Describe, discuss, and model the elements of art and principles of design to communicate ideas.

ART.VA.I.3.4 Select, present, and evaluate personal artwork.

CREATE

Standard 2: **Apply skills and knowledge to create in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.II.3.1 Apply materials and techniques to problem solve in the creation of art.

ART.VA.II.3.2 Create a composition using the elements of art and principles of design to communicate ideas.

ART.VA.II.3.3 Examine how artists turn ideas into visual solutions.

ART.VA.II.3.4 Combine ideas, symbols, and experiences that express and communicate meaning.

ART.VA.II.3.5 Create artwork that aesthetically and creatively conveys an idea.

ART.VA.II.3.6 Design artwork using computers and electronic media to create original works of art.

ANALYZE

Standard 3: **Analyze, describe, and evaluate works of art.**

ART.VA.III.3.1 Compare the elements of art used in personal artwork.

ART.VA.III.3.2 Examine how art expresses cultural traditions.

ART.VA.III.3.3	Highlight social trends that influence our emotional reactions to art.
ART.VA.III.3.4	Select a piece of personal artwork, critique it using art terminology, and make revisions.
ART.VA.III.3.5	Discuss how personal experiences influence the creation of art.

ANALYZE IN CONTEXT

Standard 4: **Analyze and describe the arts in their historical, social, and cultural contexts.**
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.IV.3.1	Examine customs or traditions celebrated by different communities.
ART.VA.IV.3.2	Describe the materials and art forms used by particular cultures.
ART.VA.IV.3.3	Recognize how the available materials and processes in a particular time or place can influence the art that is created.

ANALYZE AND MAKE CONNECTIONS

Standard 5: **Recognize, analyze, and describe connections among the arts; between the arts and other disciplines; between the arts and everyday life.**
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.V.3.1	Describe how art can be found in various environments.
ART.VA.V.3.2	Investigate and identify careers related to artists who work in specific media.
ART.VA.V.3.3	Investigate collaboration across art disciplines.
ART.VA.V.3.4	Illustrate connections between the visual arts and other curriculum through student artwork.

GRADE 4

PERFORM

Standard 1: **Apply skills and knowledge to perform in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.I.4.1	Use technologies to communicate ideas and experiences.
ART.VA.I.4.2	Demonstrate control and safe use of technologies with environmental awareness.
ART.VA.I.4.3	Analyze and reflect on the elements of art and design to communicate ideas.
ART.VA.I.4.4	Prepare, present, and collaboratively evaluate personal artwork.

CREATE

Standard 2: **Apply skills and knowledge to create in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.II.4.1	Synthesize the use of a variety of materials, techniques, and processes to problem solve in the creation of art.
ART.VA.II.4.2	Synthesize knowledge of elements of art and principles of design to creatively communicate ideas.
ART.VA.II.4.3	Analyze and collaborate how artists express ideas through the use of visual culture, global perspective, and symbols in works of art.
ART.VA.II.4.4	Analyze and reflect on the uses of subject matter, symbols, and ideas to express and communicate meaning in artwork.
ART.VA.II.4.5	Discuss and debate how artists from various cultures convey ideas differently.
ART.VA.II.4.6	Incorporate the uses of different technologies to show artistic expression through an original artwork.

ANALYZE

Standard 3: **Analyze, describe, and evaluate works of art.** **(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)**

ART.VA.III.4.1	Reflect and discuss the visual structures and functions used in personal artwork.
ART.VA.III.4.2	Recognize that artwork may serve functional purposes, be purely decorative, or serve multiple purposes.
ART.VA.III.4.3	Compare how global and cultural diversity elicits differing responses.
ART.VA.III.4.4	Compare and contrast two pieces of personal work.
ART.VA.III.4.5	Analyze how art can be a reflection of society and a response to real world experiences.

ANALYZE IN CONTEXT

Standard 4: **Understand, analyze, and describe the arts in their historical, social, and cultural contexts.**
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.IV.4.1	Describe how artwork communicates facts and/or experiences of various cultures.
ART.VA.IV.4.2	Compare and contrast the visual elements contained in the artwork of particular cultures.
ART.VA.IV.4.3	Evaluate the interrelationship between design, trends, events, and the economics of a culture.

ANALYZE AND MAKE CONNECTIONS

Standard 5: **Recognize, analyze, and describe connections among the arts; between the arts and other disciplines; between the arts and everyday life.**
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.V.4.1	Analyze various uses of art globally, in media, business, technology, and industry.
ART.VA.V.4.2	Investigate and identify careers related to advertising.
ART.VA.V.4.3	Identify connections between technology and the arts.
ART.VA.V.4.4	Demonstrate cross-curricular connections through a culminating event.

GRADE 5

PERFORM

Standard 1: **Apply skills and knowledge to perform in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.I.5.1	Use materials, techniques, media, technology, and processes to communicate ideas and experiences.
ART.VA.I.5.2	Use art materials and tools safely and responsibly with environmental awareness.
ART.VA.I.5.3	Incorporate the elements of art and principles of design to communicate ideas.
ART.VA.I.5.4	Participate in the process and delivery of a final product for exhibition or presentation.

CREATE

Standard 2: **Apply skills and knowledge to create in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.II.5.1	Synthesize the knowledge of materials, techniques, and processes to create artwork.
ART.VA.II.5.2	Apply knowledge of how to use visual characteristics and organizational principles to communicate ideas.
ART.VA.II.5.3	Explore and understand prospective subject matter, ideas, and symbols for works of art.
ART.VA.II.5.4	Select and use subject matter, symbols, and ideas to communicate meaning.
ART.VA.II.5.5	Analyze how art conveys ideas to express one's individuality.
ART.VA.II.5.6	Explore and understand the impact of digital media and technology in the creation of artwork.

ANALYZE

Standard 3: **Analyze, describe, and evaluate works of art.** ***(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)***

ART.VA.III.5.1 Validate the effects of visual structures and functions, and reflect upon these effects in personal work.

ART.VA.III.5.2 Identify and defend various purposes for creating works of visual art.

ART.VA.III.5.3 Understand and respect that there are different responses to specific art works in a global community.

ART.VA.III.5.4 Analyze the characteristics of personal artwork.

ART.VA.III.5.5 Develop a sensitivity and understanding of how personal experiences can influence the development of artwork.

ANALYZE IN CONTEXT

Standard 4: Understand, analyze, and describe the arts in their historical, social, and cultural contexts.
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.IV.5.1 Defend the history of visual arts and specific relationships to various cultures and times.

ART.VA.IV.5.2 Compare and contrast works of art as belonging to particular cultures, times, and places.

ART.VA.IV.5.3 Demonstrate how history, culture, and the visual arts interrelate in making and studying works of art.

ANALYZE AND MAKE CONNECTIONS

Standard 5: Recognize, analyze, and describe connections among the arts; between the arts and other disciplines; between the arts and everyday life.
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.V.5.1 Explain how visual arts have inherent relationships to everyday life.

ART.VA.V.5.2 Identify various careers in the visual arts.

ART.VA.V.5.3 Understand and use comparative characteristics of the visual arts and other arts disciplines.

ART.VA.V.5.4 Synthesize connections between the visual arts and other disciplines in the curriculum.

GRADE 6

PERFORM

Standard 1: **Apply skills and knowledge to perform in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.I.6.1	Understand the varying qualities of materials, techniques, media technology, and processes at a developing level.
ART.VA.I.6.2	Develop the concept of proper use of art materials and using tools safely and responsibly.
ART.VA.I.6.3	Develop a successful visual vocabulary.
ART.VA.I.6.4	Develop reflective thinking skills by observing, analyzing, and critically evaluating works of art for the purpose of improving technical quality.
ART.VA.I.6.5	Produce and exhibit a final product that demonstrates quality craftsmanship and technique at a developing level.

CREATE

Standard 2: **Apply skills and knowledge to create in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.II.6.1	Identify, design, and solve creative problems at a developing level.
ART.VA.II.6.2	Develop and apply critical thinking strategies through the art making process at a developing level.
ART.VA.II.6.3	Collaborate, communicate, and work with others to create new ideas at a developing level.
ART.VA.II.6.4	Initiate new ideas employing inventiveness and innovation at a developing level.
ART.VA.II.6.5	Demonstrate reflective thinking practices at a developing level.
ART.VA.II.6.6	Make knowledgeable choices about materials, techniques, media technology, organizational principles, and processes to articulate ideas and communicate intended meaning at a developing level.

ART.VA.II.6.7 Create preliminaries, possibilities, and drafts at a developing level.

ANALYZE

Standard 3: Analyze, describe, and evaluate works of art.
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.III.6.1 Observe, describe, and analyze visual characteristics at a developing level.

ART.VA.III.6.2 Develop the skill of interpreting artwork, searching for embedded meaning, function, and personal connections at a developing level.

ART.VA.III.6.3 Develop the ability to describe how the artist's choice of materials, techniques, media technology, and processes influence the viewer.

ART.VA.III.6.4 Develop critical thinking strategies, observing, comparing, and contrasting artworks.

ART.VA.III.6.5 Develop and defend informed aesthetic opinions about works of art using artistic vocabulary at a developing level.

ART.VA.III.6.6 Identify personal and community experiences within works of art at a developing level.

ANALYZE IN CONTEXT

Standard 4: Understand, analyze, and describe the arts in their historical, social, and cultural contexts.
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.IV.6.1 Recognize and describe how art contributes to and reflects all societies and cultures.

ART.VA.IV.6.2 Develop an understanding of the historical, social, and cultural contexts of artwork with aesthetic sophistication.

ART.VA.IV.6.3 Decode and interpret artwork to discern between prejudice and tolerance, bias, and fact at a developing level.

ANALYZE AND MAKE CONNECTIONS

Standard 5: Recognize, analyze, and describe connections among the arts; between the arts and other disciplines; between the arts and everyday life.

(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.V.6.1	Recognize and describe personal, family, and community connections with artworks at a developing level.
ART.VA.V.6.2	Recognize the skills used in visual arts careers at a developing level.
ART.VA.V.6.3	Compare the characteristics of work in two or more art forms that are dissimilar in subject matter, historical periods, or cultural context at a developing level.
ART.VA.V.6.4	Demonstrate an understanding of their place in the visual world and develop an appreciation of how they are part of a global society at a developing level.
ART.VA.V.6.5	Describe ways in which the principles and subject matter of other disciplines taught in school are interrelated with the visual arts at a developing level.

GRADE 7

PERFORM

Standard 1: **Apply skills and knowledge to perform in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.I.7.1	Understand the varying qualities of materials, techniques, media technology, and processes at an emerging level.
ART.VA.I.7.2	Understand the concept of proper use of art materials and using tools safely and responsibly at an emerging level.
ART.VA.I.7.3	Demonstrate the use of successful visual vocabulary at an emerging level.
ART.VA.I.7.4	Employ reflective thinking skills by observing, analyzing, and critically evaluating works of art for the purpose of improving technical quality at an emerging level.
ART.VA.I.7.5	Produce and exhibit a final product that demonstrates quality craftsmanship and technique at an emerging level.

CREATE

Standard 2: **Apply skills and knowledge to create in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.II.7.1	Identify, design, and solve creative problems at an emerging level.
ART.VA.II.7.2	Develop and apply critical thinking strategies through the art making process at an emerging level.
ART.VA.II.7.3	Collaborate, communicate, and work with others to create new ideas at an emerging level.
ART.VA.II.7.4	Initiate new ideas employing inventiveness and innovation at an emerging level with increasing independence.
ART.VA.II.7.5	Demonstrate reflective thinking practices at an emerging level.
ART.VA.II.7.6	Make knowledgeable choices about materials, techniques, media technology, organizational principles, and processes to articulate ideas and communicate intended meaning at an emerging level.

ART.VA.II.HS.7 Create preliminaries, possibilities, and drafts at an emerging level.

ANALYZE

Standard 3: Analyze, describe, and evaluate works of art.
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.III.7.1 Critically observe, describe, and analyze visual characteristics at an emerging level.

ART.VA.III.7.2 Interpret artwork searching for embedded meaning, function, and personal connections at an emerging level.

ART.VA.III.7.3 Improve descriptions of how the artist's choice of materials, techniques, media technology, and processes influence the viewer.

ART.VA.III.7.4 Use critical thinking strategies to observe, compare, and contrast artworks at an emerging level.

ART.VA.III.7.5 Develop and defend informed aesthetic opinions about works of art using artistic vocabulary at an emerging level.

ART.VA.III.7.6 Identify personal and community experiences within works of art at an emerging level.

ANALYZE IN CONTEXT

Standard 4: Understand, analyze, and describe the arts in their historical, social, and cultural contexts.
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.IV.7.1 Recognize, describe and analyze, and evaluate how art contributes to and reflects all societies and cultures at an emerging level.

ART.VA.IV.7.2 Articulate an understanding of the historical, social, and cultural contexts of artwork with an emerging level of aesthetic sophistication.

ART.VA.IV.7.3 Decode and interpret artwork to discern between prejudice and tolerance, bias, and fact at an emerging level.

ANALYZE AND MAKE CONNECTIONS

Standard 5: **Recognize, analyze, and describe connections among the arts; between the arts and other disciplines; between the arts and everyday life.**
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.V.7.1	Recognize and describe, personal, family, and community connections with artworks at an emerging level.
ART.VA.V.7.2	Recognize and describe the skills used in visual arts careers at an emerging level.
ART.VA.V.7.3	Analyze and compare the characteristics of work in two or more art forms that are dissimilar in subject matter, historical periods, or cultural context at an emerging level.
ART.VA.V.7.4	Demonstrate an understanding of their place in the visual world and develop an appreciation of how they are part of a global society at an emerging level.
ART.VA.V.7.5	Analyze and describe ways in which the principles and subject matter of other disciplines taught in school are interrelated with the visual arts at an emerging level.

GRADE 8

PERFORM

Standard 1: **Apply skills and knowledge to perform in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.I.8.1	Apply understanding of the varying qualities of materials, techniques, media technology, and processes to the selection of appropriate tools and media to design and solve creative problems and achieve desired artistic effects.
ART.VA.I.8.2	Appropriately apply the concept of proper use of art materials and using tools safely and responsibly.
ART.VA.I.8.3	Select and apply visual characteristics and organizational principles to communicate effectively when designing and solving creative problems.
ART.VA.I.8.4	Effectively use reflective thinking skills to observe, analyze, and critically evaluate works of art for the purpose of improving technical quality.
ART.VA.I.8.5	Effectively produce and exhibit a final product that demonstrates quality craftsmanship and technique.

CREATE

Standard 2: **Apply skills and knowledge to create in the arts.** ***(VPAA: C1, C2, C3, C4, C5, P1, P2, P4, R1, R4)***

ART.VA.II.8.1	Effectively identify, design, and solve creative problems.
ART.VA.II.8.2	Effectively develop and apply critical thinking strategies through the art making process.
ART.VA.II.8.3	Effectively collaborate, communicate, and work with others to create new ideas.
ART.VA.II.8.4	Independently initiate new ideas employing inventiveness and innovation.
ART.VA.II.8.5	Consistently demonstrate reflective thinking practices when identifying, designing, and solving creative problems.
ART.VA.II.8.6	Make knowledgeable choices about materials, techniques, media technology, organizational principles, and processes to

ANALYZE AND MAKE CONNECTIONS

Standard 5: **Recognize, analyze, and describe connections among the arts; between the arts and other disciplines; between the arts and everyday life.**
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.V.7.1	Recognize and describe, personal, family, and community connections with artworks at an emerging level.
ART.VA.V.7.2	Recognize and describe the skills used in visual arts careers at an emerging level.
ART.VA.V.7.3	Analyze and compare the characteristics of work in two or more art forms that are dissimilar in subject matter, historical periods, or cultural context at an emerging level.
ART.VA.V.7.4	Demonstrate an understanding of their place in the visual world and develop an appreciation of how they are part of a global society at an emerging level.
ART.VA.V.7.5	Analyze and describe ways in which the principles and subject matter of other disciplines taught in school are interrelated with the visual arts at an emerging level.

effectively articulate ideas and communicate intended meaning.

ART.VA.II.8.7 Apply preliminaries, possibilities, and drafts in the creative problem solving process.

ANALYZE

Standard 3: Analyze, describe, and evaluate works of art.
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.III.8.1 Critically observe, describe, and analyze visual characteristics within works of art.

ART.VA.III.8.2 Effectively interpret artwork, searching for embedded meaning, function, and personal connections.

ART.VA.III.8.3 Effectively describe how the artist's choice of materials, techniques, media technology, and processes influence the viewer.

ART.VA.III.8.4 Effectively use critical thinking strategies to observe, compare, and contrast artworks.

ART.VA.III.8.5 Develop and defend informed aesthetic opinions about works of art using effective artistic vocabulary.

ART.VA.III.8.6 Identify personal and community experiences within works of art.

ANALYZE IN CONTEXT

Standard 4: Understand, analyze, and describe the arts in their historical, social, and cultural contexts.
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.IV.8.1 Recognize, describe and analyze, and evaluate how art contributes to and reflects all societies and cultures.

ART.VA.IV.8.2 Articulate an understanding of the historical, social, and cultural contexts of artwork with aesthetic sophistication.

ART.VA.IV.8.3 Effectively decode and interpret artwork to discern between prejudice and tolerance, bias and fact.

ANALYZE AND MAKE CONNECTIONS

Standard 5: **Recognize, analyze, and describe connections among the arts; between the arts and other disciplines; between the arts and everyday life.**
(VPAA: C2, C3, C4, C5, P2, P3, R1, R2, R3, R4)

ART.VA.V.8.1	Effectively recognize and describe personal, family, and community connections with artworks.
ART.VA.V.8.2	Effectively recognize and describe the skills used in visual arts careers.
ART.VA.V.8.3	Effectively analyze and compare the characteristics of work in two or more art forms that are dissimilar in subject matter, historical periods, or cultural context.
ART.VA.V.8.4	Effectively demonstrate an understanding of their place in the visual world and develop an appreciation of how they are part of a global society.
ART.VA.V.8.5	Effectively analyze and describe ways in which the principles and subject matter of other disciplines taught in school are interrelated with the visual arts.

Grade Level	Reading	Writing	Math	Science	Social Studies	Physical Education	Art/Music	Reading Plus	Study Skills	Math Logic	Life Skills
K	X	X	X	X	X	X	X				
1	X	X	X	X	X	X	X				
2	X	X	X	X	X	X	X				
3	X	X	X	X	X	X	X				
4	X	X	X	X	X	X	X				
5	X	X	X	X	X	X	X				
6	X	X	X	X	X	X	X	X	X	X	X
7	X	X	X	X	X	X	X	X	X	X	X
8	X	X	X	X	X	X	X	X	X	X	X

All Subjects Offered at Grand Blanc Academy by Grade Level

English Language Arts Grades K-2

Reading Mastery Signature Edition uses the highly explicit, systematic approach of Direct Instruction to accelerate reading and help students achieve a high rate of success. Three strands address Reading, Language Arts, and Literature through a common instructional design that helps students learn more efficiently. With the addition of technology-based resources for both additional practice and professional development, *Reading Mastery Signature Edition* helps teachers optimize each minute spent in the classroom.

The Reading Strand:

- Addresses all five essential components of reading as identified by Reading First—phonemic awareness, phonics and word analysis, fluency, vocabulary, and comprehension.
- Provides spelling instruction to help students make the connection between decoding and spelling patterns.
- Develops decoding, word recognition, and comprehension skills that transfer to other subject areas.

The Language Arts Strand:

- Teaches the oral language skills necessary to understand what is said, written, and read in the classroom.
- Helps students communicate ideas and information effectively.
- Develops the ability to use writing strategies and processes successfully.

The Literature Strand:

- Supports the reading strand by offering a wide variety of literary forms and text structures.
- Provides multiple opportunities for students to practice vocabulary and comprehension strategies and write for authentic purposes.
- Gives ample opportunity for students to read at their independent level.

English Language Arts Grades 3-8

Overview

This course focuses on students forming a theory about characters, applying and revising this theory as they encounter more complex texts leading to more thoughtful, and articulate, readers. In addition to having students being actively engaged in reading, they are also reading aloud with accountable talk each day. This course aims to increase reading stamina and comprehension. Students will be able to explain their thinking about characters, citing evidence from the text.

Rationale

The Common Core State Standards expect students to be able to read more deeply, with understanding, as they progress through school. The third grade course focuses on having students create theories, based on the characters in fiction books, applying these theories as they read other texts and revise, or create, new ones accordingly.

Scope and Sequence

Careful thought has been given to the order in which the third grade units are presented. This course is designed to build reading skills and strategies as well as habits of mind and experiences for future success in reading. As a result, certain scaffolds have been created based on this order and schools should take care in moving units from their intended placement in the curriculum. It is always important for teachers to adapt this curriculum in ways that benefit their classroom.

Alignment

The third grade course is designed to meet the Common Core State Standards for Reading Literature and Informational Text. The work done in this course is primarily designed to meet the Common Core State Standards in reading however, some of the speaking and listening standards as well as the foundational skills standards are delivered in this course. The work done throughout this third grade course not only aligns with the CCSS but is designed to prepare third graders for the work ahead in fourth grade.

Reading 4 (OS/MAISA) : Grade 4: OS/MAISA: English Language Arts

Overview

This course deepens students' higher-order thinking through analyzing characters and strategically reading informational texts. To cope with the increasing demands of more complex texts, students will also learn about text structures and how to problem solve challenging vocabulary. Read-aloud with accountable talk, mini-lessons, guided reading and strategy groups, one-to-one conferences, and partner conferences will continue to be used.

Rationale

The Common Core State Standards expect students to be able to read more deeply, with understanding, as they progress through school. In particular, the Common Core emphasizes the importance of students being competent readers of nonfiction. The fourth grade course introduces students to the structures of informational texts, helping them learn ways to differentiate between narrative informational, hybrid informational, and expository texts. Ultimately they will learn to think about the big ideas the text is teaching and learn to retell their information interjecting their own inferences and thinking to synthesize all the information.

Scope and Sequence

Careful thought has been given to the order in which the fourth grade units are presented. These units are designed to build reading skills and strategies as well as habits of mind and experiences for future success in reading. As a result, certain scaffolds have been created based on this order and schools should take care in moving units from their intended placement in the curriculum. It is always important for teachers to adapt this curriculum in ways that benefit their classroom.

Alignment

The fourth grade course is designed to meet the Common Core State Standards for Reading Literature and Informational Text. The work done in this course is primarily designed to meet the Common Core State Standards in reading, however some of the speaking and listening standards as well as the foundational skills standards are delivered in this course. The work don

Reading 5 - NEW 2014 (OS/MAISA) : Grade 5: OS/MAISA: English Language Arts

Overview

This series of units builds on the students' knowledge of character study from previous units and increases their reading work to develop agency and independence. The work with character study deepens their inferring of characters' motivation/s and encourages students to interpret across texts by analyzing characters. Students develop theories about characters and use the text to support their ideas. They also move from inference to interpretation and pay close attention to recurring themes in the texts. As the Common Core State Standards suggests, students need to be skilled readers of nonfiction which is also a focus of these units.

Rationale

The Common Core State Standards expect students to be able to read more deeply, with understanding, as they progress through school. Building on the teaching and learning in previous years, the fifth grade course, as indicated in the overview, helps students learn strategies for stepping inside and outside of the text to grow theories about their characters, pay attention to recurring themes in the text and see these recurring details as pivotal to understanding a text. Through reflecting on stories and their own learning, readers deepen their understanding. Readers also need stamina and the ability to monitor their reading and set individual goals so that they see themselves as competent readers. This will support their continued growth as they transition to middle school. With the increased use of informational texts, the units support students learn how to determine importance and synthesize within and across informational texts, as well as understand how informational texts are organized. Fifth grade social studies and science content is also suggested as a focus in text content for mini-lesson demonstrations.

Scope and Sequence

Careful thought has been given to the order in which the fifth grade units are presented. The units are designed to build reading skills and strategies as well as habits of mind and experiences for future success in reading. As a result, certain scaffolds have been created based on this order and schools should take care in moving units from their intended placement in the curriculum. It is always important for teachers to adapt this curriculum in ways that benefit their classroom.

Alignment

The fifth grade course is designed to meet the Common Core State Standards for Reading Literature and Informational Text. The work done in this course is primarily designed to meet the Common Core State Standards in reading however, some of the speaking and listening standards as well as the foundational skills standards are delivered in this course. The work done throughout this fifth grade course not only aligns with the CCSS but is designed to prepare fifth graders for the work ahead in sixth grade.

**** Special Note—Students in grades 6-8 have a double dose of reading instruction daily. All students have a class with Reading Plus and another ELA class using the MAISA reading and writing units.****

Overview

These units provide sixth grade students with a critical foundation in reading and writing narrative, informational, and argument texts. Through analysis and production of texts in these three modes, students become more adept readers, thinkers, and writers. Across the year, they come to understand the distinctions between narrative, informational and argument texts by studying fiction and nonfiction in a variety of formats and developing a more thorough understanding of audience and purpose when both reading and writing. The use of a reader or writer's notebook for each unit encourages students to be independent, engaged, and empowered learners who value close reading, idea generation, drafting, and revision. The first two units facilitate the use of the notebook for close reading and generative writing of narrative in addition to developing the classroom writing community. The focus on understanding and using the elements of argument underpins three of the units (Argument Paragraph, Literary Essay, and Writing the Argument), supporting students in becoming more competent producers of argument in both written and spoken form. The informational reading and informational essay units steep students in how to critically read nonfiction, as well as analyze and use text structures, central ideas, and supporting details to craft an informational text.

Rationale

The ability to access, navigate, and evaluate information is a crucial skill of citizens in contemporary society. Through the study of these units, students learn strategies to be critical consumers of informational and literary texts. They explore the role nonfiction and fiction plays in their daily lives and identify and analyze text structures and features of text in print and digital formats.

Scope and Sequence

Careful thought has been given to the order in which the English 6 units are presented. The year-long course is designed to build rhetorical and 21st century skills, as well as habits of mind and experiences critical for success in later grades. Students continue to develop a learner identity and content knowledge that builds their level of persistence to engage in complex tasks that call upon strong analytical thinking and reasoning. As a result, certain scaffolds have been created based on this unit order. Schools should take care in moving units from their intended placement in the curriculum. For example, Launching the Writer's Notebook and Independent Reading units are designed to establish certain learner habits, strategies, and practices that help ramp students into later units of analyzing complex texts and writing well-reasoned arguments.

Alignment

The English 6 course is designed to meet the larger learning goals listed in the Framework for Success in Post-secondary Writing developed by the Council of Writing Program Administrators, National Council of Teachers of English, the National Writing Project, and the Common Core State Standards for English Language Arts.

English 7 (OS/MAISA) : Grade 7: OS/MAISA: English Language Arts

Overview

These units provide seventh grade students with a critical foundation in reading and writing narrative, informational, and argument texts. Through analysis and production of texts in these three modes, students become more adept readers, thinkers, and writers. Across the year, they come to understand the distinctions between narrative, informational and argument texts by studying fiction and nonfiction in a variety of formats and developing a more thorough understanding of audience and purpose when both reading and writing. The use of a reader or writer's notebook for each unit encourages students to be independent, engaged, and empowered learners who value close

reading, idea generation, drafting, and revision. The first two units facilitate the use of the notebook for close reading and generative writing of narrative in addition to developing the classroom writing community. The focus on understanding and using the elements of argument underpins three of the units (Argument Paragraph, Literary Essay, and Writing the Argument), supporting students in becoming more competent producers of argument in both written and spoken form. The informational reading and informational essay units steep students in how to critically read nonfiction, as well as analyze and use text structures, central ideas, and supporting details to craft an informational text.

Rationale

The ability to access, navigate, and evaluate information is a crucial skill of citizens in contemporary society. Through the study of these units, students learn strategies to be critical consumers of informational and literary texts. They explore the role nonfiction and fiction plays in their daily lives and identify and analyze text structures and features of text in print and digital formats.

Scope and Sequence

Careful thought has been given to the order in which the English 7 units are presented. The year-long course is designed to build rhetorical and 21st century skills, as well as habits of mind and experiences critical for success in later grades. Students continue to develop a learner identity and content knowledge that builds their level of persistence to engage in complex tasks that call upon strong analytical thinking and reasoning. As a result, certain scaffolds have been created based on this unit order. Schools should take care in moving units from their intended placement in the curriculum. For example, Launching the Writer's Notebook and Independent Reading units are designed to establish certain learner habits, strategies, and practices that help ramp students into later units of analyzing complex texts and writing well-reasoned arguments.

Alignment

The English 7 course is designed to meet the larger learning goals listed in the Framework for Success in Post-secondary Writing developed by the Council of Writing Program Administrators, National Council of Teachers of English, the National Writing Project, and the Common Core State Standards for English Language Arts.

English 8 (OS/MAISA) : Grade 8: OS/MAISA: English Language Arts

Overview

These units provide eighth grade students with a critical foundation in reading and writing narrative, informational, and argument texts. Through analysis and production of texts in these three modes, students become more adept readers, thinkers, and writers. Across the year, they come to understand the distinctions between narrative, informational and argument texts by studying fiction and nonfiction in a variety of formats and developing a more thorough understanding of audience and purpose when both reading and writing. The use of a reader or writer's notebook for each unit encourages students to be independent, engaged, and empowered learners who value close reading, idea generation, drafting, and revision. The first two units facilitate the use of the notebook for close reading and generative writing of narrative in addition to developing the classroom writing community. The focus on understanding and using the elements of argument underpins three of the units (Argument Paragraph, Literary Essay, and Writing the Argument), supporting students in becoming more competent producers of argument in both written and spoken form. The informational reading and informational essay units steep students in how to critically read nonfiction, as well as analyze and use text structures, central ideas, and supporting details to craft an informational text.

Rationale

The ability to access, navigate, and evaluate information is a crucial skill of citizens in contemporary society. Through the study of these units, students learn strategies to be critical consumers of informational and literary texts. They explore the role nonfiction and fiction plays in their daily lives and identify and analyze text structures and features of text in print and digital formats.

Scope and Sequence

Careful thought has been given to the order in which the English 8 units are presented. The year-long course is designed to build rhetorical and 21st century skills, as well as habits of mind and experiences critical for success in later grades. Students continue to develop a learner identity and content knowledge that builds their level of persistence to engage in complex tasks that call upon strong analytical thinking and reasoning. As a result, certain scaffolds have been created based on this unit order. Schools should take care in moving units from their intended placement in the curriculum. For example, Launching the Writer's Notebook and Independent Reading units are designed to establish certain learner habits, strategies, and practices that help ramp students into later units of analyzing complex texts and writing well-reasoned arguments.

Alignment

The English 8 course is designed to meet the larger learning goals listed in the Framework for Success in Post-secondary Writing developed by the Council of Writing Program Administrators, National Council of Teachers of English, the National Writing Project, and the Common Core State Standards for English Language Arts.

Reading Plus Grades 6-8

The Reading Plus adaptive assessment, InSight, is a valid and reliable assessment that was created under the direction and guidance of leading reading and assessment researchers. InSight goes beyond typical measures of comprehension and vocabulary by also measuring comprehension-based silent reading rate and motivation. The rich data not only gives teachers a deep understanding of their students' needs, but also empowers students to follow their own personalized paths to reading proficiency. The assessments are adaptive allowing students to work at the level to increase their academic vocabulary, fluency, and comprehension.

Math

Grades K-5 Engage NY

Curriculum modules in mathematics integrate the CCLS, rigorous classroom reasoning, extended classroom time devoted to practice and reflection through extensive problem sets, and high expectations for mastery.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices.

Grades 6-8

Saxon Math Courses 1-3

The Saxon Math philosophy stresses that incremental and integrated instruction, with the opportunity to practice and internalize concepts, leads to successful mathematics understanding. This pedagogy aligns with the requirement of the Common Core State Standards. In grades 6-8 students will be instructed in mastery in specified math concepts that serve as a basis for future learning.

Mathematics - Grade 1: Introduction

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

1. Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

2. Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

3. Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.[1]

4. Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

[1] Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Grade 1 Overview

Operations and Algebraic Thinking
- Represent and solve problems involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition and subtraction.
- Add and subtract within 20.
- Work with addition and subtraction equations.

Number and Operations in Base Ten
- Extend the counting sequence.
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data
- Measure lengths indirectly and by iterating length units.
- Tell and write time and money.
- Represent and interpret data.

Geometry
- Reason with shapes and their attributes.

Operations & Algebraic Thinking 1.OA

Represent and solve problems involving addition and subtraction.
1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.[1]
2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Understand and apply properties of operations and the relationship between addition and subtraction.
3. Apply properties of operations as strategies to add and subtract.[2] *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)*
4. Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8. Add and subtract within 20.*

Add and subtract within 20.
5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).

Work with addition and subtraction equations.
7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.
8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = _ – 3, 6 + 6 = _.*

[1] See Glossary, Table 1.
[2] Students need not use formal terms for these properties.

Number & Operations in Base Ten — 1.NBT

Extend the counting sequence.

1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Understand place value.

2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
   a. 10 can be thought of as a bundle of ten ones — called a "ten."
   b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
   c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

Use place value understanding and properties of operations to add and subtract.

4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
6. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Measurement & Data — 1.MD

Measure lengths indirectly and by iterating length units.

1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.
2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

Tell and write time *and money*.

3. Tell and write time in hours and half-hours using analog and digital clocks. ***Recognize and identify coins, their names, and their value.***

Represent and interpret data.

4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Geometry 1.G

Reason with shapes and their attributes.

1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size) ; build and draw shapes to possess defining attributes.
2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.[1]
3. Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

[1] Students do not need to learn formal names such as "right rectangular prism."

Mathematics - Grade 2: Introduction

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

1. Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

2. Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

3. Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

4. Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Grade 2 Overview

Operations and Algebraic Thinking
- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

Number and Operations in Base Ten
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data
- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Work with time and money.
- Represent and interpret data.

Geometry
- Reason with shapes and their attributes.

Operations & Algebraic Thinking 2.OA

Represent and solve problems involving addition and subtraction.
1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1]

Add and subtract within 20.
2. Fluently add and subtract within 20 using mental strategies.[2] By end of Grade 2, know from memory all sums of two one-digit numbers.

Work with equal groups of objects to gain foundations for multiplication.
3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

[1] See Glossary, Table 1.
[2] See standard 1.OA.6 for a list of mental strategies.

Number & Operations in Base Ten 2.NBT

Understand place value.
1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
   a. 100 can be thought of as a bundle of ten tens — called a "hundred."
   b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
2. Count within 1000; skip-count by 5s, 10s, and 100s.
3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Use place value understanding and properties of operations to add and subtract.
5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
6. Add up to four two-digit numbers using strategies based on place value and properties of operations.
7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
9. Explain why addition and subtraction strategies work, using place value and the properties of operations.[1]

[1] Explanations may be supported by drawings or objects.

Measurement & Data 2.MD

Measure and estimate lengths in standard units.

1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
3. Estimate lengths using units of inches, feet, centimeters, and meters.
4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate addition and subtraction to length.

5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

Work with time and money.

7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Represent and interpret data.

9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems[1] using information presented in a bar graph.

[1] See Glossary, Table 1.

Geometry 2.G

Reason with shapes and their attributes.

1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.[1] Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

[1] Sizes are compared directly or visually, not compared by measuring.

Mathematics - Grade 3: Introduction

In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

1. Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.

2. Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, 1/2 of the paint in a small bucket could be less paint than 1/3 of the paint in a larger bucket, but 1/3 of a ribbon is longer than 1/5 of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

3. Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.

4. Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Grade 3 Overview

Operations and Algebraic Thinking
- Represent and solve problems involving multiplication and division.
- Understand properties of multiplication and the relationship between multiplication and division.
- Multiply and divide within 100.
- Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Number and Operations in Base Ten
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions
- Develop understanding of fractions as numbers.

Measurement and Data
- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
- Represent and interpret data.
- Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
- Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Geometry
- Reason with shapes and their attributes.

Operations & Algebraic Thinking 3.OA

Represent and solve problems involving multiplication and division.

1. Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as* 5×7.
2. Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as* $56 \div 8$.
3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1]
4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations* $8 \times ? = 48$, $5 = \_ \div 3$, $6 \times 6 = ?$

Understand properties of multiplication and the relationship between multiplication and division.

5. Apply properties of operations as strategies to multiply and divide.[2] *Examples: If* $6 \times 4 = 24$ *is known, then* $4 \times 6 = 24$ *is also known. (Commutative property of multiplication.)* $3 \times 5 \times 2$ *can be found by* $3 \times 5 = 15$, *then* $15 \times 2 = 30$, *or by* $5 \times 2 = 10$, *then* $3 \times 10 = 30$. *(Associative property of multiplication.) Knowing that* $8 \times 5 = 40$ *and* $8 \times 2 = 16$, *one can find* 8×7 *as* $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. *(Distributive property.)*
6. Understand division as an unknown-factor problem. *For example, find* $32 \div 8$ *by finding the number that makes 32 when multiplied by 8.*

Multiply and divide within 100.

7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

8. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.[3]
9. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

[1] See Glossary, Table 2.
[2] Students need not use formal terms for these properties.
[3] This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order.

Number & Operations in Base Ten — 3.NBT

Use place value understanding and properties of operations to perform multi-digit arithmetic.[1]
1. Use place value understanding to round whole numbers to the nearest 10 or 100.
2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3. Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

[1] A range of algorithms may be used.

Number & Operations—Fractions[1] — 3.NF

Develop understanding of fractions as numbers.
1. Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.
2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.
   a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.
   b. Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.
3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
   a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
   b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model.
   c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.*
   d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

[1] Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, 8.

Measurement & Data 3.MD

Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

1. Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).[1] Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.[2]

Represent and interpret data.

3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*
4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

5. Recognize area as an attribute of plane figures and understand concepts of area measurement.
   a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.
   b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.
6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).
7. Relate area to the operations of multiplication and addition.
   a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
   b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
   c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.
   d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

8. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

[1] Excludes compound units such as cm3 and finding the geometric volume of a container.
[2] Excludes multiplicative comparison problems (problems involving notions of "times as much"; see Glossary, Table 2).

Geometry 3.G

Reason with shapes and their attributes.

1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*

Mathematics - Grade 4: Introduction

In Grade 4, instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

1. Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

2. Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g., 15/9 = 5/3), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

3. Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Grade 4 Overview

Operations and Algebraic Thinking
- Use the four operations with whole numbers to solve problems.
- Gain familiarity with factors and multiples.
- Generate and analyze patterns.

Number and Operations in Base Ten
- Generalize place value understanding for multidigit whole numbers.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions
- Extend understanding of fraction equivalence and ordering.
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- Understand decimal notation for fractions, and compare decimal fractions.

Measurement and Data
- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
- Represent and interpret data.
- Geometric measurement: understand concepts of angle and measure angles.

Geometry
- Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Operations & Algebraic Thinking 4.OA

Use the four operations with whole numbers to solve problems.

1. Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.[1]
3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Gain familiarity with factors and multiples.

4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

Generate and analyze patterns.

5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

[1] See Glossary, Table 2.

Number & Operations in Base Ten[1] 4.NBT

Generalize place value understanding for multi-digit whole numbers.

1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*
2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
3. Use place value understanding to round multi-digit whole numbers to any place.

Use place value understanding and properties of operations to perform multi-digit arithmetic.

4. Fluently add and subtract multi-digit whole numbers using the standard algorithm.
5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

[1]Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000

Number & Operations—Fractions[1] 4.NF

Extend understanding of fraction equivalence and ordering.

1. Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

3. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
   a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
   b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.*
   c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
   d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.
4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
   a. Understand a fraction a/b as a multiple of $1/b$. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).*
   b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)*

c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

Understand decimal notation for fractions, and compare decimal fractions.

5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.[2] *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*

6. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*

7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.

[1] Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, 100.

[2] Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.

Measurement & Data — 4.MD

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

Represent and interpret data.

4. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

Geometric measurement: understand concepts of angle and measure angles.

5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

   a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.

   b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

7. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find

unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Geometry 4.G

Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Mathematics - Grade 5: Introduction

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

1. Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)

2. Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

3. Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real world and mathematical problems.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Grade 5 Overview

Operations and Algebraic Thinking
- Write and interpret numerical expressions.
- Analyze patterns and relationships.

Number and Operations in Base Ten
- Understand the place value system.
- Perform operations with multi-digit whole numbers and with decimals to hundredths.

Number and Operations—Fractions
- Use equivalent fractions as a strategy to add and subtract fractions.
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Measurement and Data
- Convert like measurement units within a given measurement system.
- Represent and interpret data.
- Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Geometry
- Graph points on the coordinate plane to solve real-world and mathematical problems.
- Classify two-dimensional figures into categories based on their properties.

Operations & Algebraic Thinking 5.OA

Write and interpret numerical expressions.
1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*

Analyze patterns and relationships.
3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

Number & Operations in Base Ten 5.NBT

Understand the place value system.
1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
3. Read, write, and compare decimals to thousandths.
   a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.
   b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
4. Use place value understanding to round decimals to any place.

Perform operations with multi-digit whole numbers and with decimals to hundredths.
5. Fluently multiply multi-digit whole numbers using the standard algorithm.
6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Number & Operations—Fractions 5.NF

Use equivalent fractions as a strategy to add and subtract fractions.
1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*
2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.*

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
3. Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*
4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
   a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*
   b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
5. Interpret multiplication as scaling (resizing), by:
   a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
   b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Sequence of Kindergarten Modules Aligned with the Standards

Module 1: Numbers to 10
Module 2: Two-Dimensional and Three-Dimensional Shapes
Module 3: Comparison of Length, Weight, Capacity, and Numbers to 10
Module 4: Number Pairs, Addition and Subtraction to 10
Module 5: Numbers 10–20 and Counting to 100
Module 6: Analyzing, Comparing, and Composing Shapes

Summary of Year

Kindergarten mathematics is about (1) representing, relating, and operating on whole numbers, initially with sets of objects; and (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

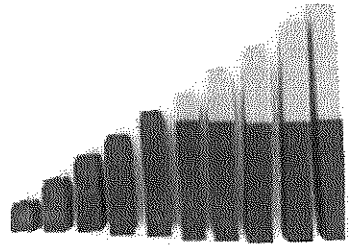
Key Areas of Focus for K-2: Addition and subtraction—concepts, skills, and problem solving

Required Fluency: K.OA.5 Add and subtract within 5.

CCLS Major Emphasis Clusters
Counting and Cardinality • Know number names and count sequence. • Count to tell the number of objects. • Compare numbers.
Operations and Algebraic Thinking • Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.
Number and Operations in Base Ten • Work with numbers 11-19 to gain foundations for place value.

Rationale for Module Sequence in Kindergarten

Like Pre-Kindergarten, in Module 1, Kindergarten starts out with solidifying the meaning of numbers to 10 with a focus on embedded numbers and relationships to 5 using fingers, cubes, drawings, 5 groups and the Rekenrek. Students then investigate patterns of "1 more" and "1 less" using models such as the number stairs (see picture). Because fluency with addition and subtraction within 5 is a Kindergarten goal, addition within 5 is begun in Module 1 as another representation of the decomposition of numbers.



Number Stairs

In Module 2, Students learn to identify and describe squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders and spheres. During this module students also practice their fluency with numbers to 10.

In Module 3, students begin to experiment with comparison of length, weight and capacity. Students first learn to identify the attribute being compared, moving away from non-specific language such as "bigger" to "longer than," "heavier than," or "more than." Comparison begins with developing the meaning of the word "than" in the context of "taller than," "shorter than," "heavier than," "longer than," etc. The terms "more" and "less" become increasingly abstract later in Kindergarten. "7 is 2 more than 5" is more abstract than "Jim is taller than John."

In Module 4, number comparison leads to a further study of embedded numbers (e.g., "3 is less than 7" leads to, "3 and 4 make 7," and 3 + 4 = 7,). "1 more, 2 more, 3 more" lead into addition (+1, +2, +3). Students now represent stories with blocks, drawings, and equations.

After Module 5, after students have a meaningful experience of addition and subtraction within 10 in Module 4, they progress to exploration of numbers 10-20. They apply their skill with and understanding of numbers within 10 to teen numbers, which are decomposed as "10 ones and some ones." For example, "12 is 2 more than 10." The number 10 is special; it is the anchor that will eventually become the "ten" unit in the place value system in Grade 1.

Module 6 rounds out the year with an exploration of shapes. Students build shapes from components, analyze and compare them, and discover that they can be composed of smaller shapes, just as larger numbers are composed of smaller numbers.

Mathematics – Kindergarten: Introduction

In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

1. Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as $5 + 2 = 7$ and $7 - 2 = 5$. (Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.) Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

2. Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Grade K Overview

Counting and Cardinality
- Know number names and the count sequence.
- Count to tell the number of objects.
- Compare numbers.

Operations and Algebraic Thinking
- Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

Number and Operations in Base Ten
- Work with numbers 11–19 to gain foundations for place value.

Measurement and Data
- Describe and compare measurable attributes.
- Classify objects and count the number of objects in categories.

Geometry
- Identify and describe shapes.
- Analyze, compare, create, and compose shapes.

Counting & Cardinality — K.CC

Know number names and the count sequence.

1. Count to 100 by ones and by tens.
2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

Count to tell the number of objects.

4. Understand the relationship between numbers and quantities; connect counting to cardinality.
   a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
   b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
   c. Understand that each successive number name refers to a quantity that is one larger.
   d. *Develop understanding of ordinal numbers (first through tenth) to describe the relative position and magnitude of whole numbers.*
5. Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

Compare numbers.

6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.[1]
7. Compare two numbers between 1 and 10 presented as written numerals.

[1] Include groups with up to ten objects.

Operations & Algebraic Thinking — K.OA

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

1. Represent addition and subtraction with objects, fingers, mental images, drawings[1], sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).
4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
5. Fluently add and subtract within 5.

[1] Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

Number & Operations in Base Ten — K.NBT

Work with numbers 11-19 to gain foundations for place value.
1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Measurement & Data K.MD

Describe and compare measurable attributes.
1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
2. Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

Classify objects and count the number of objects in each category.
3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.[1]

[1] Limit category counts to be less than or equal to 10.

Geometry K.G

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).
1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.
2. Correctly name shapes regardless of their orientations or overall size.
3. Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

Analyze, compare, create, and compose shapes.
4. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).
5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
6. Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*

Alignment Chart

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Kindergarten Modules[12]
Module 1: **Numbers to 10**[13] (43 days)	**Know number names and the count sequence.**[14] **K.CC.3** Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects). **Count to tell the number of objects.**[15] **K.CC.4** Understand the relationship between numbers and quantities; connect counting to cardinality. a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. c. Understand that each successive number name refers to a quantity that is one larger. **K.CC.5** Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects. **Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.**[16] **K.OA.3** Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).

[12] When a cluster is referred to in this chart without a footnote, the cluster is taught in its entirety.
[13] In this module, standards work is limited to within 10.
[14] The balance of this cluster is addressed in Module 5.
[15] K.CC.4d is addressed in Module 6.
[16] The balance of this cluster is addressed in Module 4.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Kindergarten Modules[12]
	Classify objects and count the number of objects in each category. K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.)
Module 2: **Two-Dimensional and Three-Dimensional Shapes** (12 days)	**Classify objects and count the number of objects in each category.** K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.) **Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).** K.G.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above, below, beside, in front of, behind,* and *next to.* K.G.2 Correctly name shapes regardless of their orientations or overall size. K.G.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid"). **Analyze, compare, create, and compose shapes.**[17] K.G.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).
Module 3: **Comparison of Length, Weight, Capacity, and Numbers to 10** (38 days)	**Compare numbers.** K.CC.6 Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. (Include groups with up to ten objects.) K.CC.7 Compare two numbers between 1 and 10 presented as written numerals. Describe and compare measurable attributes.

[17] The balance of this cluster is addressed in Module 6.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Kindergarten Modules[12]	
	K.MD.1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
	K.MD.2	Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*
Module 4: **Number Pairs, Addition and Subtraction to 10** (47 days)	**Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.**	
	K.OA.1	Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. (Drawings need not show details, but should show the mathematics in the problem.)
	K.OA.2	Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
	K.OA.3	Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).
	K.OA.4	For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings and record the answer with a drawing or equation.
	K.OA.5	Fluently add and subtract within 5.
Module 5: **Numbers 10–20 and Counting to 100** (30 days)	**Know number names and the count sequence.**	
	K.CC.1	Count to 100 by ones and by tens.
	K.CC.2	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
	K.CC.3	Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Kindergarten Modules[12]
	Count to tell the number of objects.[18] K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality. a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. c. Understand that each successive number name refers to a quantity that is one larger. K.CC.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects. **Work with numbers 11-19 to gain foundations for place value.** K.NBT.1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two three, four, five, six, seven, eight or nine ones.
Module 6: **Analyzing, Comparing, and Composing Shapes** (10 days)	**Count to tell the number of things.**[19] K.CC.4 Understand the relationship between numbers and quantities: connect counting to cardinality. d. Develop understanding of ordinal numbers (first through tenth) to describe the relative position and magnitude of whole numbers. **Analyze, compare, create and compose shapes.** K.G.4 Analyze and compare two and three dimensional shapes, in different sizes and orientations,

[18] K.CC.4d is addressed in Module 6.
[19] Ordinality is introduced in the context of constructing and manipulating shapes. The balance of this cluster is addressed in Modules 1 and 5.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Kindergarten Modules[12]	
		using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).
	K.G.5	Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
	K.G.6	Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?*

Sequence of Grade 1 Modules Aligned with the Standards

Module 1: Sums and Differences to 10
Module 2: Introduction to Place Value Through Addition and Subtraction Within 20
Module 3: Ordering and Comparing Length Measurements as Numbers
Module 4: Place Value, Comparison, Addition and Subtraction to 40
Module 5: Identifying, Composing, and Partitioning Shapes
Module 6: Place Value, Comparison, Addition and Subtraction to 100

Summary of Year

First Grade mathematics is about (1) developing understanding of addition, subtraction, and strategies for addion and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

Key Areas of Focus for K-2: Addition and subtraction—concepts, skills, and problem solving

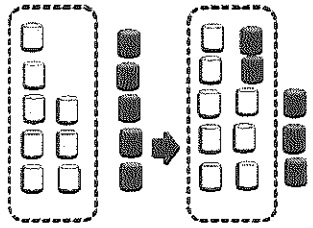
Required Fluency: 1.OA.6 Add and subtract within 10.

CCLS Major Emphasis Clusters
Operations and Algebraic Thinking • Represent and solve problems involving addition and subtraction. • Understand and apply properties of operations and the relationship between addition and subtraction. • Add and subtract within 20. • Work with addition and subtraction equations. Number and Operations in Base Ten • Extend the counting sequence. • Understand place value. • Use place value understanding and properties of operations to add and subtract. Measurement and Data • Measure lengths indirectly and by iterating length units.

Rationale for Module Sequence in Grade 1

In Grade 1, work with numbers to 10 continues to be a major stepping-stone in learning the place value system. In Module 1, students work to further understand the meaning of addition and subtraction begun in Kindergarten, largely within the context of the Grade 1 word problem types. They begin intentionally and energetically building fluency with addition and subtraction facts—a major gateway to later grades.

In Module 2, students add and subtract within 20. Work begins by modeling "adding and subtracting across ten" in word problems and with equations. Solutions involving decomposition and composition like that shown to the right for 8 + 5 reinforce the need to "make 10." In Module 1, students loosely grouped 10 objects to make a ten. They now transition to conceptualizing that ten as a single unit (using 10 linking cubes stuck together, for example). This is the next major stepping-stone in understanding place value, learning to group "10 ones" as a single unit: 1 ten. Learning to "complete a unit" empowers students in later grades to understand "renaming" in the addition algorithm, to add 298 and 35 mentally (i.e., 298 + 2 + 33), and to add measurements like 4 m, 80 cm, and 50 cm (i.e., 4 m + 80 cm + 20 cm + 30 cm = 4 m + 1 m + 30 cm = 5 m 30 cm).



$8 + 5 = 8 + (2 + 3) = (8 + 2) + 3 = 10 + 3 = 13$

Adding Across a Ten

Module 3, which focuses on measuring and comparing lengths indirectly and by iterating length units, gives students a few weeks to practice and internalize "making a 10" during daily fluency activities.

Module 4 returns to understanding place value. Addition and subtraction within 40 rest on firmly establishing a "ten" as a unit that can be counted, first introduced at the close of Module 2. Students begin to see a problem like 23 + 6 as an opportunity separate the "2 tens" in 23 and concentrate on the familiar addition problem 3 + 6. Adding 8 + 5 is related to solving 28 + 5; complete a unit of ten and add 3 more.

In Module 5, students think about attributes of shapes and practice composing and decomposing geometric shapes. They also practice work with addition and subtraction within 40 during daily fluency activities (from Module 4). Thus, this module provides important "internalization time" for students between two intense number-based modules. The module placement also gives more spatially-oriented students the opportunity to build their confidence before they return to arithmetic.

Although Module 6 focuses on "adding and subtracting within 100," the learning goal differs from the "within 40" module. Here, the new level of complexity is to build off the place value understanding and mental math strategies that were introduced in earlier modules. Students explore by using simple examples and the familiar units of 10 made out of linking cubes, bundles, and drawings. Students also count to 120 and represent any number within that range with a numeral.

Alignment Chart

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 1 Modules[20]
Module 1: **Sums and Differences to 10** [21] (45 days)	**Represent and solve problems involving addition and subtraction.**[22] 1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart and comparing, with unknowns in all positions, e.g., by using objects, drawings and equations with a symbol for the unknown number to represent the problem. (See Glossary, Table 1.) **Understand and apply properties of operations and the relationship between addition and subtraction.** 1.OA.3 Apply properties of operations as strategies to add and subtract. (Students need not use formal terms for these properties.) *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)* 1.OA.4 Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.* **Add and subtract within 20.** 1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). 1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). **Work with addition and subtraction equations.**

[20] When a cluster is referred to in this chart without a footnote, the cluster is taught in its entirety.
[21] In this module, work is limited to within 10.
[22] 1.OA.2 is addressed in Module 2.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 1 Modules[20]
	1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.* 1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ? - 3, 6 + 6 = ?.*
Module 2: **Introduction to Place Value Through Addition and Subtraction Within 20** (35 days)	**Represent and solve problems involving addition and subtraction.** 1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See Glossary, Table 1.) 1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. **Understand and apply properties of operations and the relationship between addition and subtraction.** 1.OA.3 Apply properties of operations as strategies to add and subtract. (Students need not use formal terms for these properties.) *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)* 1.OA.4 Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.* **Add and subtract within 20.[27]** 1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a

[27] The balance of this cluster is addressed in Module 1.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 1 Modules[20]
	number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). **Understand place value.**[28] **1.NBT.2** Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones – called a "ten." b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
Module 3: **Ordering and Comparing Length Measurements as Numbers** (15 days)	**Represent and solve problems involving addition and subtraction.**[29] **1.OA.1** Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See Glossary, Table 1.) **Measure lengths indirectly and by iterating length units.** **1.MD.1** Order three objects by length; compare the lengths of two objects indirectly by using a third object. **1.MD.2** Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

[28] Focus in this module is on numbers to 20. The balance of this cluster is addressed in Modules 4 and 6.
[29] The balance of this cluster is addressed in Module 2.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 1 Modules[20]
	Represent and interpret data. 1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
Module 4: **Place Value, Comparison, Addition and Subtraction to 40** (35 days)	**Represent and solve problems involving addition and subtraction.**[30] 1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See Glossary, Table 1.) **Extend the counting sequence.**[31] 1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. **Understand place value.**[32] 1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones – called a "ten." c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). 1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. **Use place value understanding and properties of operations to add and subtract.**[33]

[30] The balance of this cluster is addressed in Module 2.
[31] Focus on numbers to 40.
[32] Focus on numbers to 40.
[33] Focus on numbers to 40.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 1 Modules[20]
	1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. **1.NBT.5** Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. **1.NBT.6** Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
Module 5: **Identifying, Composing, and Partitioning Shapes** (15 days)	**Tell and write time and money.**[34] **1.MD.3** Tell and write time in hours and half-hours using analog and digital clocks. Recognize and identify coins, their names, and their value. **Reason with shapes and their attributes.** **1.G.1** Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. **1.G.2** Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. (Students do not need to learn formal names such as "right rectangular prism.) **1.G.3** Partition circles and rectangles into two and four equal shares, describe the shares using the

[34] Focus on time. Coins are addressed in Module 6.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 1 Modules[20]
	words *halves, fourths*, and *quarters*, and use the phrases *half of, fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.
Module 6: **Place Value, Comparison, Addition and Subtraction to 100** (35 days)	**Extend the counting sequence.** **1.NBT.1** Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. **Understand place value.** **1.NBT.2** Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones – called a "ten." c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). **1.NBT.3** Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. **Use place value understanding and properties of operations to add and subtract.** **1.NBT.4** Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. **1.NBT.5** Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count: explain the reasoning used. **1.NBT.6** Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value,

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 1 Modules[20]
	properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. **Tell and write time and money.**[35] 1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks. Recognize and identify coins, their names, and their value.

[35] Focus on money.

Sequence of Grade 2 Modules Aligned with the Standards

Module 1: Sums and Differences to 100
Module 2: Addition and Subtraction of Length Units
Module 3: Place Value, Counting, and Comparison of Numbers to 1000
Module 4: Addition and Subtraction Within 200 with Word Problems to 100
Module 5: Addition and Subtraction Within 1000 with Word Problems to 100
Module 6: Foundations of Multiplication and Division
Module 7: Problem Solving with Length, Money, and Data
Module 8: Time, Shapes, and Fractions as Equal Parts of Shapes

Summary of Year

Second Grade mathematics is about (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

Key Areas of Focus for K-2: Addition and subtraction—concepts, skills, and problem solving

Required Fluency:
2.OA.2 Add and subtract within 20.
2.NBT.5 Add and subtract within 100.

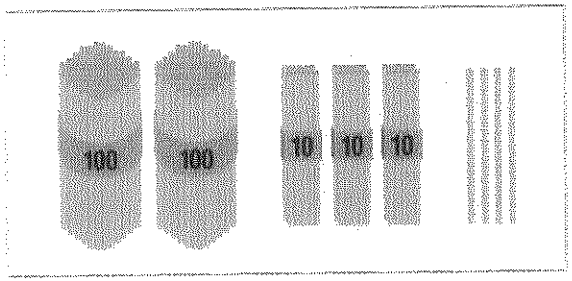
CCLS Major Emphasis Clusters
Operations and Algebraic Thinking • Represent and solve problems involving addition and subtraction. • Add and subtract within 20. • Work with equal groups of objects to gain foundations for multiplication.
Number and Operations in Base Ten • Understand place value. • Use place value understanding and properties of operations to add and subtract.
Measurement and Data • Measure and estimate lengths in standard units. • Relate addition and subtraction to length.

Rationale for Module Sequence in Grade 2

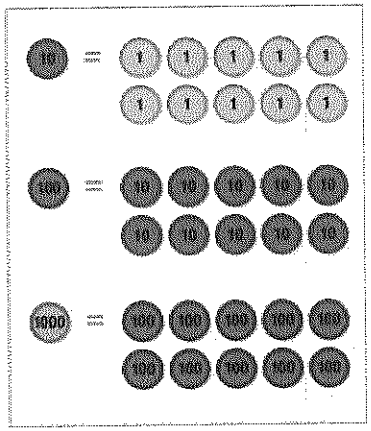
From Grade 1, students have fluency of addition and subtraction within 10 and extensive experience working with numbers to 100. Module 1 of Grade 2 establishes a motivating, differentiated fluency program in the first few weeks that will provide each student with enough practice to achieve mastery of the new required fluencies (i.e., adding and subtracting within 20 and within 100) by the end of the year. Students learn to represent and solve word problems using addition and subtraction: a practice that will also continue throughout the year.

In Module 2, students learn to measure and estimate using standard units for length and solve measurement word problems involving addition and subtraction of length. A major objective is for students to use measurement tools with the understanding that linear measure involves an iteration of units and that the smaller a unit, the more iterations are necessary to cover a given length. Students work exclusively with metric units, i.e. centimeters and meters, in this module to support upcoming work with place value concepts in Module 3. Units also play a central role in the addition and subtraction algorithms of Modules 4 and 5. An underlying goal for this module is for students to learn the meaning of a "unit" in a different context, that of length. This understanding serves as the foundation of arithmetic, measurement, and geometry in elementary school.

All arithmetic algorithms are manipulations of place value units: ones, tens, hundreds, etc. In Module 3, students extend their understanding of base-ten notation and apply their understanding of place value to count and compare numbers to 1000. In Grade 2 the place value units move from a proportional model to a non-proportional number disk model (see picture). The place value table with number disks can be used through Grade 5 for modeling very large numbers and decimals, thus providing students greater facility with and understanding of mental math and algorithms.



Proportional Model for Place Value



Non-Proportional Model for Place Value

In Module 4, students apply their work with place value units to add and subtract within 200 moving from concrete to pictorial to abstract. This work deepens their understanding of base-ten, place value, and the properties of operations. It also challenges them to apply their knowledge to one-step and two-step word problems. During this module, students also continue to develop one of the required fluencies of the grade: addition and subtraction within 100.

Module 5 builds upon the work of Module 4. Students again use place value strategies, manipulatives, and math drawings to extend their conceptual understanding of the addition and subtraction algorithms to numbers within 1000. They maintain addition and subtraction fluency within 100

through daily application work to solve one- and two-step word problems of all types. A key component of Modules 4 and 5 is that students use place value reasoning to explain why their addition and subtraction strategies work.

In Module 6, students extend their understanding of a unit to build the foundation for multiplication and division wherein any number, not just powers of ten, can be a unit. Making equal groups of "four apples each" establishes the unit "four apples" (or just four) that can then be counted: 1 four, 2 fours, 3 fours, etc. Relating the new unit to the one used to create it lays the foundation for multiplication: 3 groups of 4 apples equal 12 apples (or 3 fours is 12).

Module 7 provides another opportunity for students to practice their algorithms and problem-solving skills with perhaps the most well-known, interesting units of all: dollars, dimes, and pennies. Measuring and estimating length is revisited in this module in the context of units from both the customary system (e.g., inches and feet) and the metric system (e.g., centimeters and meters). As they study money and length, students represent data given by measurement and money data using picture graphs, bar graphs, and line plots.

Students finish Grade 2 by describing and analyzing shapes in terms of their sides and angles. In Module 8, students investigate, describe, and reason about the composition and decomposition of shapes to form other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Alignment Chart

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 2 Modules[36]
Module 1: **Sums and Differences to 20** (10 days)	**Represent and solve problems involving addition and subtraction.**[37] 2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (See Glossary, Table 1.) **Add and subtract within 20.**[38] 2.OA.2 Fluently add and subtract within 20 using mental strategies. (See standard 1.OA.6 for a list of mental strategies.) By end of grade 2, know from memory all sums of two one-digit numbers. **Use place value understanding and properties of operations to add and subtract.**[39] 2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
Module 2: **Addition and Subtraction of Length Units** (12 days)	**Measure and estimate lengths in standard units.**[40] 2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. 2.MD.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. 2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters. 2.MD.4 Measure to determine how much longer one object is than another, expressing the length

[36] When a cluster is referred to in this chart without a footnote, the cluster is taught in its entirety.
[37] In this module, word problems focus primarily on result unknown and change unknown situations.
[38] From this point forward, fluency practice with addition and subtraction to 20 is part of the students' ongoing experience.
[39] The balance of this cluster is addressed in Modules 4 and 5.
[40] Focus is on metric measurement in preparation for place value in Module 3. Customary measurement is addressed in Module 7.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 2 Modules[36]
	difference in terms of a standard length unit. **Relate addition and subtraction to length.** **2.MD.5** Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. **2.MD.6** Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.
Module 3: **Place Value, Counting, and Comparison of Numbers to 1000** (25 days)	**Understand place value.** **2.NBT.1** Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens – called a "hundred." b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). **2.NBT.2** Count within 1000; skip-count by 5s[42], 10s, and 100s. **2.NBT.3** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. **2.NBT.4** Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.
Module 4: **Addition and Subtraction Within 200 with Word Problems to 100**	**Represent and solve problems involving addition and subtraction.** **2.OA.1** Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with

[42] Use analog clock to provide a context for skip-counting by 5s.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 2 Modules[36]
(35 days)	unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (See Glossary, Table 1.) **Use place value understanding and properties of operations to add and subtract.**[44] **2.NBT.5** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. **2.NBT.6** Add up to four two-digit numbers using strategies based on place value and properties of operations. **2.NBT.7** Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. **2.NBT.8** Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900. **2.NBT.9** Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)
Module 5: **Addition and Subtraction Within 1000 with Word Problems to 100** (24 days)	**Use place value understanding and properties of operations to add and subtract.**[45] **2.NBT.7** Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. **2.NBT.8** Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given

[44] In this module, work is limited to within 200. This work is extended to numbers within 1000 in the next module.
[45] The balance of this cluster is addressed in Module 4.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 2 Modules[36]
	number 100-900. **2.NBT.9** Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)
Module 6: **Foundations of Multiplication and Division** (24 days)	**Work with equal groups of objects to gain foundations for multiplication.** **2.OA.3** Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s: write an equation to express an even number as a sum of two equal addends. **2.OA.4** Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends. **Reason with shapes and their attributes.**[47] **2.G.2** Partition a rectangle into rows and columns of same size squares and count to find the total number of them.
Module 7: **Problem Solving with Length, Money, and Data** (30 days)	**Measure and estimate lengths in standard units.** **2.MD.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. **2.MD.2** Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. **2.MD.3** Estimate lengths using units of inches, feet, centimeters, and meters. **2.MD.4** Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. **Relate addition and subtraction to length.** **2.MD.5** Use addition and subtraction within 100 to solve word problems involving lengths that are given

[47] 2.G.2 is taught before G.1 and G.3 because the array model is so important to the foundation for multiplication.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 2 Modules[36]
	in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problems. **2.MD.6** Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram. **Work with time and money.**[49] **2.MD.8** Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?* **Represent and interpret data.** **2.MD.9** Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units. **2.MD.10** Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems (See Glossary, Table 1.) using information presented in a bar graph.
Module 8: **Time, Shapes, and Fractions as Equal Parts of Shapes** (20 days)	**Work with time and money.**[50] **2.MD.7** Tell time and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. **Reason with shapes and their attributes.** **2.G.1** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. (Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

[49] Focus on money. Time is addressed in Module 8.
[50] Focus on time. Money is addressed in Module 7.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 2 Modules[36]	
	2.G.3	Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Sequence of Grade 3 Modules Aligned with the Standards

Module 1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10
Module 2: Place Value and Problem Solving with Units of Measure
Module 3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10
Module 4: Multiplication and Area
Module 5: Fractions as Numbers on the Number Line
Module 6: Collecting and Displaying Data
Module 7: Geometry and Measurement Word Problems

Summary of Year

Third Grade mathematics is about (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

Key Areas of Focus for 3-5: Multiplication and division of whole numbers and fractions—concepts, skills, and problem solving

Required Fluency:

3.OA.7	Multiply and divide within 100.
3.NBT.2	Add and subtract within 1000.

CCLS Major Emphasis Clusters

Operations and Algebraic Thinking
- Represent and solve problems involving multiplication and division.
- Understand the properties of multiplication and the relationship between multiplication and division.
- Multiply and divide within 100.
- Solve problems involving the four operations and identify and explain patterns in arithmetic.

Number and Operations – Fractions
- Develop understanding of fractions as numbers.

Measurement and Data
- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
- Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

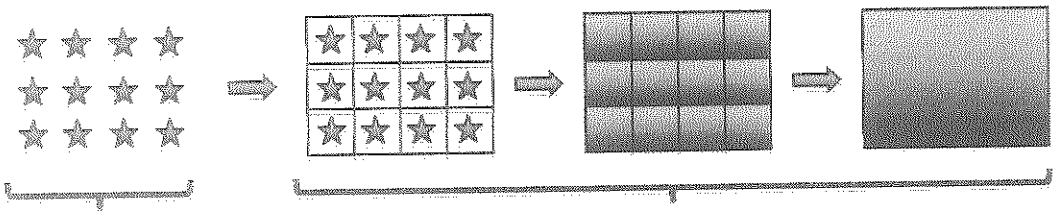
Rationale for Module Sequence in Grade 3

The first module builds upon the foundation of multiplicative thinking with units started in Grade 2. First, students concentrate on the meaning of multiplication and division and begin developing fluency for learning products involving factors of 2, 3, 4, 5, and 10 (see key areas of focus and

required fluency above). The restricted set of facts keeps learning manageable, and also provides enough examples to do one- and two-step word problems and to start measurement problems involving weight, capacity and time in the second module.

Module 2 focuses on measurement of time and metric weight and capacity. In exploratory lessons, students decompose a kilogram into 100 gram, 10 gram and 1 gram weights and decompose a liter into analogous amounts of milliliters. Metric measurement thereby develops the concept of mixed units, e.g. 3 kilograms 400 grams is clearly related to 3 thousands, 4 hundreds. Students then apply their new understanding of number to place value, comparison and rounding, composing larger units when adding, decomposing into smaller units when subtracting. Students also draw proportional tape diagrams to solve word problems (e.g., "If this tape represents 62 kg, then a tape representing 35 kg needs to be slightly longer than half the 62 kg bar..."). Drawing the relative sizes of the lengths involved in the model prepares students to locate fractions on a number line in Module 5 (where they learn to locate points on the number line relative to each other and relative to the whole unit). Module 2 also provides students with internalization time for learning the 2, 3, 4, 5, and 10 facts as part of their fluency activities.

Students learn the remaining multiplication and division facts in Module 3 as they continue to develop their understanding of multiplication and division strategies within 100 and use those strategies to solve two-step word problems. The "2, 3, 4, 5 and 10 facts" module (Module 1) and the "0, 1, 6, 7, 8, 9 and multiples of 10 facts" module (Module 3) both provide important, sustained time for work in understanding the structure of rectangular arrays to prepare students for area in Module 4. This work is necessary because students initially find it difficult to distinguish the different units in a grid (the third array in the picture below), count them and recognize that the count is related to multiplication. Tiling also supports a correct interpretation of the grid. Modules 1 and 3 slowly build up to the area model (the fourth model in the picture below) using rectangular arrays in the context of learning multiplication and division:



Module 1 and Module 3 Module 4

Progression from Rectangular Array to Area Model

By Module 4, students are ready to investigate area. They measure the area of a shape by finding the total number of same-size units of area, e.g. tiles, required to cover the shape without gaps or overlaps. When that shape is a rectangle with whole number side lengths, it is easy to partition the rectangle into squares with equal areas (as in the third stage of the illustration above).

One goal of Module 5 is for students to transition from thinking of fractions as area or parts of a figure to points on a number line. To make that jump, students think of fractions as being constructed out of unit fractions: "1 fourth" is the length of a segment on the number line such that the length of four concatenated fourth segments on the line equals 1 (the whole). Once the unit "1 fourth" has been established, counting them is as easy as counting whole numbers: 1 fourth, 2 fourths, 3 fourths, 4 fourths, 5 fourths, etc. Students also compare fractions, find equivalent fractions in special cases, and solve problems that involve fractions.

In Module 6, students leave the world of exact measurements behind. By applying their knowledge of fractions from Module 5, they estimate lengths to the nearest halves and fourths of an inch and record that information in bar graphs and line plots. This module also prepares students for the multiplicative comparison problems of Grade 4 by asking students "how many more" and "how many less" questions about scaled bar graphs.

The year rounds out with plenty of time to solve two-step word problems involving the four operations, and to improve fluency for concepts and skills initiated earlier in the year. In Module 7, students also describe, analyze, and compare properties of two-dimensional shapes. By now, students have done enough work with both linear and area measurement models to understand that there is no relationship in general between the area of a figure and perimeter, which is one of the concepts taught in the last module.

Alignment Chart

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 3 Modules[52]
Module 1: **Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10** (25 days)	**Represent and solve problems involving multiplication and division.**[53] **3.OA.1** Interpret products of whole numbers, e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 x 7.* **3.OA.2** Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of

[52] When a cluster is referred to in this chart without a footnote, the cluster is taught in its entirety.
[53] In this module, work is limited to factors of 2–5 and 10 and the corresponding dividends.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 3 Modules[52]
	objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*
	3.OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (See Glossary, Table 2.)
	3.OA.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 x ? = 48, 5 = _ ÷ 3, 6 x 6 = ?*
	Understand properties of multiplication and the relationship between multiplication and division.[54]
	3.OA.5 Apply properties of operations as strategies to multiply and divide. (Students need not use formal terms for these properties.) *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*[55]
	3.OA.6 Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*
	Multiply and divide within 100.[56]
	3.OA.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
	Solve problems involving the four operations, and identify and explain patterns in arithmetic.[57]

[54] In this module, work is limited to factors of 2–5 and 10 and the corresponding dividends.
[55] The Associative property is addressed in Module 3.
[56] In this module, work is limited to factors of 2–5 and 10 and the corresponding dividends.
[57] In this module, problem solving is limited to multiplication and division, and limited to factors of 2–5 and 10 and the corresponding dividends. 3.OA.9 is addressed in Module 3.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 3 Modules[59]
	3.OA.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order, i.e., Order of Operations.)
Module 2: **Place Value and Problem Solving with Units of Measure** (25 days)	**Use place value understanding and properties of operations to perform multi-digit arithmetic. (A range of algorithms may be used.)**[58] **3.NBT.1** Use place value understanding to round whole numbers to the nearest 10 or 100. **3.NBT.2** Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. **Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.** **3.MD.1** Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram. **3.MD.2** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). (Excludes compound units such as cm^3 and finding the geometric volume of a container.) Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (Excludes multiplicative comparison problems, i.e., problems involving notions of "times as much"; see Glossary, Table 2.)

[58] 3.NBT.3 is taught in Module 3.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 3 Modules[52]
Module 3: **Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10** (25 days)	**Represent and solve problems involving multiplication and division.**[59] **3.OA.3** Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (See Glossary, Table 2.) **3.OA.4** Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 x ? = 48, 5 =___ ÷ 3, 6 x 6 = ?* **Understand properties of multiplication and the relationship between multiplication and division.** **3.OA.5** Apply properties of operations as strategies to multiply and divide. (Students need not use formal terms for these properties.) *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)* **Multiply and divide within 100.**[60] **3.OA.7** Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. **Solve problems involving the four operations, and identify and explain patterns in arithmetic.**[61] **3.OA.8** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no

[59] The balance of this cluster is addressed in Module 1.
[60] From this point forward, fluency practice with multiplication and division facts is part of the students' on-going experience.
[61] After being fully taught in Module 3, this standard (as well as 3.OA.3) continues being practiced throughout the remainder of the school year.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 3 Modules[52]
	parentheses to specify a particular order, i.e., Order of Operations.) **3.OA.9** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.* **Use place value understanding and properties of operations to perform multi-digit arithmetic. (A range of algorithms may be used.)[62]** **3.NBT.3** Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.
Module 4: **Multiplication and Area** (20 days)	**Geometric measurement: understand concepts of area and relate area to multiplication and to addition.** **3.MD.5** Recognize area as an attribute of plane figures and understand concepts of area measurement. a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. b. A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units. **3.MD.6** Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units). **3.MD.7** Relate area to the operations of multiplication and addition. a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side

[62] The balance of this cluster is addressed in Module 2.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 3 Modules[52]
	lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning. d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.
Module 5: Fractions as Numbers on the Number Line (35 days)	**Develop understanding of fractions as numbers. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)** **3.NF.1** Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$. **3.NF.2** Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line. **3.NF.3** Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at*

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 3 Modules[57]
	the same point of a number line diagram. d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. **Reason with shapes and their attributes.**[63] **3.G.2** Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area and describe the area of each part as ¼ of the area of the shape.
Module 6: **Collecting and Displaying Data** (10 days)	**Represent and interpret data.** **3.MD.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two- step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.* **3.MD.4** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units – whole numbers, halves, or quarters.
Module 7: **Geometry and Measurement Word Problems**[64] (40 days)	**Represent and interpret data.**[65] **3.MD.4** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units – whole numbers, halves, or quarters. **Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear**

[63] 3.G.1 is taught in Module 7.
[64] The seemingly eclectic set of standards in Module 7 allows for a new level of word problems, including perimeter and measurement word problems.
[65] 3.MD.3 is taught in Module 6.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 3 Modules[32]
	and area measures. 3.MD.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. **Reason with shapes and their attributes.** 3.G.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Sequence of Grade 4 Modules Aligned with the Standards

Module 1: Place Value, Rounding, and Algorithms for Addition and Subtraction
Module 2: Unit Conversions and Problem Solving with Metric Measurement
Module 3: Multi-Digit Multiplication and Division
Module 4: Angle Measure and Plane Figures
Module 5: Fraction Equivalence, Ordering, and Operations
Module 6: Decimal Fractions
Module 7: Exploring Multiplication

Summary of Year

Fourth grade mathematics is about (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; and (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

Key Areas of Focus for 3-5: Multiplication and division of whole numbers and fractions—concepts, skills, and problem solving

Required Fluency: 4.NBT.4 Add and subtract within 1,000,000.

CCLS Major Emphasis Clusters

Operations and Algebraic Thinking
- Use the four operations with whole numbers to solve problems.

Number and Operations in Base Ten
- Generalize place value understanding for multi-digit whole numbers.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations – Fractions
- Extend understanding of fraction equivalence and ordering.
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- Understand decimal notation for fractions, and compare decimal fractions.

Rationale for Module Sequence in Grade 4

In Grade 4, students extend their work with whole numbers. They begin with large numbers using familiar units (tens and hundreds) and develop their understanding of thousands by building knowledge of the pattern of *times ten* in the base ten system on the place value chart (**4.NBT.1**). In

Grades 2 and 3 students focused on developing the concept of composing and decomposing place value units within the addition and subtraction algorithms. Now, in Grade 4, those (de)compositions and are seen through the lens of multiplicative comparison, e.g. 1 thousand is 10 times as much as 1 hundred. They next apply their broadened understanding of patterns on the place value chart to compare, round, add and subtract. The module culminates with solving multi-step word problems involving addition and subtraction modeled with tape diagrams that focus on numerical relationships.

The algorithms continue to play a part in Module 2 as students relate place value to metric units. This module helps students draw similarities between:

1 ten	= 10 ones
1 hundred	= 10 tens
1 hundred	= 100 ones
1 meter	= 100 centimeters
1 thousand	= 1,000 ones
1 kilometer	= 1,000 meters
1 kilogram	= 1,000 grams
1 liter	= 1,000 milliliters

Students work with metric measurement in the context of the addition and subtraction algorithms, mental math, place value, and word problems. Customary units are used as a context for fractions in Module 5.

In Module 3, measurements provide the concrete foundation behind the distributive property in the multiplication algorithm: $4 \times (1 \text{ m } 2 \text{ cm})$ can be made physical using ribbon, where it is easy to see the 4 copies of 1 m and the 4 copies of 2 cm. Likewise, $4 \times (1 \text{ ten } 2 \text{ ones}) = 4 \text{ tens } 8 \text{ ones}$. Students then turn to the place value table with number disks to develop efficient procedures for multiplying and dividing one-digit whole numbers and use the table with number disks to understand and explain why the procedures work. Students also solve word problems throughout the module where they select and accurately apply appropriate methods to estimate, mentally calculate, or use the procedures they are learning to compute products and quotients.

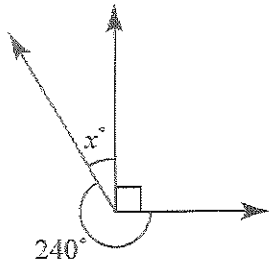
Module 4 focuses as much on solving unknown angle problems using letters and equations as it does on building, drawing, and analyzing two-dimensional shapes in geometry. Students have already used letters and equations to solve word problems in earlier grades. They continue to do so in Grade 4, and now they also learn to solve unknown angle problems: work that challenges students to build and solve equations to find unknown

angle measures. First, students learn the definition of degree and learn how to measure angles in degrees using a circular protractor. From the definition of degree and the fact that angle measures are additive, the following rudimentary facts about angles naturally follow:

1. The sum of angle measurements around a point is 360 degrees.
2. The sum of angle measurements on a line is 180 degrees.
3. Hence, from 1 and 2, students see that vertical angles are equal.
4.

Armed only with these facts, students are able to generate and solve equations as in the following proble:

Find the unknown angle x.



X + 240 + 90 = 360

X + 330 = 360

X = 30

Unknown angle problems help to unlock algebraic concepts for students *because such problems are visual.* The *x* clearly stands for a specific number: If a student wished, he could place a protractor down on that angle and measure it to find *x*. But doing so destroys the joy of deducing the answer and solving the puzzle on his own.

Module 5 centers on equivalent fractions and operations with fractions. We use fractions when there is a given unit, the *whole unit*, but we want to measure using a smaller unit, called the *fractional unit*. To prepare students to explore the relationship between a fractional unit and its whole unit, examples of such relationships in different contexts were already carefully established earlier in the year:

360 degrees in	1 complete turn
100 centimeters in	1 meter
1000 grams in	1 kilogram
1000 milliliters in	1 liter

The beauty of fractional units, once defined and understood, is that they behave just as all other units do:

- "3 fourths + 5 fourths = 8 fourths" just as "3 meters + 5 meters = 8 meters"
- "4 x 3 fourths = 12 fourths" just as "4 x 3 meters = 12 meters"

Students add and subtract fractions with like units using the area model and the number line. They multiply a fraction by a whole number where the interpretation is as repeated addition e.g. 3 fourths + 3 fourths = 2 x 3 fourths. Through this introduction to fraction arithmetic they gradually come to understand fractions as units they can manipulate, just like whole numbers. Throughout the module, customary units of measurement provide a relevant context for the arithmetic.

Module 6, on decimal fractions, starts with the realization that decimal place value units are simply special fractional units: 1 tenth = 1/10, 1 hundredth = 1/100, etc. Fluency plays an important role in this topic as students learn to relate 3/10 = 0.3 = 3 tenths. They also recognize that 3 tenths is equal to 30 hundredths and subsequently have their first experience adding and subtracting fractions with unlike units e.g., 3 tenths + 4 hundredths = 30 hundredths + 4 hundredths.

The year ends with a module focused on multiplication and measurement as they solve multi-step word problems. Exploratory lessons support conceptual understanding of the relative sizes of measurement units. Students explore conversion in hands-on settings and subsequently apply those conversions to solve multi-step word problems involving all operations and multiplicative comparison.

Alignment Chart

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 4 Modules[65]
Module 1: **Place Value, Rounding, and Algorithms for Addition and Subtraction** (25 days)	**Use the four operations with whole numbers to solve problems.**[67] **4.OA.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

[65] When a cluster is referred to in this chart without a footnote, the cluster is taught in its entirety.
[67] 4.OA.1 and 4.OA.2 are addressed in Modules 3 and 7.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 4 Modules[66]
	Generalize place value understanding for multi-digit whole numbers. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.) **4.NBT.1** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.* **4.NBT.2** Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. **4.NBT.3** Use place value understanding to round multi-digit whole numbers to any place. **Use place value understanding and properties of operations to perform multi-digit arithmetic.**[68] **4.NBT.4** Fluently add and subtract multi-digit whole numbers using the standard algorithm.
Module 2: **Unit Conversions and Problem Solving with Metric Measurement** (7 days)	**Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.**[69] **4.MD.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...* **4.MD.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

[68] 4.NBT.5 is addressed in Modules 3 and 7; 4.NBT.6 is addressed in Module 3.

[69] The focus of this module is on the metric system to reinforce place value, mixed units, and word problems with unit conversions. Decimal and fraction word problems wait until Modules 5 and 6. 4.MD.3 is taught in Module 3.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 4 Modules[66]
Module 3: **Multi-Digit Multiplication and Division** (43 days)	**Use the four operations with whole numbers to solve problems.** **4.OA.1** Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. **4.OA.2** Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. (See Glossary, Table 2.) **4.OA.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. **Gain familiarity with factors and multiplies.** **4.OA.4** Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite. **Use place value understanding and properties of operations to perform multi-digit arithmetic. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)[70]** **4.NBT.5** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.[71] **4.NBT.6** Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using

[70] 4.NBT.4 is addressed in Module 1 and is then reinforced throughout the year.
[71] Multiplying two two-digit numbers is addressed in Module 7.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 4 Modules[66]
	equations, rectangular arrays, and/or area models. **Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.**[72] **4.MD.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*
Module 4: **Angle Measure and Plane Figures** (20 days)	**Geometric measurement: understand concepts of angle and measure angles.** **4.MD.5** Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees. **4.MD.6** Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. **4.MD.7** Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. **Draw and identify lines and angles, and classify shapes by properties of their lines and angles.** **4.G.1** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and

[72] 4.MD.1 is taught in Modules 2 and 7; 4.MD.2 is taught in Modules 2, 5, 6, and 7.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 4 Modules[66]
	parallel lines. Identify these in two-dimensional figures. **4.G.2** Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. **4.G.3** Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
Module 5: **Fraction Equivalence, Ordering, and Operations**[73] (45 days)	**Generate and analyze patterns.** **4.OA.5** Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.* **Extend understanding of fraction equivalence and ordering. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)** **4.NF.1** Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. **4.NF.2** Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. **Build fractions from unit fractions by applying and extending previous understanding of operations on whole**

[73] Tenths and hundredths are important fractions in this module, represented in decimal form in Module 6.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 4 Modules[GG]
	numbers. **4.NF.3** Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.* c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. **4.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4). b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.) c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 4 Modules[66]
	answer lie? **Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.**[74] **4.MD.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. **Represent and interpret data.** **4.MD.4** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*
Module 6: Decimal Fractions (20 days)	**Understand decimal notations for fractions, and compare decimal fractions. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)**[75] **4.NF.5** Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. (Students who can generate equivalent fractions can develop strategies for adding fractions wit unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.) *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.* **4.NF.6** Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.* **4.NF.7** Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons

[74] 4.MD.1 is taught in Modules 2 and 7. 4.MD.3 is taught in Module 3.
[75] In this module we continue to work with fractions, now including decimal form.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 4 Modules[66]
	are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model. **Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.**[76] 4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
Module 7: **Exploring Multiplication** (20 days)	**Use the four operations with whole numbers to solve problems.** 4.OA.1 Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. 4.OA.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. (See Glossary, Table 2.) 4.OA.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. **Use place value understanding and properties of operations to perform multi-digit arithmetic.**[77] 4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate

[76] 4.MD.1 is taught in Modules 2 and 7. 4.MD.3 is taught in Module 3.
[77] In Module 7, the focus is on multiplying two 2-digit numbers.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 4 Modules[66]
	and explain the calculation by using equations, rectangular arrays, and/or area models.
	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.[78]
	4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*
	4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

[78] The focus now is on customary units in word problems for application of fraction concepts. 4.MD.3 is taught in Module 3.

Sequence of Grade 5 Modules Aligned with the Standards

Module 1: Place Value and Decimal Fractions
Module 2: Multi-Digit Whole Number and Decimal Fraction Operations
Module 3: Addition and Subtraction of Fractions
Module 4: Multiplication and Division of Fractions and Decimal Fractions
Module 5: Addition and Multiplication with Volume and Area
Module 6: Problem Solving with the Coordinate Plane

Summary of Year

Fifth grade mathematics is about (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to two-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

Key Areas of Focus for 3-5: Multiplication and division of whole numbers and fractions—concepts, skills, and problem solving

Required Fluency: 5.NBT.5 Multi-digit multiplication.

CCLS Major Emphasis Clusters
Number and Operations in Base Ten • Understand the place value system. • Perform operations with multi-digit whole numbers and with decimals to hundredths.
Number and Operations – Fractions • Use equivalent fractions as a strategy to add and subtract fractions. • Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
Measurement and Data • Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Rationale for Module Sequence in Grade 5

Students' experiences with the algorithms as ways to manipulate place value units in Grades 2-4 really begin to pay dividends in Grade 5. In Module 1, whole number patterns with number disks on the place value table are easily generalized to decimal numbers. As students work word problems with measurements in the metric system, where the same patterns occur, they begin to appreciate the value and the meaning of decimals. Students apply their work with place value to adding, subtracting, multiplying and dividing decimal numbers with tenths and hundredths.

Module 2 begins by using place value patterns and the distributive and associative properties to multiply multi-digit numbers by multiples of 10 and leads to fluency with multi-digit whole number multiplication.[79] For multiplication, students must grapple with and fully understand the distributive property (one of the key reasons for teaching the multi-digit algorithm). While the multi-digit multiplication algorithm is a straightforward generalization of the one-digit multiplication algorithm, the division algorithm with two-digit divisors requires far more care to teach because students have to also learn estimation strategies, error correction strategies, and the idea of successive approximation (all of which are central concepts in math, science, and engineering).

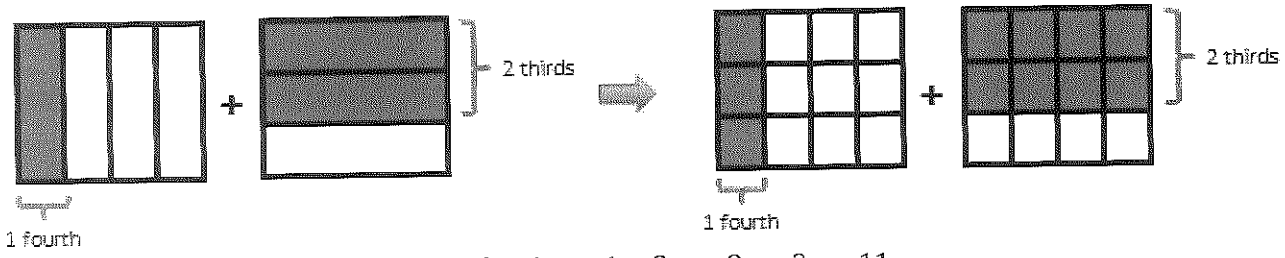
Work with place value units paves the path toward fraction arithmetic in Module 3 as elementary math's place value emphasis shifts to the larger set of fractional units for algebra. Like units are added to and subtracted from like units:

$$1.5 + 0.8 = 1\frac{5}{10} + \frac{8}{10} = 15 \text{ tenths} + 8 \text{ tenths} = 23 \text{ tenths} = 2 \text{ and } 3 \text{ tenths} = 2\frac{3}{10} = 2.3$$

$$1\frac{5}{9} + \frac{8}{9} = 14 \text{ ninths} + 8 \text{ ninths} = 22 \text{ ninths} = 2 \text{ and } 4 \text{ ninths} = 2\frac{4}{9}$$

The new complexity is that when units are not equivalent, they must be changed for smaller equal units so that they can be added or subtracted. Probably the best model for showing this is the rectangular fraction model pictured below. The equivalence is then represented symbolically as students engage in active meaning-making rather than obeying the perhaps mysterious command to "multiply the top and bottom by the same number."

2 boys + 1 girl = 2 children + 1 child = 3 children
2 thirds + 1 fourth = 8 twelfths + 3 twelfths = 11 twelfths

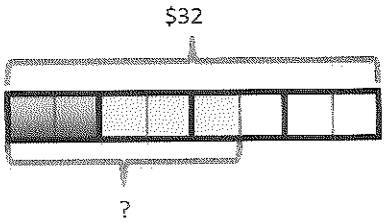


$$\frac{2}{3} + \frac{1}{4} = \left(\frac{2 \times 4}{3 \times 4}\right) + \left(\frac{1 \times 3}{4 \times 3}\right) = \frac{8}{12} + \frac{3}{12} = \frac{11}{12}$$

[79] Multi-digit decimal multiplication such as 4.1 × 3.4 and division such as 4.5 ÷ 1.5 are studied in Module 4.

Relating different fractional units to one another requires extensive work with area and number line diagrams. Tape diagrams are used often in word problems. Tape diagrams, which students began using in the early grades and which become increasingly useful as students applied them to a greater variety of word problems, hit their full strength as a model when applied to fraction word problems. At the heart of a tape diagram is the now-familiar idea of forming units. In fact, forming units to solve word problems is one of the most powerful examples of the unit theme and is particularly helpful for understanding fraction arithmetic, as in the following example:

Jill had \$32. She gave $\frac{1}{4}$ of her money to charity and $\frac{3}{8}$ of her money to her brother. How much did she give altogether?



Solution with units:

8 units = \$32
1 unit = \$4
5 units = \$20

Solution with arithmetic:

$$\frac{1}{4}+\frac{3}{8}=\frac{2}{8}+\frac{3}{8}=\frac{5}{8}$$

$$\frac{5}{8}\times 32 = 20$$

Jill gave \$20 altogether.

Near the end of Module 4 students know enough about fractions and whole number operations to begin to explore multi-digit decimal multiplication and division. In multiplying 2.1×3.8, for example, students now have multiple skills and strategies that they can use to locate the decimal point in the final answer, including:

- Unit awareness: $2.1 \times 3.8 = 21$ tenths $\times$ 38 tenths = 798 hundredths
- Estimation (through rounding): $2.1 \times 3.8 \approx 2 \times 4 = 8$, so $2.1 \times 3.8 = 7.98$
- Fraction multiplication: $21/10 \times 38/10 = (21 \times 38)/(10 \times 10)$

Similar strategies enrich students' understanding of division and help them to see multi-digit decimal division as whole number division in a different unit. For example, we divide to find, "How many groups of 3 apples are there in 45 apples?" and write 45 apples ÷ 3 apples = 15. Similarly, 4.5 ÷ 0.3 can be written as "45 tenths ÷ 3 tenths" with the same answer: There are 15 groups of 0.3 in 4.5. This idea was used to introduce fraction division earlier in the module, thus gluing division to whole numbers, fractions and decimals together through an understanding of units.

Frequent use of the area model in Modules 3 and 4 prepares students for an in-depth discussion of area and volume in Module 5. But the module on area and volume also reinforces work done in the fraction module: Now, questions about how the area changes when a rectangle is scaled by a whole or fractional scale factor may be asked and missing fractional sides may be found. Measuring volume once again highlights the unit theme, as a unit cube is chosen to represent a volume unit and used to measure the volume of simple shapes composed out of rectangular prisms.

Scaling is revisited in the last module on the coordinate plane. Since Kindergarten where growth and shrinking patterns were first introduced, students have been using bar graphs to display data and patterns. Extensive bar-graph work has set the stage for line plots, which are both the natural extension of bar graphs and the precursor to linear functions. It is in this final module of K-5 that a simple line plot of a straight line is presented on a coordinate plane and students are asked about the scaling relationship between the increase in the units of the vertical axis for 1 unit of increase in the horizontal axis. This is the first hint of slope and marks the beginning of the major theme of middle school: ratios and proportions.

Alignment Chart

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 5 Modules[80]
Module 1: **Place Value and Decimal Fractions** (20 days)	**Understand the place value system.** **5.NBT.1** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. **5.NBT.2** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. **5.NBT.3** Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$. b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. **5.NBT.4** Use place value understanding to round decimals to any place. **Perform operations with multi-digit whole numbers and with decimals to hundredths.**[82] **5.NBT.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between

[80] When a cluster is referred to in this chart without a footnote, the cluster is taught in its entirety.
[82] The balance of this cluster is addressed in Module X.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 5 Modules[80]
	addition and subtraction; relate the strategy to a written method and explain the reasoning used. **Convert like measurement units within a given measurement system.**[83] **5.MD.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
Module 2: **Multi-Digit Whole Number and Decimal Fraction Operations** (35 days)	**Write and interpret numerical expressions.**[84] **5.OA.1** Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. **5.OA.2** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.* **Understand the place value system.**[85] **5.NBT.1** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. **5.NBT.2** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. **Perform operations with multi-digit whole numbers and with decimals to hundredths.** **5.NBT.5** Fluently multiply multi-digit whole numbers using the standard algorithm. **5.NBT.6** Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit

[83] The focus of this module is on the metric system to reinforce place value and writing measurements using mixed units.
[84] These skills are also applied to fractions in this module.
[85] 5.NBT.3 and 5.NBT.4 are taught in Module 1.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 5 Modules[86]
	divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. **5.NBT.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.[86] **Convert like measurement units within a given measurement system.** **5.MD.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
Module 3: **Addition and Subtraction of Fractions** (22 days)	**Use equivalent fractions as a strategy to add and subtract fractions.**[87] **5.NF.1** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)* **5.NF.2** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.*
Module 4: **Multiplication and Division of**	**Write and interpret numerical expressions.** **5.OA.1** Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with

[86] Focus on decimal multiplication of a single-digit, whole number factor times a multi-digit number with up to 2 decimal places (e.g., 3 x 64.98). Restrict decimal division to a single digit whole number divisor with a multi-digit dividend with up to 2 decimal places (e.g., 64.98 ÷ 3). The balance of the standard is taught in Module 4.
[87] Examples in this module also include tenths and hundredths in fraction and decimal form.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 5 Modules[80]
Fractions and Decimal Fractions (38 days)	these symbols. **5.OA.2** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.* **Perform operations with multi-digit whole numbers and with decimals to hundredths.**[88] **5.NBT.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. **Apply and extend previous understandings of multiplication and division to multiply and divide fractions.**[89] **5.NF.3** Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?* **5.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*

[88] 5.NBT.5 and 5.NBT.6 are taught in Module 2. Teach problems such as 2.7 x 2.1 and 4.5 ÷ 1.5. See "Progressions" pgs. 17 – 18 (http://commoncoretools.files.wordpress.com/2011/04/ccss_progression_nbt_2011_04_073.pdf).

[89] The focus of 5.NF.4 in this module is only on part a; 5.NF.4b is taught in Module 5. Include problems involving decimal fractions throughout the cluster.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 5 Modules[80]
	5.NF.5 Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1. **5.NF.6** Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. **5.NF.7** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.) a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$. b. Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$. c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of*

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 5 Modules[89]
	raisins? **Convert like measurement units within a given measurement system.**[90] **5.MD.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. **Represent and interpret data.** **5.MD.2** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*
Module 5: **Addition and Multiplication with Volume and Area** (25 days)	**Apply and extend previous understandings of multiplication and division to multiply and divide fractions.**[91] **5.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. **Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.** **5.MD.3** Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

[90] The focus of 5.MD.1 in this module is on the customary system of units as a means of introducing fractions (e.g., 1 inch is 1/12 foot, 1 foot is 1/3 yard, etc.).

[91] 5.NF.3 is taught in Module 3; 5.NF.4a, 5.NF.5, 5.NF.6, and 5.NF.7 are taught in Module 4. In this module 5.NF.4b is applied to multiplying to find volume and area. 5.NF.4b certainly includes decimal fraction side lengths of sides of a rectangle (in both fraction and decimal form).

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 5 Modules[80]
	a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units. **5.MD.4** Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. **5.MD.5** Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems. **Classify two-dimensional figures into categories based on their properties.** **5.G.3** Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles. **5.G.4** Classify two-dimensional figures in a hierarchy based on properties.

Module and Approximate Number of Instructional Days	Common Core Learning Standards Addressed in Grade 5 Modules[80]
Module 6: **Problem Solving with the Coordinate Plane** (40 days)	**Write and interpret numerical expressions.**[92] **5.OA.2** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.* **Analyze patterns and relationships.** **5.OA.3** Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.* **Graph points on the coordinate plane to solve real-world and mathematical problems.** **5.G.1** Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). **5.G.2** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

[92] 5.OA.1 is taught in Modules 2 and 4.

Domains, Clusters, and Mathematical Practices for Grade 6

The Common Core State Standards are separated into domains, which are divided into clusters.

Grade 6 Domains and Clusters

Large groups of connected standards are referred to as domains. In Grade 6 there are five domains. Groups of related standards within a domain are referred to as clusters.

6.RP–Ratios and Proportional Relationships

- 1st cluster: Understand ratio concepts and use ratio reasoning to solve problems.

6.NS–The Number System

- 1st cluster: Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- 2nd cluster: Compute fluently with multi-digit numbers and find common factors and multiples.
- 3rd cluster: Apply and extend previous understandings of numbers to the system of rational numbers.

6.EE–Expressions and Equations

- 1st cluster: Apply and extend previous understandings of arithmetic to algebraic expressions.
- 2nd cluster: Reason about and solve one-variable equations and inequalities.
- 3rd cluster: Represent and analyze quantitative relationships between dependent and independent variables.

6.G–Geometry

- 1st cluster: Solve real-world and mathematical problems involving area, surface area, and volume.

6.SP–Statistics and Probability

- 1st cluster: Develop understanding of statistical variability.
- 2nd cluster: Summarize and describe distributions.

Mathematical Practices

The Standards for Mathematical Practice list the following essential competencies that students will develop throughout their mathematics education.

CC.K–12.MP.1 Make sense of problems and persevere in solving them.
CC.K–12.MP.2 Reason abstractly and quantitatively.
CC.K–12.MP.3 Construct viable arguments and critique the reasoning of others.
CC.K–12.MP.4 Model with mathematics.
CC.K–12.MP.5 Use appropriate tools strategically.
CC.K–12.MP.6 Attend to precision.
CC.K–12.MP.7 Look for and make use of structure.
CC.K–12.MP.8 Look for and express regularity in repeated reasoning.

For the full text of the Common Core State Standards and a comprehensive correlation, including Mathematical Practices, see the Correlation of ***Saxon Math Course 1*** to the Common Core State Standards for Mathematics Grade 6 on pages 13–18.

SAXON MATH™ Course 1
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Common Core

Section 1 • Lessons 1–10, Investigation 1

The following table shows a CCSS (Common Core State Standards) focus of the Power Up (PU) and the Problem Solving (PS) activities, which appear at the beginning of each lesson.

CCSS Reference	1	2	3	4	5	6	7	8	9	10
CC.K–12.MP.1	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS
CC.K–12.MP.3			PS		PS		PS			
CC.K–12.MP.4										PS
CC.K–12.MP.5										PS
CC.K–12.MP.8	PS			PS						
CC.6.RP (1st cluster)		PU						PU		

*The cluster indicates the particular group of related standards within the given domain.

MP Mathematical Practices
EE Expressions and Equations
RP Ratios and Proportional Relationships
G Geometry
NS The Number System
SP Statistics and Probability

Section 2 • Lessons 11–20, Investigation 2

Lesson		CCSS Focus of Lesson
11	• Problems About Comparing • Problems About Separating	CC.6.EE (2nd cluster)
12	• Place Value Through Trillions • Multistep Problems	CC.6.EE (1st cluster)
13	• Problems About Comparing • Elapsed-Time Problems	CC.6.EE (1st cluster)
14	• The Number Line: Negative Numbers Extension Activity 2 (p 21): • Understanding and Comparing Absolute Values	CC.6.NS (3rd cluster)
15	• Problems About Equal Groups	CC.6.EE (1st cluster)
	Cumulative Assessment	
16	• Rounding Whole Numbers • Estimating	CC.K–12.MP.2
17	• The Number Line: Fractions and Mixed Numbers	CC.K–12.MP.5
18	• Average • Line Graphs	CC.K–12.MP.2
19	• Factors • Prime Numbers	CC.6.EE (1st cluster)
20	• Greatest Common Factor (GCF) Extension Activity 3 (p 23): • Using the Greatest Common Factor and the Distributive Property	CC.6.NS (2nd cluster)
	Cumulative Assessment *Extension Test 1*	
Inv. 2	• Investigating Fractions with Manipulatives	CC.K–12.MP.4

The following table shows a CCSS focus of the Power Up (PU) and the Problem Solving (PS) activities, which appear at the beginning of each lesson.

CCSS Reference	11	12	13	14	15	16	17	18	19	20
CC.K–12.MP.1	PS	PS	PS	PS	PS	PS	PS	PU/PS	PS	PS
CC.K–12.MP.2			PS							
CC.K–12.MP.3					PS			PS		
CC.K–12.MP.4							PS			
CC.K–12.MP.8	PS	PS				PS				
CC.6.RP (1st cluster)		PU				PU				
CC.6.NS (2nd cluster)					PU				PU	
CC.6.SP (2nd cluster)		PS								

Section 3 • Lessons 21–30, Investigation 3

Lesson		CCSS Focus of Lesson
21	• Divisibility	CC.K–12.MP.7
22	• "Equal Groups" Problems with Fractions	CC.K–12.MP.1
23	• Ratio • Rate	CC.6.RP (1st cluster)
24	• Adding and Subtracting Fractions That Have Common Denominators	CC.K–12.MP.7
25	• Writing Division Answers as Mixed Numbers • Multiples	CC.K–12.MP.7 CC.K–12.MP.8
	Cumulative Assessment	
26	• Using Manipulatives to Reduce Fractions • Adding and Subtracting Mixed Numbers	CC.K–12.MP.4
27	• Measures of a Circle	CC.K–12.MP.5
28	• Angles	CC.K–12.MP.6
29	• Multiplying Fractions • Reducing Fractions by Dividing by Common Factors	CC.K–12.MP.8
30	• Least Common Multiple (LCM) • Reciprocals	CC.6.NS (2nd cluster)
	Cumulative Assessment	
Inv. 3	• Measuring and Drawing Angles with a Protractor	CC.K–12.MP.5

The following table shows a CCSS focus of the Power Up (PU) and the Problem Solving (PS) activities, which appear at the beginning of each lesson.

CCSS Reference	21	22	23	24	25	26	27	28	29	30
CC.K–12.MP.1	PS	PS	PS	PS	PS	PS	PU/PS	PS	PS	PS
CC.K–12.MP.3						PS		PS		
CC.K–12.MP.4				PS						PS
CC.6.RP (1st cluster)			PU			PU				
CC.6.SP (1st cluster)						PU				PU

MP Mathematical Practices
EE Expressions and Equations
RP Ratios and Proportional Relationships
G Geometry
NS The Number System
SP Statistics and Probability

Section 4 • Lessons 31–40, Investigation 4

Lesson		CCSS Focus of Lesson
31	• Areas of Rectangles	CC.K–12.MP.6
32	• Expanded Notation • More on Elapsed Time	CC.K–12.MP.7 CC.K–12.MP.6
33	• Writing Percents as Fractions, Part 1	CC.K–12.MP.8
34	• Decimal Place Value	CC.K–12.MP.7
35	• Writing Decimal Numbers as Fractions, Part 1 • Reading and Writing Decimal Numbers	CC.K–12.MP.8
	Cumulative Assessment	
36	• Subtracting Fractions and Mixed Numbers from Whole Numbers	CC.K–12.MP.1
37	• Adding and Subtracting Decimal Numbers	CC.6.NS (2nd cluster)
38	• Adding and Subtracting Decimal Numbers and Whole Numbers • Squares and Square Roots	CC.6.NS (2nd cluster)
39	• Multiplying Decimal Numbers	CC.6.NS (2nd cluster)
40	• Using Zero as a Placeholder • Circle Graphs	CC.6.NS (2nd cluster)
	Cumulative Assessment	
Inv. 4	• Collecting, Organizing, Displaying, and Interpreting Data Extension Activity 4A (p 25): • Recognizing a Statistical Question • Describing Patterns in Statistical Data Extension Activity 4B (p 27): • Displaying Data in Box Plots	CC.6.SP (2nd cluster) CC.6.SP (1st cluster)

The following table shows a CCSS focus of the Power Up (PU) and the Problem Solving (PS) activities, which appear at the beginning of each lesson.

CCSS Reference	31	32	33	34	35	36	37	38	39	40
CC.K–12.MP.1	PS	PS	PS	PS	PS	PS	PU/PS	PS	PS	PS
CC.K–12.MP.2						PS				
CC.K–12.MP.3				PS						
CC.K–12.MP.4				PS					PS	
CC.6.RP (1st cluster)						PS				
CC.6.NS (2nd cluster)	PU	PU	PU		PU	PU	PU		PU	PU
CC.6.G (1st cluster)		PU	PU							
CC.6.SP (1st cluster)									PU	

Section 5 • Lessons 41–50, Investigation 5

Lesson		CCSS Focus of Lesson
41	• Finding a Percent of a Number	CC.6.RP (1st cluster)
42	• Renaming Fractions by Multiplying by 1	CC.K–12.MP.8
43	• Equivalent Division Problems • Finding Unknowns in Fraction and Decimal Problems	CC.K–12.MP.7
44	• Simplifying Decimal Numbers • Comparing Decimal Numbers	CC.K–12.MP.7
45	• Dividing a Decimal Number by a Whole Number	CC.6.NS (2nd cluster)
	Cumulative Assessment *Extension Test 2*	
46	• Writing Decimal Numbers in Expanded Notation • Mentally Multiplying Decimal Numbers by 10 and by 100	CC.6.NS (2nd cluster)
47	• Circumference • Pi (π)	CC.6.NS (2nd cluster)
48	• Subtracting Mixed Numbers with Regrouping, Part 1	CC.K–12.MP.5
49	• Dividing by a Decimal Number	CC.6.NS (2nd cluster)
50	• Decimal Number Line (Tenths) • Dividing by a Fraction	CC.K–12.MP.1
	Cumulative Assessment	
Inv. 5	• Displaying Data Extension Activity 5A (p 29): • Using Measures of Variability Extension Activity 5B (p 31): • Describing the Distribution in a Set of Data	CC.6.SP (2nd cluster) CC.6.SP (1st cluster)

CCSS Reference	41	42	43	44	45	46	47	48	49	50
CC.K–12.MP.1	PS	PS	PS	PU/PS	PS	PS	PS	PS	PS	PS
CC.K–12.MP.2				PS					PS	
CC.K–12.MP.3			PS							
CC.6.RP (1st cluster)	PU									
CC.6.NS (2nd cluster)	PU	PU		PU		PU	PU		PU	PU
CC.6.G (1st cluster)	PS				PU					
CC.6.SP (1st cluster)										PU

MP Mathematical Practices
EE Expressions and Equations
RP Ratios and Proportional Relationships
G Geometry
NS The Number System
SP Statistics and Probability

Section 6 • Lessons 51–60, Investigation 6

Lesson		CCSS Focus of Lesson
51	• Rounding Decimal Numbers	CC.K–12.MP.3
52	• Mentally Dividing Decimal Numbers by 10 and by 100	CC.K–12.MP.7
53	• Decimals Chart • Simplifying Fractions	CC.6.NS (2nd cluster)
54	• Reducing by Grouping Factors Equal to 1 • Dividing Fractions	CC.6.NS (1st cluster)
55	• Common Denominators, Part 1	CC.K–12.MP.8
	Cumulative Assessment	
56	• Common Denominators, Part 2	CC.K–12.MP.8
57	• Adding and Subtracting Fractions: Three Steps	CC.K–12.MP.8
58	• Probability and Chance	CC.6.SP (2nd cluster)
59	• Adding Mixed Numbers	CC.K–12.MP.2
60	• Polygons	CC.K–12.MP.6
	Cumulative Assessment *Extension Test 3*	
Inv. 6	• Attributes of Geometric Solids	CC.6.G (1st cluster)

The following table shows a CCSS focus of the Power Up (PU) and the Problem Solving (PS) activities, which appear at the beginning of each lesson.

CCSS Reference	51	52	53	54	55	56	57	58	59	60
CC.K–12.MP.1	PS	PS	PS	PU/PS	PS	PS	PS	PS	PS	PS
CC.K–12.MP.2				PS						
CC.K–12.MP.3						PS				
CC.6.RP (1st cluster)					PU		PS			
CC.6.NS (2nd cluster)		PU	PU		PU					

Section 7 • Lessons 61–70, Investigation 7

Lesson		CCSS Focus of Lesson
61	• Adding Three or More Fractions	CC.K–12.MP.5
62	• Writing Mixed Numbers as Improper Fractions	CC.K–12.MP.5
63	• Subtracting Mixed Numbers with Regrouping, Part 2	CC.K–12.MP.8
64	• Classifying Quadrilaterals	CC.K–12.MP.3
65	• Prime Factorization • Division by Primes • Factor Trees	CC.K–12.MP.7
	Cumulative Assessment	
66	• Multiplying Mixed Numbers	CC.K–12.MP.1
67	• Using Prime Factorization to Reduce Fractions	CC.K–12.MP.7
68	• Dividing Mixed Numbers	CC.K–12.MP.1
69	• Lengths of Segments • Complementary and Supplementary Angles	CC.K–12.MP.6
70	• Reducing Fractions Before Multiplying	CC.6.NS (1st cluster)
	Cumulative Assessment	
Inv. 7	• The Coordinate Plane Extension Activity 6 (p 33): • Finding Distances on the Coordinate Plane	CC.6.G (1st cluster) CC.6.NS (3rd cluster)

The following table shows a CCSS focus of the Power Up (PU) and the Problem Solving (PS) activities, which appear at the beginning of each lesson.

CCSS Reference	61	62	63	64	65	66	67	68	69	70
CC.K–12.MP.1	PS	PS	PS	PS	PS	PS	PS	PS	PS	PU/PS
CC.K–12.MP.2										PS
CC.K–12.MP.3				PS						
CC.K–12.MP.4										PS
CC.6.RP (1st cluster)			PU							
CC.6.NS (2nd cluster)	PU									
CC.6.G (1st cluster)									PS	PS
CC.6.SP (2nd cluster)	PU									

MP Mathematical Practices
EE Expressions and Equations
RP Ratios and Proportional Relationships
G Geometry
NS The Number System
SP Statistics and Probability

Section 8 • Lessons 71–80, Investigation 8

Lesson		CCSS Focus of Lesson
71	• Parallelograms	CC.6.G (1st cluster)
72	• Fractions Chart • Multiplying Three Fractions	CC.K–12.MP.7
73	• Exponents • Writing Decimal Numbers as Fractions, Part 2	CC.6.EE (1st cluster)
74	• Writing Fractions as Decimal Numbers • Writing Ratios as Decimal Numbers	CC.K–12.MP.8
75	• Writing Fractions and Decimals as Percents, Part 1	CC.K–12.MP.8
	Cumulative Assessment *Extension Test 4*	
76	• Comparing Fractions by Converting to Decimal Form	CC.K–12.MP.8
77	• Finding Unstated Information in Fraction Problems	CC.K–12.MP.1
78	• Capacity	CC.K–12.MP.6
79	• Area of a Triangle	CC.6.G (1st cluster)
80	• Using a Constant Factor to Solve Ratio Problems	CC.6.RP (1st cluster)
	Cumulative Assessment	
Inv. 8	• Geometric Construction of Bisectors	CC.K–12.MP.5

The following table shows a CCSS focus of the Power Up (PU) and the Problem Solving (PS) activities, which appear at the beginning of each lesson.

CCSS Reference	71	72	73	74	75	76	77	78	79	80
CC.K–12.MP.1	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS
CC.K–12.MP.3		PS								
CC.K–12.MP.4								PS		
CC.K–12.MP.8										PS
CC.6.RP (1st cluster)								PS	PU	
CC.6.NS (2nd cluster)	PU	PU			PU					
CC.6.SP (1st cluster)		PU	PU	PU	PU		PU	PU		
CC.6.SP (2nd cluster)			PU	PU	PU		PU	PU		

Section 9 • Lessons 81–90, Investigation 9

Lesson		CCSS Focus of Lesson
81	• Arithmetic with Units of Measure	CC.K–12.MP.6
82	• Volume of a Rectangular Prism Extension Activity 7 (p 35): • Finding Volume of a Prism with Fractional Edge Lengths	CC.6.G (1st cluster)
83	• Proportions	CC.K–12.MP.4
84	• Order of Operations, Part 2	CC.6.EE (1st cluster)
85	• Using Cross Products to Solve Proportions	CC.K–12.MP.8
	Cumulative Assessment	
86	• Area of a Circle	CC.6.EE (1st cluster)
87	• Finding Unknown Factors	CC.6.EE (1st cluster)
88	• Using Proportions to Solve Ratio Word Problems Extension Activity 8 (p 37): • Using Tables to Compare Ratios	CC.6.RP (1st cluster)
89	• Estimating Square Roots	CC.K–12.MP.3
90	• Measuring Turns	CC.K–12.MP.6
	Cumulative Assessment *Extension Test 5*	
Inv. 9	• Experimental Probability	CC.K–12.MP.1

The following table shows a CCSS focus of the Power Up (PU) and the Problem Solving (PS) activities, which appear at the beginning of each lesson.

CCSS Reference	81	82	83	84	85	86	87	88	89	90
CC.K–12.MP.1	PS	PS	PS	PS	PS	PS	PU/PS	PS	PS	PS
CC.K–12.MP.3			PS							
CC.6.RP (1st cluster)							PS			
CC.6.NS (2nd cluster)		PU								
CC.6.EE (2nd cluster)							PU			
CC.6.SP (2nd cluster)		PU	PU	PU						

MP Mathematical Practices
EE Expressions and Equations
RP Ratios and Proportional Relationships
G Geometry
NS The Number System
SP Statistics and Probability

Section 10 • Lessons 91–100, Investigation 10

Lesson		CCSS Focus of Lesson
91	• Geometric Formulas	CC.6.EE (1st cluster)
92	• Expanded Notation with Exponents • Order of Operations with Exponents • Powers of Fractions	CC.6.EE (1st cluster)
93	• Classifying Triangles	CC.K–12.MP.3
94	• Writing Fractions and Decimals as Percents, Part 2	CC.K–12.MP.8
95	• Reducing Rates Before Multiplying	CC.K–12.MP.2
	Cumulative Assessment	
96	• Functions • Graphing Functions Extension Activity 9 (p 39): • Analyzing the Relationship Between Dependent and Independent Variables	CC.6.EE (3rd cluster)
97	• Transversals	CC.K–12.MP.3
98	• Sum of the Angle Measures of Triangles and Quadrilaterals	CC.K–12.MP.4
99	• Fraction-Decimal-Percent Equivalents	CC.K–12.MP.8
100	• Algebraic Addition of Integers	CC.6.NS (3rd cluster)
	Cumulative Assessment	
Inv. 10	• Compound Experiments	CC.K–12.MP.1

The following table shows a CCSS focus of the Power Up (PU) and the Problem Solving (PS) activities, which appear at the beginning of each lesson.

CCSS Reference	91	92	93	94	95	96	97	98	99	100
CC.K–12.MP.1	PS	PU/PS	PS	PS	PS	PS	PS	PS	PS	PS
CC.K–12.MP.2		PS								
CC.K–12.MP.3									PS	
CC.K–12.MP.4								PS		
CC.K–12.MP.8				PS						
CC.6.RP (1st cluster)	PS						PU			
CC.6.NS (2nd cluster)								PU	PU	PU
CC.6.EE (2nd cluster)		PU	PU	PU	PU					
CC.6.SP (2nd cluster)			PS							

Section 11 • Lessons 101–110, Investigation 11

Lesson		CCSS Focus of Lesson
101	• Ratio Problems Involving Totals	CC.6.RP (1st cluster)
102	• Mass and Weight	CC.K–12.MP.6
103	• Perimeter of Complex Shapes	CC.K–12.MP.2
104	• Algebraic Addition Activity	CC.6.NS (3rd cluster)
105	• Using Proportions to Solve Percent Problems	CC.K–12.MP.1
	Cumulative Assessment	
106	• Two-Step Equations Extension Activity 10A (p 41): • Identifying Parts of Expressions and Generating Equivalent Expressions Extension Activity 10B (p 43): • Identifying Equivalent Expressions	CC.6.EE (2nd cluster) CC.6.EE (1st cluster)
107	• Area of Complex Shapes Extension Activity 11 (p 45): • Finding the Area of Trapezoids and Regular Polygons	CC.6.G (1st cluster)
108	• Transformations Extension Activity 12 (p 47): • Analyzing the Relationship of Points on a Coordinate Plane	CC.6.NS (3rd cluster)
109	• Corresponding Parts • Similar Figures	CC.K–12.MP.3
110	• Symmetry	CC.6.G (1st cluster)
	Cumulative Assessment *Extension Test 6*	
Inv. 11	• Scale Factor: Scale Drawings and Models	CC.6.NS (3rd cluster)

The following table shows a CCSS focus of the Power Up (PU) and the Problem Solving (PS) activities, which appear at the beginning of each lesson.

CCSS Reference	101	102	103	104	105	106	107	108	109	110
CC.K–12.MP.1	PS	PS	PS	PS	PS	PS	PS	PS	PS	PU/PS
CC.K–12.MP.2							PS			
CC.K–12.MP.3			PS							PS
CC.K–12.MP.8		PS							PS	
CC.6.RP (1st cluster)					PU					
CC.6.NS (2nd cluster)	PU	PU	PU		PU					

MP Mathematical Practices
EE Expressions and Equations
RP Ratios and Proportional Relationships
G Geometry
NS The Number System
SP Statistics and Probability

Section 12 • Lessons 111–120, Investigation 12

Lesson		CCSS Focus of Lesson
111	• Applications Using Division	CC.K–12.MP.1
112	• Multiplying and Dividing Integers	CC.K–12.MP.8
113	• Adding and Subtracting Mixed Measures • Multiplying by Powers of Ten	CC.K–12.MP.6 CC.K–12.MP.7
114	• Unit Multipliers	CC.6.RP (1st cluster)
115	• Writing Percents as Fractions, Part 2	CC.K–12.MP.8
	Cumulative Assessment *Extension Test 7*	
116	• Compound Interest	CC.K–12.MP.8
117	• Finding a Whole When a Fraction Is Known	CC.K–12.MP.8
118	• Estimating Area	CC.K–12.MP.2
119	• Finding a Whole When a Percent Is Known	CC.6.RP (1st cluster)
120	• Volume of a Cylinder	CC.K–12.MP.6
	Cumulative Assessment	
Inv. 12	• Volume of Prisms, Pyramids, Cylinders and Cones • Surface Area of Prisms and Cylinders	CC.6.G (1st cluster)

The following table shows a CCSS focus of the Power Up (PU) and the Problem Solving (PS) activities, which appear at the beginning of each lesson.

CCSS Reference	111	112	113	114	115	116	117	118	119	120
CC.K–12.MP.1	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS
CC.K–12.MP.3							PS			
CC.K–12.MP.4							PS			
CC.6.RP (1st cluster)								PS		
CC.6.EE (1st cluster)				PS		PS				
CC.6.EE (2nd cluster)				PS		PS		PS	PS	
CC.6.SP (1st cluster)						PU	PU	PU	PU	PU
CC.6.SP (2nd cluster)					PU	PU	PU	PU	PU	PU

MP Mathematical Practices
EE Expressions and Equations
RP Ratios and Proportional Relationships
G Geometry
NS The Number System
SP Statistics and Probability

Correlation of *Saxon Math Course 2* to the Common Core State Standards for Mathematics Grade 7

Standards for Mathematical Practice – *This standard is covered throughout the program; the following are examples.*

1. Make sense of problems and persevere in solving them.	**Power Up:** PS14, PS20, PS28, PS30, PS34, PS45, PS56, PS68, PS74, PS81, PS100, PS109, PS117 **Lessons:** WP3, L11, L12, L13, L14, WP14, WP17, L22, WP24, L28, WP31, Inv4, L46, L52, L60 WP54, WP71, Inv8, L81, WP87, WP96, L106, WP107, Inv11, WP115, WP120 **Other:** SFA7, SFA9, SFA10, SFA11, SFA12, SFA17, SFA26
2. Reason abstractly and quantitatively.	**Power Up:** PS2, PS5, PS6, PS15, PS34, PS38, PS45, PS56, PS64, PS66, PS79, PS90 **Lessons:** L3, WP3, WP4, L11, L12, L13, WP13, L14, WP14, WP16, Inv8, L19, L46, L53, L54, L60, L66, L71, L72, L81, WP90, L92, L97, WP96, WP100, L101, WP101, WP102, L110 **Other:** SFA16, SFA17, SFA22, SFA23, SFA26, SFA 27
3. Construct viable arguments and critique the reasoning of others.	**Power Up:** PS3, PS15, PS20, PS35, PS43, PS57, PS64, PS75, PS82, PS95, PS103, PS113 **Lessons:** L6, L12, WP12, L14, L16, WP19, WP22, WP30, WP33, WP35, L38, L40, L67, WP70, L86, L89, Inv8, L94, WP94, L97, WP95, L99, L112 **Other:** SFA3, SFA4, SFA14, SFA19, SFA24
4. Model with mathematics.	**Power Up:** PS14, PS28, PS30, PS34, PS40, PS50, PS54, PS90 **Lessons:** L4, L7, L8, L9, L10, Inv2, L15, L16, L21, L22, L23, WP24, L25, L27, L31, L35, L36, WP36, L38, Inv4, L53, L54, L56, WP56, L59, WP62, L64, WP71, WP77, WP83, WP87, L98, WP100, Inv11, WP118 **Other:** SFA15, SFA18, SFA22, SFA23
5. Use appropriate tools strategically.	**Power Up:** PS2, PS24, PS30, PS34, PS50, PS80 **Lessons:** L17, WP17, WP18, WP19, Inv2, WP22, L25, WP25, L29, Inv3, WP32, L33, L34, WP36, L37, WP37, L42, L43, L51, L52, L57, L65, Inv10, L88, L94, L100, L110, L112 **Other:** SFA5, SFA8, SFA18, SFA25, SFA28
6. Attend to precision.	**Power Up:** PS69, PS79, PS80, PS82 **Lessons:** L8, L15, WP15, WP16, L17, L20, Inv2, WP21, WP22, Inv3, L32, WP32, L34, WP34, L35, WP35, WP37, WP66, L82, WP86, Inv10, Inv11, L100 **Other:** SFA2, SFA3
7. Look for and make use of structure.	**Lessons:** L2, WP3, L4, WP7, L9, L11, L12, L13, L14, WP14, L15, L19, WP19, WP27, L41, WP41, WP42, L52, L53, L54, WP60, L66, L81, WP81, L85, WP85, L97, L101, WP101, L106, WP107, L108, Inv11 **Other:** SFA20, SFA21, SFA27
8. Look for and express regularity in repeated reasoning.	**Power Up:** PS1, PS12, PS16, PS21, PS42 **Lessons:** L4, WP4, WP5, L6, WP8, L24, WP25, WP26, L27, WP28, WP31, Inv8, Inv11, L115, WP117, WP119

Common Core State Standards	*Saxon Math Course 2* Citations *References in italics indicate foundational.*
Ratios and Proportional Relationships 7.RP	
Analyze proportional relationships and use them to solve real-world and mathematical problems.	
1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	**Power Up:** PS57, PS67, PS102 **Lessons:** L46, WP46, WP48, WP49, WP50, WP51, WP52, L53, WP55, WP57, WP61, WP62, WP65, WP68, WP70, WP74, WP75, WP76, WP79, WP86, WP91, WP92, WP93, WP98, WP103, WP106, Inv11, WP112, WP113, WP114 **Other:** SFA13

Key: **Inv:** Investigation; **L:** Lesson; **PS:** Problem Solving; **PU:** Power Up; **SFA:** Standards Focus Activity; **WP:** Written Practice

Common Core State Standards	Saxon Math Course 2 Citations References in italics indicate foundational.
2. Recognize and represent proportional relationships between quantities.	
a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	**Lessons:** Inv9, WP91, L98, WP109 **Other:** SFA19
b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	**Power Up:** PS57, PS67, PS102 **Lessons:** L46, WP46, WP48, WP49, WP50, WP51, WP52, WP55, WP57, WP61, WP62, WP65, WP68, WP70, WP74, WP75, WP76, WP79, WP86, WP91, WP92, WP93 **Other:** SFA25
c. Represent proportional relationships by equations.	**Power Up:** PS102 **Lessons:** L28, L39, WP39, WP40, WP41, WP42, WP43, WP44, WP45, L46, WP46, WP48, WP51, WP52, L55, WP55, WP57, WP61, WP62, WP65, WP68, WP70, L72, WP74
d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.	**Lessons:** L98, WP104 **Other:** SFA26
3. Use proportional relationships to solve multistep ratio and percent problems.	**Power Up:** PS101 **Lessons:** L60, WP60, WP74, WP76, WP78, WP80, WP81, WP84, WP85, WP91, L92, WP92, WP93, WP94, WP95, WP97, WP98, WP99, WP104
The Number System 7.NS	
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	
a. Describe situations in which opposite quantities combine to make 0.	**Lessons:** L59, L68 **Other:** SFA6
b. Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	**Lessons:** L59, WP59, WP60, WP61, WP62, WP63, L68, WP68, WP71, WP74 **Other:** SFA7
c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	**Lessons:** L59, WP59, L64, WP65, WP66, L68, WP68, WP71, WP73, WP74 **Other:** SFA9

Common Core State Standards	Saxon Math Course 2 Citations *References in italics indicate foundational.*
d. Apply properties of operations as strategies to add and subtract rational numbers.	**Lessons:** L59, WP59, WP60, L64, WP67, L68, WP68, WP71, WP73, WP74, WP76, WP78
2. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	**Power Up:** PU81, PU85, PU88, PU93, PU97, PU101, PU106, PU107, PU109 **Lessons:** L73, WP73, WP74, WP75, WP76, WP77, WP78, WP79, WP80, WP81, WP82, WP83, WP84 **Other:** SFA10
b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.	**Lessons:** L1, WP1, WP2, WP3, WP4, WP5, WP6, WP8, WP9, WP11, WP13, WP14, WP16, WP18, WP28, L73, WP73, WP74, WP75, WP76, WP77, WP79, WP80, WP82, WP84, L118 **Other:** SFA11
c. Apply properties of operations as strategies to multiply and divide rational numbers.	**Power Up:** PU2, PU5, PU11, PU15, PU18, PS21, PU24, PS25, PU28, PS29, PS35, PS36, PU41, PS41, PU46, PS46, PU51, PU55, PS55, PU58, PS62, PU65, PS75, PU76, PS79, PS92, PU99 **Lessons:** L9, WP13, WP15, WP17, WP19, WP21, L22, L24, L25, L26, WP26, WP28, WP32, L35, WP37, WP38, L45, WP45, WP46, WP49, WP55, WP57, WP61, WP62, WP63, WP66, WP69, WP70, L73, WP73, WP74, WP75, WP83, WP84, WP109
d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	**Lessons:** L43, WP43, WP44, WP45, WP46, WP51, WP74, WP75, WP76, WP80, L86, WP93, WP100
3. Solve real-world and mathematical problems involving the four operations with rational numbers.[1]	**Power Up:** PU2, PU6, PU9, PS11, PU16, PU19, PS22, PS23, PU27, PS27, PS32, PS36, PU41, PS41, PS45, PU46, PU49, PS51, PU55, PS55, PS62, PU68, PS72, PU74, PU79, PS86, PU87, PS95, PU103, PU111, PU119 **Lessons:** L13, WP13, WP15, WP16, WP17, WP18, WP19, WP20, WP21, L22, WP24, L26, WP26, L28, L44, L45, WP63, WP64, WP66 **Other:** SFA12
Expressions and Equations 7.EE	
Use properties of operations to generate equivalent expressions.	
1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	**Lessons:** L84, WP84, WP85, WP86, WP87, WP88, WP89, WP90, WP93, L96, WP96, WP97, WP99, WP100, WP101, WP109, L115, WP116, WP117, WP118, WP119, WP120 **Other:** SFA22

[1] Computations with rational numbers extend the rules for manipulating fractions to complex fractions.

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Common Core State Standards	Saxon Math Course 2 Citations References in italics indicate foundational
2. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*	**Power Up:** PS56, PS81 **Lessons:** L101, WP101, WP102, WP103, WP105, WP106, WP107, WP108, WP109, WP111, WP116, WP117, WP118 **Other:** SFA27
Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.	**Power Up:** PS47, PS87 **Lessons:** L11, WP11, WP12, WP13, WP14, WP17, WP19, WP20, WP22, WP26, WP27, WP33, WP34, WP80 **Other:** SFA24
4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	
a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	**Power Up:** PS59 **Lessons:** L3, WP3, WP4, WP5, WP6, WP7, WP8, WP9, L11, WP11, L12, WP12, L13, WP13, L14, WP14, WP16, L92, L101, WP101, WP102, WP103, WP105, WP106, WP107, WP108, WP109, WP111, WP116, WP118, WP120 **Other:** SFA20
b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	**Lessons:** *L78, WP78, WP79, WP80, WP82, WP83, WP85, WP90, L93, WP93, WP95, WP98, WP102, WP119* **Other:** SFA21
Geometry 7.G	
Draw, construct, and describe geometrical figures and describe the relationships between them.	
1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	**Lessons:** L97, WP97, L98, WP98, WP99, WP103, WP104, WP105, WP108, WP110, WP113, WP115, WP118 **Other:** SFA23
2. Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	**Lessons:** WP19, L37, WP37, Inv6, L62, WP62, WP63, WP65, WP66, WP68, WP69, WP71, L117, WP119 **Other:** SFA28

Common Core State Standards	Saxon Math Course 2 Citations *References in italics indicate foundational.*
3. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	**Power Up:** PS90, PS100 **Lessons:** L67 **Other:** SFA8
Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	
4. Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	**Power Up:** PU65, PU66, PU68, PS89 **Lessons:** L65, WP65, WP66, WP67, WP69, WP70, WP71, WP72, WP73, WP74, WP75, WP76, WP77, WP78, WP79, L82, WP82, WP83, WP84, WP87, WP89, WP90, WP91, WP94, WP96, WP100, WP102, WP104
5. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	**Lessons:** L40, WP42, WP44, WP47, WP49, WP101, WP102, WP108, WP116, WP118
6. Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	**Power Up:** PS49, PS49, PS50, PS69, PS79, PS99 **Lessons:** L20, WP22, WP25, WP26, WP28, Inv3, L37, WP37, WP60, L61, WP62, WP63, L75, WP85, WP87, WP90, WP94, L95, WP95, WP102, L105, Inv11, L113, L114, WP114, WP115, WP117
Statistics and Probability 7.SP	
Use random sampling to draw inferences about a population.	
1. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences	**Lessons:** Inv4, WP41, WP43, WP50, Inv5, WP54, WP57, WP61, WP65, WP68, WP69, WP71, WP84, WP86, WP90, WP95, WP97, WP101, WP103, WP114 **Other:** SFA1
2. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.	**Lessons:** Inv5 **Other:** SFA2, SFA3
Draw informal comparative inferences about two populations.	
3. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.	**Lessons:** Inv5, WP57, WP114 **Other:** SFA5
4. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.	**Lessons:** Inv4, WP41, WP43, WP50, WP54, WP61, WP68, WP69, WP71, WP81, WP84, WP86, WP95, WP97, WP101, WP103, WP112 **Other:** SFA4

Key: **Inv:** Investigation, **L:** Lesson, **PS:** Problem Solving, **PU:** Power Up, **SFA:** Standards Focus Activity, **WP:** Written Practice

Common Core State Standards	Saxon Math Course 2 Citations *References in italics indicate foundational.*
Investigate chance processes and develop, use, and evaluate probability models.	
5. Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	**Lessons:** L14, L36, WP38, WP39, WP42, WP60, Inv8, WP83, WP85, WP100, WP114
6. Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.	**Lessons:** L14, L36, WP38, WP39, WP42, WP60, Inv8, WP83, WP85, WP100, WP114 **Other:** SFA14
7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	
a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.	**Lessons:** L36, WP38, WP39, WP42, WP44, WP60, Inv8, WP83, WP85, WP100, WP114 **Other:** SFA15
b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.	**Lessons:** Inv8, WP83, WP85, WP100, WP101, WP106, WP109, WP114, WP116, WP117, WP118
8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	
a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	**Lessons:** Inv8, WP83, WP85, WP100, WP101, WP106, WP109, WP114, WP116, WP117, WP118 **Other:** SFA17
b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.	**Lessons:** Inv8, WP83, WP85, WP100, WP101, WP106, WP109, WP114, WP116, WP117, WP118 **Other:** SFA16
c. Design and use a simulation to generate frequencies for compound events.	**Lessons:** Inv8, WP83, WP85, WP100, WP101, WP106, WP109, WP114, WP116, WP117, WP118 **Other:** SFA18

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Correlation of *Saxon Math Course 3* to the Common Core State Standards for Mathematics Grade 8

Standards for Mathematical Practice – *This standard is covered throughout the program; the following are examples.*

1. Make sense of problems and persevere in solving them.	**Power Up:** PS1, PU2, PU8, PS12, PU13, PU23, PS23, PS35, PU40, PU45, PS45, PU49, PU53, PS53, PU56, PU58, PS64, PU70, PS76, PU83, PS83, PS92, PU85, PU98, PS102, PS115 **Lessons:** L3, WP3, L4, WP4, WP5, WP6, WP7, WP18, L34, WP37, WP39, WP40, L45, L49, WP52, L53, L58, L70, Inv7, WP76, L87, WP87, L89, WP90, WP91, WP94, Inv10, L105, WP105, WP106, WP108 **Other:** SFA 16
2. Reason abstractly and quantitatively.	**Power Up:** PS12, PS15, PS17, PS25, PS37, PS45, PS54, PS61, PS72, PS79, PS94, PS99, PS109, PS118 **Lessons:** L3, L4, L17, WP17, WP21, WP24, WP26, L38, L45, L49, L58, L59, WP59, Inv7, L87, L89, WP89, Inv9, WP93 **Other:** SFA6, SFA14, SFA20
3. Construct viable arguments and critique the reasoning of others.	**Power Up:** PS1, PS15, PS25, PS36, PS49, PS68, PS79, PS96, PS109 **Lessons:** L3, L9, L17, WP18, L19, WP19, L20, WP21, WP22, WP26, WP29, WP35, L35, L59, Inv7, Inv8, WP84, Inv9, L113, L116, Inv12 **Other:** SFA5
4. Model with mathematics.	**Power Up:** PS6, PS9, PS11, PS22, PS26, PS34, PS59, PS74, PS84, PS92, PS113 **Lessons:** WP6, L9, L10, WP10, Inv1, L22, L26, WP27, L31, L33, L34, WP34, WP36, Inv4, L41, WP41, WP43, WP45, Inv5, L49, L55, WP64, WP66, L68, L75, Inv8, WP108 **Other:** SFA15, SFA19, SFA23, SFA28
5. Use appropriate tools strategically.	**Lessons:** L16, L18, Inv2, L28, L30, WP39, WP43, L51, Inv7, L73, WP76, Inv10 **Other:** SFA10
6. Attend to precision.	**Power Up:** PU1, PU4, PU6, PU8, PU10, PU18, PU32, PS32, PU38, PU42, PU49, PU61, PU79, PU95 **Lessons:** LP17, WP17, LP28, WP28, LP30, WP30, LP39, WP39, L40, WP40, L78, WP78, L0103, WP103, L117 **Other:** SFA8, SFA9, SFA13
7. Look for and make use of structure.	**Lessons:** L2, L3, L4, WP4, WP5, WP7, WP9, Inv2, L21, WP21, WP23, WP26, L30, L31, L33, L35, L38, L51, L61, L70, L73, WP73, WP74, L97, L102, **Other:** SFA11, SFA24, SFA27
8. Look for and express regularity in repeated reasoning.	**Power Up:** PS26, PS37, PS40, PS42, PS44, PS48, PS51, PS59, PS103, PS107, PS111, PS116 **Lessons:** L9, L15, L21, WP22, WP23, WP26, L28, WP29, L34, L44, L45, L48, L61, L67, L70, L73, L75, WP73, WP74, WP76, Inv8, L83, L88, L92, L97, WP97, WP98, Inv10, L102, WP102, WP108 **Other:** SFA2

Common Core State Standards	Saxon Math Course 3 Citations *References in italics indicate foundational*
The Number System 8.NS	
Know that there are numbers that are not rational, and approximate them by rational numbers.	
1. Understand informally that every number has a decimal expansion; the rational numbers are those with decimal expansions that terminate in 0s or eventually repeat. Know that other numbers are called irrational.	**Power Up:** PS89 **Lessons:** L12, WP12, L16, WP16, WP18, WP19, WP20, L30, WP30, WP31, WP32, WP35, WP39, WP43, WP47, WP50, WP56, L63, WP63, WP81 **Other:** GC3, SFA4

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Common Core State Standards	Saxon Math Course 3 Citations References in italics indicate foundational
2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2).	**Power Up:** PS31, PU31 **Lessons:** L16, WP18, WP19, WP20, L66, WP78, WP81 **Other:** SFA2
Expressions and Equations 8.EE	
Work with radicals and integer exponents.	
1. Know and apply the properties of integer exponents to generate equivalent numerical expressions.	**Power Up:** PU16, PU17, PU19, PU31, PS62, PU62, PU64, PU66, PU72, PU86, PU96, PU100 **Lessons:** L15, WP15, Inv2, WP25, L27, WP28, WP29, WP30, WP31, WP32, WP33, WP34, WP41, L51, L57 **Other:** SFA1
2. Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	**Lessons:** L15, L16, WP16, WP17, Inv2, L66, WP85, L93, WP93, WP96, WP98, WP102, WP105, WP107, WP111, WP112, WP115 **Other:** GC16, SFA19
3. Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.	**Lessons:** L28, WP30, WP31, WP34, WP39, L46, WP47, L51, WP52, WP53, WP55, WP56, L57, WP58, WP59, WP99 **Other:** GC6, GC11, SFA12
4. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	**Lessons:** L28, WP30, WP31, WP34, WP39, L46, WP47, L51, WP52, WP53, WP55, WP56, L57, WP58, WP59, WP60, WP99 **Other:** GC6, GC11, SFA10
Understand the connections between proportional relationships, lines, and linear equations.	
5. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.	**Lessons:** L41, L44, WP47, WP48, WP49, L69, WP77, L88, WP88 **Other:** SFA15
6. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.	**Lessons:** L56 **Other:** SFA28
Analyze and solve linear equations and pairs of simultaneous linear equations.	
7. Solve linear equations in one variable.	
a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).	**Lessons:** L14, WP14, WP15, WP16, WP17, WP18, WP19, WP20, WP21, WP23, WP46, WP57 **Other:** SFA7

Common Core State Standards	Saxon Math Course 3 Citations References in italics indicate foundational
b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	**Lessons:** L38, L50, WP50, WP51, WP52, WP54, WP55, L56, WP56, WP57, WP58, WP61, WP62, WP64, WP66, WP69, LA61, LA62, LA63, LA64, LA65 **Other:** SFA25
8. Analyze and solve pairs of simultaneous linear equations.	
a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	**Lessons:** L89, LA92, LA93, LA94, LA97, LA99, LA100, LA102, LA104 **Other:** SFA18
b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection.	**Lessons:** LA91, LA93, A94, LA99, LA100, LA102, LA103, LA104 **Other:** SFA18
c. Solve real-world and mathematical problems leading to two linear equations in two variables.	**Lessons:** LA92, LA93, LA94, LA97
Functions 8.F	
Define, evaluate, and compare functions.	
1. Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.[1]	**Power Up:** PS18, PU40, PU48 **Lessons:** L41, WP41, WP42, WP43, WP44, WP45, WP46, L47, WP47, WP48, WP49, WP50, WP51, WP53, L98, WP98, WP103, Inv11, LA98 **Other:** GC9, GC22, SFA21
2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	**Lessons:** *L41, WP41, WP42, WP44, WP45, WP46, WP47, WP48, WP49, WP50, L88, WP98, Inv11* **Other:** SFA26
3. Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.	**Lessons:** L56, WP56, WP57, WP58, WP61, WP62, L69, WP71, WP72, WP75, WP77, Inv11 **Other:** GC13, GC17, SFA22
Use functions to model relationships between quantities.	
4. Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	**Lessons:** L41, L44, WP44, L47, WP50, L69, WP69, WP70, WP77, WP95, WP100, LA68, LA98 **Other:** GC9, GC13, SFA27
5. Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	**Lessons:** L41, WP41, WP42, WP43, WP44, WP47, WP48, WP49, WP50, L69, WP71, WP72, L88, Inv11, LA98 **Other:** GC13, SFA17

[1] Function notation is not required in Grade 8.

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Common Core State Standards	Saxon Math Course 3 Citations References in italics indicate foundational
Geometry 8.G	
Understand congruence and similarity using physical models, transparencies, or geometry software.	
1. Verify experimentally the properties of rotations, reflections, and translations:	
a. Lines are taken to lines, and line segments to line segments of the same length.	**Power Up:** PS22, PS84 **Lessons:** L26, WP27, WP29, Inv5, WP51, WP58, WP59, WP68, WP71, WP76, WP79, WP81, WP83, WP85 **Other:** GC10
b. Angles are taken to angles of the same measure.	**Power Up:** PS22, PS84 **Lessons:** L26, WP27, Inv5, WP51, WP58, WP59, WP68, WP72, WP76, WP79, WP81, WP84, WP85 **Other:** SFA3
c. Parallel lines are taken to parallel lines.	**Power Up:** PS22, PS84 **Lessons:** L26, WP29, WP51, WP58, WP59, WP76, WP81 **Other:** GC10, SFA3
2. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	**Lessons:** L19, L26, Inv5, WP51, WP58, WP59, WP68, WP76, WP79, WP83, WP85 **Other:** SFA8
3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	**Lessons:** L26, Inv5, WP51, WP56, WP58, WP60, WP68, L71, WP76, WP79, WP81, WP93, WP114 **Other:** GC10
4. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	**Lessons:** L19, L26, WP27, WP34, WP36, WP38, WP40, Inv5, WP56, WP60, L71, WP71, WP81, WP93, WP96 **Other:** SFA9
5. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	**Power Up:** PU11, PU14, PU16, PU19, PU64, PU66, PS92 **Lessons:** L54, WP54, WP55, WP56, WP58, WP59, WP61, WP62, WP63, WP64, WP67, WP68 **Other:** SFA11, SFA14, SFA24
Understand and apply the Pythagorean Theorem.	
6. Explain a proof of the Pythagorean Theorem and its converse.	**Lessons:** Inv12 **Other:** SFA5
7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	**Lessons:** Inv2, WP21, WP28, WP32, L37, WP39, WP46, WP55, WP59, WP62, WP65, WP68, WP70, WP72, WP75, WP82, WP88, WP91, WP92, WP93, WP94, L95, WP97, WP99, WP103, WP108, WP110, WP111, WP112, WP115 **Other:** SFA20
8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	**Lessons:** L96, WP96, WP104, WP111, WP114, WP115, WP119 **Other:** SFA6

Common Core State Standards	Saxon Math Course 3 Citations *References in italics indicate foundational.*
Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	
9. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	**Lessons:** L76, WP76, WP78, WP79, WP80, L86, WP87, WP96, L106, L107, L111, WP111, WP112, WP113
Statistics and Probability 8.SP	
Investigate patterns of association in bivariate data.	
1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	**Lessons:** Inv8, WP97, WP101, L113 **Other:** GC16, SFA23
2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	**Lessons:** Inv8, WP97, WP101, L113 **Other:** GC16, SFA16
3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	**Power Up:** PS56 **Lessons:** WP66, Inv8, WP90, L98, WP101, L113
4. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.	**Lessons:** *Inv6, WP66, Inv8* **Other:** SFA13

Key: **Inv:** Investigation
L: Lesson
PS: Problem Solving
PU: Power Up
SFA: Standards Focus Activity
WP: Written Practice

K-12 Physical Education Standards

MICHIGAN Department of Education

Michigan State Board of Education

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MICHIGAN
Department of Education

K-12 Physical Education Standards

INTRODUCTION

In early 2016, the Michigan Department of Education (MDE), the State Board of Education, students, parents, educators, administrators, local districts, intermediate school districts, and other education stakeholders worked on creating a set of goals and strategies to make Michigan a Top 10 education state in the next 10 years. The purpose of this work was to design an educational system that engages our children in a meaningful way by finding, through research and evidence-based approaches, what works best and implementing a plan consistently over time. Michigan's vision for education is that every learner in Michigan's public schools will have an inspiring, engaging, and caring learning environment that fosters creative and critical thinkers who believe in their ability to positively influence Michigan and the world beyond.

Physical education is an integral component of a student's education. Researchers have shown that students who participate in regular fitness-based physical education (PE) will enjoy enhanced memory and learning, better concentration, and increased problem-solving abilities. Movement is critical to all aspects of a child's growth and development. Regular PE encourages a positive attitude towards self and others, which is an important factor in creating a safe and healthy learning environment and fits perfectly with Michigan's vision for education.

In recognition of the importance of PE and physical activity (PA) to a student's education, Every Student Succeeds Act, which was passed in December 2015, has recognized physical education as part of a well-rounded education. For Michigan K-12 physical education requirements go to the MDE Physical Education web page.

PE and PA are one component of the Whole School, Whole Community, Whole Child model from the ASCD. PE supports a holistic approach to the development of students by addressing all domains; psychomotor (motor skills), cognitive (facts and concepts), and affective (social and emotional learning). Physical Education for all students is a Tier 1 intervention when utilizing the Multi-Tiered Systems of Supports (MTSS) model as well as a Tier 2 intervention for struggling students.

Quality physical education programs are research-based and rigorous. It provides the foundation for healthy, active lifestyles that supports all learning and helps ensure success in future pursuits. Statistics related to chronic disease, disability and death, health care costs, and quality of life issues clearly illustrate that there are severe problems associated with attending to the intellectual but not the physical being.

Physical education has been making a move in recent years from a competitive sports focus to a cooperative learning, physical fitness focus that allows for personalized learning of the student based on where they are and where they would like to be.

Physical education is defined as an academic subject that provides students with a planned, sequential, K-12 standard-based program of curricula and instruction designed to develop motor skills, knowledge, and behaviors for healthy active living, physical fitness, sportsmanship, self-efficacy, and emotional intelligence. The essential components of a physical education program include policies and environment, curriculum, appropriate instruction, and student assessment. Physical education provides unique learning opportunities that also contributes to and assures that students become physically literate and engage in a physically active lifestyle. (SHAPE America)" Physical literacy is defined as the ability to move with competence and confidence in a wide variety of physical activities in multiple environments that benefit the healthy development of the whole person." (Mandigo, Francis, Lodewyk & Lopez, 2012)

Mandigo, Francis, Lodewyk and Lopez define a physically literate individual as someone who:

- Has learned the skills necessary to participate in a variety of physical activities
- Knows the implications and the benefits of involvement in various types of physical activities
- Participates regularly in physical activity
- Is physically fit
- Values physical activity and its contributions to a healthful lifestyle

It is critical to acknowledge the difference between physical activity and physical education. Physical activity is defined as bodily movement of any type and may include recreational, fitness, and sport activities, such as jumping rope, playing soccer, or lifting weights, as well as daily activities, such as walking to the store, taking the stairs, or raking the leaves. The Physical Activity Guidelines for Americans recommends that children age 6 to 17 should participate in at least 60 minutes of physical activity a day. For some students, physical education class may be the only opportunity they have to be physically active.

DESIGN CONSIDERATIONS

In late 2016, a stakeholder group reviewed the State of Michigan K-12 Physical Education (PE) standards for the purpose of revising standards that had not been updated since 2007. This stakeholder group consisted of current, practicing PE teachers at all levels, Educational Preparation Program representatives, and state PE organizations. The group reviewed the national standards and decided to adopt those standards at the state level.

As specified by the Council of Chief State School Officers (CCSSO) and the National Governor's Association (NGA), the Standards are (1) research and evidence-based, (2) aligned with college and work expectations with the expectation of lifelong fitness, (3) rigorous, and (4) internationally benchmarked. A particular standard was included in the document only when the best available evidence indicated that its mastery was essential for college and career readiness in a twenty-first century, globally competitive society. The Standards are intended to be a living work: as new and better evidence emerges, the Standards will be revised accordingly.

The Standards use individual grade levels in kindergarten through grade 8 to provide useful specificity; the Standards use two LEVELS in grades 9–12 to allow schools and/or districts the flexibility in high school course design. The two LEVELS can allow, for example, a basic PE course in high school (LEVEL 1) and then allow a second, more advanced, LEVEL (LEVEL 2) as an elective without students having to repeat the previous, basic PE course.

The new PE standards focus on results rather than means. They offer a variety of instructional methods and are based on context. Local level PE instructors and curriculum developers determine how those goals should be reached and what additional topics should be addressed. Thus, the Standards do not mandate things such as a particular sport or game, or the full range of skills and strategies that students may need to monitor and direct their learning and direction. These are minimum standards. Teachers are thus free to provide students with whatever tools, skills, and knowledge their professional judgment and experience identify as most helpful for meeting the goals set out in the Standards.

Water safety is also covered in the Standards. Not all schools have the ability or resources to address these standards. However, as the state of Michigan has more than 11,000 inland lakes as well as being surrounded by the Great Lakes, it is strongly recommended that water safety and swimming skills be included in a quality PE program whenever possible. If your school chooses to instruct in this skill please review the guidance document "MICHIGAN PUBLIC POOL SAFETY GUIDELINES FOR SCHOOLS".

Just as students must learn to read, write, speak, listen, and use language effectively in a variety of content areas, so too, must the Standards specify the motor skills and understandings required for college and career readiness. The PE standards are meant to help students meet the particular challenges of fundamental motor skills and competency and prepare for a lifetime of fitness. Past and current brain research on the link between physical activity and academic achievement consistently show fitness based physical education is a critical component to a student's ability to be successful.

As a natural outgrowth of meeting the charge to define college and career readiness, the Standards also lay out a vision of what it means to be a physically literate person. Indeed, the skills and understandings students are expected to demonstrate have wide applicability outside the classroom or workplace. Individuals who are physically literate and fit show increased attendance, a decreased risk of depression and stress, reduced risk of chronic conditions, and improved ability to focus. In short, students who meet the Standards develop the skills in that will assist them in being successful in their futures.

WHAT IS NOT INCLUDED IN THE STANDARDS:

1. The Standards define what all students are expected to know and be able to do, not how teachers should teach. For instance, the use of play with young children is not specified by the Standards, but it is welcome as a valuable activity in its own right and as a way to help students meet the expectations in this document. Furthermore, while the Standards make references to some particular forms of content, including invasion games, target games, strength and endurance, they do not—indeed, cannot—enumerate all or even most of the content and skills that students should learn. The Standards must therefore be complemented by a well-developed, skills and content-rich curriculum and program consistent with the expectations laid out in this document.

2. While the Standards focus on what is most essential, they do not describe all that can or should be taught. A great deal is left to the discretion of teachers and curriculum developers. The aim of the Standards is to articulate the fundamentals, not to set out an exhaustive list or a set of restrictions that limits what can be taught beyond what is specified herein. As previously noted, specific team sports, etc. are not intentionally covered. In turn, although it could be a benefit to a sports program, the standards are not analogous with a competitive sports program or other activities. They do not provide a substitute for a quality PE program.

3. The Standards do not define the nature of advanced work for students who meet the Standards prior to the end of high school. For those students, advanced work in such areas as personal fitness, strength training, etc. should be available. This work should provide the next logical step up from the college and career readiness baseline established here.

4. The Standards set grade-specific standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations. No set of grade-specific standards can fully reflect the great variety in abilities, needs, learning rates, and achievement levels of students in any given classroom. However, the Standards do provide clear signposts along the way to the goal of college and career readiness for all students.

5. It is also beyond the scope of the Standards to define the full range of supports appropriate for PE and for students with special needs. At the same time, all students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post high school lives. The Standards should also be read as allowing for the widest possible range of students to participate fully from the outset and as permitting appropriate accommodations to ensure maximum participation of students with special education needs. The Adapted Physical Education National Standards (APENS) can be found at the APENS website.

6. While the PE components described herein are critical to college and career readiness, they do not define the whole of such readiness. Students require a wide ranging, rigorous preparation and, particularly in the early grades, attention to such matters as skill development, social, emotional, and physical development and approaches to learning. Although it should be expected within a quality PE program, this guide does not include cross-curricular opportunities.

7. Cardiopulmonary Resuscitation (CPR), Automatic External Defibrillator (AED) use, and first aid for students are not covered in the Standards for PE. They are described in the health education standards.

8. Although it is not specifically covered in the Standards, the mind-body connection is a core concept in everything taught in PE and contributes greatly to a well-rounded education. Growing research continues to show increased academic success with increased fitness levels. This is a concept that needs to be taught to students in a quality PE program.

ASSESSMENT IN PHYSICAL EDUCATION (PE)

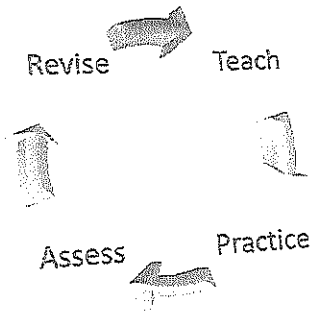
Assessment in PE may not resemble that of other content areas and this presents its own unique challenges. Seeing potentially hundreds of students every day, some only once or twice a week, makes collecting and analyzing data particularly difficult but technology, such as heart rate monitors and pedometers, has started to make it a bit less so.

The biggest change with the advance of technology and move toward fitness-based PE is that observation can no longer be used as a primary assessment method or a valid measure of a student's progress. Participation and dressing for class doesn't necessarily equate to skill development. Assessment is an objective process that is continuous and occurs throughout a student's learning.

Pre-assessments are utilized to formulate a picture of where students are and therefore allows them to personalize their learning to meet their goals and the Standards. They measure their progress of self- not progress based on others.

In PE, a variety of assessments based on the activity are necessary to get a complete understanding of a student's learning and progress towards goals. Appropriate assessments for PE include:

- Formative Assessments- ongoing during instruction and can include checks for understanding, heart rate monitors, checklists, rubrics, exit slips
- Summative Assessments – occur at the close of a unit or instructional sequence and are meant to determine a student's level of achievement. These can include personal fitness plans and logs, skills test, written tests, video or skills demonstration to peers or the class
- Fitness Gram Student Self- Assessments
- Peer Assessments
- Performance-Based Assessments



Instruction assessment should lead to a revision in how teaching is taking place if the student is struggling to meet the Standards. This then allows for re-teaching and practice.

CAREER AND COLLEGE READY

Skills taught in PE go far beyond motor skills. Interpersonal skills, such as respect for self and others, goal setting, resiliency, confidence, stress management, and strategizing are all part of a quality PE program. Soft skills such teamwork, working in groups, problem solving, stress management, time management, appropriate sporting behavior, leadership, cooperation, respect for others, and managing competition are all critical in today's world. The changing nature of the work environment makes skills such as receiving constructive criticism/feedback, managing self-directed activities, assessing progress and modification of goals, motivation, and taking initiative -all skills that are taught in PE- are critical to ensure success in college and careers.

Research continues to show that students with higher fitness levels perform better in school. A study by Dr. Charles Hillman showed that one brisk 20-minute walk on a treadmill before taking a cognitive test increased brain activity and test scores. (See image below). Research continues to show that improvements are only seen with an increase in heart rate for a sustained amount of time. If one 20-minute brisk walk on a treadmill can improve attention and achievement, just think what fitness-based physical education and physical activity can do if students receive it daily.

Average composite of 20 students
brains taking the same test

Cool Colors—low to minimum brain activity
Warm Colors—mid to high brain activity

Hillman, C.H. The Effect of Acute Treadmill Walking on Cognitive Control and Academic Achievement in Preadolescent Children. 2009

Standard 1: Demonstrates competency in a variety of motor skills and movement patterns.		
Kindergarten	**Grade 1**	**Grade 2**
Locomotor		
1. Hopping, galloping, running, sliding, skipping, leaping: Performs locomotor skills while maintaining balance. (S1.1.K)	Hops, gallops, jogs, and slides using a mature pattern. (S1.1.1)	Skips using a mature pattern. (S1.1.2)
2. Jogging, running: *Developmentally appropriate/emerging outcomes first appear in Grade 2.*	*Developmentally appropriate/emerging outcomes first appear in Grade 2.*	a. Runs with a mature pattern. (S1.2.2a) b. Travels showing differentiation between jogging and sprinting. (S1.2.2b)
3. Jumping and landing, horizontal: Performs jumping and landing actions with balance. (S1.3.K)	Demonstrates 2 of the 5 critical elements for jumping and landing in a horizontal plane using 2-foot take-offs and landings. (S1.3.1)	Demonstrates 4 of the 5 critical elements for jumping and landing in a horizontal plane using a variety of 1- and 2-foot take-offs and landings. (S1.3.2)
4. Jumping and Landing, vertical: Performs jumping and landing actions with balance. (S1.4.K)	Demonstrates 2 of the 5 critical elements for jumping and landing in a vertical plane. (S1.4.1)	Demonstrates 4 of the 5 critical elements for jumping and landing in a vertical plane. (S1.4.2)
5. Dance: Performs locomotor skills in response to teacher-led creative dance. (S1.5.K)	Combines locomotor and nonlocomotor skills in teacher-designed dance. (S1.5.1)	Performs a teacher and/or student-designed rhythmic activity with correct response to simple rhythms. (S1.5.2)
6. Combinations: *Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*

Kindergarten	Grade 1	Grade 2
Nonlocomotor (stability)		
7. Balance: **a.** Maintains momentary stillness on different bases of support. (S1.7.Ka) b. Forms wide, narrow, curled, and twisted body shapes. (S1.7.Kb)	Maintains stillness on different bases of support with different body shapes. (S1.7.1)	a. Balances on different bases of support, combining levels and shapes. (S1.7.2a) b. Balances in an inverted position with stillness and supportive base. (S1.7.2b)
8. Weight Transfer: *Developmentally appropriate/emerging outcomes first appear in Grade 1.*	Transfers weight from one body part to another in self-space in dance and gymnastics environments. (S1.8.1)	Transfers weight from feet to different body parts/bases of support for balance and/or travel. (S1.8.2)
9. Weight Transfer, rolling: Rolls sideways in a narrow body shape. (S1.9.K)	Roll with either a narrow or curled body shape. (S1.9.1)	Rolls in different directions with either a narrow or curled body shape. (S1.9.2)
10. Curling and Stretching; twisting and bending: Contrasts the actions of curling and stretching. (S1.10.K)	Demonstrates twisting, curling, bending, and stretching actions. (S1.10.1)	Differentiates among twisting, curling, bending, and stretching actions. (S1.10.2)
11. Combinations: *Developmentally appropriate/emerging outcome first appear in Grade 2.*	*Developmentally appropriate/emerging outcome first appear in Grade 2.*	Combines balances and transfers into a 3-part sequence. (S1.11.2.)
12. Balance and Weight Transfers: *Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*
Manipulative		
13. Throwing Underhand: Throws underhand with opposite foot forward. (S1.13.K)	Throws underhand, demonstrating 2 of the 5 critical elements of a mature patterns. (S1.13.1)	Throws underhand using a mature pattern. (S1.13.2)

14. Throwing Overhand: *Developmentally appropriate/emerging outcomes first appear in Grade 2.*	*Developmentally appropriate/emerging outcomes first appear in Grade 2.*	Throws overhand demonstrating 2 of the 5 critical elements of a mature pattern. (S1.14.2)
15. Passing with Hands: *Developmentally appropriate/emerging outcomes first appear in Grade 4.*	*Developmentally appropriate/emerging outcomes first appear in Grade 4.*	*Developmentally appropriate/emerging outcomes first appear in Grade 4.*
16. Catching: a. Drops a ball and catches it before it bounces twice. (S1.16.Ka) b. Catches a large ball tossed by a skilled thrower. (S1.16.Kb)	a. Catches a soft object from a self-toss before it bounces. (S1.16.1a) b. Catches various sizes of balls self-tossed or tossed by a skilled thrower. (S1.16.1b)	Catches a self-tossed or well-thrown large ball with hands, not trapping or cradling against the body. (S1.16.2)
17. Dribbling/ball control with hands: Dribbles a ball with one hand, attempting the second contact. (S1.17.K)	Dribbles continuously in self-space using the preferred hand. (S1.17.1)	a. Dribbles in self-space with preferred hand demonstrating a mature pattern. (S1.17.2a) b. Dribbles using the preferred hand while walking in general space. (S1.17.2b)
18. Dribbling/ball control with feet: Taps a ball using the inside of the foot, sending it forward. (S1.18.K)	Taps or dribbles a ball using the inside of the foot while walking in general space. (S1.18.1)	Dribbles with the feet in general space with control of ball and body. (S1.18.2)
19. Passing and Receiving with feet: *Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*
20. Dribbling in Combination: *Developmentally appropriate/emerging outcomes first appear in Grade 4.*	*Developmentally appropriate/emerging outcomes first appear in Grade 4.*	*Developmentally appropriate/emerging outcomes first appear in Grade 4.*
21. Kicking: Kicks a stationary ball from a stationary position, demonstrating 2 of the 5 elements of a mature kicking pattern. (S1.21.K)	Approaches a stationary ball and kicks it forward, demonstrating 2 of 5 critical elements of a mature pattern. (S1.21.1)	Uses a continuous running approach and kicks a moving ball, demonstrating 3 of 5 critical elements of a mature pattern. (S1.21.2)
22. Volleying Underhand:	Volleys an object with an open palm, sending it upward. (S1.22.1)	Volleys an object upward with consecutive hits. (S1.22.2)

Volleys a light weight object (balloon), sending it upward. (S1.22.K)		
23. Volleying Overhead: *Developmentally appropriate/emerging outcomes first appear in Grade 4.*	*Developmentally appropriate/emerging outcomes first appear in Grade 4.*	*Developmentally appropriate/emerging outcomes first appear in Grade 4.*
24. Striking, short implement: Strikes a light-weight object with a paddle or short-handled racket. (S1.24.K)	Strikes a ball with a short-handled implement, sending it upward. (S1.24.1)	Strikes an object upward with a short-handled implement, using consecutive hits. (S1.24.2)
25. Striking, long implement: *Developmentally appropriate/emerging outcomes first appear in Grade 2.*	*Developmentally appropriate/emerging outcomes first appear in Grade 2.*	Strikes a ball off a tee or cone with a bat using correct grip and side orientation/proper body orientation. (S1.25.2)
26. In combination with locomotor: *Developmentally appropriate/emerging outcomes first appear in Grade 4.*	*Developmentally appropriate/emerging outcomes first appear in Grade 4.*	*Developmentally appropriate/emerging outcomes first appear in Grade 4.*
27. Jumping Rope: a. Executes a single jump with self-turned rope. (S1.27.Ka) b. Jumps a long rope with teacher-assisted turning. (S1.27.Kb)	a. Jumps forward or backward consecutively using a self-turned rope. (S1.27.1a) b. Jumps a long rope up to 5 times consecutively with teacher-assisted turning. (S1.27.1b)	a. Jumps a self-turned rope consecutively forward and backward with a mature pattern. (S1.27.2a) b. Jumps a long rope 5 times consecutively with student turners. (S1.27.2b)

AQUATICS

28. Demonstrate selected elements of basic aquatics skills of front float and back float with flotation and instructor support in isolated settings. (S1.28.K)	Demonstrate selected elements of basic aquatic skills of front float, back float, and recovery with floatation support is isolated settings. (S1.28.1)	Demonstrate selected elements of the basic aquatic skills of front float, back float, and recovery with support in isolated settings. (S1.28.2)
29. Demonstrate selected elements of safe water entry and exit with flotation and instructor support in isolated settings. (S1.29.K)	Demonstrate selected elements of safe water entry and exit with flotation support in isolated settings. (S1.29.1)	Demonstrate selected elements of safe water entry and exit with support in isolated settings. (S1.29.2)
30. *Developmentally appropriate/emerging outcomes first appear in Grade 1.*	Demonstrate a combination of arms and legs to locomote in the water with flotation support in isolated settings. (S1.30.1)	Demonstrate a combination of arms and legs to locomote in the water with support in isolated settings. (S1.30.2)

31. *Developmentally appropriate/emerging outcomes first appear in Grade 1.*	Demonstrate putting on a life jacket with teacher guidance in isolated settings. (S1.31.1)	Demonstrate putting on a life jacket with peer assistance in isolated settings. (S1.31.2)
32. *Developmentally appropriate/emerging outcomes first appear in Grade 2.*	*Developmentally appropriate/emerging outcomes first appear in Grade 2.*	Demonstrate moving in the water while wearing a life jackets with assistance.(S1.32.2)

Standard 2: Applies knowledge of concepts, principles, strategies and tactics related to movement and performance.		
Kindergarten	**Grade 1**	**Grade 2**
Movement concepts, principles and knowledge		
1. Space: a. Differentiates between movement in personal (self-space) and general space. (S2.1.Ka) b. Moves in personal space to a rhythm. (S2.1.Kb)	Moves in self-space and general space in response to designated beats/rhythms. (S2.1.1)	Combines locomotor skills in general space to a rhythm. (S2.1.2)
2. Pathways, shapes, levels: Travels in 3 different pathways. (S2.2.K)	a. Travels demonstrating low, middle, and high levels. (S2.2.1a) b. Travels demonstrating a variety of relationships with objects (e.g. over, under, around, and through.) (S2.2.1b)	Combines shapes, levels, and pathways into simple travel, dance, and gymnastics sequences. (S2.2.2)
3. Speed, direction, force: Travels in general space with different speeds. (S2.3.K)	a. Differentiates between fast and slow speeds. (S2.3.1a) b. Differentiates between strong and light force. (S2.3.1b)	Varies time and force with gradual increases and decreases. (S2.3.2)
4. Alignment and muscular tension: *Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*
5. Strategies and tactics:	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*

Developmentally appropriate/emerging outcomes first appear in Grade 3.		
Standard 3: Demonstrates the knowledge and skills to achieve and maintain a health-enhanced level of physical activity and fitness.		
Kindergarten	**Grade 1**	**Grade 2**
Physical activity knowledge		
1. Identifies active-play opportunities outside physical education class. (S3.1.K)	Discusses the benefits of being active and exercising and/or playing. (S3.1.1)	Describes large-motor and/or manipulative physical activities for participation outside physical education class (e.g. before and after school, at home, at the park, with friends, with the family). (S3.1.2)
Engages in physical activity		
2. Actively participates in physical education class. (S3.2.K)	Actively engages in physical education class. (S3.2.1)	Actively engages in physical education class in response to instruction and practice. (S3.2.2)
Fitness Knowledge		
3. Recognizes that when you move fast, your heart beats faster and you breathe faster. (S3.3.K)	Identifies the heart as a muscle that grows stronger with exercise, play, and physical activity. (S3.3.1)	a. Recognizes the use of the body as resistance (e.g. holds body in plank position, animal walks) for developing strength. (S3.3.2a) b. Identifies physical activities that contribute to fitness. (S3.3.2b)
4. Developmentally appropriate/emerging outcomes first appear in Grade 3.	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*
Assessment and program planning		
5. Developmentally appropriate/emerging outcomes first appear in Grade 3.	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*

6. Nutrition: Recognizes that food provides energy for physical activity. (S3.6.K)	Differentiates between healthy and unhealthy foods. (S3.6.1)	Recognizes the "good health balance" of nutrition and physical activity. (S3.6.2)
Standard 4: Exhibits responsible personal and social behavior that respects self and others.		
Kindergarten	**Grade 1**	**Grade 2**
Personal Responsibility		
1. Follows directions in group settings (e.g. safe behaviors, following rules, taking turns). (S4.1.K) 2. Acknowledges responsibility for behavior when prompted. (S4.2.K)	Accepts personal responsibility by using equipment and space appropriately. (S4.1.1) Follows the rules and parameters of the learning environment. (S4.2.1)	Practices skills with minimal teacher prompting. (S4.1.2) Accepts responsibility for class protocols with behavior and performance actions. (S4.2.2)
Accepting Feedback		
3. Follows instruction/directions when prompted. (S4.3.K)	Responds appropriately to general feedback from the teacher. (S4.3.1)	Accepts specific corrective feedback from the teacher. (S4.3.2)
Working with Others		
4. Shares equipment and space with others. (S4.4.K)	Works independently with others in a variety of class environments (e.g. small and large groups). (S4.4.1)	Works independently with others in partner environments. (S4.4.2)
Rules and Etiquette		
5. Recognizes the established protocols for class activities. (S4.5.K)	Exhibits the established protocols for class activity. (S4.5.1)	Recognizes the role of rules and etiquette in teacher-designed physical activities. (S4.5.2)
Safety		
6. Follows teacher directions for safe participation and proper use of equipment with minimal reminders. (S4.6.K)	Follows teacher directions for safe participation and proper use of equipment without teacher reminders. (S4.6.1)	a. Works independently and safely in physical education. (S4.6.2a)

		b. Works safely with physical education equipment. (S4.6.2b)

Standard 5: Recognizes the value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction.		
Kindergarten	**Grade 1**	**Grade 2**
Health		
1. Recognizes that physical activity is important for good health. (S5.1.K)	Identifies physical activity as a component of good health. (S5.1.1)	Recognizes the value of "good health balance." (S5.1.2)
Challenge		
2. Acknowledges that some physical activities are challenging/difficult. (S5.2.K)	Recognizes that challenge in physical activities can lead to success. (S5.2.1)	Compares physical activities that bring confidence and challenge. (S5.2.2)
Self-Expression and Enjoyment		
3. a. Identifies physical activities that are enjoyable. (S5.3.Ka) b. Discusses the enjoyment of playing with friends. (S5.3.Kb)	a. Describes positive feelings that result from participating in physical activities. (S5.3.1a) b. Discuss personal reasons (i.e., the "why") for enjoying physical activities. (S5.3.1b)	Identifies physical activities that provide self-expression (e.g. dance, gymnastics routines, practice task in game environments). (S5.3.2)
4. Social Interaction: *Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*	*Developmentally appropriate/emerging outcomes first appear in Grade 3.*

Standard 1: Demonstrates competency in a variety of motor skills and movement patterns.		
Grade 3	**Grade 4**	**Grade 5**
Locomotor		

1. **Hopping, galloping, running, sliding, skipping, leaping:** Leaps using a mature pattern. (S1.1.3)	Uses various locomotor skills in a variety of small-sided practice tasks, dance, and educational gymnastics experiences. (S1.1.4)	a. Demonstrate mature patterns of locomotor skills in dynamic small-sided practice tasks, gymnastics, and dance. (S1.1.5a) b. Combines locomotor and manipulative skills in a variety of small-sided practice tasks in game environments. (S1.1.5b) c. Combines traveling with manipulative skills for execution to a target (e.g. scoring in soccer, hockey and basketball). (S1.1.5c)
2. **Jogging, running:** Travels showing differentiation between sprinting and running. (S1.2.3)	Runs for distance using a mature pattern. (S1.2.4)	Uses appropriate pacing for a variety of running distances. (S1.2.5)
3. **Jumping and landing, horizontal:** Jumps and lands in the horizontal plane using a mature pattern. (S1.3.3)	Uses spring-and-step takeoffs and landings specific to gymnastics. (S1.3.4)	Combines jumping and landing patterns with locomotor and manipulative skills in dance, gymnastics, and small-sided practice tasks in game environments. (S1.3.5)
4. **Jumping and Landing, vertical:** Jumps and lands in the vertical plane using a mature pattern. (S1.4.3)	Uses spring-and-step takeoffs and landings specific to gymnastics. (S1.4.4)	Combines jumping and landing patterns with locomotor and manipulative skills in dance, gymnastics, and small-sided practice tasks in game environments. (S1.4.5)
5. **Dance:** Performs teacher-selected and developmentally appropriate dance steps and movement patterns. (S1.5.3)	Combines locomotor movement patterns and dance steps to create and perform an original dance. (S1.5.4)	Combines locomotor skills in cultural as well as creative dances (self and group) with correct rhythm and pattern. (S1.5.5)
6. **Combinations:** Performs a sequence of locomotor skills, transitioning from one skill to another smoothly and without hesitation. (S1.6.3)	Combines traveling with manipulative skills of dribbling, throwing, catching, and striking in teacher-and/or student designed small-sided practice tasks. (S1.6.4)	Applies skill. (S1.6.5)
Nonlocomotor (stability)		

7. Balance: Balances on different bases of support, demonstrating muscular tension and extensions of free body parts. (S1.7.3)	Balances on different bases of support on apparatus, demonstrating levels and shapes. (S1.7.4)	Combines balance and transferring weight in a gymnastics sequence or dance with a partner. (S1.7.5)
8. Weight Transfer: Transfers weight from feet to hands for momentary weight support. (S1.8.3)	Transfers weight from feet to hands, varying speed and using large extensions (e.g. mule kick handstand, cartwheel). (S1.8.4)	Transfers weight in gymnastics and dance environments. (S1.8.5)
9. Weight Transfer, rolling: Applies skill. (S1.9.3)	Applies skill. (S1.9.4)	Applies skill. (S1.9.5)
10. Curling and stretching; twisting and bending: Moves into and out of gymnastics balances with curling, twisting, and stretching actions. (S1.10.3)	Moves into and out of balances with curling, twisting, and stretching actions. (S1.10.4)	Performs curling, twisting, and stretching actions with correct application in dance, gymnastics and small-sided practice tasks in game environments. (S1.10.5)
11. Combinations: Combines locomotors skills and movement concepts (levels, shapes, extensions, pathways, force, time, flow) to create and perform a dance. (S1.11.3)	Combines locomotors skills and movement concepts (levels, shapes, extensions, pathways, force, time, flow) to create and perform a dance with a partner. (S1.11.4)	Combines locomotors skills and movement concepts (levels, shapes, extensions, pathways, force, time, flow) to create and perform a dance with a group. (S1.11.5)
12. Balance and weight transfers: Combines balance and weight transfers with movement concepts to create and perform a dance. (S1.12.3)	Combines traveling with balance and weight transfers to create a gymnastics sequence with and without equipment or apparatus. (S1.12.4)	Combines actions, balances, and weight transfers to create a gymnastics sequence with a partner on equipment or apparatus. (S1.12.5)
Manipulative		
13. Throwing underhand: Throws underhand to a partner or target with reasonable accuracy. (S1.13.3)	Applies skill. (S1.13.4)	a. Throws underhand using a mature pattern in nondynamic environments (closed skills), with different sizes and types of objects. (S1.13.5a) b. Throws underhand to large target with accuracy. (S1.13.5b)

14. Throwing overhand: Throws overhand, demonstrating 3 of the 5 critical elements of a mature pattern, in nondynamic environments (closed skills), for distance and/or force. (S1.14.3)	a. Throws overhand using a mature pattern in a nondynamic environment (closed skills). (S1.14.4a) b. Throws overhand to a partner or at a target with accuracy at a reasonable distance. (S1.14.4b)	a. Throws overhand using a mature pattern in nondynamic environments (closed skills), with different sizes and types of balls. (S1.14.5a) b. Throws overhand to large target with accuracy. (S1.14.5b)
15. Passing with hands: *Developmentally appropriate/emerging outcomes first appear in grade 4.*	Throws to a moving partner with reasonable accuracy in a nondynamic environment (closed skills). (S1.15.4)	a. Throws with accuracy, both partners moving. (S1.15.5a) b. Throws with reasonable accuracy in dynamic, small-sided practice tasks. (S1.15.5b)
16. Catching: Catches a gently tossed hand-size ball from a partner, demonstrating 4 of the 5 critical elements of a mature pattern. (S1.16.3)	Catches a thrown ball above the head, at chest or waist level, and below the waist using a mature pattern in a nondynamic environment (closed environment). (S1.16.4)	a. Catches a batted ball above the head, at chest or waist level, and along the ground using a mature pattern in a nondynamic environment (closed skills). (S1.16.5a) b. Catches with accuracy, both partners moving. (S1.16.5b) c. Catches with reasonable accuracy in dynamic small-sided practice tasks. (S1.16.5c)
17. Dribbling/ball control with hands: Dribbles and travels in general space at slow to moderate jogging speed with control of ball and body. (S1.17.3)	a. Dribbles in self-space with both the preferred and the non-preferred hands using a mature pattern. (S1.17.4a) b. Dribbles in general space with control of ball and body while increasing and decreasing speed. (S1.17.4b)	Combines hand dribbling with other skills during 1v1 practice tasks. (S1.17.5)
18. Dribbling/ball control with feet: Dribbles with the feet in general space at slow to moderate jogging speed with control of the ball and body. (S1.18.3)	Dribbles with the feet in general space with control of ball and body while increasing and decreasing speed. (S1.18.4)	Combines foot dribbling with other skills in 1v1 practice tasks. (S1.18.5)
19. Passing and receiving with feet:	a. Passes and receives ball with the insides of the feet to a moving partner in a nondynamic environment (closed skills).	a. Passes with the feet using a mature pattern as both partners travel.

Passes and receives the ball with the insides of the feet to a stationary partner, "giving" on reception before returning the pass. (S1.19.3)	b. Receives and passes a ball with the outsides and insides of the feet to a stationary partner, "giving" on reception before returning the pass. (S1.19.4)	b. Receives a pass with the feet using a mature pattern as both partners travel. (S1.19.5)
20. Dribbling in Combination: *Developmentally appropriate/emerging outcomes first appear in Grade 4.*	Dribbles with hands or feet in combination with other skills (e.g. passing, receiving, shooting). (S1.20.4)	Dribbles with hands or feet with mature patterns in a variety of small-sided game forms. (S1.20.5)
21. Kicking: a. Uses a continuous running approach and intentionally performs a kick along the ground and a kick in the air, demonstrating 4 of the 5 critical elements of a mature pattern for each. (S1.21.3a) b. Uses a continuous running approach and kicks a stationary ball for accuracy. (S1.21.3b)	Kicks along the ground and in the air, and punts using mature patterns. (S1.21.4)	Demonstrates mature patterns of kicking and punting in small-sided practice task environments. (S1.21.5)
22. Volleying underhand: Volleys an object with an underhand or sidearm striking pattern, sending it forward over a net, to the wall or over a line to a partner, while demonstrating 4 of the 5 elements of a mature pattern. (S1.22.3)	Volleys underhand using a mature pattern in a dynamic environment (e.g. 2 square, 4 square, handball). (S1.22.4)	Applies skill. (S1.22.5)
23. Volleying overhead: *Developmentally appropriate/emerging outcomes first appear in Grade 4.*	Volleys a ball with a two-hand overhead pattern, sending it upward, demonstrating 4 of the 5 critical elements of a mature pattern. (S1.23.4)	Volleys a ball using a two-hand pattern, sending it upward to a target. (S1.23.5)
24. Striking, short implement: a. Strikes an object with a short-handled implement, sending it forward over a low net or to a wall. (S1.24.3a) b. Strikes an object with a short-handled implement while demonstrating 3 of the 5 critical elements of a mature pattern. (S1.24.3b)	a. Strikes an object with a short-handled implement while demonstrating a mature pattern. (S1.24.4a) b. Strikes an object with a short-handled implement, alternating hits with a partner over a low net or against a wall. (S1.24.4b)	Strikes an object consecutively, with a partner, using a short-handled implement, over a net or against a wall, in either a competitive or cooperative game environment. (S1.24.5)

25. Striking, long implement: Strikes a ball with a long-handled implement (e.g. hockey stick, bat, golf club), sending it forward, while using proper grip for the implement. Note: Use batting tee or ball tossed by teacher for batting. (S1.25.3)	Strikes an object with a long-handled implement (e.g. hockey stick, golf club, bat, tennis or badminton racket) while demonstrating 3 of the 5 critical elements of a mature pattern for the implement (grip, stance, body orientation, swing plane, and follow-through). (S1.25.4)	a. Strikes a pitched ball with a bat using a mature pattern. (S1.25.5a) b. Combines striking with a long implement (e.g. bat, hockey stick) with receiving and traveling skills in a small-sided game. (S1.25.5b)
26. In combination with locomotor: *Developmentally appropriate/emerging outcomes first appear in Grade 4.*	Combines traveling with manipulative skills of dribbling, throwing, catching and striking in teacher- and/or student-designed small-sided practice-task environments. (S1.26.4)	Combines manipulative skills and traveling for execution to a target (e.g. scoring in soccer, hockey, and basketball). (S1.26.5)
27. Jumping rope: Performs intermediate jump-rope skills (e.g. a variety of tricks, running in and out of long	Creates a jump-rope routine with either a short or long rope. (S1.27.4)	Creates a jump-rope routine with a partner using either a short or long rope. (S1.27.5)

		locomote to a position of safety in controlled settings. (S1.32.5)
33. Demonstrate moving in the water while wearing a life jacket. (S1.33.3)		

Standard 2: Applies knowledge of concepts, principles, strategies and tactics related to movement and performance.		
Grade 3	**Grade 4**	**Grade 5**
1. **Space:** Recognizes the concept of open spaces in a movement context. (S2.1.3)	a. Applies the concept of open spaces to combination skills involving traveling (e.g. dribbling and traveling) (S2.1.4a) b. Applies the concept of closing spaces in small-sided practice tasks. (S2.1.4b) c. Dribbling in general space with changes in direction and speed. (S2.1.4c)	Combines spatial concepts with locomotor and nonlocomotor movements for small groups in gymnastics, dance, and games environments. (S2.1.5)
2. Pathways, shapes, levels: Recognizes locomotor skills specific to a wide variety of physical activities. (S2.2.3)	Combines movement concepts with skills in small-sided practice tasks, gymnastics, and dance environments. (S2.2.4)	Combines movement concepts with skills in small-sided practice tasks in game environments, gymnastics, and dance with self-direction. (S2.2.5)
3. Speed, direction, force: Combines movement concepts (directions, levels, force, time) with skills as directed by the teacher. (S2.3.3)	a. Applies the movement concepts of speed, endurance, and pacing for running. (S2.3.4a) b. Applies the concepts of direction and force when striking an object with a short-handled implement, sending it toward a designated target. (S2.3.4b)	a. Applies movement concepts to strategy in game situations. (S2.3.5a) b. Applies the concepts of direction and force to strike an object with a long-handled implement. (S2.3.5b) c. Analyzes movement situations and applies movement concepts (e.g. force, direction, speed, pathways, extensions) in small-sided practice tasks in game environments, dance, and gymnastics. (S2.3.5c)

4. Alignment and muscular tension: a. Employs the concept of alignment in gymnastics and dance. (S2.4.3a) b. Employs the concept of muscular tension with balance in gymnastics and dance. (S2.4.3b)	Applies skill. (S2.4.4)	Applies skill. (S2.4.5)
5. Strategies and tactics: a. Applies simple strategies and tactics in chasing activities. (S2.5.3a) b. Applies simple strategies in fleeing activities. (S2.5.3b)	a. Applies simple offensive strategies and tactics in chasing and fleeing activities. (S2.5.4a) b. Applies simple defensive strategies and tactics in chasing and fleeing activities. (S2.5.4b) c. Recognizes the types of kicks needed for different games and sports situations. (S2.5.4c)	a. Applies basic offensive and defensive strategies and tactics in invasion small-sided practice tasks. (S2.5.5a) b. Applies basic offensive and defensive strategies and tactics in net/wall small-sided practice tasks. (S2.5.5b) c. Recognizes the type of throw, volley, or striking action needed for different games and sports situations. (S2.5.5c)

Standard 3: Demonstrates the knowledge and skills to achieve and maintain a health-enhancing level of physical activity and fitness.		
Grade 3	**Grade 4**	**Grade 5**
1. **Physical Activity knowledge:** a. Charts participation in physical activities outside physical education class. (S3.1.3a) b. Identifies physical activity benefits as a way to become healthier. (S3.1.3b)	Analyzes opportunities for participating in physical activity outside physical education class. (S3.1.4)	Charts and analyzes physical activity outside physical education class for fitness benefits of activities. (S3.1.5)
2. Engages in Physical Activity: Engages in the activities of physical education class without teacher prompting. (S3.2.3)	Actively engages in the activities on physical education class, both teacher-directed and independent. (S3.2.4)	Actively engages in all the activities of physical education. (S3.2.5)
3. Fitness Knowledge: Describes the concept of fitness and provides examples of physical activity to enhance fitness. (S3.3.3)	Identifies the components of health-related fitness. (S3.3.4)	Differentiates between skill-related and health-related fitness. (S3.3.5)

4. Fitness Knowledge: Recognizes the importance of warm-up and cool-down relative to vigorous physical activity. (S3.4.3)	Demonstrates warm-up and cool-down relative to the cardiorespiratory fitness assessment. (S3.4.4)	Identifies the need for warm-up and cool-down relative to various physical activities. (S3.4.5)
5. Assessment and Program Planning: Demonstrates, with teacher direction, the health-related fitness components. (S3.5.3)	a. Completes fitness assessments (pre- and post-). (S3.5.4a) b. Identifies areas of needed remediation from personal test and, with teacher assistance, identifies strategies for progress in those areas. (S3.5.4b)	a. Analyzes results of fitness assessment (pre-and post-) comparing results with fitness components for food health. (S3.5.5a) b. Designs a fitness plan to address ways to use physical activity to enhance fitness. (S3.5.5b)
6. Nutrition: Identifies foods that are beneficial for before and after physical activity. (S3.6.3)	Discusses the importance of hydration and hydration choices relative to physical activities. (S3.6.4)	Analyzes the impact of food choices relative to physical activity, youth sports and personal health. (S3.6.5)

Standard 4: Exhibits responsible personal and social behavior that respects self and others.

Grade 3	Grade 4	Grade 5
1. **Personal responsibility:** Exhibits personal responsibility in teacher-directed activities. (S4.1.3)	Exhibits responsible behavior in independent group situations. (S4.1.4)	Engages in physical activity with responsible interpersonal behavior (e.g. peer-to-peer, student to teacher, student to referee). (S4.1.5)
2. Personal responsibility: Works independently for extended periods of time. (S4.2.3)	Reflects on personal social behavior in physical activity. (S4.2.4)	a. Participates with responsible personal behavior in a variety of physical contexts, environments and facilities. (S4.2.5a) b. Exhibits respect for self with appropriate behavior while engaging in physical activity. (S4.2.5b)
3. Accepting feedback: Accepts and implements specific corrective feedback from the teacher. (S4.3.3)	Listens respectfully to corrective feedback from others (e.g. peers, adults). (S4.3.4)	Gives corrective feedback respectfully to peers. (S4.3.5)
4. Working with others: a. Works cooperatively with others. (S4.4.3a)	a. Praises the movement performance of others both more- and less- skilled. (S4.4.4a)	Accepts, recognizes, and actively involves others with both higher and lower skill abilities into physical activities and group projects. (S4.4.5)

b. Praises others for their success in movement performance. (S4.4.3b)	b. Accepts players of all levels into the physical activity. (S4.4.4b)	
5. Rules and Etiquette: Recognizes the role of rules and etiquette in physical activity with peers. (S4.5.3)	Exhibits etiquette and adherence to rules in a variety of physical activities. (S4.5.4)	Critiques the etiquette involved in rules of various game activities. (S4.5.5)
6. Safety: Works independently and safely in physical activity settings. (S4.6.3)	Works safely with peers and equipment in physical activity settings. (S4.6.4)	Applies safety principals with age-appropriate physical activities. (S4.6.5)
Standard 5: Recognizes the value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction		
Grade 3	**Grade 4**	**Grade 5**
1. Health: Discusses the relationship between physical activity and good health. (S5.1.3)	Examines the health benefits of participating in physical activity. (S5.1.4)	Compares the health benefits of participating in selected physical activities. (S5.1.5)
2. Challenge: Discusses the challenge that comes from learning a new physical activity. (S5.2.3)	Rates the enjoyment of participating in challenging and mastered physical activities. (S5.2.4)	Expresses (via written essay, visual art, creative dance) the enjoyment and/or challenge of participating in a favorite physical activity. (S5.2.5)
3. Self-expression and enjoyment: Reflects on the reasons for enjoying selected physical activities. (S5.3.3)	Ranks the enjoyment of participating in different physical activities. (S5.3.4)	Analyzes different physical activities for enjoyment, challenge, identifying reasons for a positive or negative response. (S5.3.5)
4. Social interaction: Describes the positive social interactions that come when engaged with others in physical activity. (S5.4.3)	Describes and compares the positive social interactions when engaged in partner, small-group and large-group physical activity. (S5.4.4)	Describes the social benefits gained from participating in physical activity (e.g. recess, youth sport). (S5.4.5)
Standard 1: Demonstrates competency in a variety of motor skills and movement patterns.		
Grade 6	**Grade 7**	**Grade 8**

1. **Dance and rhythms:** Demonstrates correct rhythm and pattern for 1 of the following dance forms: folk, social, creative, line, or world dance. (S1.1.6)	Demonstrate correct rhythm and pattern for a different dance form from among folk, social, creative, line, or world dance. (S1.1.7)	Exhibits command of rhythm and timing by creating a movement sequence to music as an individual or in a group. (S1.1.8)
2. Games & sports. Invasion and field games – Throwing: Throws with a mature pattern for distance or power appropriate to the practice task (e.g., distance = outfield to home plate; power = 2nd base to 1st base). (S1.2.6)	Throws with a mature pattern for distance or power appropriate to the activity in a dynamic environment. (S1.2.7)	Throws with a mature pattern for distance or power appropriate to the activity during small-sided game play. (S1.2.8)
3. Catching: Catches with a mature pattern from a variety of trajectories using different objects in varying practice tasks. (S1.3.6)	Catches with a mature pattern from a variety of trajectories using different objects in small-sided game play. (S1.3.7)	Catches using an implement in a dynamic environment or modified game play. (S1.3.8)
4. Games & sports. Invasion games – Passing and Receiving: Passes and receives with hands in combination with locomotor patterns of running and changing direction and speed with competency in modified invasion games such as basketball, flag football, speedball, or team handball. (S1.4.6)	Passes and receives with feet in combination with locomotor patterns of running and change of direction and speed with competency in modified invasion games such as soccer or speedball. (S1.4.7)	Passes and receives with an implement in combination with locomotor patterns of running and change of direction, speed and/or level with competency in modified invasion games such as lacrosse or hockey (floor, field, ice). (S1.4.8)
5. Passing and Receiving: Throws while stationary, a leading pass to a moving receiver. (S1.5.6)	Throws, while moving, a leading pass to a moving receiver. (S1.5.7)	Throws a lead pass to a moving partner off a dribble or pass. (S1.5.8)
6. Offensive skills: Performs pivots, fakes, and jab steps designed to create open space during practice tasks. (S1.6.6)	Executes at least 1 of the following designed to create open space during small-sided game play: pivots, fakes, jab steps. (S1.6.7)	Executes at least 2 of the following to create open space during modified game play: pivots, fakes, jab steps, screens. (S1.6.8)
7. Offensive skills: Performs the following offensive skills without defensive pressure: pivot, give and go, and fakes. (S1.7.6)	Performs the following offensive skills with defensive pressure: pivot, give and go, and fakes. (S1.7.7)	Executes the following offensive skills during small-sided game play: pivot, give and go, and fakes. (S1.7.8)

8. Dribbling/Ball Control: Dribbles with dominant hand using a change of speed and direction in a variety of practice tasks. (S1.8.6)	Dribbles with dominant and non-dominant hands using a change of speed and direction in a variety of practice tasks. (S1.8.7)	Dribbles with dominant and non-dominant hands using a change of speed and direction in small-sided game play. (S1.8.8)
9. Dribbling/Ball Control: Foot-dribbles or dribbles with an implement with control, changing speed and direction in a variety of practice tasks. (S1.9.6)	Foot-dribbles or dribbles with an implement combined with passing in a variety of practice tasks. (S1.9.7)	Foot-dribbles or dribbles with an implement with control, changing speed and direction during small-sided game play. (S1.9.8)
10. Shooting on goal: Shoots on goal with power in a dynamic environment as appropriate to the activity. (S1.10.6)	Shoots on goal with power and accuracy in small-sided game-play. (S1.10.7)	Shoots on goal with a long-handled implement for power and accuracy in modified invasion games such as hockey (floor, field, or ice) or lacrosse. (S1.10.8)
11. Defensive Skills: Maintains defensive ready position with weight on balls of feet, arms extended, and eyes on midsection of the offensive player. (S1.11.6)	Slides in all directions while on defense without crossing feet. (S1.11.7)	Drop-steps in the direction of the pass during player-to-player defense. (S1.11.8)
12. Games and sports. Net/Wall Games Serving: Performs a legal underhand serve with control for net/wall games such as badminton, volleyball, or pickleball. (S1.12.6)	Executes consistently (at least 70% of the time) a legal underhand serve to a predetermined target for net/wall games such as badminton, volleyball, or pickleball. (S1.12.7)	Executes consistently (at least 70% of the time) a legal underhand serve for distance and accuracy for net/wall games such as badminton, volleyball, or pickleball. (S1.12.8)
13. Striking: Strikes with a mature overhand pattern in a nondynamic environment (closed skills) for net/wall games such as volleyball, handball, badminton, or tennis. (S1.13.6)	Strikes with a mature overhand pattern in a dynamic environment for net/wall games such as volleyball, handball, badminton, or tennis. (S1.13.7)	Strikes with a mature overhand pattern in a modified game for net/wall games such as volleyball, handball, badminton, or tennis. (S1.13.8)
14. Forehand and backhand: Demonstrates the mature form of the forehand and backhand strokes with a short-handled implement in net games such as	Demonstrates the mature form of forehand and backhand strokes with a long-handled implement in net games such as badminton or tennis. (S1.14.7)	Demonstrates the mature form of forehand and backhand strokes with a short- or long-handled implement with power and accuracy in net games, such as pickleball, tennis, badminton, or paddleball. (S1.14.8)

paddleball, pickleball, or short-handled racket tennis. (S1.14.6)		
15. Weight Transfer: Transfers weight with correct timing for the striking pattern. (S1.15.6)	Transfers weight with correct timing using low-to-high striking pattern with a short-handled implement on the forehand side. (S1.15.7)	Transfers weight with correct timing using low-to-high striking pattern with a long-handled implement on the backhand side. (S1.15.8)
16. Volley: Forehand volleys with a mature form and control using a short-handled implement. (S1.16.6)	Forehand and backhand volleys with a mature form and control using a short-handled implement. (S1.16.7)	Forehand and backhand volleys with a mature form and control using a short-handled implement during modified game play. (S1.16.8)
17. Two handed volley: Two-handed volleys with control in a variety of practice tasks. (S1.17.6)	Two-hand-volleys with control in a dynamic environment. (S1.17.7)	Two-hand-volleys with control in a small-sided game. (S1.17.8)
18. Games and sports. Target Games: Demonstrates a mature underhand pattern for a modified target game such as bowling, bocce, or horseshoes. (S1.18.6)	Executes consistently (70% of the time) a mature underhand pattern for target games such as bowling, bocce, or horseshoes. (S1.18.7)	Performs consistently (70% of the time) a mature underhand pattern with accuracy and control for 1 target game such as bowling or bocce. (S1.18.8)
19. Striking: Strikes, with an implement, a stationary object for accuracy in activities such as croquet, shuffleboard, or golf. (S1.19.6)	Strikes, with an implement, a stationary object for accuracy and distance in activities such as croquet, shuffleboard, or golf. (S1.19.7)	Strikes with an implement, a stationary object for accuracy and power in such activities as croquet, shuffleboard, or golf. (S1.19.8)
20. Games and Sports. Fielding/striking games –Striking: Strikes a pitched ball with an implement with force in a variety of practice tasks. (S1.20.6)	Strikes a pitched ball with an implement to open space in a variety of practice tasks. (S1.20.7)	Strikes a pitched ball with an implement for power to open space in a variety of small-sided games. (S1.20.8)
21. Catching: Catches, with a mature pattern, from different trajectories using a variety of objects in varying practice tasks. (S1.21.6)	Catches, with a mature pattern, from different trajectories using a variety of objects in small-sided game play. (S1.21.7)	Catches, using an implement, from different trajectories and speeds in a dynamic environment or modified game play. (S1.21.8)
22. Outdoor pursuits:	Demonstrates correct technique for a variety of skills in 1 self-selected outdoor activity. (S1.22.7)	Demonstrates correct technique for basic skills in 2 self-selected outdoor activities. (S1.22.8)

Demonstrates correct technique for basic skills in 1 self-selected outdoor activity. (S1.22.6)		
24. Individual-performance activities: Demonstrates correct technique for basic skills in 1 self-directed individual-performance activity. (S1.24.6)	Demonstrates correct technique for a variety of skills in 1 self-selected individual-performance activity. (S1.24.7)	Demonstrates correct technique for basic skills in at least 2 self-selected individual-performance activities. (S1.24.8)

AQUATICS

25. Demonstrate selected elements of mature form for the basic aquatic skill of front crawl and breaststroke in controlled settings. (S1.25.6)	Apply knowledge of limited critical elements of safe water entry and exit in controlled settings. (S1.25.7)	Apply knowledge of critical elements of safe water entry and exit in controlled settings. (S1.25.8)
26. Demonstrate selected elements of mature form for the basic aquatic skill of backstroke in controlled settings. (S1.26.6)	Apply knowledge of limited critical elements of aquatic skills: front crawl, backstroke, breaststroke, and treading in controlled settings. (S1.26.7)	Apply knowledge of critical elements of aquatic skills: front crawl, backstroke, breaststroke, and treading in controlled settings. (S1.26.8)
27. Demonstrate selected elements of assisting a distressed swimmer in isolated settings. (S1.27.6)	Apply knowledge of limited critical elements of assisting a distressed swimmer in controlled settings. (S1.27.7)	Apply knowledge of critical elements of assisting a distressed swimmer in controlled settings. (S1.27.8)

Standard 2: Applies knowledge of concepts, principles, strategies and tactics related to movement and performance.

Grade 6	Grade 7	Grade 8
1. **Games and Sports. Invasion Games Creating space with movement:** Creates open space by using locomotor movements (e.g. walking, running, jumping, and landing) in combination with movement (e.g. varying pathways; change of speed; direction or pace). (S2.1.6)	Reduces open space by using locomotor movements (e.g. walking, running, jumping, and landing, changing size and shape of the body) in combination with movement concepts (e.g. reducing the angle in space, reducing distance between player and goal). (S2.1.7)	Opens and closes space during small-sided game play by combining locomotor movements with movement concepts. (S2.1.8)

2. Creating space with offensive tactics: Executes at least 1 of the following offensive tactics to create open space: moves to open space without the ball; uses a variety of passes, pivots, and fakes; give and go. (S2.2.6)	Executes at least 2 of the following offensive tactics to create open space: uses a variety of passes, pivots, and fakes; give and go. (S2.2.7)	Executes at least 3 of the following offensive tactics to create an open space: moves to create open space on and off the ball; uses a variety of passes, fakes, and pathways; give and go. (S2.2.8)
3. Creating space using width and length: Creates open space by using the width and length of the field/court on offense. (S2.3.6)	Creates open space by staying spread on offense and cutting and passing quickly. (S2.3.7)	Creates open space by staying spread on offense, cutting and passing quickly, and using fakes off the ball. (S2.3.8)
4. Games and Sports. Invasion Games- Reducing space by changing size and shape: Reduces open space on defense by making the body larger or reducing passing angles. (S2.4.6)	Reduces open space on defense by staying close to the opponent as he/she nears the goal. (S2.4.7)	Reduces open space on defense by staying on the goal side of the offensive player and reducing the distance to him/her (third-party perspective). (S2.4.8)
5. Reducing space using denial: Reduces open space by not allowing the catch (denial) or by allowing the catch but not the return pass. (S2.5.6)	Reduces open space by not allowing the catch (denial) or anticipating the speed of the object or person for the purpose of interception or deflection. (S2.5.7)	Reduces open space by not allowing the catch (denial) and anticipating the speed of the object or person for the purpose of interception or deflection. (S2.5.8)
6. Transitions: Transitions from offense to defense or defense to offense by recovering quickly. (S2.6.6)	Transitions from offense to defense or defense to offense by recovering quickly and communicating with team-mates. (S2.6.7)	Transitions from offense to defense or defense to offense by recovering quickly, communicating with teammates, and capitalizing on an advantage. (S2.6.8)
7. Games and Sports. Net/Wall games - Creating Space through variation: Creates open space in net/wall games with a short-handled implement by varying force and direction. (S2.7.6)	Creates open space in net/wall games with a long-handled implement by varying force and direction and moving opponent from side to side. (S2.7.7)	Creates open space in net/wall games with either a long- or short-handled implement by varying force or direction or by moving opponent side to side and/or forward and back. (S2.7.8)
8. Using tactics and shots: Reduces offensive options for opponents by returning to midcourt position. (S2.8.6)	Selects offensive shot based on opponent's location (hit where opponent is not). (S2.8.7)	Varies placement, force, and timing of return to prevent anticipation by opponent. (S2.8.8)

9. Games and Sports. Target games -Shot selection: Selects appropriate shot and/or club based on location of the object in relation to the target. (S2.9.6)	Varies the speed and/or trajectory of the shot based on location of the object in relation to the target. (S2.9.7)	Varies the speed, force, and trajectory of the shot based on location of the object in relation to the target. (S2.9.8)
10. Games and sports. Fielding and Striking games- Offensive strategies: Identifies open spaces and attempts to strike object into that space. (S2.10.6)	Uses a variety of shots (e.g. slap & run, bunt, line drive, high arc) to hit to open space. (S2.10.7)	Identifies sacrifice situations and attempt to advance a teammate. (S2.10.8)
11. Reducing space: Identifies the correct defensive play based on the situation (e.g. number of outs). (S2.11.6)	Selects the correct defensive play based on the situation (e.g. number of outs). (S2.11.7)	Reduces open spaces in the field by working with teammates to maximize coverage. (S2.11.8)
12. Individual-performance activities, dance and rhythms- Movement concepts: Varies application of force during dance or gymnastic activities. (S2.12.6)	Identifies and applies Newton's law of motion to various dance or movement activities. (S2.12.7)	Describes and applies mechanical advantage(s) for a variety of movement patterns. (S2.12.8)
13. Outdoor Pursuits -Movement concepts: Makes appropriate decisions based on the weather, level of difficulty due to conditions, or ability to ensure safety of self and others. (S2.13.6)	Analyzes the situation and makes adjustments to ensure the safety of self and others. (S2.13.7)	Implements safe protocols in self-selected outdoor activities. (S2.13.8)

Standard 3: Demonstrates the knowledge and skills to achieve and maintain a health-enhancing level of physical activity and fitness.

Grade 6	Grade 7	Grade 8
1. **Physical activity knowledge:** Describes how being physically active leads to a healthy body. (S3.1.6)	Identifies barriers related to maintaining a physically active lifestyle and seeks solutions for eliminating those barriers. (S3.1.7)	Identifies the 5 components of health-related fitness (muscular strength, muscular endurance, flexibility, cardiorespiratory endurance, body composition) and explains the connections between fitness and overall physical and mental health. (S3.1.8)
2. Engages in physical activity:	Participates in a physical activity twice a week outside of physical education class. (S3.2.7)	Participates in a physical activity 3 times a week outside of physical education class. (S3.2.8)

Participates in self-selected physical activity outside of physical education class. (S3.2.6)		
3. Engages in physical activity: Participates in a variety of aerobic-fitness activities such as cardio-kick, step aerobics, and aerobic dance. (S3.3.6)	Participates in a variety of strength- and endurance-fitness activities such as Pilates, resistance training, body-weight training, and light free-weight training. (S3.3.7)	Participates in a variety of self-selected aerobic-fitness activities outside of school such as walking, jogging, biking, skating, dancing, and swimming. (S3.3.8)
4. Engages in physical activity: Participates in a variety of aerobic-fitness activities using technology such as Dance Dance Revolution or Wii Fit. (S3.4.6)	Participates in a variety of strength- and endurance-fitness activities such as weight or resistance training. (S3.4.7)	Plans and implements a program of cross-training to include aerobic, strength and endurance, and flexibility training. (S3.4.8)
5. Engages in physical activity: Participates in a variety of lifetime recreational team sports, outdoor pursuits, or dance activities. (S3.5.6)	Participates in a variety of lifetime dual and individual sports, martial arts, or aquatic activities. (S3.5.7)	Participates in a self-selected lifetime sport, dance, aquatic, or outdoor activities outside of the school day. (S3.5.8)
6. Fitness knowledge: Participates in moderate to vigorous aerobic physical activity that includes intermittent or continuous aerobic physical activity of both moderate and vigorous intensity for at least 60 minutes per day. (S3.6.6)	Participates in moderate to vigorous muscle- and bone-strengthening physical activity at least 3 times per week. (S3.6.7)	Participates in moderate to vigorous aerobic and/or muscle- and bone-strengthening physical activity for at least 60 minutes per day at least 5 times per week. (S3.6.8)
7. Fitness knowledge: Identifies the components of skill-related fitness. (S3.7.6)	Distinguishes between health-related and skill-related fitness. (S3.7.7)	Compares and contrasts health-related fitness components. (S3.7.8)
8. Fitness knowledge: Sets and monitors a self-selected physical activity goal for aerobic and/or muscle- and bone-strengthening activity based on current fitness level. (S3.8.6)	Adjusts physical activity based on quantity of exercise needed for minimal health standards and/or optimal functioning based on current fitness level. (S3.8.7)	Uses available technology to self-monitor quantity of exercise needed for a minimal health standard and/or optimal functioning based on current fitness level. (S3.8.8)
9. Fitness knowledge: Employs correct techniques and methods of stretching. (S3.9.6)	Describes and demonstrates the difference between dynamic and static stretches. (S3.9.7)	Employs a variety of appropriate static-stretching techniques for all major muscle groups. (S3.9.8)

10. Fitness knowledge: Differentiates between aerobic and anaerobic capacity and between muscular strength and endurance. (S3.10.6)	Describes the role of exercise and nutrition in weight management. (S3.10.7)	Describe the role of flexibility in injury prevention. (S3.10.8)
11. Fitness knowledge: Identifies each of the components of the overload principle (FITT formula: frequency, intensity, time, and type) for different types of physical activity (aerobic, muscular fitness, and flexibility). (S3.11.6)	Describes the overload principle (FITT formula) for different types of physical activity, the training principles on which the formula is based and how the formula and principles affect fitness. (S3.11.7)	Uses the overload principle (FITT formula) in preparing a personal workout. (S3.11.8)
12. Fitness knowledge: Describes the role of warm-ups and cool-downs before and after physical activity. (S3.12.6)	Designs a warm-up and cool-down regimen for a self-selected physical activity. (S3.12.7)	Designs and implements a warm-up/cool-down regimen for a self-selected physical activity. (S3.12.8)
13. Fitness knowledge: Defines resting heart rate and describes its relationship to aerobic fitness and the Borg Rating of Perceived Exertion (RPE) scale. (S3.13.6)	Defines how the RPE Scale can be used to determine the perception of the work effort or intensity of exercise. (S3.13.7)	Defines how RPE Scale can be used to adjust workout intensity during physical activity. (S3.13.8)
14. Fitness knowledge: Identifies major muscles used in selective physical activities. (S3.14.6)	Describes how muscles pull on bones to create movement in pairs by relaxing and contracting. (S3.14.7)	Explains how body systems interact with one another (e.g. blood transports nutrients from the digestive system, oxygen from the respiratory system) during physical activity. (S3.14.8)
15. Assessment and program planning: Designs and implements a program of remediation for any areas of weakness based on the results of health-related fitness assessment. (S3.15.6)	Designs and implements a program of remediation for 2 areas of weakness based on the results of health-related fitness assessment. (S3.15.7)	Designs and implements a program of remediation for 3 areas of weakness based on the results of health-related fitness assessment. (S3.15.8)
16. Assessment and program planning: Maintains a physical activity log for at least 2 weeks and reflects on activity levels as documented in the log. (S3.16.6)	Maintains a physical activity and nutrition log for at least 2 weeks and reflects on activity levels and nutrition as documented in the log. (S3.16.7)	Designs and implements a program to improve levels of health-related fitness and nutrition. (S3.16.8)

17. Nutrition: Identifies foods within each of the basic food groups and selects appropriate servings and portions for his/her age and physical activity levels. (S3.17.6)	Develops strategies for balancing healthy food, snacks and water intake, along with daily physical activity. (S3.17.7)	Describes the relationship between poor nutrition and health risk factors. (S3.17.8)
18. Stress Management: Identifies positive and negative results of stress and appropriate ways of dealing with it. (S3.18.6)	Practices strategies for dealing with stress, such as deep breathing, guided visualization, and aerobic exercise. (S3.18.7)	Demonstrates basic movements used in other stress-reducing activities, such as yoga and tai chi. (S3.18.8)

Standard 4: Exhibits responsible personal and social behavior that respects self and others.

Grade 6	Grade 7	Grade 8
1. Personal responsibility: Exhibits personal responsibility by using appropriate etiquette, demonstrating respect for facilities, and exhibiting safe behaviors. (S4.1.6)	Exhibits responsible social behaviors by cooperating with classmates, demonstrating inclusive behaviors, and supporting classmates. (S4.1.7)	Accepts responsibility for improving one's own levels of physical activity and fitness. (S4.1.8)
2. Personal responsibility: Identifies and uses appropriate strategies to self-reinforce positive fitness behaviors, such as positive self-talk. (S4.2.6)	Demonstrates both intrinsic and extrinsic motivation by selecting opportunities to participate in physical activity outside of class. (S4.2.7)	Uses effective self-monitoring skills to incorporate opportunities for physical activity in and outside of school. (S4.2.8)
3. Accepting feedback: Demonstrates self-responsibility by implementing specific corrective feedback to improve performance. (S4.3.6)	Provides corrective feedback to a peer using teacher-generated guidelines and incorporating appropriate tone and other communication skills. (S4.3.7)	Provides encouragement and feedback to peers without prompting from the teacher. (S4.3.8)
4. Working with others: Accepts differences among classmates in physical development, maturation, and varying skills levels by providing encouragement and positive feedback. (S4.4.6)	Demonstrates cooperation skills by establishing rules and guidelines for resolving conflicts. (S4.4.7)	Responds appropriately to participants' ethical and unethical behavior during physical activity by using rules and guidelines for resolving conflicts. (S4.4.8)

Scope and Sequence Chart

The following scope-and-sequence chart summarizes the skills taught in the Reading strands of *Reading Mastery Signature Edition*. The skills are divided into four principal areas: decoding skills, comprehension skills, literary skills, and study skills.

Decoding Skills

Reading Mastery uses a widely acclaimed phonics method that features step-by-step instruction for all decoding skills.

Phonemic Awareness (Decoding Readiness): Students learn blending, segmenting, rhyming, sequencing, and matching skills that prepare them for decoding.

Sound/Symbol Relationships (Sounds and Letters): Students learn letter sounds in a carefully programmed sequence. New letters are introduced every few lessons and then systematically reviewed.

Decoding and Word Recognition (Word Reading): Students learn how to sound out and read regularly spelled words and how to read irregularly spelled words.

Sentences and Stories: Students learn how to read sentences and stories. Individual fluency checkouts are used to monitor decoding rate and accuracy.

Comprehension Skills

Reading Mastery provides thorough instruction in reading comprehension. Oral questions, written questions, and skill exercises develop comprehension in five important areas.

Comprehension Readiness: Students learn how to follow directions and how to answer questions about pictures.

Vocabulary: Students learn how to identify word meanings and how to interpret definitions.

Literal Comprehension: Students learn how to understand the explicit meaning of a text.

Interpretive Comprehension: Students learn how to interpret the implicit meaning of a text.

Reasoning: Students learn how to analyze the underlying logic of a text.

Literary Skills

Reading Mastery stresses literary appreciation and interpretation. Students read a wide range of literature and carefully analyze content and style.

Characters and Settings: Students learn how to interpret complex characters and settings.

Literary Devices: Students learn how to interpret figurative language and other elements of literary style.

Types of Literature: Students learn about various types of literature and read examples of each type.

Study Skills

Reading Mastery teaches the writing and reference skills that are necessary for effective studying.

Writing: Students gradually develop writing skills, first by copying words and stories, then by writing answers to questions, and finally by writing whole paragraphs, stories, and poems.

Reference: Students learn how to interpret various reference materials, such as maps, diagrams, time lines, and graphs.

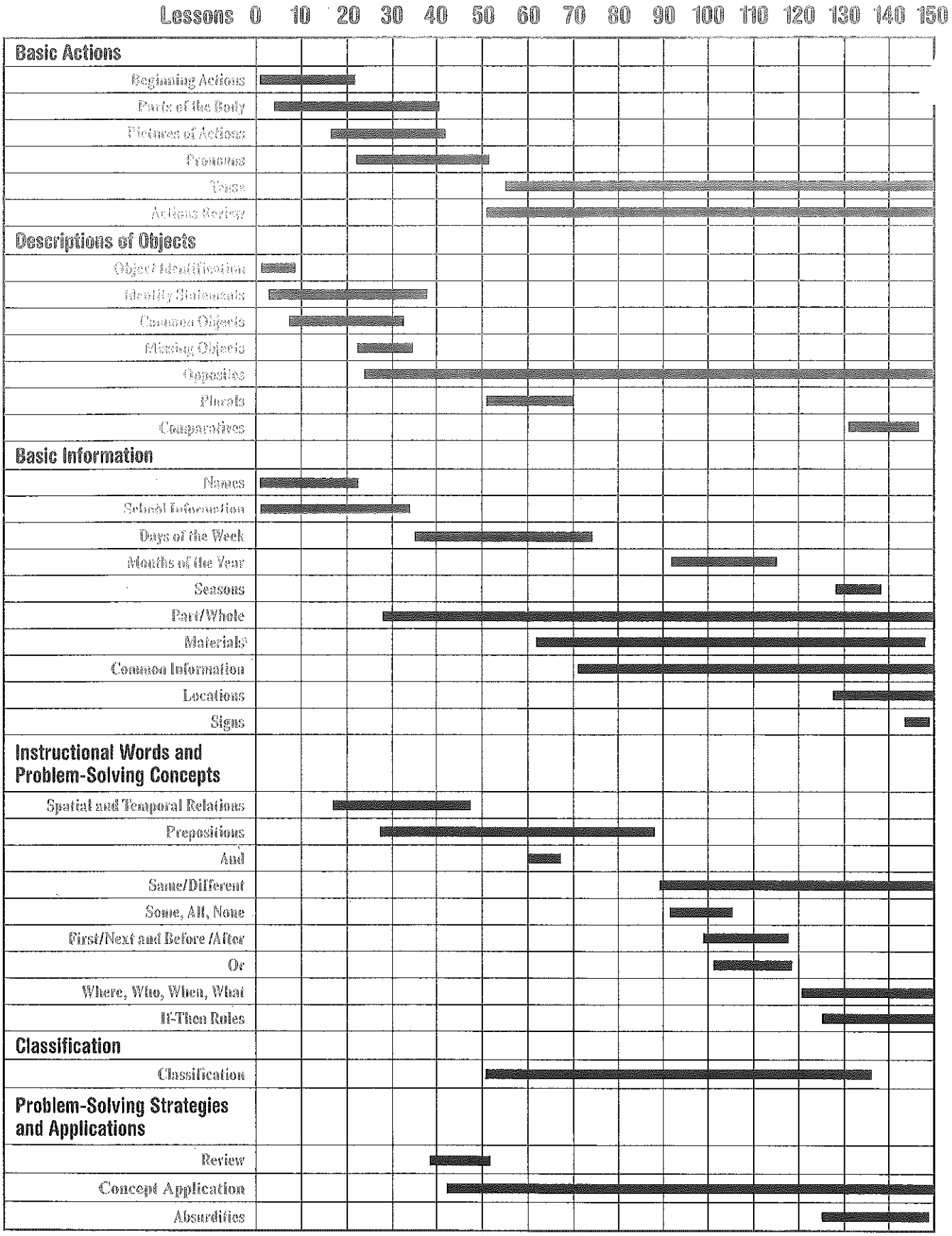
Decoding Skills

	K	1	Tr	2	3	4	5
Phonemic Awareness							
pronouncing individual sounds	◆						
sequencing from left to right	◆						
blending sounds orally	◆						
identifying rhyming sounds	◆						
Sound/Symbol Relationships							
reading short vowels	◆	◆					
reading long vowels	◆	◆					
reading voiced consonants	◆	◆					
reading unvoiced consonants	◆	◆					
reading sound combinations	◆	◆	◆	◆			
identifying vowel names		◆					
identifying consonant names		◆					
identifying alphabetical order		◆		◆			
Decoding and Word Recognition							
reading regularly spelled words	◆	◆	◆	◆	◆	◆	◆
reading irregularly spelled words	◆	◆	◆	◆	◆	◆	◆
recognizing rhyming words	◆		◆	◆		◆	◆
recognizing inflected endings	◆		◆		◆	◆	
recognizing compound words		◆	◆	◆	◆	◆	
reading word lists for accuracy		◆	◆	◆	◆	◆	
spelling difficult words		◆	◆	◆	◆		
prefixes and suffixes	◆	◆	◆	◆	◆	◆	◆
Sentences and Stories							
reading aloud	◆	◆	◆	◆	◆	◆	◆
reading silently	◆	◆	◆	◆	◆	◆	◆
reading aloud for rate and accuracy	◆	◆	◆	◆	◆	◆	◆
identifying punctuation marks	◆				◆	◆	

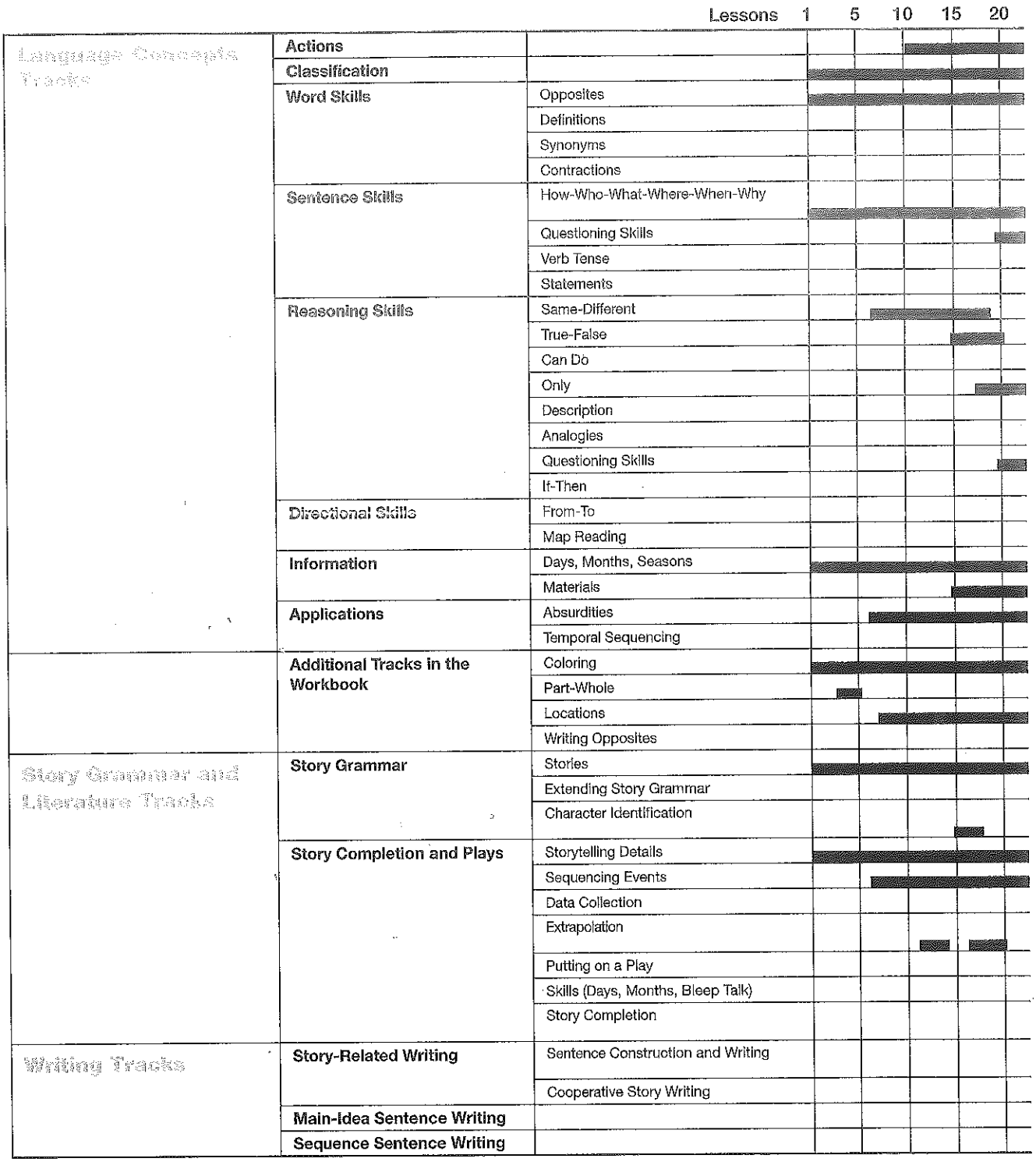
Comprehension Skills

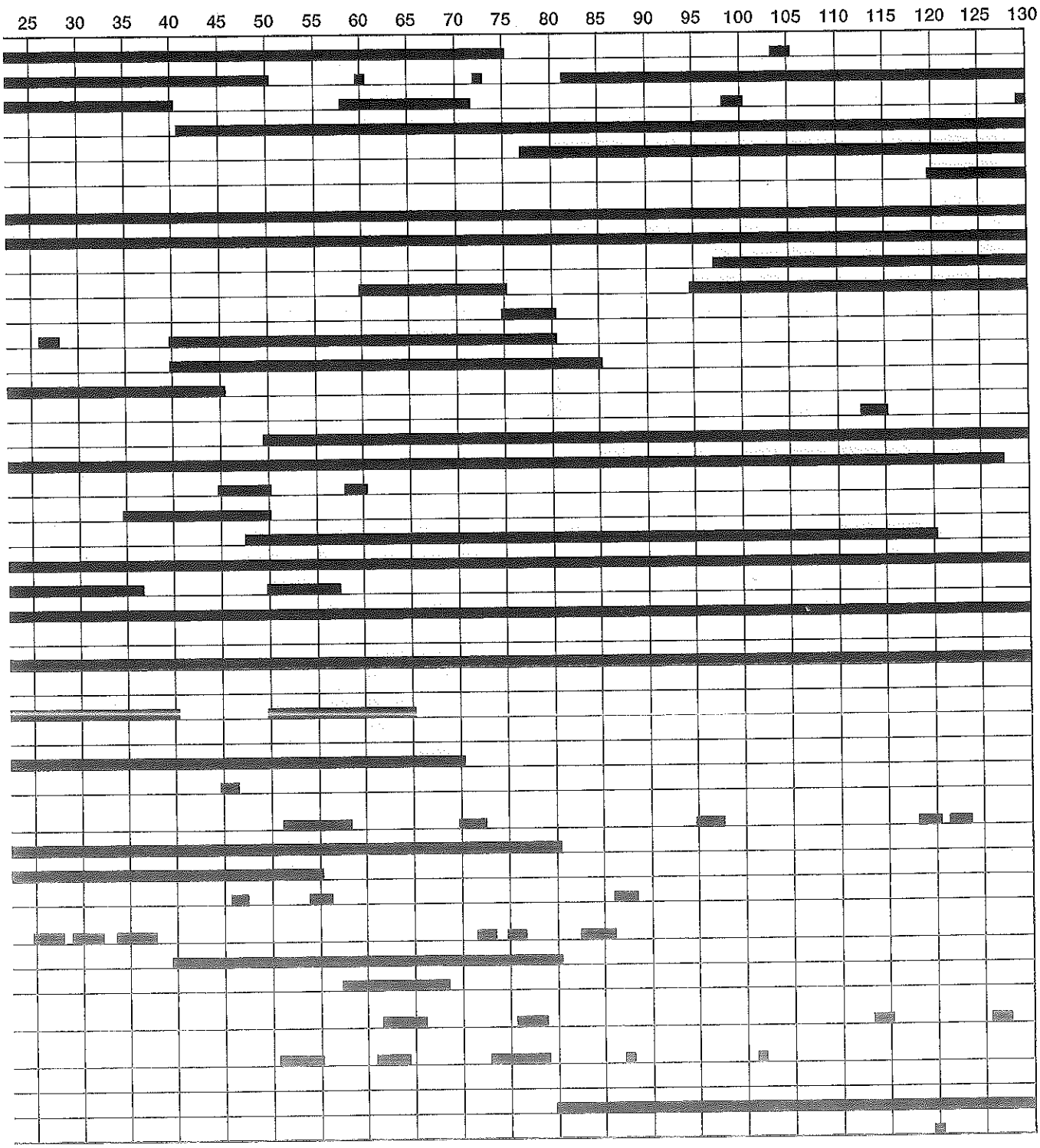
	K	1	Tr	2	3	4	5
Comprehension Readiness							
following oral directions	◆	◆	◆	◆	◆	◆	◆
answering questions about pictures	◆	◆	◆	◆	◆	◆	◆
associating pictures with words	◆						
drawing pictures based on a story	◆						
repeating sentences	◆			◆	◆		
Vocabulary							
identifying the meanings of common words	◆	◆	◆	◆	◆	◆	◆
writing the names of pictured objects	◆	◆	◆				
comprehending vocabulary definitions				◆	◆	◆	◆
using vocabulary words in context				◆	◆	◆	◆
identifying homonyms and homographs				◆		◆	
comprehending contractions				◆			
using context to predict word meaning						◆	◆
Literal Comprehension							
answering literal questions about a text	◆	◆	◆	◆	◆	◆	◆
identifying literal cause and effect	◆	◆	◆	◆	◆	◆	◆
recalling details and events	◆	◆	◆	◆	◆	◆	◆
following written directions	◆	◆	◆	◆	◆	◆	◆
memorizing facts and rules		◆	◆	◆	◆		
sequencing narrative events				◆	◆	◆	◆
Interpretive Comprehension							
predicting outcomes	◆	◆	◆	◆	◆	◆	◆
relating titles to story content	◆	◆	◆	◆	◆	◆	
inferring causes and effects		◆	◆	◆	◆	◆	◆
inferring story details and events		◆	◆	◆	◆	◆	◆
making comparisons				◆	◆	◆	◆
inferring story morals				◆		◆	
inferring the main idea				◆	◆	◆	◆
inferring details relevant to a main idea					◆	◆	◆
outlining						◆	◆
Reasoning							
using rules to classify objects		◆		◆	◆		
completing written deductions		◆		◆			
drawing conclusions				◆	◆	◆	◆
using rules to predict outcomes				◆	◆		
evaluating problems and solutions					◆	◆	◆
identifying relevant evidence					◆		◆
identifying contradictions							◆
identifying inferential questions							◆
identifying logical fallacies							◆

Grade K Language Scope and Sequence Chart



Grade 1 Language Arts Scope and Sequence Chart

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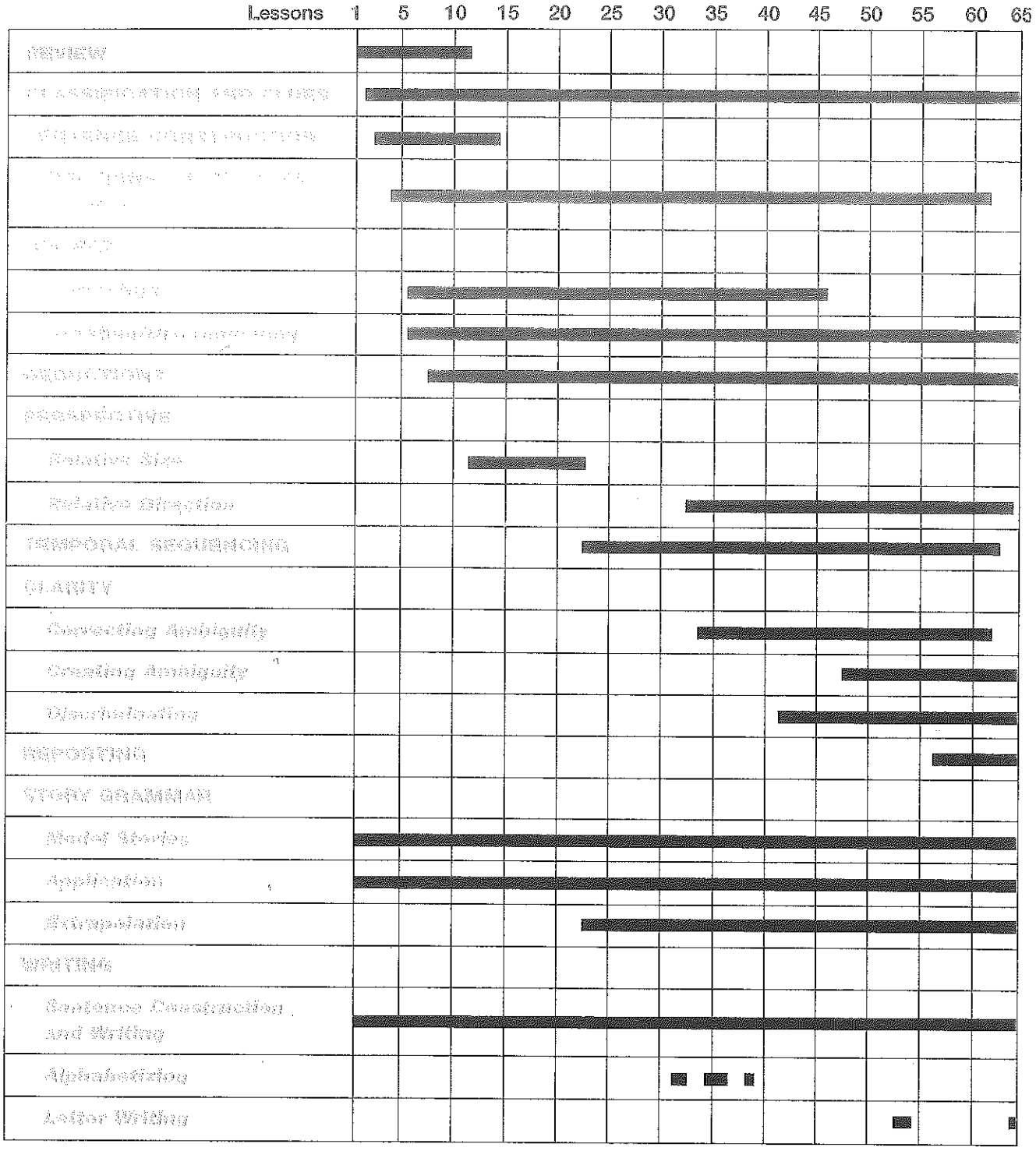
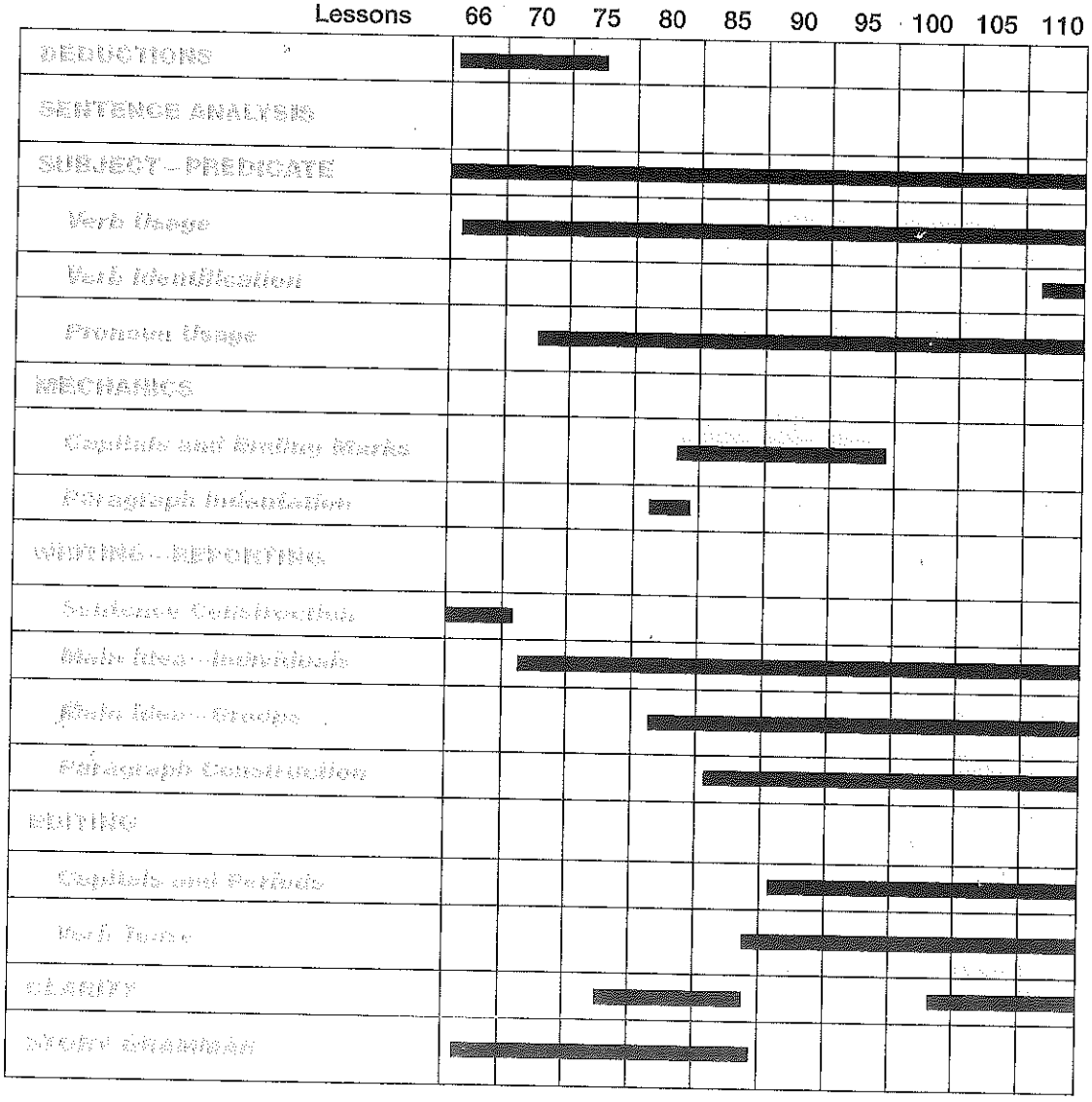
Grade 2 Language Arts Scope and Sequence Chart

Part 1 (lessons 1–65)



Part 2 (lessons 66–110)



Common Core Essential Elements ELA (2015) 3rd Grade

Reading (Literature)
Key Ideas and Details.

- EE.RL.3.1 Answer who and what questions to demonstrate understanding of details in a text.
- Michigan Range of Complexity EE.RL.H.3.1: The student can use details to answer questions about the plot, setting, and characters in a narrative text.
- Michigan Range of Complexity EE.RL.M.3.1: The student can answer questions about basic elements in a narrative text (e.g., characters' names, settings, and specific events.)
- Michigan Range of Complexity EE.RL.L.3.1: The student can answer simple who, what or where questions about a narrative text.
- EE.RL.3.2 Associate details with events in stories from diverse cultures.
  Michigan Range of Complexity: Assessed at the state level under EE.RL.3.1.
- EE.RL.3.3 Identify the feelings of characters in a story.
  Michigan Range of Complexity: Assessed at the state level under EE.RL.3.1.

Craft and Structure.

- EE.RL.3.4 Determine words and phrases that complete literal sentences in a text.
  Michigan Range of Complexity: Assessed at the state level under EE.L.3.4 and EE.L.3.5.
- EE.RL.3.5 Determine the beginning, middle, and end of a familiar story with a logical order.
- Michigan Range of Complexity EE.RL.H.3.5: The student can identify events that occur at the beginning, middle and/or end of a multiple-paragraph narrative text.
- Michigan Range of Complexity EE.RL.M.3.5: The student can identify when a simple story element

Common Core Essential Elements ELA (2015) 4th Grade

Reading (Literature)
Key Ideas and Details.

- EE.RL.4.1 Use details from the text to recount what the text says.
- Michigan Range of Complexity EE.RL.H.4.1: The student can use details to answer questions about narrative text (characters, setting, plot, sequence, etc.).
- Michigan Range of Complexity EE.RL.M.4.1: The student can answer questions about basic elements in a narrative text (e.g., characters' names,
  settings, and specific events).
- Michigan Range of Complexity EE.RL.L.4.1: The student can answer simple who, what, where or when questions about narrative text.
- EE.RL.4.2 Identify the theme or central idea of a familiar story, drama or poem.
- Michigan Range of Complexity EE.RL.H.4.2: The student can identify the theme or main idea of a multi-paragraph narrative text.
- Michigan Range of Complexity EE.RL.M.4.2: The student can identify the main idea of a one-paragraph narrative text.
- Michigan Range of Complexity EE.RL.L.4.2: The student can identify the main idea of a one- to two- sentence narrative text.
- EE.RL.4.3 Use details from the text to describe characters in the story.
  Michigan Range of Complexity: Assessed at the state level under EE.RL.4.1.

Craft and Structure.

- EE.RL.4.4 Determine the meaning of words in a text.

Common Core Essential Elements ELA (2015) 5th Grade

Reading (Literature)
Key Ideas and Details.

- EE.RL.5.1 Identify words in the text to answer a question about explicit information.
- Michigan Range of Complexity EE.RL.H.5.1: The student can use details, including (but not limited to) specific words from the text, to answer questions about narrative text
- Michigan Range of Complexity EE.RL.M.5.1: The student can answer questions about basic elements in a narrative text (e.g., characters' names, settings, and specific events).
- Michigan Range of Complexity EE.RL.L.5.1: The student can answer simple who, what or where or when questions about narrative text.
- EE.RL.5.2 Identify the central idea or theme of a story, drama or poem.
- Michigan Range of Complexity EE.RL.H.5.2: The student can identify the theme or main idea of a multi-paragraph narrative text.
- Michigan Range of Complexity EE.RL.M.5.2: The student can identify the main idea of a one-paragraph narrative text.
- Michigan Range of Complexity EE.RL.L.5.2: The student can identify the main idea of a one- to two-sentence narrative text.
- EE.RL.5.3 Compare two characters in a familiar story.
- Michigan Range of Complexity EE.RL.H.5.3: The student can compare and contrast two characters in a narrative text.
- Michigan Range of Complexity EE.RL.M.5.3: The student can identify what is the same between two characters within a paragraph of a narrative text.
- Michigan Range of Complexity EE.RL.L.5.3: The student can identify what is the same between two

occurred (e.g., at the beginning/end of a narrative, what happened first/last, etc.) in a one-paragraph narrative text.
- Michigan Range of Complexity EE.RL.L.3.5: The student can demonstrate understanding of sequence in a familiar routine or simple narrative text.
- EE.RL.3.6 Identify personal point of view about a text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Integration of Knowledge and Ideas.

- EE.RL.3.7 Identify parts of illustrations or tactual information that depict a particular setting, or event.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RL.3.8 (Not applicable to literature)
- EE.RL.3.9 Identify common elements in two stories in a series.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Reading and Level of Text Complexity.

- EE.RL.3.10 Demonstrate understanding while actively engaged in shared reading of stories, dramas, and poetry.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Michigan Range of Complexity: Assessed at the state level under EE.L.4.4 and EE.L.4.5.
- EE.RL.4.5 Identify elements that are characteristic of stories.
- Michigan Range of Complexity EE.RL.H.4.5: The student can identify the elements that comprise stories (e.g., characters, settings, plots, themes, point of view, etc.).
- Michigan Range of Complexity EE.RL.M.4.5: The student can identify simple story elements in narrative text (e.g., characters, setting, story sequence).
- Michigan Range of Complexity EE.RL.L.4.5: The student can differentiate between two types of narrative text genre (e.g., stories, poetry, songs).
- EE.RL.4.6 Identify the narrator of a story.
- Michigan Range of Complexity EE.RL.H.4.6: The student can identify the narrator of a story.
- Michigan Range of Complexity EE.RL.M.4.6: The student can identify who is telling a story when given choices.
- Michigan Range of Complexity EE.RL.L.4.6: The student can identify the speaker in a one- to two-sentence narrative text with dialogue.

Integration of Knowledge and Ideas.

- EE.RL.4.7 Make connections between the text representation of a story and a visual, tactual, or oral version of a story.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RL.4.8 (Not applicable to literature)
- EE.RL.4.9 Compare characters, settings or events in stories, myths or texts from different cultures.
- Michigan Range of Complexity EE.RL.H.4.9: The student can identify what is similar between two characters, two settings, or two events in a narrative text.
- Michigan Range of Complexity EE.RL.M.4.9: The student can identify what is the same between two characters, two settings, or two events within a paragraph of a narrative text.
- Michigan Range of Complexity EE.RL.L.4.9: The student can identify what is the same (e.g., between two characters, or between two settings).

Craft and Structure.

- EE.RL.5.4 Determine the intended meaning of multi-meaning words in a text.
  Michigan Range of Complexity: Assessed at the state level under EE.L.5.4 and EE.L.5.5.
- EE.RL.5.5 Identify a story element that undergoes change from beginning to end.
- Michigan Range of Complexity EE.RL.H.5.5: The student can identify an element (e.g., character, setting, or event) of a narrative text that changes from beginning to end.
- Michigan Range of Complexity EE.RL.M.5.5: The student can use pictures or phrases to show what happens at the beginning, middle, and end of a narrative text.
- Michigan Range of Complexity EE.RL.L.5.5: The student can use pictures and/or words to indicate what happened first or last in a short narrative text.
- EE.RL.5.6 Determine the point of view of the narrator.
- Michigan Range of Complexity EE.RL.H.5.6: The student can identify the narrator's/speaker's point of view (i.e., what he/she thinks or feels about the topic of the text/speech).
- Michigan Range of Complexity EE.RL.M.5.6: The student can identify what the narrator/speaker believes during a story/speech.
- Michigan Range of Complexity EE.RL.L.5.6: The student can identify who is telling the story/speaking when given two choices.

Integration of Knowledge and Ideas.

- EE.RL.5.7 Identify illustrations, tactual or multimedia elements that add to understanding of a text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RL.5.9 Compare stories, myths, or texts with similar topics or themes.
  Michigan Range of Complexity: See RL.5.3 where comparative skills are assessed, just within the same text.

Range of Reading and Level of Text Complexity.

- EE.RL.5.10 Demonstrate understanding of text while engaged in individual or group reading of stories, dramas, and poems

Range of Reading and Level of Text Complexity.

- EE.RL.4.10 Demonstrate understanding of text while actively engaging in shared reading of stories, dramas, and poetry.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Reading (Informational Text)

Key Ideas and Details.

- EE.RI.3.1 Answer who and what questions to demonstrate understanding of details in a text.
  Michigan Range of Complexity: Assessed at state level under EE.RI.3.2.
- EE.RI.3.2 Identify details in a text.
- Michigan Range of Complexity EE.RI.H.3.2: The student can answer questions about details (e.g., individuals, events, locations, ideas and/or sequence of events) in an informational text.
- Michigan Range of Complexity EE.RI.M.3.2: The student can answer questions about basic details (i.e., individuals, locations, and events) in an informational text.
- Michigan Range of Complexity EE.RI.L.3.2: The student can identify one detail (fact, event, idea) in a short informational text.
- EE.RI.3.3 Order two events from a text as "first" and "next."
  Michigan Range of Complexity: Assessed at state level under EE.RI.3.2.

Craft and Structure.

- EE.RI.3.4 Determine words and phrases that complete literal sentences in a text.
  Michigan Range of Complexity: Assessed at state level under EE.L.3.4 and EE.L.3.5.
- EE.RI.3.5 With guidance and support, use text features including headings and key words to locate information in a text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RI.3.6 Identify personal point of view about a text.
  Michigan Range of Complexity: Not measured at

Reading (Informational Text)

Key Ideas and Details.

- EE.RI.4.1 Identify explicit details in an informational text.
- Michigan Range of Complexity EE.RI.H.4.1: The student can answer questions about details (e.g., individuals, events, locations, and text features) in informational text.
- Michigan Range of Complexity EE.RI.M.4.1: The student can identify basic details (e.g., individuals, locations, events, and text features) in a one paragraph informational text.
- Michigan Range of Complexity EE.RI.L.4.1: The student can answer simple who, what, where, or when questions about short informational texts.
- EE.RI.4.2 Identify the main idea of a text when it is explicitly stated.
- Michigan Range of Complexity EE.RI.H.4.2: The student can identify the main idea of a multi-paragraph informational text when it is explicitly stated.
- Michigan Range of Complexity EE.RI.M.4.2: The student can identify the main idea of a one-paragraph informational text when it is explicitly stated.
- Michigan Range of Complexity EE.RI.L.4.2: The student can identify the topic of a one- to two-sentence informational text.
- EE.RI.4.3 Identify an explicit detail that is related to an individual, event, or idea in a historical, scientific, or technical text.
  Michigan Range of Complexity: Assessed at state level under EE.RI.4.1.

Craft and Structure.

- EE.RI.4.4 Determine meaning of words in text.
  Michigan Range of Complexity: Assessed at

Reading (Informational Text)

Key Ideas and Details.

- EE.RI.5.1 Identify words in the text to answer a question about explicit information.
- Michigan Range of Complexity EE.RI.H.5.1: The student can use details from informational text to answer questions about the text.
- Michigan Range of Complexity EE.RI.M.5.1: The student can use details in an informational text to answer basic questions about the text.
- Michigan Range of Complexity EE.RI.L.5.1: The student can answer simple who, what, where, or when questions about short informational texts.
- EE.RI.5.2 Identify the main idea of a text when it is not explicitly stated.
- Michigan Range of Complexity EE.RI.H.5.2: The student can identify the main idea of a multi-paragraph informational text in which the main idea is not explicitly stated.
- Michigan Range of Complexity EE.RI.M.5.2: The student can identify the main idea of a one-paragraph informational text.
- Michigan Range of Complexity EE.RI.L.5.2: The student can identify the topic of a one- to two-sentence informational text.
- EE.RI.5.3 Compare two individuals, events, or ideas in a text.
- Michigan Range of Complexity EE.RI.H.5.3: The student can identify similarities between individuals, events, or ideas in informational text.
- Michigan Range of Complexity EE.RI.M.5.3: The student can identify what is the same between two individuals, two locations, or two events within a paragraph of an informational text.
- Michigan Range of Complexity EE.RI.L.5.3: The student can identify what is the same between two individuals or two locations with a one- to two-sentence informational text.

state level, range of complexity determined at classroom level.

Integration of Knowledge and Ideas.

- EE.RI.3.7 Use information gained from visual elements and words in the text to answer explicit who and what questions.
- Michigan Range of Complexity EE.RI.H.3.7: The student can use more complex visuals (e.g., pictures, illustrations, posters, schedules, photographs, etc.) to demonstrate understanding of text/information.
- Michigan Range of Complexity EE.RI.M.3.7: The student can use visual representations of information (e.g., charts, posters, schedules, pictures, etc.) to answer "who" and/or "what" questions.
- Michigan Range of Complexity EE.RI.L.3.7: The student can use visual representations of information (e.g., charts, posters, schedules, pictures, etc.) to identify a single detail or idea.
- EE.RI.3.8 Identify two related points the author makes in an informational text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RI.3.9 Identify similarities between two texts on the same topic.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Reading and Level of Text Complexity.

- EE.RI.3.10 Demonstrate understanding of text while actively engaged in shared reading of history/social studies, science, and technical texts.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

state level under EE.L.4.4 and EE.L.4.5.

- EE.RI.4.5 Identify elements that are characteristic of informational texts.
- Michigan Range of Complexity EE.RI.H.4.5: The student can identify elements of informational text (e.g., titles, headings, subheadings, bulleted lists, numbered stems, bold or italicized text, pictures, tables, illustrations, chronology of events, based on fact, cause/effect, etc.).
- Michigan Range of Complexity EE.RI.M.4.5: The student can identify the title, headings or illustrations contained within an informational text
- Michigan Range of Complexity EE.RI.L.4.5: The student can identify the title of a passage.
- EE.RI.4.6 Compare own experience with a written account of the experience.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Integration of Knowledge and Ideas.

- EE.RI.4.7 Answer questions about information presented visually, orally, or quantitatively.
- Michigan Range of Complexity EE.RI.H.4.7: The student can use information presented visually and/or orally (charts, graphs, diagrams, timelines, photographs, illustrations, posters, recipes, etc.) to answer questions.
- Michigan Range of Complexity EE.RI.M.4.7: The student can use visual representations (pictures, charts, diagrams, posters, recipes, calendars, etc.) to find information.
- Michigan Range of Complexity EE.RI.L.4.7: The student can identify simple visuals (such as charts or illustrations) that go with a particular informational passage.
- EE.RI.4.8 Identify one or more reasons supporting a specific point in an informational text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RI.4.9 Compare details presented in two texts on the same topic.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Craft and Structure.

- EE.RI.5.4 Determine the meanings of domain-specific words and phrases.
  Michigan Range of Complexity: Assessed at state level under EE.L.5.4 and EE.L.5.5.
- EE.RI.5.5 Determine if a text tells about events, gives directions, or provides information on a topic.
- Michigan Range of Complexity EE.RI.H.5.5: The student can determine the purpose of an informational text (e.g., to tell about events, provide information, give directions, etc.).
- Michigan Range of Complexity EE.RI.M.5.5: The student can identify a variety of informational texts and/or associate a text with its purpose (e.g., dictionaries define words, newspapers provide information on events, calendars provide dates, schedules provide times, etc.).
- Michigan Range of Complexity EE.RI.L.5.5: The student can identify different types of informational texts (e.g., recipes, books, posters, calendars, etc.).
- EE.RI.5.6 Compare two books on the same topic.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Integration of Knowledge and Ideas.

- EE.RI.5.7 Locate information in print or digital sources.
- Michigan Range of Complexity EE.RI.H.5.7: The student can use text features (bold, italics, and underlined text; headings; captions; graphics; illustrations; text boxes; tables, glossaries, etc.) to locate information within informational text and/or answer questions about the text.
- Michigan Range of Complexity EE.RI.M.5.7: The student can use text features (illustrations, pictures, graphics, labels, lists, charts, graphs, tables, etc.) to answer questions about informational text.
- Michigan Range of Complexity EE.RI.L.5.7: The student can identify a picture or title that goes with a particular informational text (e.g., communication system, poster, recipe, etc.).
- EE.RI.5.8 Identify the relationship between a specific point and supporting reasons in an informational text.
  Michigan Range of Complexity: Not measured at

Range of Reading and Level of Text Complexity.

- EE.RI.4.10 Demonstrate understanding of text while actively engaged in shared reading of history/social studies, science, and technical texts.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- classroom level.
- EE.RI.5.9 Compare and contrast details gained from two texts on the same topic.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RI.5.10 Demonstrate understanding of text while actively engaged in shared reading of history/social studies, science, and technical texts.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Reading and Level of Text Complexity.

- EERI.5.10. **This Informational Text Essential Element references all elements above.

Reading (Foundational Skills)

Fluency

- EE.RF.3.3 Use letter-sound knowledge to read words.
  a. In context, demonstrate basic knowledge of letter-sound correspondences.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RF.3.3.b. With models and supports, decode single-syllable words with common spelling patterns (consonant-vowelconsonant [CVC] or high-frequency rimes).
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RF.3.3.c.Not applicable
- EE.RF.3.3.d. Recognize 40 or more written words.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RF.3.4 Read words in text.
  a. Read familiar text comprised of known words.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RF.3.4.b. Not applicable
- EE.RF.3.4.c. Use context to determine missing words in familiar texts.

Reading (Foundational Skills)

Fluency.

- EE.RF.4.3 Use letter-sound knowledge to read words.
  a. Apply letter-sound knowledge to use first letter plus context to identify unfamiliar words.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RF.4.3.b. Decode single-syllable words with common spelling patterns (consonant-vowel-consonant [CVC] or high - frequency rimes).
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RF.4.4 Read words in text.
  A. Read text comprised of familiar words with accuracy and understanding.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RF.4.4.b. Not applicable
- EE.RF.4.4.c. Use letter knowledge and context to support word recognition when reading.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Reading (Foundational Skills)

Phonics and Word Recognition.

- EE.RF.5.3 Use letter-sound knowledge to read words.
  a. Read common sight words and decode single syllable words.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EERF.5.3.b. Read more than 20 common high-frequency words

Fluency.

- EE.RF.5.4 Read words in text.
  a. Read text comprised of familiar words with accuracy and understanding.
- EE.RF.5.4.b. Not applicable
- EE.RF.5.4.c. Use context to confirm or self-correct word recognition when reading.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Writing
Text Types and Purposes.

- EE.W.3.1 Write opinions about topics or text.
  A. Select a text and write an opinion about it.
- Michigan Range of Complexity EE.W.H.3.1.a: The student can write/dictate/draw a brief piece describing his/her opinion on a given topic or text.
- Michigan Range of Complexity EE.W.M.3.1.a: The student can select two words/phrases that express an opinion about a given topic or text.
- Michigan Range of Complexity EE.W.L.3.1.a: The student can select one word or labeled picture that expresses an opinion about a given topic or text.
- EE.W.3.1.b. Write one reason to support an opinion about a text.
- Michigan Range of Complexity EE.W.H.3.1.b: The student can identify reasons to support an opinion about a given topic or text. (The opinion may belong to the student, character or author of a given text.).
- Michigan Range of Complexity EE.W.M.3.1.b: The student can identify two words/phrases that express an opinion of a character in a given text.
- Michigan Range of Complexity EE.W.L.3.1.b: The student can identify an opinion of a character in a short narrative text.
- EE.W.3.1.c. Not applicable
- EE.W.3.1.d. Not applicable
- EE.W.3.2 Write to share information supported by details.
  A. Select a topic and write about it including one fact or detail.
- Michigan Range of Complexity EE.W.H.3.2.a: The student can write/dictate/draw a brief piece about a given topic using facts and details.
- Michigan Range of Complexity EE.W.M.3.2.a: The student can identify facts or details about a given topic or category.
- Michigan Range of Complexity EE.W.L.3.2.a: The student can select one fact or detail that is related to a given topic or list of details.
- EE.W.3.2.b. Not applicable
- EE.W.3.2.c. Not applicable
- EE.W.3.2.d. Not applicable

Writing
Text Types and Purposes.

- EE.W.4.1 Write opinions about topics or text.
  A. Select a topic or text and write an opinion about it.
- Michigan Range of Complexity EE.W.H.4.1.a: The student can write/dictate/draw a brief piece describing his/her opinion on a given topic or text.
- Michigan Range of Complexity EE.W.M.4.1.a: The student can write or dictate an opinion about a given topic or text.
- Michigan Range of Complexity EE.W.L.4.1.a: The student can select one word or labeled picture that expresses an opinion about a given topic or text.
- EE.W.4.1.b. List reasons to support the opinion.
- Michigan Range of Complexity EE.W.H.4.1.b: The student can identify or list reasons to support an opinion about a given topic or text. (The opinion may belong to the student or the writer of a given text.)
- Michigan Range of Complexity EE.W.M.4.1.b: The student can identify an opinion about a topic or short text. (The opinion may belong to the student, writer or a character).
- Michigan Range of Complexity EE.W.L.4.1.b: The student can select a labeled picture to identify an opinion given by an author or character about a given topic or text.
- EE.W.4.1.c-d. Not applicable
- EE.W.4.2 Write to share information supported by details.
  a. Select a topic and write about it including related visual, tactual, or multimedia information as appropriate.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.4.2.b. List words, facts, or details related to the topic.
- Michigan Range of Complexity EE.W.H.4.2.b: The student can identify or list words, facts, or details that relate to a given topic.

Writing
Text Types and Purposes.

- EE.W.5.1 Write opinions about topics or text.
  a. Introduce a topic or text and state an opinion about it..
- EE.W.5.1.b. Provide reasons to support the opinion.
- Michigan Range of Complexity EE.W.H.5.1: The student can write/draw/dictate an opinion about a given topic or text and provide one reason to support it.
- Michigan Range of Complexity EE.W.M.5.1: The student can write/draw/dictate an opinion about a given topic or text.
- Michigan Range of Complexity EE.W.L.5.1: The student can select one word or labeled picture that expresses an opinion about a given topic or text.
- EE.W.5.1.c. N/A
- EEW.5.1.d. N/A
- EE.W.5.2 Write to share information supported by details.
  a. Introduce a topic and write to convey information about it including visual, tactual, or multimedia information as appropriate.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.5.2.b. Provide facts, details, or other information related to the topic.
- Michigan Range of Complexity EE.W.H.5.2.b: The student can identify/organize/list facts, details, or other information that relate to a given topic.
- Michigan Range of Complexity EE.W.M.5.2.b: The student can select words/phrases that relate to a given topic.
- Michigan Range of Complexity EE.W.L.5.2.b: The student can select labeled pictures that relate to a given topic.
- EE.W.5.2.c. N/A
- EE.W.5.2.d. N/A
- EE.W.5.2.e. N/A
- EE.W.5.3 Write about events or personal experiences.

- EE.W.3.3 Write about events or personal experiences.
  a. Select an event or personal experience and write about it including the names of people involved.
- Michigan Range of Complexity EE.W.H.3.3.a: The student can write/dictate/draw a personal narrative about an event or personal experience.
- Michigan Range of Complexity EE.W.M.3.3.a: The student can identify two details from an event or personal experience.
- Michigan Range of Complexity EE.W.L.3.3.a: The student can select a word or picture to share information about an event or personal experience.
- EE.W.3.3.b. Not applicable
- EE.W.3.3.c. Not applicable
- EE.W.3.3.d. Not applicable

Production and Distribution of Writing.

- EE.W.3.4 With guidance and support, produce writing that expresses more than one idea.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.3.5 With guidance and support from adults and peers, revise own writing.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.3.6 With guidance and support from adults, use technology to produce writing while interacting and collaborating with others.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Research to Build and Present Knowledge.

- EE.W.3.7 Identify information about a topic for a research project.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.3.8 Sort information on a topic or personal experience into two provided categories and write about each one.
- Michigan Range of Complexity EE.W.H.3.8: The student can sort information into two categories in preparation for a writing project.

- Michigan Range of Complexity EE.W.M.4.2.b: The student can identify or select words that describe familiar people, places, things, professions, or events.
- Michigan Range of Complexity EE.W.L.4.2.b: The student can identify and/or name familiar people, places, professions, events, and objects.
- EE.W.4.2.c. Not applicable
- EE.W.4.2.d. Not applicable
- EE.W.4.2.e. Not applicable
- EE.W.4.3 Write about events or personal experiences.
  a. Write about a personal experience including two events in sequence.
- Michigan Range of Complexity EE.W.H.4.3.a: The student can write/dictate/draw a personal narrative about an event or personal experience, using two details/events in sequence.
- Michigan Range of Complexity EE.W.M.4.3.a: The student can order two details/events while preparing to write/communicate about an event or personal experience.
- Michigan Range of Complexity EE.W.L.4.3.a: The student can indicate when something happened (before or after) while preparing to write/communicate about an event or personal experience.
- EE.W.4.3.b. List words that describe an event or personal experience to use when writing about it.
- Michigan Range of Complexity EE.W.H.4.3.b: The student can identify or list three words that describe an event or personal experience while preparing to communicate about it.
- Michigan Range of Complexity EE.W.M.4.3.b: The student can identify or list two words that describe an event or personal experience while preparing to communicate about it.
- Michigan Range of Complexity EE.W.L.4.3.b: The student can select one word or phrase to describe an event or personal experience while preparing to communicate about it.
- EE.W.4.3.c. Not applicable
- EE.W.4.3.d. Not applicable
- EE.W.4.3.e. Not applicable

Production and Distribution of Writing.

- EE.W.5.3 Write about an experience or event including three or more events in sequence.
- Michigan Range of Complexity EE.W.H.5.3.a: The student can write/draw/dictate about an event or personal experience, using two or more actions/happenings in sequence.
- Michigan Range of Complexity EE.W.M.5.3.a: The student can order two details/happenings while preparing to write/communicate about an event or personal experience.
- Michigan Range of Complexity EE.W.L.5.3.a: The student can indicate when something happened (before or after) while preparing to write/communicate about an event or personal experience.
- EE.W.5.3.b. N/A
- EE.W.5.3.c. N/A
- EE.W.5.3.d. N/A
- EE.W.5.3.e. N/A

Production and Distribution of Writing.

- EE.W.5.4 Produce writing that is appropriate for an explicitly stated task or purpose.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.5.5 With guidance and support from adults and peers, plan before writing and revise own writing.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.5.6 With guidance and support from adults, use technology, including the Internet, to produce writing while interacting and collaborating with others.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Research to Build and Present Knowledge.

- EE.W.5.7 Conduct short research projects using two or more sources.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.5.8 Gather and sort relevant information on a topic from print or digital sources into given

- Michigan Range of Complexity EE.W.M.3.8: The student can choose two pieces of information that are related to a given topic in preparation for a class writing project.
- Michigan Range of Complexity EE.W.L.3.8: The student can contribute to class brainstorming sessions to generate ideas for group writing projects.
- EE.W.3.9 (Begins in grade 4)
- EE.W.3.10 Write routinely for a variety of tasks, purposes, and audiences.

Range of Writing.

- EEW.3.10. Write routinely for a variety of tasks, purposes, and audiences.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.W.4.4 Produce writing that expresses more than one idea.
- Michigan Range of Complexity EE.W.H.4.4: The student can use at least three ideas, details, or examples when writing/dictating/drawing about a given topic.
- Michigan Range of Complexity EE.W.M.4.4: The student can contribute two ideas during a brainstorming session while preparing for a writing assignment.
- Michigan Range of Complexity EE.W.L.4.4: The student can contribute one idea during a brainstorming session while preparing for a writing assignment.
- EE.W.4.5 With guidance and support from adults and peers, plan before writing and revise own writing.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.4.6 With guidance and support from adults, use technology, including the Internet, to produce writing while interacting and collaborating with others.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Research to Build and Present Knowledge.

- EE.W.4.7 Gather information about a topic from two or more sources for a research project.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.4.8 Recall and sort information from personal experiences or a topic into given categories.
- Michigan Range of Complexity EE.W.H.4.8: The student can sort information into two categories in preparation for a writing project
- Michigan Range of Complexity EE.W.M.4.8: The student can choose two pieces of information that are related to a given topic in preparation for a writing project.
- Michigan Range of Complexity EE.W.L.4.8: The student can choose one piece of information that is related to a given topic in preparation for a writing project.

categories.

- Michigan Range of Complexity EE.W.H.5.8: The student can sort information into two categories in preparation for a writing project.
- Michigan Range of Complexity EE.W.M.5.8: The student can choose two pieces of information that are related to a given topic in preparation for a writing project.
- Michigan Range of Complexity EE.W.L.5.8: The student can choose one piece of information that is related to a given topic in preparation for a writing project.
- EE.W.5.9 Use information from literary and informational text to support writing.
  a. Apply Essential Elements of Grade 5 Reading Standards to literature (e.g., "Compare and contrast two characters in the story.").
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.5.9.b. Apply Essential Elements of Grade 5 Reading Standards to informational texts (e.g., "Use specific reasons and evidence for supporting specific points in an informational text.").
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Writing.

- EE.W.5.10. Write routinely for a variety of tasks, purposes, and audiences.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.W.4.8 Recall information from literary and informational text to support writing.
  A. Apply Essential Elements of Grade 4 Reading Standards to literature (e.g., "Use details from text to describe a character in a story.").
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.4.9.b. Apply Essential Elements of Grade 4 Reading Standards to informational texts (e.g., "Use reasons and evidence supporting point in an informational text.").
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Writing.

- EE.W.4.10. Write routinely for a variety of tasks, purposes, and audiences.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Speaking and Listening

Comprehension and Collaboration.

- EE.SL.3.1 Engage in collaborative discussions.
  a. Engage in collaborative interactions about texts.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.3.1.b. Listen to others' ideas before responding.br>Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.3.1.c. Indicate confusion or lack of understanding about information presented.br>Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.3.1.d. Express ideas clearly.br>Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.3.2 Identify details in a text read aloud or information presented orally or through other media.
- Michigan Range of Complexity EE.SL.H.3.2: The student can respond to questions about details

Speaking and Listening

Comprehension and Collaboration.

- EE.SL.4.1 Engage in collaborative discussions.
  a. Contribute ideas from prior knowledge of a text during discussions about the same text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.4.1.b. With guidance and support, carry out assigned role in a discussion.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.4.1.c. Answer specific questions related to information in a discussion.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.4.1.d. Identify the key ideas in a discussion.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Speaking and Listening

Comprehension and Collaboration.

- EE.SL.5.1 Engage in collaborative discussions.
  a. Come to discussion prepared to share information.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.5.1.b. Carry out assigned role in a discussion.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.5.1.c. Ask questions related to information in a discussion.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.5.1.d. Make comments that contribute to the discussion and link to the remarks of others.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

presented orally or through other media.

- Michigan Range of Complexity EE.SL.M.3.2: The student can respond to basic questions about details presented orally or through other media.
- Michigan Range of Complexity EE.SL.L.3.2: The student can select a detail from a text presented orally or through other media.
- EE.SL.3.3 Ask or answer questions about the details provided by the speaker.
  Michigan Range of Complexity: Assessed at state level under EE.SL.3.2.

Presentation of Knowledge and Ideas.

- EE.SL.3.4 Recount a personal experience, story, or topic including details.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.3.5 Create a multimedia presentation of a story or poem.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.3.6 Combine words for effective communication to clarify thoughts, feelings, and ideas in various contexts.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.SL.4.2 Ask and answer questions about details from a text read aloud or information presented orally or through other media.
- Michigan Range of Complexity EE.SL.H.4.2: The student can answer questions about information presented orally or through other media, including (but not limited to) points made by the presenter.
- Michigan Range of Complexity EE.SL.M.4.2: The student can answer basic questions about details presented orally or through other media.
- Michigan Range of Complexity EE.SL.L.4.2: The student can select a detail from information presented orally or through other media.
- EE.SL.4.3 Identify a point that the speaker makes.
  Michigan Range of Complexity: Assessed at state level under EE.SL.4.2.

Presentation of Knowledge and Ideas

- EE.SL.4.4 Retell a story or personal experience or recount a topic with supporting details.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.4.5 Add audio recordings or visuals to a presentation about a personally relevant topic.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.4.6 Differentiate between communication partners and contexts that call for formal and informal communication.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.SL.5.2 Identify the explicitly stated main idea of a text presented orally or through other media.
- Michigan Range of Complexity EE.SL.H.5.2: The student can identify/state the main idea of a text presented orally or through other media and/or identify a supporting reason for a specific point.
- Michigan Range of Complexity EE.SL.M.5.2: The student can answer questions about information presented orally or through other media, including (but not limited to) the main idea of the presentation.
- Michigan Range of Complexity EE.SL.L.5.2: The student can select one or more details from information presented orally or through other media.
- EE.SL.5.3 Identify the reasons and evidence supporting a specific point.
  Michigan Range of Complexity: Assessed at state level under EE.SL.5.2.

Presentation of Knowledge and Ideas.

- EE.SL.5.4 Report on a familiar topic or text or present an opinion including related facts.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.5.5 Select or create audio recordings and visual/tactile displays to enhance a presentation.
- EE.SL.5.6 Differentiate between contexts that require formal and informal communication.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Vocabulary Acquisition and Use.

- EE.L.5.4. Determine or clarify the meaning of vocabulary drawn from reading and content areas. A. Use context as a clue to determine the meaning of words.
- EE.L.5.4.b. Identify the temporal meaning of words when common affixes (-ing, -ed, -s, -es) are added to common nouns and verbs.
- EE.L.5.4.c. N/A
- EE.L.5.5. Demonstrate understanding of word relationships. A. Use simple, common idioms (e.g., You bet!, It's a deal., We're cool.).
- EE.L.5.5.b. N/A
- EE.L.5.5.c. N/A

Language
Conventions of Standard English.

- EE.L.3.1 Demonstrate standard English grammar and usage when communicating.
  a. Uses noun + verb, noun + adjective, and subject + verb + object combinations in communication.
- EE.L.3.1.b. Use regular plural nouns in communication.
- EE.L.3.1.c. Not applicable
- EE.L.3.1.d. Use present and past tense verbs.
- EE.L.3.1.e. Not applicable
- EE.L.3.1.f. Not applicable
- EE.L.3.1.g. Use common adjectives.
- EE.L.3.1.h. Not applicable (see EE.L.3.1.a)
- EE.L.3.1.i. Ask simple questions.
- Michigan Range of Complexity EE.L.H.3.1: The student can identify the correct use of grammatical structures (e.g., singular/plural nouns, appropriate pronouns, present/past tense verbs) when communicating.
- Michigan Range of Complexity EE.L.M.3.1: The student can identify/demonstrate the correct grammatical use of nouns and/or pronouns when presented in context.
- Michigan Range of Complexity EE.L.L.3.1: The student can identify the correct grammatical use of nouns when presented in context.
- EE.L.3.2 Demonstrate understanding of conventions of standard English.
  A. Capitalize the first letter of familiar names.
- EE.L.3.2.b. During shared writing, indicate the need to add a period at the end of a sentence.
- Michigan Range of Complexity EE.L.H.3.2: The student can identify that the first word in a sentence should be capitalized and/or choose the correct ending punctuation (period, question mark, or exclamation point).
- Michigan Range of Complexity EE.L.M.3.2: The student can identify correct capitalization and/or end punctuation (period and question mark).
- Michigan Range of Complexity EE.L.L.3.2: The student can differentiate between a word and a simple sentence.
- EE.L.3.2.c. Not applicable
- EE.L.3.2.d. Not applicable

Language
Conventions of Standard English.

- EE.L.4.1. Demonstrate standard English grammar and usage when communicating.
  a. Use possessive pronouns.
- EE.L.4.1.b. Combine common nouns with verbs, nouns, or pronouns in communication.
- EE.L.4.1.c. Not applicable
- EE.L.4.1.d. Use comparative and superlative adjectives to describe people or objects.
- EE.L.4.1.e. Use common prepositions (e.g., to, from, in, out, on, off, by, with).
- EE.L.4.1.f. Combine three or more words in communication.
- Michigan Range of Complexity EE.L.H.4.1: The student can identify the correct usage of grammatical structures (e.g., singular/plural nouns, appropriate pronouns, present/past tense verbs) when communicating.
- Michigan Range of Complexity EE.L.M.4.1: The student can identify correct usage of simple grammatical structures (e.g., singular/plural nouns, appropriate pronouns) when communicating.
- Michigan Range of Complexity EE.L.L.4.1: The student can identify correct usage of simple grammatical structures (e.g., singular/plural nouns) when communicating.
- EE.L.4.1.g. Not applicable
- EE.L.4.2 Demonstrate understanding of conventions of standard English.
  a. Capitalize the first word in a sentence.
- Michigan Range of Complexity EE.L.H.4.2.a: The student can identify which word/words should be capitalized in a sentence (first words and proper nouns) and choose the correct ending punctuation (period, question mark, or exclamation point).
- Michigan Range of Complexity EE.L.M.4.2.a: The student can identify capital letters and basic punctuation (periods and question marks).
- Michigan Range of Complexity EE.L.L.4.2.a: The student can differentiate if a sentence is a statement or a question.
- EE.L.4.2.b. Not applicable

- EE.L.5.3. Use domain-specific words (e.g., it, then, next).

Language
Conventions of Standard English.

- EE.L.5.1 Demonstrate standard English grammar and usage when communicating.
  a. N/A
- EE.L.5.1.b. Form and use the past tense of frequently occurring irregular verbs (e.g., went, sat, ate, told).
- EE.L.5.1.c. N/A
- EE.L.5.1.d.
- EE.L.5.1.e. Use frequently occurring conjunctions: and, but, or, for, because.
- Michigan Range of Complexity EE.L.H.5.1: The student can identify the correct usage of grammatical structures, including (but not limited to) frequently occurring past tense irregular verbs (e.g., went, sat, ate, told) and/or conjunctions (and, but, or, for, because).
- Michigan Range of Complexity EE.L.M.5.1: The student can identify correct usage of simple grammatical structures (e.g., singular/plural nouns, appropriate pronouns, verbs) when communicating.
- Michigan Range of Complexity EE.L.L.5.1: The student can identify correct usage of singular/plural nouns when communicating.
- EE.L.5.2 Demonstrate understanding of conventions of standard English.
  a. Not applicable
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.5.2.b. N/A
- EE.L.5.2.c. N/A
- EE.L.5.2.e. Spell untaught word phonetically, drawing on letter-sound relationships and common spelling patterns.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Knowledge of Language.

- EE.L.5.3. Use language to achieve desired meaning when communicating.

- EE.L.3.2.c. Use resources as needed to spell common high-frequency words accurately.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.3.2.f. Use spelling patterns in familiar words with common spelling patterns to spell words with the same spelling pattern.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.3.2.g. Consult print in the environment to support reading and spelling.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Knowledge of Language.

- EE.L.3.3. Use language to achieve desired outcomes when communicating.
  a. Use language to make simple requests, comment, or share information.
- Michigan Range of Complexity EE.L.H.3.3: The student can identify the correct use of language to communicate effectively with a variety of audiences and for different purposes (e.g., asking and answering questions, sharing information and advocating for oneself).
- Michigan Range of Complexity EE.L.M.3.3: The student can use language to communicate effectively with a variety of audiences and for different purposes (e.g., asking questions, sharing information, responding to greetings, using polite expressions, using appropriate body language).
- Michigan Range of Complexity EE.L.L.3.3: The student can identify the correct use of language to communicate effectively with familiar people (e.g., sharing information, responding to greetings, being polite, and making simple requests, etc.).
- EE.L.3.3.b. Not applicable

Vocabulary Acquisition and Use.

- EE.L.3.4 Demonstrate knowledge of word meanings.
  a. With guidance and support, use sentence level context to determine what word is missing from a sentence read aloud.

- EE.L.4.2.c. Not applicable
- EE.L.4.2.d. Spell words phonetically, drawing on knowledge of lettersound relationships, and/or common spelling patterns.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Knowledge of Language.

- EEL.4.3. Use language to convey meaning when writing or communicating. a. Use language to express emotion.
- EEL.4.3.c. Communicate effectively with peers and adults.
- Michigan Range of Complexity: EE.L.H.4.3: The student can use language to express emotions and communicate effectively with peers and adults (e.g., asking and answering questions, initiating conversations, sharing information, and making simple requests).
- Michigan Range of Complexity: EE.L.M.4.3: The student can use language to communicate effectively with a variety of audiences and for different purposes (e.g., asking questions, sharing information, responding to greetings, using polite expressions).
- Michigan Range of Complexity: EE.L.L.4.3: The student can identify the correct use of language to communicate effectively with familiar people (e.g., sharing information, responding to greetings, being polite and making simple requests, etc.).

Vocabulary Acquisition and Use.

- EE.L.4.4 Demonstrate knowledge of word meanings.
  a. Use context as a clue to guide selection of a word that completes a sentence read aloud by an adult.
- Michigan Range of Complexity EE.L.H.4.4.a: The student can use context as a clue to guide selection of a word or words that completes a sentence.
- Michigan Range of Complexity EE.L.M.4.4.a: The student can use context cues to determine the meaning of familiar words paired with pictures and/or
  objects.

- EE.L.5.5.b. N/A
- Michigan Range of Complexity EE.L.H.5.3: The student can use language effectively to communicate with peers and adults (e.g., asking and answering questions, initiating conversations, sharing information, and making requests).
- Michigan Range of Complexity EE.L.M.5.3: The student can use language to communicate effectively with a variety of audiences and for different purposes (e.g., asking questions, sharing information, responding to greetings, using polite expressions, using appropriate body language).
- Michigan Range of Complexity EE.L.L.5.3: The student can identify the correct use of language to communicate effectively with familiar people (e.g., sharing information, responding to greetings, being polite, and making simple requests, etc.).

Vocabulary Acquisition and Use

- EE.L.5.4 Demonstrate knowledge of word meanings.
  a. Use sentence level context to determine which word is missing from a content area text.
- Michigan Range of Complexity EE.L.H.5.4.a: The student can use context as a clue to guide selection of a word or words that best complete a sentence.
- Michigan Range of Complexity EE.L.M.5.4.a: The student can use context clues to determine the meaning of familiar words paired with pictures and/or objects.
- Michigan Range of Complexity EE.L.L.5.4.a: The student can use cues to recognize the meaning of familiar words when paired with pictures.
- EE.L.5.4.b. Use frequently occurring root words (e.g., talk) and the words that result when word endings are added (e.g., talked, talking, talks).
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.5.4.c. Not applicable
- EE.L.5.5 Demonstrate understanding of word relationship and use.
  a. Use simple, common idioms (e.g., You bet!, It's a deal., We're cool.).
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.5.5.b. N/A

- Michigan Range of Complexity EE.L.H.3.4.a: The student can determine which word or words best complete a sentence. (The sentence may or may not be read aloud depending on student need.)
- Michigan Range of Complexity EE.L.M.3.4.a: The student can use semantic and/or syntactic cues to recognize familiar words paired with pictures and/or objects in context.
- Michigan Range of Complexity EE.L.L.3.4.a: The student can use simple visual and/or auditory cues to recognize familiar words.
- EE.L.3.4.b. With guidance and support, identify the temporal meaning of words when common affixes (-ing, -ed) are added to common verbs.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.3.4.c. Not applicable
- EE.L.3.4.d. Not applicable
- EE.L.3.5 Demonstrate understanding of word relationships and use.
  A. Determine the literal meaning of words and phrases in context.
- EE.L.3.5.b. Identify real-life connections between words and their use (e.g., happy: "I am happy.").
- EE.L.3.5.c. Identify words that describe personal emotional states.
- Michigan Range of Complexity EE.L.H.3.5: The student can identify the meaning of words in narrative and informational texts, including (but not limited to) words that describe emotions.
- Michigan Range of Complexity EE.L.M.3.5: The student can identify the meaning of words in one-paragraph narrative and informational texts, including (but not limited to) "feeling words."
- Michigan Range of Complexity EE.L.L.3.5: The student can identify the meaning of basic words paired with pictures in narrative or informational texts, including (but not limited to) "feeling words" (e.g. happy, sad, tired, mad, etc.).
- EE.L.3.6 Demonstrate understanding of words that signal spatial and temporal relationships (e.g., behind, under, after, soon, next, later).
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- Michigan Range of Complexity EE.L.H.4.4.a: The student can use cues to recognize the meaning of familiar words.
- EE.L.4.4.b. Use frequently occurring root words (e.g., talk) and the words that result when word endings are added (e.g.,talked, talking, talks).
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.4.4.c. Not applicable
- EE.L.4.5 Demonstrate understanding of word relationships and use.
  A. Not applicable
- EE.L.4.5.b. Use common idioms (e.g., no way, not a chance, you bet).
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.4.5.c. Demonstrate understanding of opposites.
- Michigan Range of Complexity EE.L.H.4.5.c: The student can identify the meaning of words in narrative and informational texts, including (but not limited to) opposites.
- Michigan Range of Complexity EE.L.M.4.5.c: The student can identify the opposite meaning of a given word that appears in a text.
- Michigan Range of Complexity EE.L.L.4.5.c: The student can identify the opposite meaning of frequently used words.
- EE.L.4.6 Use words acquired through conversations, being read to, and during shared reading activities including domain specific words.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.L.5.5.c: Demonstrate understanding of words that have similar meanings.
- Michigan Range of Complexity EE.L.H.5.5.c: The student can demonstrate understanding of the meaning of words used in context, including (but not limited to) synonyms.
- Michigan Range of Complexity EE.L.M.5.5.c: The student can identify a word with the same meaning as the target word that appears in a paragraph of text.
- Michigan Range of Complexity EE.L.L.5.5.c: The student can identify a word with the same meaning as a target word that appears in a one- to two-sentence text.
- EE.L.5.6 Use words acquired through conversations, being read to, and during shared reading activities including domainspecific words.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

MAISA

maisa Standards Overview

Common Core Essential Elements ELA (2015) 6th Grade

Reading (Literature)
Key Ideas and Details.

- EE.RL.6.1 Determine what a text says explicitly as well as what simple inferences must be drawn.
- Michigan Range of Complexity EE.RL.H.6.1: The student can answer questions about narrative text using explicit details and clues to make simple inferences.
- Michigan Range of Complexity EE.RL.M.6.1: The student can use details and clues to answer questions about basic narrative text elements (e.g., characters' actions/feelings/behaviors/motivations, major events, setting, story sequence, etc.).
- Michigan Range of Complexity EE.RL.L.6.1: The student can use details (pictures) to answer concrete who, what, where or when questions about short narrative text.
- EE.RL.6.2 Identify details in a text that are related to the theme or central idea.
- Michigan Range of Complexity EE.RL.H.6.2: The student can identify one or more details in narrative text that are related to the text's theme or main idea.
- Michigan Range of Complexity EE.RL.M.6.2: The student can identify detail that relates to the theme or main idea of a short narrative text when the theme or main idea is provided.
- Michigan Range of Complexity EE.RL.L.6.2: The student can identify the theme or main idea of a short narrative text.
- EE.RL.6.3 Can identify how a character responds to a challenge in a story.
- Michigan Range of Complexity EE.RL.H.6.3: The student can identify how a character responds to a challenge or problem in a narrative text.

Common Core Essential Elements ELA (2015) 7th Grade

Reading (Literature)
Key Ideas and Details.

- EE.RL.7.1 Analyze text to identify where information is explicitly stated and where inferences must be drawn.
- Michigan Range of Complexity: EE.RL.H.7.1: The student can answer questions about narrative text using explicit details and clues to make inferences.
- Michigan Range of Complexity: EE.RL.M.7.1: The student can use concrete details to answer simple questions and make prediction about short narrative text.
- Michigan Range of Complexity: EE.RL.L.7.1: The student can use concrete details to answer simple "who", "what", "where" or "when" questions about short narrative text.
- EE.RL.7.2 Identify events in a text that are related to the theme or central idea.
- Michigan Range of Complexity: EE.RL.H.7.2: The student can identify one or more details in narrative text that are related to the text's theme or main idea.
- Michigan Range of Complexity: EE.RL.M.7.2: The student can identify one detail that relates to the theme or main idea of a short narrative text (when the theme or main idea is provided).
- Michigan Range of Complexity: EE.RL.L.7.2: The student can identify the theme or main idea of a short narrative text.
- EE.RL.7.3 Determine how two or more story elements are related.
- Michigan Range of Complexity: EE.RL.H.7.3: The student can indicate how two or more story elements are related.

Common Core Essential Elements ELA (2015) 8th Grade

Reading (Literature)
Key Ideas and Details.

- EE.RL.8.1. Cite text to support inferences from stories and poems.
- Michigan Range of Complexity: EE.RL.H.8.1: The student can answer questions about narrative text using explicit details, and/or identify specific details that support an inference.
- Michigan Range of Complexity: EE.RL.M.8.1: The student can use details from narrative text to answer simple questions and make predictions.
- Michigan Range of Complexity: EE.RL.L.8.1: The student can use concrete details to answer simple "who", "what", "where" or "when" questions about short narrative text.
- EE.RL.8.2. Recount an event related to the theme or central idea, including details about character and setting.
- Michigan Range of Complexity: EE.RL.H.8.2: The student can relate details about events, characters, and/or settings to the theme or main idea of a narrative text.
- Michigan Range of Complexity: EE.RL.M.8.2: The student can identify the theme or main idea of a short narrative text.
- Michigan Range of Complexity: EE.RL.L.8.2: The student can identify the theme or main idea of a short narrative text.
- EE.RL.8.3. Identify which incidents in a story or drama lead to subsequent action.
- Michigan Range of Complexity: EE.RL.H.8.3: The student can indicate how a particular event

- Michigan Range of Complexity EE.RL.M.6.3: The student can identify an event that had an effect on a character in a short narrative text or how a specific action/event made the character feel.
- Michigan Range of Complexity EE.RL.L.6.3: The student can identify an action of a character in a short narrative text.

Craft and Structure.

- EE.RL.6.4 Determine how word choice changes the meaning in a text.
  Michigan Range of Complexity: Assessed at the state level under EE.L.6.4 and EE.L.6.5.
- EE.RL.6.5 Determine the structure of a text (e.g., story, poem, or drama).
- Michigan Range of Complexity: EE.RL.H.6.5: The student can identify the genre of a text (story, poem, or drama) based on how it is organized/structured (e.g., beginning/middle/end, scenes/acts, stanzas, etc.).
- Michigan Range of Complexity: EE.RL.M.6.5: The student can identify a variety of narrative text genres (story, poem, and drama).
- Michigan Range of Complexity: EE.RL.L.6.5: The student can differentiate between two types of narrative text genres.
- EE.RL.6.6 Identify words or phrases in the text that describe or show what the narrator or speaker is thinking or feeling.
- Michigan Range of Complexity: EE.RL.H.6.6: The student can identify words/phrases in a narrative text that show what the narrator or speaker is thinking/feeling.
- Michigan Range of Complexity: EE.RL.M.6.6: The student can identify what the narrator/speaker is feeling when specific clues are given in text or speech.
- Michigan Range of Complexity: EE.RL.L.6.6: The student can identify what the narrator/speaker of a short narrative text/speech said.

Integration of Knowledge and Ideas.

- EE.RL.6.7 Compare the experience of reading or listening to a written story, drama or poem with the experience of watching video or live performance of the same text.
  Michigan Range of Complexity: Not measured at state

- Michigan Range of Complexity: EE.RL.M.7.3: The student can identify which story element is associated with a given story element.
- Michigan Range of Complexity: EE.RL.L.7.3: The student can identify what is the same between two characters when given a visual model to match.

Craft and Structure.

- EE.RL.7.4 Determine the meaning of simple idioms and figures of speech as they are used in a text.
  Michigan Range of Complexity: Assessed at the state level under EE.L.7.4 and EE.L.7.5.
- EE.RL.7.5 Compare the structure of two or more texts (e.g., stories, poems, or dramas).
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RL.7.6 Compare the points of view of two or more characters or narrators in a text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Integration of Knowledge and Ideas.

- EE.RL.7.7 Compare a text version of a story, drama, or poem with an audio, video, or live version of the same text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RL.7.9 Compare a fictional time, place, or character in one text with the same time, place, or character portrayed in a historical account.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Reading and Level of Text Complexity

- EE.RL.7.10 Demonstrate understanding of text while actively engaged in reading or listening to stories, dramas, and poetry.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

a subsequent happening to occur.
- Michigan Range of Complexity: EE.RL.M.8.3: The student can select the action/event in a narrative text that led to a later action (when the later action is given).
- Michigan Range of Complexity: EE.RL.L.8.3: The student can identify an event that occurred or a character's action in a short narrative text.

Craft and Structure.

- EE.RL.8.4. Determine connotative meanings of words and phrases in a text.
  Michigan Range of Complexity: Assessed at the state level under EE.L.8.4 and EE.L.8.5.
- EE.RL.8.5. Compare and contrast the structure of two or more texts.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RL.8.6. Determine the difference in the points of view of a character and the audience or reader in a text with suspense or humor.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Integration of Knowledge and Ideas.

- EE.RL.8.7. Compare and contrast a text version of a story, drama, or poem with an audio, video, or live version of the same text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RL.8.9. Compare and contrast themes, patterns of events, or characters across two or more stories or dramas.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Reading and Level of Text Complexity.

- EE.RL.8.10. Demonstrate understanding of text while actively engaged in reading or listening to stories, dramas, and poetry.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level

level, range of complexity determined at classroom level.
- EE.RL.6.8 (Not applicable to literature)
- EE.RL.6.9 Compare and contrast stories, myths, or texts with similar topics or themes.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Reading and Level of Text Complexity.

- EE.RL.6.10 Demonstrate understanding of text while actively reading or listening to stories, dramas, or poetry.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Reading (Informational Text)
Key Ideas and Details.

- EE.RI.6.1 Analyze a text to determine what it says explicitly as well as what inferences should be drawn.
- Michigan Range of Complexity: EE.RI.H.6.1: The student can use details and clues from informational text to answer questions and make simple inferences.
- Michigan Range of Complexity: EE.RI.M.6.1: The student can use details and clues to answer basic questions about informational text.
- Michigan Range of Complexity: EE.RI.L.6.1: The student can answer simple who, what, where, or when questions about short informational texts.
- EE.RI.6.2 Determine the main idea of a passage and details or facts related to it.
- Michigan Range of Complexity: EE.RI.H.6.2: The student can identify one or more details in informational text that are related to the text's main idea.
- Michigan Range of Complexity: EE.RI.M.6.2: The student can identify one detail that relates to the main idea of a short informational text when the main idea is provided.
- Michigan Range of Complexity: EE.RI.L.6.2: The student can identify the main idea of a short informational text.
- EE.RI.6.3 Identify a detail that elaborates upon individuals, events, or ideas introduced in a text.

Reading (Informational Text)
Key Ideas and Details.

- EE.RI.7.1 Analyze text to identify where information is explicitly stated and where inferences must be drawn.
- Michigan Range of Complexity: EE.RI.H.7.1: The student can use details and clues from informational text to answer questions and make inferences.
- Michigan Range of Complexity: EE.RI.M.7.1: The student can use concrete details to answer simple questions and make predictions about a short informational text.
- Michigan Range of Complexity: EE.RI.L.7.1: The student can use concrete details to answer simple "who", "what", "where", or "when" questions about short informational text.
- EE.RI.7.2 Determine two or more central ideas in a text.
- Michigan Range of Complexity: EE.RI.H.7.2: The student can identify one or more central ideas in an informational text.
- Michigan Range of Complexity: EE.RI.M.7.2: The student can identify one detail that relates to the main idea of a short informational text (when the main idea is provided).
- Michigan Range of Complexity: EE.RI.L.7.2: The student can identify the main idea of a short informational text.

Reading (Informational Text)
Key Ideas and Details.

- EE.RI.8.1. Cite text to support inferences from informational text.
- Michigan Range of Complexity: EE.RI.H.8.1: The student can answer questions about informational text using explicit details and/or identify specific details that support an inference.
- Michigan Range of Complexity: EE.RI.M.8.1: The student can use concrete details to answer simple questions and make predictions about short informational text.
- Michigan Range of Complexity: EE.RI.L.8.1: The student can use concrete details to answer simple "who", "what", "where," or "when" questions about short informational text.
- EE.RI.8.2. Provide a summary of a familiar informational text.
- Michigan Range of Complexity: EE.RI.H.8.2: The student can identify a sentence/statement that accurately summarizes a short informational text.
- Michigan Range of Complexity: EE.RI.M.8.2: The student can identify the main idea of a short informational text.
- Michigan Range of Complexity: EE.RI.L.8.2: The student can identify the main idea of a short informational text.

- Michigan Range of Complexity: EE.RI.M.6.3: The student can identify a detail that elaborates (gives information) about an individual, event or idea presented in an informational text.
- Michigan Range of Complexity: EE.RI.M.6.3: The student can identify one detail about an individual, event, or idea described in short informational text.
- Michigan Range of Complexity: EE.RI.L.6.3: The student can match a detail with a person or event described in short informational text.

Craft and Structure.

- EE.RI.6.4 Determine how word choice changes the meaning of a text.
  Michigan Range of Complexity: Assessed at state level under EE.L.6.4 and EE.L.6.5.
- EE.RI.6.5 Determine how the title fits the structure of the text. (Cause/Effect, Chronological, Compare/Contrast, Order of Importance, Problem/Solution, Sequence/Steps).
- Michigan Range of Complexity: EE.RI.H.6.5: The student can determine how the title of an informational text relates to its content.
- Michigan Range of Complexity: EE.RI.M.6.5: The student can select a title that is appropriate for a short informational text when given choices.
- Michigan Range of Complexity: EE.RI.L.6.5: The student can identify the title of a short informational text.
- EE.RI.6.6 Identify words or phrases in the text that describe or show the author's point of view.
- Michigan Range of Complexity: EE.RI.H.6.6: The student can identify concrete details in informational text that describe/show the author's point of view.
- Michigan Range of Complexity: EE.RI.M.6.6: The student can identify what/how the author feels about the topic of a short informational text.
- Michigan Range of Complexity: EE.RI.L.6.6: The student can identify what the author/speaker of a short text said using word/picture choices.

Integration of Knowledge and Ideas.

- EE.RI.6.7 Find similarities in information presented in different media or formats as well as in text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.RI.7.3 Determine how two individuals, events or ideas in a text are related.
- Michigan Range of Complexity: EE.RI.H.7.3: The student can indicate how two individuals, events, or ideas in an informational text are related.
- Michigan Range of Complexity: EE.RI.M.7.3: The student can identify which informational text element is associated with a given text element.
- Michigan Range of Complexity: EE.RI.L.7.3: The student can identify what is the same between two individuals within a short informational text.

Craft and Structure.

- EE.RI.7.4 Determine how words or phrases are used to persuade or inform a text.
  Michigan Range of Complexity: Assessed at state level under EE.L.7.4 and EE.L.7.5.
- EE.RI.7.5 Determine how a fact, step, or event fits into the overall structure of the text.
- Michigan Range of Complexity: EE.RI.H.7.5: The student can identify how an informational text has been organized by the author (e.g., problem/solution, sequence/order, compare/contrast, cause/effect, descriptive) and/or indicate how a fact, step, or event fits into the text structure.
- Michigan Range of Complexity: EE.RI.M.7.5: The student can identify a variety of informational/functional texts and/or text patterns (e.g., problem/solution, sequence/order, same/different, cause/effect, descriptive).
- Michigan Range of Complexity: EE.RI.L.7.5: The student can answer simple questions regarding a variety of basic informational/functional text (e.g., awareness of daily schedule, calendars, dictionary, phone directories, etc.).
- EE.RI.7.6 Determine an author's purpose or point of view.
- Michigan Range of Complexity: EE.RI.H.7.6: The student can identify the author's point of view or his/her purpose for writing an informational text.
- Michigan Range of Complexity: EE.RI.M.7.6: The student can select words/phrases that show how the author feels about the topic of an informational text or identify why the author most likely wrote it.

- EE.RI.8.3 Recount events in the order they were presented in the text.
- Michigan Range of Complexity: EE.RI.H.8.3: The student can correctly sequence three events from an informational text.
- Michigan Range of Complexity: EE.RI.M.8.3: The student can put two events from a short informational text in order.
- Michigan Range of Complexity: EE.RI.L.8.3: The student can identify which of two events/actions came first in a short informational text.

Craft and Structure.

- EE.RI.8.4. Determine meanings of words and phrases in informational text including figurative language.
  Michigan Range of Complexity: Assessed at state level under EE.L.8.4 and EE.L.8.5.
- EE.RI.8.5. Locate the topic sentence and supporting details in a paragraph.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RI.8.6. Determine an author's purpose or point of view and identify examples from text to that describe or support it.
- Michigan Range of Complexity: EE.RI.H.8.6: The student can identify the author's purpose or point of view and/or select one example from the text that describes/supports it.
- Michigan Range of Complexity: EE.RI.M.8.6: The student can identify one example from a short informational text that supports an author's purpose or point of view (when the purpose or point of view is provided).
- Michigan Range of Complexity: EE.RI.L.8.6: The student can choose the author's purpose or point of view when given choices.

Integration of Knowledge and Ideas.

- EE.RI.8.7. Determine whether a topic is best presented as audio, video, multimedia, or text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RI.8.8. Determine the argument made by an author in an informational text.
  Michigan Range of Complexity: Not measured

- EE.RI.6.8 Distinguish claims in a text supported by reason.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RI.6.9 Compare and contrast how two texts describe the same event.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Reading and Level of Text Complexity.

- EE.RI.6.10 Demonstrate understanding while actively reading or listening to literary nonfiction.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- Michigan Range of Complexity: EE.RI.EP.8: The student can identify the purpose of an informational/functional text (e.g., to tell about events, give directions, provide information) using words/phrases paired with pictures.

Integration of Knowledge and Ideas.

- EE.RI.7.7 Compare a text to an audio, video or multimedia version of the same text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RI.7.8 Determine how a claim or reason fits into the overall structure of an informational text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.RI.7.9 Compare and contrast how different texts on the same topic present the details.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Reading and Level of Text Complexity.

- EE.RI.7.10 Demonstrate understanding while actively reading or listening to literary nonfiction.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- at state level, range of complexity determined at classroom level.
- EE.RI.8.9. Identify where two different texts on the same topic differ in their interpretation of the details.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Reading and Level of Text Complexity.

- EE.RI.8.10. Demonstrate understanding while actively reading or listening to literary nonfiction.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Writing

Text Types and Purposes.

- EE.W.6.1 Write claims about topics or text.
  a. Write a claim about a topic or text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.6.1.b. Write one or more reasons to support a claim about a topic or text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.6.1.c-d. Not applicable
- EE.W.6.1.e. Not applicable
- EE.W.6.2 Write to share information supported by details.

Writing

Text Types and Purposes.

- EE.W.7.1 Write claims about topics or texts.
  a. Introduce a topic or text and write one claim about it.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.7.1.b. Write one or more reasons to support a claim about a topic or text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.7.1.c. Use temporal words (first, next, also) to create cohesion.
  Michigan Range of Complexity: Not measured

Writing

Text Types and Purposes.

- EE.W.8.1 Write claims about topics or texts.
  EE.W.8.1.a. Introduce the claim and provide reasons or pieces of evidence to support it.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.8.1.b. Write reasons to support a claim about a topic or text.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.8.1.c. Not applicable
- EE.W.8.1.d. Not applicable
- EE.W.8.1.e. Not applicable

a. Introduce a topic and write to convey ideas and information about it including visual, tactual, or multimedia information as appropriate.
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.W.6.2.b. Provide facts, details, or other information related to the topic.
- Michigan Range of Complexity: EE.W.H.6.2.b: The student can identify/list/organize facts, details, or other pieces of information to support a topic.
- Michigan Range of Complexity: EE.W.M.6.2.b: The student can select two facts details, or other pieces of information that relate to a given topic.
- Michigan Range of Complexity: EE.W.L.6.2.b: The student can select one fact, detail, or other piece of information that relates to a given topic.
- EE.W.6.2.c-d. Not applicable
- EE.W.6.2.e. Not applicable
- EE.W.6.2.f. Not applicable
- EE.W.6.3 Write about events or personal experiences. a. Write a narrative about a real or imagined experience introducing the experience and including two or more events.
- Michigan Range of Complexity: EE.W.H.6.3.a: The student can write/draw/dictate about an event or personal experience, including two or more actions/happenings that occurred.
- Michigan Range of Complexity: EE.W.M.6.3.a: The student provide details about one action/happening that occurred while preparing to write/communicate about an event or personal experience.
- Michigan Range of Complexity: EE.W.L.6.3.a: The student can provide a detail about an action that occurs during an event or personal experience, while preparing to write/communicate about it.
- EE.W.6.3.b. Not applicable
- EE.W.6.3.c. Use words that establish the time frame.
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.6.3.d. Use words that convey specific details about the experience or event.
- Michigan Range of Complexity: EE.W.H.6.3.d: The student can identify/list three words/phrases that describe an event or personal experience while preparing to write about it.
- Michigan Range of Complexity: EE.W.M.6.3.d: The student can identify two words that describe an event

at state level, range of complexity determined at classroom level.

- EE.W.7.1.d. Not applicable
- EE.W.7.1.e. Not applicable
- EE.W.7.2 Write to share information supported by details. a. Introduce a topic and write to convey ideas and information about it including visual, tactual, or multimedia information as appropriate.
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.7.2.b. Provide facts, details, or other information related to the topic.
- Michigan Range of Complexity: EE.W.H.7.2.b: The student can identify/list/organize facts, details, or other pieces of information to support a topic.
- Michigan Range of Complexity: EE.W.M.7.2.b: The student can select two facts, details, or other pieces of information that relate to a given topic.
- Michigan Range of Complexity: EE.W.L.7.2.b: The student can select one fact, detail, or other piece of information that relates to a given topic.
- EE.W.7.2.c. Not applicable
- EE.W.7.2.d. Select domain-specific vocabulary to use in writing about the topic.
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.7.2.e. Not applicable
- EE.W.7.2.f. Not applicable
- EE.W.7.3 Write about events or personal experiences. a. Write a narrative about a real or imagined experience introducing the experience, at least one character, and two or more events.
b. Not applicable
- Michigan Range of Complexity: EE.W.H.7.3.a: The student can write/draw/dictate about an event or personal experience, including at least one person/character and one action/happening.
- Michigan Range of Complexity: EE.W.M.7.3.a: The student can provide details about one person/character or one action/happening that occurred during an event or personal experience, while preparing to write/communicate about it.

- EE.W.8.2 Write to share information supported by details.
EE.W.8.2.a. Introduce a topic clearly and write to convey ideas and information about it including visual, tactual, or multimedia information as appropriate.
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.8.2.b. Write one or more facts or details related to the topic.
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- Michigan Range of Complexity: EE.W.H.8.2.b: The student can identify/list/organize facts or details to support a given topic.
- Michigan Range of Complexity: EE.W.M.8.2.b: The student can select two facts or details related to a given topic.
- Michigan Range of Complexity: EE.W.L.8.2.b: The student can select one fact or detail related to a given topic.
- EE.W.8.2.c. Write complete thoughts as appropriate.
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.8.2.d. Use domain specific vocabulary related to the topic.
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.8.2.e. Not applicable
- EE.W.8.2.f. Provide a closing.
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.8.3 Write about events or personal experiences.
EE.W.8.3.a. Write a narrative about a real or imagined experience introducing the experience, at least one character, and two or more events.
- Michigan Range of Complexity: EE.W.H.8.3.a: The student can write/draw/dictate about a personal experience, including three details such as people/characters, settings, and/or events.

of personal experience, while preparing to write/communicate about it.
- Michigan Range of Complexity: EE.W.L.6.3.d: The student can identify a word or phrase paired with a picture that describes an event, while preparing to write/communicate about it.
- EE.W.6.3.e. Not applicable

Production and Distribution of Writing.

- EE.W.6.4 Produce writing that is appropriate for the task, purpose, or audience.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.6.5 With guidance and support from adults and peers, plan before writing and revise own writing.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.6.6 Use technology, including the Internet, to produce writing while interacting and collaborating with others.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Research to Build and Present Knowledge.

- EE W.6.7 Conduct short research projects to answer a question.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.6.8 Gather information from multiple print and digital sources that relates to a given topic.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.6.9 Use information from literary and informational text to support writing.
  a. Apply Essential Elements of Grade 6 Reading Standards to literature (e.g., "Compare a text version of a story, drama, or poem with an audio, video, or live version of the text.").
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.6.9.b. Apply Essential Elements of Grade 6 Reading Standards to informational texts (e.g., "Can

- Michigan Range of Complexity: EE.W.L.7.3.a: The student can provide a detail (paired with a picture) about a person/character, while preparing to write/communicate about an event or personal experience.
- EE.W.7.3.c. Use temporal words (e.g., first, then, next) to signal order.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.7.3.d. Use words that describe feelings of people or characters in the narrative.
- Michigan Range of Complexity: EE.W.H.7.3.d: The student can identify/use three words that describe the feelings of people/characters in a text.
- Michigan Range of Complexity: EE.W.M.7.3.d: The student can identify two words or one phrase that describe the feelings of the people/characters in a text.
- Michigan Range of Complexity: EE.W.L.7.3.d: The student can identify a word or phrase paired with a picture that describes the feelings of a person/character in a text.
- EE.W.7.3.e. Not applicable

Production and Distribution of Writing.

- EE.W.7.4 Produce writing that is appropriate for the task, purpose, or audience.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.7.5 With guidance and support from adults and peers, plan before writing and revise own writing.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.7.6 Use technology, including the Internet, to produce writing to interact and collaborate with others.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Research to Build and Present Knowledge.

- EE.W.7.7 Conduct research to answer a question based on multiple sources of

- Michigan Range of Complexity: EE.W.L.8.3.a: The student can write/dictate a sentence to express ideas about a personal experience or other given topic.
- Michigan Range of Complexity: EE.W.L.8.3.a: The student can provide a detail about a personal experience or other given topic while preparing to write/communicate about it.
- EE.W.8.3.b. Not applicable
- EE.W.8.3.c. Use temporal words (e.g., first, then, next) to signal order.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.8.3.d. Use words that describe the feelings of characters or provide other sensory information about the setting, experiences, or events.
- Michigan Range of Complexity: EE.W.H.8.3.d: The student can identify/use words to describe the feelings of people/characters in a text or other sensory information about the setting.
- Michigan Range of Complexity: EE.W.M.8.3.d: The student can identify words that describe the feelings of the people/characters in a text or other sensory information about a setting or event in a text.
- Michigan Range of Complexity: EE.W.L.8.3.d: The student can identify one word that describes feelings of people/characters in a text or other sensory information about a setting or event in a text.
- EE.W.8.3.e. Provide a closing.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Production and Distribution of Writing.

- EE.W.8.4. Produce writing that is appropriate for the task, purpose, or audience.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.8.5. With guidance and support from adults and peers, plan before writing and revise own writing.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

produce an argument by logically organizing the claims and the supporting reasons and evidence.").
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.W.6.10 Write routinely for a variety of tasks, purposes, and audiences.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

information.
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.W.7.8 Identify quotes providing relevant information about a topic from multiple print or digital sources.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.7.9 Use information from literary and informational text to support writing.
  a. Apply Essential Elements of Grade 7 Reading Standards to literature (e.g., "Recognize the difference between fictional characters and nonfictional characters.").
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.7.9.b. Apply Essential Elements of Grade 7 Reading Standards to informational texts (e.g., "Use relevant and sufficient evidence for supporting the claims and argument.").
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Writing.

- EE.W.7.10 Write routinely for a variety of tasks, purposes, and audiences.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.W.8.6. Use technology, including the internet, to produce writing to interact and collaborate with others.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Research to Build and Present Knowledge.

- EE.W.8.7. Conduct short research projects to answer and pose questions based on one source of information.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.8.8. Select quotes providing relevant information about a topic from multiple print or digital sources.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.8.9 Use information from literary and informational text to support writing.
  EE.W.8.9.a. Apply Essential Elements of Grade 8 Reading Standards to literature (e.g., "Compare and contrast themes, patterns of events, or characters across two or more stories or dramas.").
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.W.8.9.b. Apply Essential Elements of Grade 8 Reading Standards to informational texts (e.g., "Use relevant and sufficient evidence for supporting the claims and argument.").
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Range of Writing.

- EE.W.8.10. Write routinely for a variety of tasks, purposes, and audiences.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Speaking and Listening

Comprehension and Collaboration.

Speaking and Listening

Comprehension and Collaboration.

Speaking and Listening

Comprehension and Collaboration.

- EE.SL.6.1 Engage in collaborative discussions.
  a. Come to discussions prepared to share information.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.6.1.b. With guidance and support from adults and peers, follow simple, agreed-upon rules for discussions and contribute information.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.6.1.c. Ask and answer questions specific to the topic, text, or issue under discussion.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.6.1.d.Restate key ideas expressed in the discussion.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.6.2 Identify information presented in diverse media and formats (e.g., visually, quantitatively, orally) that relates to a topic, text, or issue under study.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.6.3 Identify the reasons and evidence supporting the claims made by the speaker.
- Michigan Range of Complexity: EE.SL.H.6.3: The student can identify one reason or piece of evidence that supports a point/claim made by a speaker (orally or through other media).
- Michigan Range of Complexity: EE.SL.M.6.3: The student can identify a speaker's point/claim when given choices.
- Michigan Range of Complexity: EE.SL.L.6.3: The student can select one or more details from information presented orally or through other media.

Presentation of Knowledge and Ideas.

- EE.SL.6.4 Present findings on a topic including descriptions, facts, or details.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.6.5 Select an auditory, visual, or tactual display to clarify the information in presentations.

- EE.SL.7.1 Engage in collaborative discussions.
  a. Come to discussions prepared to share information.
- EE.SL.7.1.b. With guidance and support from adults and peers, follow simple, agreed-upon rules for discussions and carry out assigned roles.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.7.1.c. Remain on the topic of the discussion when answering questions or making other contributions to a discussion.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.7.1.d. Acknowledge new information expressed by others in a discussion.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.7.2 Identify details related to the main idea of a text presented orally or through other media.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.7.3 Determine whether the claims made by a speaker are fact or opinion.
- Michigan Range of Complexity: EE.SL.H.7.3: The student can determine whether the information provided by a speaker is based on fact or opinion.
- Michigan Range of Complexity: EE.SL.M.7.3: The student can distinguish whether a piece of information shared by a speaker is a fact.
- Michigan Range of Complexity: EE.SL.L.7.3: The student can select one or more details from information presented orally or through other media.

Presentation of Knowledge and Ideas.

- EE.SL.7.4 Present findings on a topic including relevant descriptions, facts, or details.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.7.5 Select or create audio recordings and visual/tactile displays to emphasize

- EE.SL.8.1 Engage in collaborative discussions.
  EE.SL.8.1.a. Come to discussions prepared to share information previously studied.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.8.1.b. Follow simple rules and carry out assigned roles during discussions.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.8.1.c. Remain on the topic of the discussion when asking or answering questions or making other contributions to a discussion.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.8.1.d. Acknowledge new information expressed by others in a discussion and relate it to own ideas.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.8.2 Determine the purpose of information presented in graphic, oral, visual, or multimodal formats.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.8.3 Determine the argument made by a speaker on a topic.
- Michigan Range of Complexity: EE.SL.H.8.3: The student can identify an argument made by a speaker and one point that supports it.
- Michigan Range of Complexity: EE.SL.M.8.3: The student can identify one point that supports a speaker's argument (when the argument is provided).
- Michigan Range of Complexity: EE.SL.L.8.3: The student can select one or more details from information presented orally or through other media.

Presentation of Knowledge and Ideas.

- EE.SL.8.4 Present descriptions, facts, or details supporting specific points made on a topic.
  Michigan Range of Complexity: Not measured

Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.SL.6.6 Use formal and informal language as appropriate to the communication partner.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

specific points in a presentation.
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.SL.7.6 Communicate precisely (i.e., provide complete information) or efficiently (i.e., telegraphic communication) as required by the context, task, and communication partner.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

at state level, range of complexity determined at classroom level.

- EE.SL.8.5 Include multimedia and visual information into presentations.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.SL.8.6 Adapt communication to a variety of contexts and tasks.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Language

Conventions of Standard English.

- EE.L.6.1 Demonstrate standard English grammar and usage when communicating.
  a. Use personal pronouns (e.g., he, she, they) correctly.
- EE.L.6.1.b. Use indefinite pronouns.
- Michigan Range of Complexity: EE.L.H.6.1: The student can identify the correct use of personal pronouns (e.g., he, she, and they) and a few indefinite pronouns (e.g., someone, everybody, many, few) when communicating.
- Michigan Range of Complexity: EE.L.M.6.1: The student can identify correct use of simple grammatical structures (e.g., singular plural nouns, appropriate pronouns, verbs) when communicating.
- Michigan Range of Complexity: EE.L.L.6.1: The student can identify correct use of singular/plural nouns, verbs when communicating.
- EE.L.6.1.c. Not applicable
- EE.L.6.1.d. Not applicable
- EE.L.6.1.e. Not applicable
- EE.L.6.2 Demonstrate understanding of conventions of standard English.
  A. Use question marks at the end of written questions.
- Michigan Range of Complexity: EE.L.H.6.2.a: The student can identify which word/words should be capitalized in a sentence (first words and proper nouns) and/or choose the correct ending punctuation (period, question mark, or exclamation point).
- Michigan Range of Complexity: EE.L.M.6.2.a: The student can identify capital letters and/or basic punctuation (periods and question marks).
- Michigan Range of Complexity: EE.L.L.6.2.a: The student can differentiate if a sentence is a statement

Language

Conventions of Standard English.

- EE.L.7.1 Demonstrate standard English grammar and usage when communicating.
  a. Not applicable
- EE.L.7.1.b. Produce complete simple sentences when writing or communicating.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.7.1.c. Not applicable
- EE.L.7.2 Demonstrate understanding of conventions of standard English.
  a. Use end punctuation when writing a sentence or question.
- Michigan Range of Complexity: EE.L.H.7.2.a: The student can identify which word/words should be capitalized in a sentence (first words and proper nouns) and/or choose the correct ending punctuation (period, question mark, or exclamation point).
- Michigan Range of Complexity: EE.L.M.7.2.a: The student can identify capital letters and/or basic punctuation (periods and question marks).
- Michigan Range of Complexity: EE.L.L.7.2.a: The student can differentiate if a sentence is a statement or a question.
- EE.L.7.2.b. Spell words phonetically, drawing on knowledge of lettersound relationships and/or common spelling patterns.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Language

Conventions of Standard English.

- EE.L.8.1 Demonstrate standard English grammar and usage when communicating.
  EE.L.8.1.a. Not applicable
- EE.L.8.1.b. Form and use the simple verb tenses (e.g., I walked, I walk, I will walk)
- Michigan Range of Complexity: EE.L.H.8.1.b: The student can identify/use the appropriate verb tense when communicating.
- Michigan Range of Complexity: EE.L.M.8.1.b: The student can identify appropriate past tense verbs when communicating.
- Michigan Range of Complexity: EE.L.L.8.1.b: The student can identify the action a person is taking when given a picture prompt.
- EE.L.8.1.c. Use appropriate verbs to match nouns.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.8.1.d. Not applicable
- EE.L.8.2 Demonstrate understanding of conventions of standard English.
  EE.L.8.2.a. Use end punctuation and capitalization when writing a sentence or question.
- Michigan Range of Complexity: EE.L.H.8.2.a: The student can identify a grammatically correct sentence that uses correct capitalization and ending punctuation.
- Michigan Range of Complexity: EE.L.M.8.2.a: The student can identify a sentence that uses the correct capitalization or ending punctuation.

of a question.
- Michigan Range of Complexity: EE.L.6.2.b. Spell untaught words phonetically, drawing on lettersound relationships and common spelling patterns.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Knowledge of Language.

- EE.L.6.3 Use language to achieve desired outcomes when communicating.
  a. Vary use of language when the listener or reader does not understand the initial attempt.
- Michigan Range of Complexity: EE.L.H.6.3: The student can use language effectively to communicate with peers and adults (e.g., asking and answering questions, providing more information when someone does not understand the first time, sharing information, making requests, etc.).
- Michigan Range of Complexity: EE.L.M.6.3: The student can use language to communicate effectively with a variety of audiences and for different purposes (e.g., asking questions, sharing information, responding to greetings, using polite expressions, using appropriate body language).
- Michigan Range of Complexity: EE.L.L.6.3: The student can identify the correct use of language to communicate effectively with familiar people (e.g., sharing information, responding to greetings, being polite, and making simple requests, etc.).
- EE.L.6.3.b. Not applicable

Vocabulary Acquisition and Use.

- EE.L.6.4 Demonstrate knowledge of word meanings.
  a. Use context to determine which word is missing from a content area text.
- Michigan Range of Complexity: EE.L.H.6.4.a: The student can use context as a clue to guide selection of a word or words that best complete a sentence.
- Michigan Range of Complexity: EE.L.M.6.4.a: The student can use context clues to determine the meaning of familiar words paired with pictures and/or objects.
- Michigan Range of Complexity: EE.L.L.6.4.a: The student can use cues to recognize the meaning of familiar words when paired with pictures.
- EE.L.6.4.b. Use frequently occurring root words (e.g., like) and the words that result when affixes are added

Knowledge of Language.

- EE.L.7.3 Use language to achieve desired outcomes when communicating. a. Use precise language as required to achieve desired meaning.
- Michigan Range of Complexity: EE.L.H.7.3: The student can use language to communicate effectively with peers and adults (e.g., asking and answering questions, providing more information when someone does not understand the first time, sharing information, making requests, etc.).
- Michigan Range of Complexity: EE.L.M.7.3: The student can use language to communicate effectively with a variety of audiences and for different purposes (e.g., asking questions, sharing information, responding to greetings, using polite expressions, using appropriate body language).
- Michigan Range of Complexity: EE.L.L.7.3: The student can identify the correct use of language to communicate effectively with familiar people (e.g., sharing information, responding to greetings, being polite, and making simple requests, etc.).

Vocabulary Acquisition and Use.

- EE.L.7.4 Demonstrate knowledge of word meanings.
  a. Use context to determine which word is missing from a text.
- Michigan Range of Complexity: EE.L.H.7.4.a: The student can use context as a clue to guide selection of a word or words that best complete a sentence.
- Michigan Range of Complexity: EE.L.M.7.4.a: The student can use context clues to determine the meaning of familiar words paired with pictures and/or objects.
- Michigan Range of Complexity: EE.L.L.7.4.a: The student can use cues to recognize the meaning of familiar words when paired with pictures.
- EE.L.7.4.b. Use frequently occurring root words (e.g., like) and the words that result when affixes are added (e.g., liked, disliked, liking).
  Michigan Range of Complexity: Not measured

- Michigan Range of Complexity: EE.L.L.8.2.a: The student can differentiate if a sentence is a statement or a question.
- EE.L.8.2.b. Not applicable
- EE.L.8.2.c. Spell words phonetically, drawing on knowledge of lettersound relationships and/or common spelling patterns.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

Knowledge of Language.

- EE.L.8.3 Use language to achieve desired outcomes when communicating.
  EE.L.8.3.a. Use to-be verbs (am, are, is, was, were, be, become, became) accurately when writing and communicating.
- Michigan Range of Complexity: EE.L.H.8.3: The student can use language to communicate effectively with peers and adults (e.g., asking and answering questions, sharing information, clarifying statements, making requests, etc.).
- Michigan Range of Complexity: EE.L.M.8.3: The student can use language to communicate effectively with a variety of audiences and for different purposes (e.g., asking questions, sharing information, responding to greetings, using polite expressions, using appropriate body language).
- Michigan Range of Complexity: EE.L.L.8.3: The student can identify the correct use of language to communicate effectively with familiar people (e.g., sharing information, responding to greetings, being polite, and making simple requests, etc.).

Vocabulary Acquisition and Use.

- EE.L.8.4 Demonstrate knowledge of word meanings.
  EE.L.8.4.a. Use context to determine which word is missing from a content area text.
- Michigan Range of Complexity: EE.L.H.8.4.a: The student can use context as a clue to guide selection of a word or words that best complete a sentence including (but not limited to) content-area words.
- Michigan Range of Complexity: EE.L.M.8.4.a: The student can use context clues to determine

(e.g., liked, disliked, liking).
Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.L.6.4.c. Seek clarification and meaning support when unfamiliar words are encountered while reading or communicating
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.6.4.d. Not applicable
- EE.L.6.5 Demonstrate understanding of word relationships and use.
  a. Identify the meaning of simple similes (e.g., The man was as big as a tree.).
- Michigan Range of Complexity: EE.L.H.6.5.a: The student can identify the meaning of a word, words or phrase when presented in the context of narrative or informational text. Focus is on introducing non-literal meanings/figurative language.
- Michigan Range of Complexity: EE.L.M.6.5.a: The student can demonstrate understanding that the same word can have different meanings (e.g., "sweet" means kind and sugary, "bark" is the covering on a tree and a sound made by a dog, "bowl" is a vessel that holds food and an activity involving a ball, lanes, and pins).
- Michigan Range of Complexity: EE.L.L.6.5.a: The student can identify two things that share a common characteristic (e.g., two things that are big, two things that are quiet, two things that are hot, etc.).
- EE.L.6.5.b. Demonstrate understanding of words by identifying other words with similar and different meanings.
- Michigan Range of Complexity: EE.L.H.6.5.b: The student can demonstrate understanding of words with the same or different meanings (synonyms and antonyms).
- Michigan Range of Complexity: EE.L.M.6.5.b: The student can identify a word with the same meaning as a target word that appears in a paragraph of text.
- Michigan Range of Complexity: EE.L.L.6.5.b: The student can identify a word with the same meaning as a target word that appears in a short text.
- EE.L.6.5.c. Not applicable
- EE.L.6.6 Use general academic and domain-specific words and phrases across contexts.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- EE.L.7.4.c. Seek clarification and meaning support when unfamiliar words are encountered while reading or communicating.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.7.4.d. Not applicable
- EE.L.7.5 Demonstrate understanding of word relationships and use.
  a. Identify the literal and nonliteral meanings of words in context.
- Michigan Range of Complexity: EE.L.H.7.5.a: The student can identify the meaning of literal or non-literal/figurative words or phrases when presented in the context of narrative or informational text.
- Michigan Range of Complexity: EE.L.M.7.5.a: The student identify the correct word (from commonly confused words) to use in a given context.
- Michigan Range of Complexity: EE.L.L.7.5.a: The student can identify the meaning of a word or phrase used in a given context given choices of words paired with pictures/objects.
- EE.L.7.5.b. Demonstrate understanding of synonyms and antonyms.
- Michigan Range of Complexity: EE.L.H.7.5.b: The student can demonstrate understanding of words with the same or different meanings (synonyms and antonyms).
- Michigan Range of Complexity: EE.L.M.7.5.b: The student can identify a word with the opposite meaning as a target word that appears in text.
- Michigan Range of Complexity: EE.L.L.7.5.b: The student can identify a word with the opposite meaning as a target word that appears in a short text.
- EEL.7.5.c. Not applicable
- EE.L.7.6 Use general academic and domain-specific words and phrases across contexts.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

the meaning of familiar words including (but not limited to) content-area words.

- Michigan Range of Complexity: EE.L.L.8.4.a: The student can use cues to recognize the meaning of familiar words when paired with pictures including (but not limited to) content-area words.
- EE.L.8.4.b. Use frequently occurring root words (e.g., like) and the words that result when affixes are added (e.g., liked, disliked, liking).
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.8.4.c. Seek clarification and meaning support when unfamiliar words are encountered while reading or communicating.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.8.4.d. Not applicable
- EE.L.8.5 Demonstrate understanding of word relationships and use.
  EE.L.8.5.a. Demonstrate understanding of the use of multiple meaning words.
- Michigan Range of Complexity: EE.L.H.8.5.a: The student can identify the meaning of literal or non-literal/figurative words or phrases when presented in the context of narrative or informational text, including (but not limited to) multiple-meaning words.
- Michigan Range of Complexity: EE.L.M.8.5.a: The student can identify the meaning of a word when presented in the context of a sentence.
- Michigan Range of Complexity: EE.L.L.8.5.a: The student can identify the meaning of a word or phrase used in context given choices of words paired with pictures/objects.
- EE.L.8.5.b. Use knowledge of common words to understand the meaning of compound and complex words in which they appear (e.g., birdhouse, household).
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.
- EE.L.8.5.c. Use descriptive words to add meaning when writing and communicating.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

- L2.L.6.3 Use general academic and domain-specific words and phrases across contexts.
  Michigan Range of Complexity: Not measured at state level, range of complexity determined at classroom level.

A Story of Units:
A Curriculum Overview for Grades P-5

Table of Contents:

Introduction

This document provides an overview of the academic year for Pre-Kindergarten through Grade 5, beginning with a curriculum map and followed by detailed grade-level descriptions.

The curriculum map is a chart that shows, at a glance, the sequence of modules comprising each grade of the entire elementary curriculum. The map also indicates the approximate number of instructional days designated for each module of each grade. The date approximations are based on an academic calendar beginning on 9/6/12 and ending on 6/26/13 with a testing date approximately mid-late April. Details that elaborate on the curriculum map are found in the grade-level descriptions. Each grade-level description begins with a list of the five to seven modules that comprise the instruction of that grade. That introductory component is followed by three sections: the **Summary of Year**, the **Rationale for Module Sequence**, and the **Alignment Chart** with the grade-level standards. The **Summary of Year** portion of each grade level includes four pieces of information:

- The critical instructional areas for the grade, as described in the Common Core Learning Standards[1] (CCLS)
- The Key Areas of Focus[2] for the grade band (Note that this information is not available for Pre-Kindergarten.)
- The Required Fluencies[3] for the grade (Note that this information is not available for Pre-Kindergarten.)
- The CCLS Major Emphasis Clusters[4] for the grade (Note that this information is not available for Pre-Kindergarten.)

The **Rationale for Module Sequence** portion of each grade level provides a brief description of the instructional focus of each module for that grade and explains the developmental sequence of the mathematics.

The **Alignment Chart** for each grade lists the CCLS that are addressed in each module of the grade. Throughout the alignment charts, when a cluster is included without a footnote, it is taught in its entirety; there are also times when footnotes are relevant to particular standards within a cluster. All standards for each grade have been carefully included in the module sequence. Some standards are deliberately included in more than one module, so that a strong foundation can be built over time. Note that for Grade 3 through Grade 5, the standards identified on the Pre-Post Standards[5] document as those which should be taught after the state test in April, have been intentionally aligned with the final modules of those grades.

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[1] EngageNY: http://www.p12.nysed.gov/ciai/common_core_standards/pdfdocs/nysp12cclsmath.pdf
[2] Achievethecore: http://www.achievethecore.org/downloads/E0702_Description_of_the_Common_Core_Shifts.pdf
[3] EngageNY: http://engageny.org/wp-content/uploads/2011/07/CCSSFluencies.pdf
[4] EngageNY: http://engageny.org/wp-content/uploads/2012/03/nys-math-emphases-k-8.pdf
[5] NYSED: http://www.p12.nysed.gov/assessment/ei/2013/draft-math-ccls-13.pdf

A Story of Units Curriculum Overview

	Pre-Kindergarten	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	
20 days	M1: Numbers to 5 (45 days)	M1: Numbers to 10 (43 days)	M1: Sums and Differences to 10 (45 days)	M1: Sums and Differences to 20 (10 days)	M1: Properties of Multiplication and Division and Solving Problems with Units of 2-5 and 10 (25 days)	M1: Place Value, Rounding, and Algorithms for Addition and Subtraction (25 days)	M1: Place Value and Decimal Fractions (20 days)	20 days
20 days				M2: Addition and Subtraction of Length Units (12 days)				
20 days				M3: Place Value, Counting, and Comparison of Numbers to 1000 (25 days)	M2: Place Value and Problem Solving with Units of Measure (25 days)	*M2: Unit Conversions (7 days)	M2: Multi-Digit Whole Number and Decimal Fraction Operations (35 days)	20 days
20 days	M2: Two-Dimensional and Three-Dimensional Shapes (15 days)	*M2: 2D and 3D Shapes (12 days)	M2: Introduction to Place Value Through Addition and Subtraction Within 20 (35 days)	M4: Addition and Subtraction Within 200 with Word Problems to 100 (35 days)	M3: Multiplication and Division with Units of 0, 1, 6-9, and Multiples of 10 (25 days)	M3: Multi-Digit Multiplication and Division (43 days)		20 days
20 days	M3: Counting to Answer Questions of How Many (50 days)	M3: Comparison of Length, Weight, Capacity, and Numbers to 10 (38 days)					M3: Addition and Subtraction of Fractions (22 days)	20 days
20 days			M3: Ordering and Comparing Length Measurements as Numbers (15 days)	M5: Addition and Subtraction Within 1000 with Word Problems to 100 (24 days)	M4: Multiplication and Area (20 days)	M4: Angle Measure and Plane Figures (20 days)	M4: Multiplication and Division of Fractions and Decimal Fractions (38 days)	20 days
20 days		M4: Number Pairs, Addition and Subtraction to 10 (47 days)	M4: Place Value, Comparison, Addition and Subtraction to 40 (35 days)	M6: Foundations of Multiplication and Division (24 days)	M5: Fractions as Numbers on the Number Line (35 days)	M5: Fraction Equivalence, Ordering, and Operations (45 days)		20 days
20 days	M4: Comparison of Length, Weight, and Capacity (35 days)		M5: Identifying, Composing, and Partitioning Shapes (15 days)	M7: Problem Solving with Length, Money, and Data (30 days)	M6: Collecting and Displaying Data (10 days)		M5: Addition and Multiplication with Volume and Area (25 days)	20 days
20 days	M5: Numerals to 5, Addition and Subtraction Stories, Counting to 20 (35 days)	M5: Numbers 10-20 and Counting to 100 (30 days)	M6: Place Value, Comparison, Addition and Subtraction to 100 (35 days)		M7: Geometry and Measurement Word Problems (40 days)	M6: Decimal Fractions (20 days)	M6: Problem Solving with the Coordinate Plane (40 days)	20 days
20 days		M6: Analyzing, Comparing, and Composing Shapes (10 days)		M8: Time, Shapes, and Fractions as Equal Parts of Shapes (20 days)		M7: Exploring Multiplication (20 days)		20 days

Approx. test date for grades 3-5

*Please refer to grade-level descriptions to identify partially labeled modules and the standards corresponding to all modules.

Key:	Geometry	Number	Number and Geometry, Measurement	Fractions

Combined K-5 Mystery Science Planning Guide

Combined K-5 Planning Guide

What is Included in this Document?

Grade Level Pacing Guides

The Pacing Guide is a resource to support your year-long planning. The units can be taught in any order. In most units, the Mysteries build on one another. Therefore, we strongly recommend the Mysteries within each unit are taught in the sequence they are presented. If you have more time, each unit can be extended by using items from the Optional Extras.

Mystery Science - NGSS Alignment

Mystery Science is aligned to the Next Generation Science Standards. Each Mystery is aligned to a topic, performance expectations, science and engineering practices, disciplinary core ideas, and crosscutting concepts. This document explains how each Mystery is aligned to the NGSS standards.

Table of Contents

Mystery Science Kindergarten - Pacing Guide

Mystery Science recommends teaching the mysteries within each unit in the order they are presented. The units themselves can be taught in any order. The core Mystery (exploration & activity) are designed to take 30-45 minutes per week, with 1 hour of Optional Extras per Mystery. The Read Along Mysteries offer an opportunity to develop students' literacy as they learn science.

	Force Olympics (6-9 weeks)	Weather Watching (6-9 weeks)	Plant & Animal Secrets (6-9 weeks)
Week 1	Mystery 1: What's the Biggest Excavator (***Foundational for K-PS2-1, K-PS2-2***)	Mystery 1: Have you ever watched a storm? (***K-ESS2-1***)	Mystery 1: Why do woodpeckers peck wood? (***K-LS1-1***)
Week 2	Mystery 2 Read Along: Why do builders need so many big machines? (***Foundational for K-PS2-1, K-PS2-2***)	Mystery 2 Read Along: How can you get ready for a big storm? (***K-ESS3-2***)	Mystery 2 Read Along: Where do animals live? (***K-ESS3-1***)
Week 3	Mystery 3: How can you knock down a wall made of concrete? (***K-PS2-1 and K-PS2-2***)	Mystery 3: What will the weather be like on your birthday? (***K-ESS2-1***)	Mystery 3: How can you find animals in the woods? (***K-LS1-1***)
Week 4	Mystery 4 Read Along: How can you knock down the most bowling pins? (***K-PS2-1***)	Mystery 4 Read Along: How do you know what to wear for the weather? (***K-ESS2-1***)	Mystery 4 Read Along: How do animals make their home in the forest? (***K-ESS2-2***)
Week 5	Mystery 5: How can we protect a mountain town from falling rocks? (***K-PS2-2, K-2-ETS1-2, K-2-ETS1-3***)	Mystery 5: How could you warm up a frozen playground? (***K-PS3-1, K-PS3-2, K-2-ETS1-2, K-2-ETS1-3***)	Mystery 5: How do plants and trees grow? (***K-LS1-1***)
Week 6	Mystery 6 Read Along: How could you invent a trap? (***K-PS2-2, K-2-ETS1-2***)	Mystery 6 Read Along: How could you walk barefoot across hot pavement without burning your feet? (***K-PS3-1, K-PS3-2***)	Mystery 5 - **Part 2**: How do plants and trees grow? (***K-LS1-1***)
Week 7			Mystery 6 Read Along: Why would you want an old log in your backyard? (***K-ESS3-3***)

Have extra time? "Optional Extras" are extensions to each Mystery. We recommend you use them during your unit or to extend the length of each unit. They include an informational text reading that builds on the Mystery's topic, assessments, and suggestions for supplemental activities.

More Science each week	Longer Science units	Cross Curricular Integration
Use items from the Optional Extras to extend each Mystery if you have more time.	Add a week after each Mystery to teach items from the Optional Extras.	If you want to extend the Mystery but don't have extra time, use Optional Extras during literacy time.

Weather Watching (6-9 weeks) *Weather Conditions, Instruments, & Seasons*

Kindergarten Mystery Science & NGSS Alignment - Earth and Space Sciences (ESS)

Profound Perspective: This unit will help students develop the habit of becoming weather watchers who take pleasure in noticing weather patterns and predicting changes.

Kindergarten Earth and Space Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Have you ever watched a storm?	K-ESS2-1	Weather Conditions and Tracking	The weather is always changing around us! For example, sometimes we need a coat, or an umbrella, and other days we don't. Weather isn't just one thing, there are different factors that affect the weather. When you are a weather watcher, you observe the weather around you. **DCIs: ESS2.D**	Students **obtain information** through observations of the weather. They **communicate the information** by acting as a weather watcher and creating drawings of the weather conditions.	Students observe weather **patterns**. They understand weather as a pattern in the natural world.
Mystery 2 Read Along How can you get ready for a big storm?	K-ESS3-2	Weather Conditions and Tracking	Weather is usually mild but it can quickly become severe. Weather tracking helps us know when to prepare for weather hazards. When the weather becomes severe you may see the sky get darker, the temperature drop, the wind increase, and even precipitation fall. Knowing how to prepare for weather hazards keeps people safe. **DCIs: ESS3.B, ETS1.A**	Students track the weather daily and **analyze the data** by collecting, recording, and sharing their observations. They act as weather reporters and **ask questions** based on observations of weather to find out more information about the natural world.	Students observe weather **patterns**. They understand weather as a pattern in the natural world. Students explore the **cause and effect** relationship between weather tracking and hazard preparation.
Mystery 3 What would the weather be like on your birthday?	K-ESS2-1	Seasons and Patterns	"Weather watchers" see that there are four seasons that each have their own type of weather! Winter is cold, snowy, and trees are bare; spring is warmer, rainy, and new leaves begin to grow; summer is hot and trees have a lot of leaves; autumn is chilly and the leaves begin to fall. The seasons don't just stop, they repeat in a cycle. Therefore, the weather and seasons are a pattern. **DCIs: ESS2.D**	Students **obtain and evaluate information** in a series of unnamed drawings of each season. They use clues in the picture to **argue** for the season they think the picture represents. Next, they use these clues to sequence the seasons in the correct cycle..	Students use their observations of the weather in each season to identify **patterns**. They determine the order of the seasons, and notice the **pattern** that all four seasons repeat each year.

(continued)

Weather Watching (6-9 weeks) *Weather Conditions, Instruments, & Seasons*

Kindergarten Mystery Science & NGSS Alignment - Earth and Space Sciences (ESS)

Kindergarten Earth and Space Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 Read Along How do you know what to wear for the weather?	K-ESS2-1	Daily Weather & Patterns	Weather changes over time, like in the seasons, but it can also change throughout the day. It is usually cooler in the mornings and evenings when the sun isn't out, and warmer in the afternoon when the sun is shining high above us. **DCIs: ESS2.D**	Students **develop and use models** of weather instruments and use them to **carry out an investigation**. Using the instruments students determine the direction of the wind, and how much rain has fallen. Students **analyze the data** to determine weather trends.	Students observe weather **patterns**. They understand temperature changes throughout the day as a **pattern** in the natural world.
Mystery 5 How could you warm up a frozen playground?	K-PS3-1 K-PS3-2* K-2-ETS1-2 K-2-ETS1-3	Sun's Warmth & Engineering	The sun is very far away from earth, but also very important to us. It gives off *so* much light and heat that it warms Earth's surface. If a place doesn't get enough sunlight, it becomes very cold. Engineers can solve this problem by designing a tool that increases the warming effect of the sun on a specific place. *This Mystery uses an activity that *increases* the warming effect of sunlight on an area. **DCI's: PS3.B, ETS1.B, ETS1.C**	Students **define the problem** that Chill City, a valley town surrounded by mountains, does not get enough sunlight in the winter. Using various materials, they **carry out an investigation** to test which materials can redirect sunlight. Using this information, they **design a solution** to help bring sunlight to various locations in Chill City.	Students consider the **cause and effect** relationship between sunlight exposure and the temperature on Earth's surface.
Mystery 6 Read Along How could you walk barefoot across hot pavement without burning your feet?	K-PS3-1 K-PS3-2	Sun & Heat	The sun warms Earth's surface. Places that get a lot of sunlight have warmer temperatures, and shaded places that get less sunlight have cooler temperatures. **DCI's: PS3.B**	Students **obtain and evaluate information** from a map of the pool. Analyzing the hot and cool surfaces, they **design a solution** to get a person across the pool without burning their feet. Students analyze an image of a playground and **construct an explanation** about what areas would be coolest and hottest. Students **conduct an investigation** to determine the warmest and coldest spots outside on a sunny day.	Students consider the **cause and effect** relationship between the amount of sunlight an area gets and its temperature.

Plant & Animal Secrets (6-9 weeks) *Plant and Animal Needs*

Kindergarten Mystery Science & NGSS Alignment- Life Science (LS)

Profound Perspective: Animals and plants need things in order to survive, and their lives are *all* about meeting those needs… it's the secret to why they do the many strange and wonderful things that they do! Knowing how they meet their needs can even help you find plants and animals near where you live.

Kindergarten Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Why do woodpeckers peck wood?	K-LS1-1	Survival Needs: Food	All animals need to find food in order to survive. They go about finding food in different ways, but all animals have this need in common. Knowing that animals have this need can help you find animals where you live, as well as help you make sense of their behaviors. **DCIs: LS1.C**	Students **obtain information through observations** of different animal behaviors. They use evidence from their observations to **argue** for their **explanation** of why animals are acting in these ways. Students act out the behaviors of different animals.	Students study animal behaviors to identify the **pattern** that all animals have behaviors that include seeking out food to survive.
Mystery 2 Read Along Where do animals live?	K-ESS3-1	Animal Homes	Living things need food, water, shelter, and many other resources to survive! All living things live in places that provide the needs they have to survive. Not all living things live in a house, like humans do. Animals live in many different types of homes close to their resources. **DCIs: ESS3.A**	Students **obtain information** through media about how different animal homes are built. They **communicate this information** in order to identify patterns in the natural world.	Students identify the **pattern** that all living things live where their needs are met. They recognize that plants, animals, and their surroundings make up a **system** as parts that work together.
Mystery 3 How can you find animals in the woods?	K-LS1-1	Survival Needs: Safety	All animals need to find safety (protection) in order to survive. They go about finding safety in different ways, but all animals have this need in common. Knowing that animals have this need can help you find animals where you live, as well as help you make sense of their behaviors. **DCIs: *Extends* LS1.C**	Students **obtain information through observations** of different animal behaviors. They use evidence from their observations to **argue** for why animals are acting in these ways. Students act out the behaviors of different animals.	Students study animal behaviors to identify the **pattern** that all animals have the behavior seeking out safety to survive.

(continued)

Plant & Animal Secrets (6-9 weeks) *Plant and Animal Needs*

Kindergarten Mystery Science & NGSS Alignment- Life Science (LS)

Kindergarten Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 Read Along How do animals make their home in the forest?	K-ESS2-2	Survival Needs: Environment Changes	All living things need food and safety to survive. Animals can't always find shelter or something to eat lying around, so they have to change their environment to meet their needs. Animals change the environment in many ways - they dig for food, build homes, create hiding spots, and much more! **DCIs: ESS2.E**	Students take a nature walk to **carry out an investigation** exploring which types of animals live around them and what their homes are like. They **analyze and interpret data** by using their observations to describe the patterns they see.	Students begin to recognize that plants, animals, and their surroundings make up a **system** as parts that work together.
Mystery 5 How do plants and trees grow?	K-LS1-1	Plant Needs: Sunlight	Plants are alive, just like animals. They grow over time, and have similar needs (like water). However, there are some big differences between plants and animals. Plants don't have legs... so you won't see them walking around. They also don't have mouths or eat food the way we do. They need water *and* sunlight. **DCIs: LS1.C**	Students **plan and carry out an investigation** to determine how light affects plant growth. They grow radish plants in light and dark conditions for four days and then **analyze their data**. Using this data, students **engage in an argument from evidence** about which plant is healthier and why.	Students study plant growth under different conditions to identify the **pattern** that all plants have survival needs.
Mystery 6 Read Along Why would you want an old log in your backyard?	K-ESS3-3	Animal's Needs & Changing the Environment	People make changes to their environment so that they can live comfortably. They cut down trees, use energy to produce materials and products, and much more. When people make changes to their environment they use resources needed by other living things. It is important to make choices that reduce our impact on the habitat we share. **DCIs: ESS3.C**	Students **obtain and evaluate information** by virtually keeping watch on a log and reporting about the living things that visit it. They **communicate information** by drawing a log and the animals that would use it as their habitat.	Students consider the **cause and effect** relationship between the changes people make to their environment and the impact it has on other living things that share their habitat.

Force Olympics (6-9 weeks) *Forces, Machines, & Engineering*

Kindergarten Mystery Science & NGSS Alignment - Physical Science (PS)

Profound Perspective: This unit will help students develop their first concept of "force," and the idea that by playing with forces and thinking about them, we can accomplish surprisingly big things.

Kindergarten Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 What's the biggest excavator?	Foundational for K-PS2-1 K-PS2-2	Pushes, Pulls & "Work Words"	Machines multiply the work a human can do - making the work easier! A machine's force is stronger than a human's force. For example, digging a hole takes less work with a shovel than it does with your hands. It takes even less work if you use a bigger machine, like a bulldozer! **DCIs: *Foundational* for PS2.A, PS2.B, PS2.C**	Students **obtain information** through observations of different machines. They use evidence from their observations to **argue** for their **explanation** of why machines make work easier. Students act out the "work words" of different machines.	Students consider the **effects** that machines can have when completing a task.
Mystery 2 Read Along Why do builders need so many big machines?	Foundational for K-PS2-1 K-PS2-2	Pushes, Pulls & "Work Words"	There are many different types of machines and each one has a unique job. Machines help people by making their work faster and easier. Machines help people do things like dig, lift, dump, push, and mix! Without machines, it would take a lot longer to build new things. **DCIs: *Foundational* for PS2.A, PS2.B, PS2.C**	Students **obtain information** through footage of different construction equipment being used in different ways. Student **communicate about the information** by discussing what each machine does using "work words".	Students consider the **cause and effect** relationship between the movement of a machine and the work it can do.
Mystery 3 How can you knock down a wall made of concrete?	K-PS2-1 K-PS2-2	Strength & Direction of Force	Machines create pushes and pulls, or "forces". A wrecking ball is a machine that uses a push to knock things over. By changing the strength and direction of the push, you can make the force larger or smaller. **DCIs: PS2.A, PS2.B, *Foundational* PS3.C and ETS1.A**	Students **carry out an investigation** to determine how far back they should pull their **model** wrecking ball to knock down a wall, but not the houses behind it. They **analyze the data** collected in their investigation to discuss how the force of the wrecking ball changes when you change the strength and direction of its push.	Students analyze the **effect** of changing the strength and direction of a wrecking ball's push. They experiment with different heights to determine how the push, or force, is changed.

(continued)

Force Olympics (6-9 weeks) *Forces, Machines, & Engineering*

Kindergarten Mystery Science & NGSS Alignment - Physical Science (PS)

Kindergarten Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 Read Along How can you knock down the most bowling pins?	K-PS2-1	Strength & Direction of Force	To move an object farther or faster, a bigger push or pull is needed. When objects collide they push on one another causing a change in direction and speed. By changing the force acting on an object, you can change the motion of the object. **DCIs: PS2.A, PS2.B, *Foundational PS3.C***	Students **carry out an investigation** by 'bowling' with solo cups (pins), a tennis ball (bowling ball), and pool noodles (bumpers). They explore the forces at work when one thing hits another, and how changing the size of the force affects the motion of an object.	Students analyze the **cause and effect** relationship between the size of the force on an object and the direction or speed it goes.
Mystery 5 How can we protect a mountain town from falling rocks?	K-PS2-1 K-PS2-2 K-2-ETS1-2 K-2-ETS1-3	Forces & Engineering	Pushes and pulls can have different strengths. The faster an object moves, or the larger it is, the stronger it pushes on something when it bumps into it. Sometimes a push or pull is so strong that it makes an object start moving, or stop moving! Pushing or pulling on an object can even change the direction an object is going. We can use scientific knowledge to help people solve a problem. **DCIs: PS2.A, PS2.B, PS3.C, ETS1.B, ETS1.C**	Students use a **model** of a mountain town, Tiny Town, to **conduct an investigation** of how to protect the town from a falling boulder. They **design a solution** to safely guide a boulder down the hill so it doesn't hit the town and rolls into a dump truck. Using pushpin poles, students change the direction the boulder is rolling.	Students consider the **cause and effect** relationship between a force and an object's speed or direction.
Mystery 6 Read Along How could you invent a trap?	K-PS2-2 K-2-ETS1-2	Forces & Engineering	Inventors design solutions to solve problems. Anyone can be an inventor! Inventors create new ideas, and many use engineering and design to help them. Inventors use their knowledge to create something new. In this story, two inventors use a pull to help them solve a problem. **DCIs: PS2.A, ETS1.A, ETS1.B, ETS1.C**	Students **design a solution** to help the boo characters solve a problem. Then, they **define a problem** by choosing a chore they don't like doing. Next, they **design solution** by sketching a machine that could help them. They compare their solutions with a partner.	Students consider the **structure and function** of existing materials and tools in order to create new uses for them in order to solve a problem.

Mystery Science Grade 1 - Pacing Guide

Mystery Science recommends teaching the mysteries within each unit in the order they are presented. The units themselves can be taught in any order. The core Mystery (exploration & activity) are designed to take 30-45 minutes per week, with 1 hour of Optional Extras per Mystery. The Read Along Mysteries offer an opportunity to develop students' literacy as they learn science.

	Spinning Sky (6-9 weeks)	Light & Sounds (6-9 weeks)	Plant & Animal Superpowers (6-9 weeks)
Week 1	Mystery 1: Can a statue's shadow move? ***(1-ESS1-1)***	Mystery 1: How do they make silly sounds in cartoons? ***(1-PS4-1)***	Mystery 1: Why do birds have beaks? ***(1-LS1-1)***
Week 2	Mystery 2 Read Along: What does your shadow do when you're not looking? ***(1-ESS1-1)***	Mystery 2 Read Along: Where do sounds come from? ***(1-PS4-1)***	Mystery 2 Read Along: Why do baby ducks follow their mother? ***(1-LS1-2)***
Week 3	Mystery 3: How can the sun help you if you're lost? ***(1-ESS1-1)***	Mystery 3: What if there were no windows? ***(1-PS4-3)***	Mystery 3: Why are polar bears white? ***(1-LS1-1)***
Week 4	Mystery 4 Read Along: Why do you have to go to bed early in the summer? ***(1-ESS1-2)***	Mystery 4 Read Along: Can you see in the dark? ***(1-PS4-2)***	Mystery 4 Read Along: Why do family members look similar to one another? ***(1-LS3-1)***
Week 5	Mystery 5: Why do the stars come out at night? ***(1-ESS1-1)***	Mystery 5: How could you send a secret message to someone far away? ***(1-PS4-4, K-2-ETS1-2)***	Mystery 5: Why don't trees blow down in the the wind? ***(1-LS1-1, K-2-ETS1-2, K-2-ETS1-3)***
Week 6	Mystery 6 Read Along: How can stars help you if you get lost? ***(1-ESS1-1)***	Read Along Mystery 6:How do boats find their way in the fog? ***(1-PS4-4)***	Read Along Mystery 6: What do sunflowers do when you're not looking? ***(1-LS1-1)***

Have extra time? "Optional Extras" are extensions to each Mystery. We recommend you use them during your unit or to extend the length of each unit. They include an informational text reading that builds on the Mystery's topic, assessments, and suggestions for supplemental activities.

More Science each week	Longer Science units	Cross Curricular Integration
Use items from the Optional Extras to extend each Mystery if you have more time.	Add a week after each Mystery to teach items from the Optional Extras.	If you want to extend the Mystery but don't have extra time, use Optional Extras during literacy time.

Spinning Sky (6-9 weeks) *Sun, Moon, & Stars*

Grade 1 Mystery Science & NGSS Alignment - Earth & Space Sciences (ESS)

Profound Perspective: This unit will help students develop the idea that the sun, moon, and stars change position in the sky in ways that are fun to watch and predict.

Grade 1 Earth & Space Sciences	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Could a statue's shadow move?	1-ESS1-1	Sun, Shadows, & Daily Patterns	Patterns of motion are all around us; they're even in the sky! If you observe a still object throughout the day, you'll see that its shadow changes. The sun doesn't stay in the same place all day. It is the sun's movement across the sky that changes the shape of an object's shadow. **DCIs: ESS1.A**	Students **conduct two investigations**. In the first, they place a gnome in the sun and trace its shadow. They **observe** how the shadow changes as time passes, or as the sun moves across the sky. In their second **investigation**, they use model gnomes to **analyze** how to move a light source to change the shape and length of the shadow of the gnome. **Interpreting this data**, they **construct an explanation** about what causes a shadow to move.	Students consider the movement of shadows to be caused by the **pattern** of the sun's movement across the sky.
Mystery 2 Read Along What does your shadow do when you're not looking?	1-ESS1-1	Sun, Shadows, & Daily Patterns	Each day, the sun moves across the sky in an arch shape. It is low in the mornings, high in the afternoon, and low again in the evenings. When the sun is low in the sky, it makes shadows long. When it is high in the sky, shadows are short. If you look closely, you'll notice your shadow also changes sides in the morning and evening. **DCIs: ESS1.A**	Students **conduct an investigation** to gather information about how their shadow changes throughout the day. They trace their shadow in the morning and afternoon, then **analyze the data** to identify differences in the shadows. Using the data, they **construct an explanation** about why their shadows point in different directions.	Students explain changes in shadows by considering the **patterns** in the sun's movement across the sky. They identify the **cause and effect** relationship between the height of the sun in the sky and a shadow's length and direction.
Mystery 3 How can the sun help you if you're lost?	1-ESS1-1	Sun & Daily Patterns	The sun's movement across the sky is a pattern! We can use its path to help us figure out the direction we're headed. Since we know the sun always rises in the east, moves across the sky, and sets in the west, we can use the time of day and the sun's position to figure out which way is east and which way is west. **DCIs: ESS1.A**	Students develop a Sun Finder, a **model** of the sun's movement across the sky. **Using the model**, they reason about how the sun can help guide them during the day. Since they know that they walked toward the sun to get to their friend's house in the morning, they must use **evidence to argue** whether they should walk toward or away from the sun to get home in the afternoon.	Students analyze the **pattern** of the sun's movement across the sky each day.

(continued)

Spinning Sky (6-9 weeks) *Sun, Moon, & Stars*

Grade 1 Mystery Science & NGSS Alignment - Earth & Space Sciences (ESS)

Grade 1 Earth & Space Sciences	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 Read Along Why do you have to go to bed early in the summer?	1-ESS1-2	Daylight Patterns	Depending on the season, it takes different amounts of time for the sun to move across the sky. This makes it seem like some seasons have longer days, and others have shorter days. During the summer, the sun rises earlier and sets later - there are *more* hours of daylight. In the winter, the sun rises later and sets earlier - there are *less* hours of daylight. **DCIs: ESS1.B**	Students **obtain information** about the seasonal patterns of sunrise and sunset through a printable student reader. Students read the text independently to determine seasonal daylight patterns.	Students consider the **pattern** that there are more hours of daylight during the summer than there are in the winter.
Mystery 5 Why do the stars come out at night?	1-ESS1-1	Stars & Daily Patterns	It seems that stars only come out at night, but they are actually always there. It's just that we can only *see* them at night. We can't see stars during the day because the sun is out and its brightness outshines the stars. When the sun sets, the stars are not outshone and you can see them. It isn't just the sun that outshines stars, this is true about any bright light. If the moon is very bright, or there are bright city lights, it will be harder to see stars. **DCIs: ESS1.A**	Students **develop and use a model** of the Big Dipper in the night sky. They **carry out an investigation** to determine why stars are only visible in the night sky. Students **construct an explanation** about the stars being outshone by the sun in the daytime sky, and then being visible again when the sun sets.	Students consider the **pattern** that the stars are only visible in the night sky. They explore the **cause and effect** relationship between the sun's brightness and the visibility of the stars.
Mystery 6 Read Along How can stars help you if you get lost?	1-ESS1-1	Stars & Seasonal Patterns	There are groups of stars in the sky that form a pattern; they are called constellations. One constellation, the Big Dipper, can help us find where the North Star is! Even though the Big Dipper changes its spot in the sky in different seasons, it always points to the North Star. **DCIs: ESS1.A**	Students **obtain, evaluate, and communicate information** about the cardinal directions. They **conduct an investigation** to determine which direction each part of their classroom is facing.	Students consider the **pattern** that stars are in different places in the sky during different seasons. They consider the **pattern** that the Big Dipper help us find the North Star.

Light & Sounds (6-9 weeks) *Properties of Light & Sound*

Grade 1 Mystery Science & NGSS Alignment - Physical Science (PS)

Profound Perspective: This unit will develop the idea that by exploring the properties of light and sound, human beings create fun and useful things.

Grade 1 Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 How do they make silly sounds in cartoons?	1-PS4-1	Sounds, Vibrations	There are so many different types of sounds! Some are loud, soft, high, low, or even silly. People are capable of making a lot of different sounds. Each sound is made with a back and forth movement, called a vibration. Different vibrations make different sounds. **DCIs: PS4.A**	Students **carry out investigations** exploring how to make different sounds. First, they use their hands and feet to make the sounds of a rain storm. Next, they use the vibration of a ruler to create a 'boing' sound as the soundtrack to a bouncing ball animation. Students **construct the explanation** that objects vibrate when they make a sound, and if the vibration stops, the sound stops as well.	Students consider the relationship between vibrations **(cause)** and sound **(effect)**.
Mystery 2 Read Along Where do sounds come from?	1-PS4-1	Sounds, Vibrations	Sounds are caused by an object vibrating. If a vibration stops, then the sound will stop too. Musical instruments make many unique and interesting sounds! When an instruments makes music, it comes from a part of the instrument vibrating. **DCIs: PS4.A**	Students **carry out investigations** to explore different sounds and how they are created. They create three different sound makers and **construct an explanation** about where the vibrations are happening in each sound experiment.	Students consider the relationship between vibrations **(cause)** and sound **(effect)**.
Mystery 3 What if there were no windows?	1-PS4-3	Light, Materials, Transparent & Opaque	Glass is a transparent material, it is see-through and light can pass through it. Imagine what life would have been like with no glass. There would have been no windows, no eyeglasses, and even no windshields in a car! There are also materials that are *somewhat* see-through (some light can pass through) called translucent materials. Materials that are not see-through at all (no light can pass through) are called opaque materials. **DCIs: PS4.B**	Students **investigate** the difference between transparent, translucent, and opaque materials by sorting them. They determine whether a material is transparent, translucent or opaque. Students then create a stained glass window using tissue paper. In this activity, they **construct an argument** to answer what happens to tissue paper when it is layered.	Students reason about the **cause and effect** relationship between the type of material (cause) and the amount of light that can pass through it (effect).

(continued)

Light & Sounds (6-9 weeks) *Properties of Light & Sound*

Grade 1 Mystery Science & NGSS Alignment - Physical Science (PS)

Grade 1 Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 Read Along Can you see in the dark?	1-PS4-2	Illumination	If you've ever been in a completely dark space, you know you can't see anything! Even the slightest bit of light helps us see our surroundings. In a dark room there is often light from the hallway coming in through the crack under the door. The night sky is full of bright stars, and roads have street lights. Objects can only be seen if they are illuminated or give off their own light. **DCIs: PS4.B**	Students **carry out an investigation** using a Mystery Box. They look inside the completely dark box to see if they can see the shape of the object inside. They allow more light in through peepholes to illuminate the object and allow them to see it. Students use their observations to **construct the explanation** that objects need light to be seen.	Students consider the **cause and effect** relationship between light (cause) and being able to see objects (effect).
Mystery 5 How could you send a secret message to someone far away?	1-PS4-4 K-2-ETS1-2	Engineering & Communication	People use many different devices to communicate over long distances. Cell phones and iPads help us communicate with people far away, but they had to be invented. People don't just communicate with sound, we can also use light. A great example is a traffic light which tells cars to go, slow down, or stop using light signals. **DCIs: PS4.C, ETS1.B**	Students are presented with the problem that they need to send a message at night, without using noise. They **design a solution** with a partner by correlating light colors to a specific message. Using their secret code, partners take turns communicating information across the room with light signals.	Students consider light signals and their understood meaning as a **pattern**.
Mystery 6 Read Along How do boats find their way in the fog?	1-PS4-4	Lights, Sounds, & Communication	Colors, lights, and sounds help us communicate over long distances. Sounds can even help us communicate when it is difficult to see. People who drive cars and boats use colors, lights, and sounds to help them find their way around the road or sea. **DCIs: PS4.C**	Students **obtain information** about light and sound signals. They play red light/green light to practice responding to common signals. Students **conduct an investigation** of different sounds. They find their 'sound partner'--the student who has the same sound object in their cup. Students **analyze** different sounds with their eyes closed. They determine which type of sound they heard.	Students consider that different light and sound signals form a **pattern** used for communication.

Plant and Animal Superpowers (6-9 weeks) *Parts, Survival, & Growth*

Grade 1 Mystery Science & NGSS Alignment - Life Science (LS)

Profound Perspective: This unit will help students develop the idea that, like a superhero has special powers, every animal and plant has special parts and behaviors that help them to grow and meet their needs.

Grade 1 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Why do birds have beaks?	1-LS1-1	Structure & Survival	All living things have body parts that help them survive and grow. Each kind of animal has special body parts that help them get the food they need to survive. Some animals use their hands, mouth, beaks, trunks, or tongues to eat their food. The shape of the body part they use to get food is best suited for the type of food the animal eats. **DCIs: LS1.A**	Students **model** how different bird beaks are well suited for eating different kinds of foods. Students **conduct an investigation** to figure out how much food (straw pieces) they can pick up using each beak. **Analyzing these results**, students construct **arguments using their evidence** about which beak would help the birds survive in different environments.	Students consider the relationship between the shape of a bird's beak **(structure)**, and the food it eats **(function)**.They begin to observe the **pattern** that all animals have structures that help them accomplish unique functions.
Mystery 2 Read Along Why do baby ducks follow their mother?	1-LS1-2	Parents and Offspring Survival	Offspring, the children of living things, need to get their needs met in order to survive.. All offspring need food, shelter, protection, and comfort. They also need to learn how to survive on their own. Animal parents (including humans) have the important job of teaching their offspring how to survive before they grows up. Offspring learn from their parents and rely on them to meet their survival needs when they are young. **DCIs: LS1.B**	Students **obtain information** about different animal mothers engaging in behavior to help their offspring survive. They **evaluate and communicate the information** by discussing why each animal mother does each behavior for her offspring.	Students consider the **patterns** in behavior of parents and offspring that help offspring survive.
Mystery 3 Why are polar bears white?	1-LS1-1	Structure & Survival	This Mystery continues the exploration that animals have body parts to help them survive and grow. Animals have different behaviors and body parts that help protect themselves from danger. The color of an animal's fur, feather, skin, or scales can help them blend in with their habitat. Camouflage helps both prey and predators survive! **DCIs: LS1.A**	Students **model** how camouflage helps moths survive by **carrying out an investigation** with differently patterned paper moths and trees. They see how many moths they can find in the paper forest. Moths that are patterned like the tree they are on will be harder to see, while moths that are patterned differently than the tree that they are on will be much more visible. Students make an **argument** about which moths a hungry bird would eat first based on **evidence** from their investigation. Next, they choose a place in the classroom and design their own moth that will camouflage into the area.	Students consider the relationship between the color of an animal's fur, feathers, or skin **(structure)**, and how this helps it survive in its habitat **(function)**.They begin to observe the **pattern** that all animals have structures that help them get what they need to survive.

(continued)

Plant and Animal Superpowers (6-9 weeks) *Parts, Survival, & Growth*

Grade 1 Mystery Science & NGSS Alignment - Life Science (LS)

Grade 1 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 Read Along Why do family members look similar to one another?	1-LS3-1	Inheritance & Variation of Traits	All living things share similar characteristics with their parents. For example, a baby duckling looks like a duck, not a cow! You'll notice that young animals and plants look similar to their parents, but not identical. **DCIs: LS3.A, LS3.B**	Students use observations of animal parents and their offspring to **construct an explanation** about young plants and animals being similar, but not identical, to their parents. They play the game MatchUp, between mother and baby animals, using their knowledge of similar characteristics.	Students consider shared characteristics between parents and their offspring as a **pattern**.
Mystery 5 Why don't trees blow down in the wind?	1-LS1-1 K-2-ETS1-2 K-2-ETS1-3	Plants & Engineering	All living things have structures, or external parts. Animals use their body parts to help them survive, grow, and communicate. Plants also have external parts that help them to survive. Humans can mimic the structure and function of an animal or plant's external parts to design solutions to their problems. **DCIs: LS1.A, ETS1.A, ETS1.B, ETS1.C**	Students **develop a model** of an umbrella and **conduct an investigation** to test wind's effect on it. Students **design a solution** to solve the problem of needing a shade structure that won't blow over in the wind, by mimicking a tree's external part.	Students observe the relationship between a tree's roots and leaves (**structure**) and how they help the tree stand in the wind (**function**). They apply this relationship in a natural object to a designed object.
Mystery 6 Read Along What do sunflowers do when you're not looking?	1-LS1-1	Plant Survival	Sunflowers move throughout the day so that they are always facing the sun! Their stem bends so that the sunflower always gets as much sun as possible to help it grow. The flower starts the day facing east, where the sun rises, and ends the day facing west, where the sun sets. **DCIs: LS1.A, LS1.D**	Students **conduct an investigation** to test how plants respond to light. They observe how the direction a plant grows depends on the position of the light.	Students observe the relationship between a sunflower's flower and stem (**structure**) and how the flower parts bend to get as much sun as possible throughout the day (**function**). This response to the environment helps sunflowers grow.

Mystery Science Grade 2 - Pacing Guide

Mystery Science recommends teaching the mysteries within each unit in the order they are presented. The units themselves can be taught in any order. The core Mystery (exploration & activity) are designed to take an hour per week, with 2 hours of Optional Extras.

	Plant Adventures (5-10 weeks)	Animal Adventures (3-6 weeks)	Material Magic (4-8 weeks)	Work of Water (4-8 weeks)
Week 1	Mystery 1: How did a tree travel halfway around the world? ***(2-LS2-2)***	Mystery 1: How many different kinds of animals are there? ***(2-LS4-1)***	Mystery 1: Why do we wear clothes ***(2-PS1-1, 2-PS1-2, K-2-ETS1-2, and K-2-ETS1-3)***	Mystery 1: If you floated down a river, where would you end up? ***(2-ESS2-2 and 2-ESS2-3)***
Week 2	Mystery 2: Do plants eat dirt? ***(2-LS2-1 and 2-LS4-1)***	Mystery 2: Why do frogs say "ribbit"? ***(2-LS4-1)***	Mystery 2: Can you really fry an egg on a hot sidewalk? ***(2-PS1-1 and 2-PS1-2)***	Mystery 2: Why is there sand at the beach? ***(2-ESS2-2)***
Week 3	Mystery 3: Why do trees grow so tall? ***(2-LS2-1)***	Mystery 3: How could you get more birds to visit a bird feeder? ***(2-LS4-1, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3)***	Mystery 3: Why are so many toys made out of plastic? ***(2-PS1-1, 2-PS1-2 and 2-PS1-4)***	Mystery 3: What's strong enough to make a canyon? ***(2-ESS1-1, 2-ESS2-1 and 2-ESS2-2)***
Week 4	Mystery 3 - **Activity Part 2**: Why do trees grow so tall? ***(2-LS2-1)***		Mystery 4: What materials might be invented in the future? ***(2-PS1-1, 2-PS1-2, K-2-ETS1-2, K-2-ETS1-3)***	Mystery 4: How can you stop a landslide? ***(2-ESS2-1, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3)***
Week 5	Mystery 4: Should you water a cactus? ***(2-LS2-1 and 2-LS4-1)***		Mystery 5: *Coming August 2018*	
Week 6	Mystery 5: Where do plants grow best? ***(2-LS2-1 and 2-LS4-1)***			

Have extra time? "Optional Extras" are extensions to each Mystery. We recommend you use them during your unit or to extend the length of each unit. They include an informational text reading that builds on the Mystery's topic, assessments, and suggestions for supplemental activities.

More Science each week	Longer Science units	Cross Curricular Integration
Use items from the Optional Extras to extend each Mystery if you have more time.	Add a week after each Mystery to teach items from the Optional Extras.	If you want to extend the Mystery but don't have extra time, use Optional Extras during literacy time.

Plant Adventures *Structure, Function & Adaptations*

Grade 2 Mystery Science & NGSS Alignment - Life Sciences (LS)

Profound Perspective: This unit develops the idea that plants are truly alive and face challenges every bit as dramatic as those of animals. Students will learn that plants have needs, and will reason from evidence to understand how plants meet their needs.

Grade 2 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 How did a tree travel halfway around the world?	2-LS2-2	Seed Dispersal	Many plants start as seeds! There are a lot of different types of seeds, all with unique shapes. In order for more plants to grow, seeds need to move away from the parent plant and grow into a new plant. Plants depend on wind, water, and animals to disperse their seeds. **DCIs: LS2.A**	Students **model** seed dispersal by creating three different seed flyers. They **investigate** how each seed flyers' structure helps the seed disperse.	Students explore how the **structure** of a seed helps it disperse (**function**).
Mystery 2 Do plants eat dirt?	2-LS2-1 2-LS4-1	Roots, Water, & Minerals	When a seed is in dirt, the first thing to grow are its roots. The plant actually doesn't need the dirt to grow but it does need the water and minerals often found in the dirt. Roots carry these nutrients from the environment to the plant. As long as plants are getting minerals, water, and sunlight, they can grow! There are many types of plants living in different habitats that get their minerals in unique ways. **DCIs: LS2.A, LS4.D**	Students **conduct an investigation** using a root viewer to observe how roots grow. Students record what the seed looks like for 2 days, turn the root viewer to the side on Day 3, and record the growth until Day 4.	Students evaluate the **effect** minerals have on plant growth. Students consider how the **structure** of plants helps them get the water and minerals they need to survive (**function**).
Mystery 3 Why do trees grow so tall?	2-LS2-1	Light, Leaves, & Competition	We've learned that plants need water and minerals to survive, but they also need light! It's possible to watch plants grow *toward* light following the sun throughout the day. The leaves of a plant soak up the sun and deliver it to the rest of the plant. Trees compete for sunlight, so their leaves are at the top of the tree and they grow as tall as possible. **DCIs: LS2.A**	Students make a Grass Head and **conduct an investigation** to determine the sun's impact on the direction plants grow. **Analyzing data** from Mystery 1, students predict growth patterns of plants.	Students consider the **effect** sunlight has on plant growth. Students analyze the role of the leaves (**structure**) in helping the plant capture sunlight (**function**).
Mystery 4 Should you water a cactus?	2-LS2-1 2-LS4-1	Adaptations & Habitat	All plants need sunlight and water to survive, but they don't need the *same* amount of them. There are plants that like shade, and live on the forest floor. There are even plants that need small amounts of water and can survive in the hot and dry desert. **DCIs: LS2.A, LS4.D**	Students **analyze the data** from their Grass Head in Mystery 3. They compare their growth pattern prediction with the actual results to determine if the grass grew in the direction of the sunlight.	Students consider the **cause and effect** relationship between a plant's needs and the habitat it survives best in. Students consider how plants have **structures** that help them survive in their environment (**function**).

(continued)

Plant Adventures *Structure, Function & Adaptations*

Grade 2 Mystery Science & NGSS Alignment - Life Sciences (LS)

Grade 2 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 5 Where do plants grow best?	2-LS2-1 2-LS4-1	Adaptations & Habitat	In order to grow a plant successfully, it's important to know its needs! We've learned that plants need different amounts of sunlight and water. If you planted a cactus in an area that got a lot of rain, it probably wouldn't survive. Knowing a plant's needs helps gardeners and farmers grow plants. **DCIs: LS2.A, LS4.D**	Students engage in a **model** simulation of a farm with different growing conditions in different areas of the farm. Students consider the needs of a plant in order to determine where it will grow best.	Students consider the **cause and effect** relationship between a plant's needs and the habitat it survives best in.

Animal Adventures *Biodiversity*

Grade 2 Mystery Science & NGSS Alignment - Life Science (LS)

Profound Perspective: This unit helps students develop a sense of wonder for biodiversity: the sheer range and variety of animals found on earth. Students gain practical experience in identifying animals and sorting them into scientific groups, and apply their knowledge in an engineering design challenge. This unit introduces two critically important concepts in biology: "habitat" and "species," foundational concepts which will be revisited and refined at higher grade levels.

Grade 2 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 How many different kinds of animals are there?	2-LS4-1	Biodiversity, Classification & Patterns	There are *so many* different kinds of animals--even today, we haven't discovered all of them! Before it was easy to travel and visit each other's continents, people only knew about the types of animals from where they grew up. Early scientists eventually started exploring different places and learning about new animals. They discovered the wide variety of living things in habitats, called biodiversity. Scientists organized the animals they discovered into groups based on their shared characteristics. **DCI: LS4.D**	Students **evaluate and communicate information** by sorting animals based on their traits and explaining their choices. Then, students sort the animals based on the traits scientists use to classify the animals as mammals, birds, reptiles, and invertebrates. Students determine which group 'challenge animals' belong to, based on their characteristics.	Students identify **patterns** in animal's characteristics in order to group them.
Mystery 2 Why do frogs say "ribbit"?	2-LS4-1	Biodiversity, Species, & Habitats	Frogs are a really neat example of the biodiversity in North America! In just one habitat, there can be many different frog species. Scientists study frog biodiversity by analyzing the different frog sounds they hear in a habitat--each frog species has a unique call. The variety of frog species in a habitat, depends on the amount of resources a habitat has. The more resources, the more types of frogs! **DCI: LS4.D**	Students listen to a variety of frog calls, then **analyze** the sounds from two different habitats to determine which frogs are there. They then construct an **argument from evidence** about which habitat is more biodiverse based on the amount of different frog calls.	Students identify **patterns** in frog calls in order to determine how biodiverse a habitat is.
Mystery 3 How could you get more birds to visit a bird feeder?	2-LS4-1 K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	Biodiversity & Engineering	Not all bird feeders are created equally! Bird feeders come in all shapes, sizes, and colors--they even hold different types of food. Different bird feeders attract different bird species. People like to see different birds up close, so engineers designed bird feeders to help solve this problem. There are so many different bird feeders and each one has strengths and weaknesses, depending on what type of bird you want to attract!	Students **define a problem** by stating which type of bird they want to design a bird feeder for, and what its needs are. Each student **designs a solution** by comparing multiple sketches and **developing a model** of a bird feeder that best meets the needs of the bird they want to attract. Students reflect on	Students explore the **cause and effect** relationship between bird feeder design and the type of food in it and the types of birds that visit it.

			DCI: LS4.D	how to improve their prototype.	

Material Magic *Properties & Phases of Matter*

Grade 2 Mystery Science & NGSS Alignment - Physical Sciences (PS)

Profound Perspective: This unit develops the idea that by taking advantage of the properties of materials, we can solve many problems in our lives. Students will develop an appreciation for the manmade materials of everyday objects, and learn to recognize that those materials are chosen based on their properties. Through hands-on investigation, students will explore the material properties involved in meeting basic needs (such as clothing and cooking). They'll consider the solid and liquid states of matter to understand why plastic was invented. The unit ends with a brainstorming activity about futuristic inventions that might be possible using new materials.

Grade 2 Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Why do we wear clothes?	2-PS1-1 2-PS1-2 K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	Material Properties & Engineering	Materials have a set of unique properties that determine their use. Clothes are made of material, and we wear them to protect us. We choose clothing based on its properties. For example, if it was hot outside we would wear something light and opaque to protect us from the sun. **DCIs: PS1.A, ETS1.A, ETS1.B**	Students **define the problem** that a hat is needed to shade the sun. They **carry out an investigation** of the properties of the provided materials. Next, each student **designs a solution** by selecting materials to create a hat that blocks the sun.	Students consider the **pattern** that different materials share similar properties. Students test the **effect** a material's properties have on its function.
Mystery 2 Can you really fry an egg on a hot sidewalk?	2-PS1-1 2-PS1-2	Material Properties & Classifying Materials	One interesting property of materials is whether they are an insulator (a material that does not allow the movement of heat) or a conductor (a material that moves heat easily). If you know which property a material has, you can choose the best one for your purpose! **DCIs: PS1.A**	Students **carry out an investigation** to test if a material is an insulator. **Analyzing the data**, they determine which material they would use to pick up something hot.	Students consider the **pattern** that different materials share similar properties. Students test the **effect** a material's properties have on its function.
Mystery 3 Why are so many toys made out of plastic?	2-PS1-1 2-PS1-2 2-PS1-4	Material Changes & Phases of Matter	Another property of materials is if they are meltable or not. If a material is meltable, it melts into a liquid when you heat it up! All meltable material melts at different temperatures. Some may melt in your hands, while others need fire. This property is useful because you can heat a substance, melt it, pour the liquid into any mold, let it cool and harden again to make different shapes. **DCIs: PS1.A, PS1.B**	Students **conduct an investigation** to determine which type of candy will melt in hot water. **Analyzing the data**, students compare their predictions to what actually occurred. Students **engage in an argument** as to which candy to mail using **evidence** from the investigation to support their claim.	Students observe the **pattern** that different materials share similar properties. Students consider the **cause and effect** of heat being added to meltable substances. They observe that when heat (**energy**) is applied to a meltable substance (**matter**) it changes shape.
Mystery 4 What materials	2-PS1-1 2-PS1-2 K-2-ETS1-1	Material Inventions & Engineering	Over time, inventions of materials with new properties have helped solve problems. New materials are	Students use a new material to **design solutions** to solve a real life problem. Students **engage in**	Students observe the **pattern** that different materials share similar properties. Some materials have

might be invented in the future?	K-2-ETS1-2		constantly being invented and made into products that could be available in the future. **DCIs: PS1.A, ETS1.A, ETS1.B, *Foundational* ETS1.C**	**an argument** for the merits of their design.	properties that **cause** them to be better suited to a purpose. They begin to explore how the **structure** of a designed object relates to its **function**.

Note: *Mysteries that address PE 2-PS1-3 are in development.*

Work of Water *Earth's Surface Processes*

Grade 2 Mystery Science & NGSS Alignment - Earth Sciences (ES)

Profound Perspective: This unit helps students develop the idea that water is a powerful force that reshapes the earth's surface. Students see that water isn't just something we drink. It carries sand to create beaches, carves out canyons and valleys and, as ice, scrapes entire areas flat.

Grade 2 Earth Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 If you floated down a river where would you end up?	2-ESS2-2 2-ESS2-3	Mapping, Earth's Surface, & Landforms	Rivers are bodies of water that are moving! When we look at a map of the earth's surface, we see that big rivers empty into the ocean. Earth's surface looks flat on a map, but we know that it is actually *quite* hilly. If we looked at a map with texture we'd see that rivers begin at points of high land, flow to points of low land and then into the ocean. **DCIs: ESS2.B, ESS2.C**	Students **develop a model** of the earth's surface and **carry out an investigation** to discover how rivers flow. They **construct an explanation** about where on the earth's surface rivers start and end.	Students identify **patterns** about where rivers start and end on earth's surface.
Mystery 2 Why is there sand at the beach?	2-ESS1-1 2-ESS2-1 2-ESS2-2	Erosion, Earth's Surface, & Landforms	In the last Mystery, we explored how rivers flow from high points of the earth's surface to low points and into the ocean. Oceans are usually next to sandy beaches - but how did all of that sand get there? As the rivers flow toward the ocean, rocks collide into one another causing them to break into smaller pieces. By the time those rocks reach the end of the river, they are *tiny* rocks - or sand! **DCIs: ESS1.C, *Foundational for* ESS2.A, ESS2.B**	Students **conduct an investigation by modeling** how rocks tumble through a river and break. Students **construct an explanation** for why there is sand at the beach.	Students reason about the **cause and effect** of rocks tumbling in a river (cause) and turning into sand (effect). Students begin to explore that **changes** to the earth's surface can happen slowly through the process of erosion.
Mystery 3 What's strong enough to make a canyon?	2-ESS1-1 2-ESS2-1 2-ESS2-2	Erosion, Earth's Surface, & Landforms	Water is incredibly powerful - even powerful enough to move the earth's surface! Heavy rains wash away dirt and rocks, creating canyons - this process is called erosion. Most canyons have rivers flowing from them, and as time passes the water continues to carry away dirt, rocks, and sand. Because of this, canyons continue to grow deeper and wider over time. **DCIs: ESS1.C, ESS2.A, ESS2.B, ESS2.C**	Students **conduct an investigation** by **modeling** what happens to land when it rains over and over. Students **construct an explanation** for how the water changed the land.	Students consider the **cause and effect** of how heavy rains (cause) create canyons on earth's surface (effect). Students begin to explore that **changes** to the earth's surface can happen slowly through the process of erosion.

Mystery 4 How can you stop a landslide?	2-ESS1-1 2-ESS2-1 K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	Erosion & Engineering	Landslides - w hen the earth loosens and is w ashed aw ay dow n a hill - is more likely to happen after a w ildfire! The fire burns the plants, w hich soak up rainw ater and stabilize the soil w ith their roots. After a heavy rain, the w ater loosens the soil and w ashes the soil aw ay, causing a landslide. Landslides pose many dangers for people! **DCIs: ESS1.C, ESS2.A, ETS1.A, ETS1.B, ETS1.C**	Students **define the problem** that landslides create. They **design solutions** to stabilize soil and prevent landslides. Students compare their solutions and engage in argument from this evidence to determine w hich designs are most effective.	Students apply the concept that **changes** to earth's surface can happen rapidly during a landslide. Students mimic natural **structures** and their **functions** to create a design solution that lessens the impact of landslides.

Mystery Science Grade 3 - Pacing Guide

Mystery Science recommends teaching the mysteries within each unit in the order they are presented. The units themselves can be taught in any order. The core Mystery (exploration & activity) are designed to take an hour per week, with 2 hours of Optional Extras.

	Power of Flowers (4-8 weeks)	Animals Through Time (8-16 weeks)	Invisible Forces (5-10 weeks)	Stormy Skies (4-8 weeks)
Week 1	Mystery 1: Why do plants grow flowers? ***(3-LS1-1)***	Mystery 1: Where can you find whales in a desert? ***(3-LS4-1 and 3-LS4-4)*** ****Revision Coming October 2018***	Mystery 1: How could you win a tug-of-war against a bunch of adults? ***(3-PS2-1)***	Mystery 1: Where do clouds come from? ***(Foundational 3-ESS2-1)***
Week 2	Mystery 2: Why do plants give us fruit? ***(3-LS1-1)***	Mystery 2: How do we know what dinosaurs looked like? ***(3-LS4-1)*** ****Revision Coming October 2018***	Mystery 2: What makes bridges so strong? ***(3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3, Foundational 3-PS2-1)***	Mystery 2: How can we predict when it's going to storm? ***(3-ESS2-1)***
Week 3	Mystery 3: Why are some apples red and some green? ***(3-LS3-1)***	Mystery 3: Can you outrun a dinosaur? ***(3-LS4-1)*** ****Revision Coming October 2018***	Mystery 3: How can you go faster down a slide? ***(3-PS2-1 and 3-PS2-2)***	Mystery 3: Why are some places always hot? ***(3-ESS2-2)***
Week 4	Mystery 4: How could you make the biggest fruit in the world? ***(3-LS3-1)***	Mystery 4: What kinds of animals might there be in the future? ***(3-LS3-1, 3-LS4-2)***	Mystery 4: What can magnets do? ***(3-PS2-3 and 3-PS2-4)***	Mystery 4: How can you keep a house from blowing away in a windstorm? ***(3-ESS3-1, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3)***
Week 5		Mystery 5: Can selection happen without people? ***(3-LS2-1, 3-LS3-1, 3-LS4-2, 3-LS4-3, 3-LS4-4)***	Mystery 5: How could you unlock a door using a magnet? ***(3-PS2-3, 3-PS2-4, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3)***	
Week 6		Mystery 6: *Coming September 2018*		
Week 7		Mystery 7: *Coming September 2018*		
Week 8		Mystery 8: *Coming September 2018*		

Have extra time? "Optional Extras" are extensions to each Mystery. We recommend you use them during your unit or to extend the length of each unit. They include an informational text reading that builds on the Mystery's topic, assessments, and suggestions for supplemental activities.

More Science each week	Longer Science units	Cross Curricular Integration
Use items from the Optional Extras to extend each Mystery if you have more time.	Add a week after each Mystery to teach items from the Optional Extras.	If you want to extend the Mystery but don't have extra time, use Optional Extras during literacy time.

Power of Flowers *Life Cycle, Traits, & Heredity*

Grade 3 Mystery Science & NGSS Alignment - Life Sciences (LS)

Profound Perspective: This unit develops the idea that by studying how plants reproduce and pass on their traits, we human beings have figured out how to make food plants even more useful to us. Students first discover how plants reproduce by exploring the process of pollination and fruiting. Then students are introduced to the process of plant domestication (selection of traits based on inheritance and variation).

Grade 3 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Why do plants grow flowers?	3-LS1-1	Flowering & Reproduction	All plants grow from a seed, which is a baby plant. Just like animals, *some* plants--all flowering plants--need two parent plants to create a seed. Flowering plants make seeds through a process called pollination. Pollination happens when pollen from one flower gets transferred to a special part of another flower - the stigma. Flowers make seeds! These plants have a unique life cycle that start with pollination. **DCIs: *Foundational LS1.B***	Students **develop a model** of a flower and bee to simulate pollination. With a partner, they **carry out an investigation** to determine how bees fly between flowers and cause pollination. Students **analyze their data** and **construct an explanation** for if their flower will produce seeds or not.	Students explore the **pattern** of similarities in life cycles among organisms. Students observe that a plant's stigma (**structure**) is sticky to 'catch' pollen (**function**).
Mystery 2 Why do plants give us fruit?	3-LS1-1	Reproduction	We learned in the last Mystery that pollen travels to the stigma of a flower to make a seed. But it isn't that simple - the pollen travels down the stigma, and into the flower's ovary. Then a seed is made! Some plants grow fruit next. Fruit, a yummy 'container' for seeds, is eaten by animals! They swallow the seeds and excrete them away from the parent plant. This helps the seeds spread to new places and grow new plants. A lot of vegetables have seeds, but to plant scientists they are actually fruits! **DCIs: LS1.B**	Students **carry out an investigation** to determine if a food is a science fruit or vegetable. They cut open each food to determine if there are seeds. Students **analyze this data** to determine if the food is a fruit or vegetable.	Students use **patterns** to sort food as a science fruit or a science vegetable. Students learn that fruit (**structure**) contains seeds and helps them spread (**function**).

Mystery 3 Why are some apples red and some green?	3-LS3-1	Inheritance, Traits, & Selection	Apples, like all living things, inherit their characteristics from their parents. Sweet apples grow from the seeds of sweet apples, and sour apples grow from the seeds of sour apples. While offspring have similar traits as their parents and siblings, they are not *exactly* the same. There are over 2,000 varieties of apples, each with unique traits. Farmers choose people's favorites, plant that type of seed over and over, and grow more of them. This is called selection. **DCIs: LS3.A, LS3.B**	Students **carry out an investigation** to determine the sweetness of different apple varieties.	Students identify the similarities and differences shared between offspring and their parents, or among siblings as a **pattern**.

(continued)

Power of Flowers *Life Cycle, Traits, & Heredity*

Grade 3 Mystery Science & NGSS Alignment - Life Sciences (LS)

Grade 3 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 How could you make the biggest fruit in the world?	3-LS3-1	Fruiting & Reproduction	No two individual offspring are exactly alike! Organisms inherit their traits from their parents which is why they are similar but not identical. Selection is when a desired trait is chosen to reproduce. It is used to change any trait of a plant. Plant-growers watch closely for changes in traits so that they can create new varieties of plants. Many fruits and vegetables we eat today were created through selection. **DCIs: LS3.A, LS3.B**	Students **engage in argument from evidence** about which plants and fruits are related to one another. Students **obtain, evaluate, and communicate information** by sorting plant cards into groups based on similar traits. They determine which plants share wild parents and are varieties of each other.	Students recognize similarities and differences among the traits of different plants as a **pattern**.

Animals Through Time *Habitats, Heredity, & Change Over Time*

Grade 3 Mystery Science & NGSS Alignment - Life Sciences (LS)

Profound Perspective: In this unit students will develop an appreciation for how animals and the places they live (their habitats) are not constant—they have changed over time. Fossils give us a window to the animals and habitats of the past. Selective breeding shows us not only how some animals of the past became domesticated, but allows us to imagine how they might look in the future.

Grade 3 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Where can you find whales in the desert?	3-LS4-1 3-LS4-3	Habitats & Environmental Change	Fossils provide evidence of the types of organisms that lived long ago and also about the characteristics of their habitats. They help tell the story of how the environment, and the things that live in it, have changed over time. As the environment changes, some organisms survive, some adapt, and some die out. **DCIs: LS2.C, LS4.A, LS4.C, LS4.D**	Students **analyze and interpret data** from fossil records to determine how the environment they were found in has changed over time. They use this evidence to **engage in an argument** for which environment an organism survived in based on its characteristics.	Students reason about the **cause and effect** relationship between environment and the type of organism that can survive there. They observe that organisms have body parts (**structure**) that helps them survive in their habitat (**function**). Students also consider the rate of **stability and change** of an environment.
Mystery 2 How do we know what dinosaurs looks like?	3-LS4-1	Structure & Adaptations, Fossil Evidence, Classification	Fossils are clues to the past! They can tell us what an organism looked like on the outside, the habitat it lived in, and even the food it ate. Dinosaur skeletons helped us learn that dinosaurs looked a lot like lizards do today. Fossils of their teeth helped us determine if they were meat or plant-eaters. **DCIs: LS4.A**	Students **analyze and interpret data** from fossil records to determine what type of food an organism ate/eats. They use the fossil evidence to **engage in an argument** for why they chose each food source.	Students consider that fossilized evidence of organism's teeth (**structure**) can determine which type of food they ate (**function**) and the type of environment they inhabited.

Mystery 3 Can you outrun a dinosaur?	3-LS4-1	Fossil Evidence, Behavior	Dinosaur footprints are a type of fossil, meaning they can help us learn about the past. When footprints are farther apart, an organism is moving faster. When footprints are closer together, the organism is moving slower. Some dinosaurs are faster than others and we can use their footprints to figure out how their speeds were different. **DCIs: LS4.A**	Students **carry out an investigation** by comparing the stride length of student runners to the stride length of a comparable sized dinosaur, CeeLo. They use **mathematics and computational thinking** to record stride length, graph the value and determine the speed at which the student was running.	Students explore **quantity** by measuring stride length. They observe the relationship between stride length and speed.

(continued)

Animals Through Time *Habitats, Heredity, & Change Over Time*

Grade 3 Mystery Science & NGSS Alignment - Life Sciences (LS)

Grade 3 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 What kinds of animals might there be in the future?	3-LS3-1 3-LS4-2	Heredity, Variation, & Selection	People want their pets to look a certain way--they want them to have desirable traits. Since many characteristics of organisms are inherited from their parents, people can change organisms to have the traits they want! This is called selection. If people want an animal to have a specific trait -like, a dog to be small - they will breed two of the smallest dogs they can over and over again! **DCIs: LS3.A, LS3.B**	Students **analyze** the traits of parent dogs to determine which puppy they could have. They **construct explanations** about which traits the puppy gets from each parent.	Students recognize **patterns** in traits between parents and offspring.
Mystery 5 Can selection happen without people?	3-LS2-1* 3-LS3-1 3-LS4-2 3-LS4-3 3-LS4-4**	Heredity, Variation, & Selection	It isn't just people that can change the traits of animals over time--nature can too! When the environment changes, like the introduction of a new predator, some organisms survive well and reproduce, some have traits that help them survive less well, and some cannot survive at all. Over time, most offspring will be born with the trait that helps them survive well. This is because offspring inherit their traits from their parents--and the ones that survive well and reproducing! *Bonus Mystery in Optional Extras **End of Unit Project in Optional Extras **DCIs: LS2.C, LS3.A, LS3.B, LS4.B, LS4.C, LS4.C**	Students **carry out an investigation** by using a **model** to simulate the introduction of a predator species on Lizard Island. Students simulate multiple generations of lizards, **analyzing and interpreting the data** after each one. They use this data to **engage in argument from evidence** to support their claim about how the offspring change from the original lizards.	Students recognize the **cause and effect** relationship between a change in the environment and the survival of organisms that inhabit it. They recognize environments as a **system**, made up of interdependent parts that function as a whole. They can be **stable and change** over time at different rates of speed.

Invisible Forces *Forces & Motion, Magnetism*

Grade 3 Mystery Science & NGSS Alignment - Physical Sciences (PS)

Profound Perspective: This introductory forces unit will give students a new understanding of the invisible pushes and pulls that operate in the world around them. They will realize that understanding forces will let them do surprising things — from building a sturdy bridge from paper to using the pull of a rubber band to send a cardboard "hopper" flying. What students learn in this unit will connect to the world around them, leading them to think about such things as the force of friction as they slide down a playground slide or the the invisible force that makes magnets cling to the refrigerator. Hands-on activities focus on engineering, investigation, and discovery.

Grade 3 Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 How could you win a tug-of-war against a bunch of adults?	3-PS2-1	Forces	Every action is either a push or a pull, or what we call a 'force'. Forces each have a strength and a direction. When objects are in contact, they exert a force on each other. When a force is greater than the opposite force, it causes the object to move in its direction. **DCIs: PS2.A, PS2.B**	Students build a Hopper Popper to **carry out an investigation** about force and motion. They **construct an explanation** for which direction the forces act on the object, causing it to hop.	Students recognize the **cause and effect** relationship between the forces acting on an object and the direction of its motion.
Mystery 2 What makes bridges so strong?	3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3 Foundational for 3-PS2-1	Balance of Forces, Engineering	Engineers build bridges to join two pieces of land that are split by a body of water. Building a bridge is no easy task! Engineers had to try lots of different solutions, most that didn't work, and learn from them. Possible solutions to a problem can be limited by available resources and materials--we call these constraints. All engineers communicate with their peers, test their prototypes, learn from their failures, and improve their designs. Being an engineer is exciting and full of learning! **DCIs: ETS1.A, ETS1.B, ETS1.C, Foundational PS2.A**	Students **define a problem** - designing a bridge that will hold the most weight - and its constraints, it can only be made of paper. They collaborate with peers to **design multiple solutions**. They **carry out investigations** to test each of their prototypes, determine how to improve their design.	Students explore the relationship between the **structure and function** of different bridge designs.

Mystery 3 How can you go faster down a slide?	3-PS2-1 3-PS2-2	Balance of Forces, Friction	A special type of 'push' force is called friction. This force occurs when two objects are in contact and push against each other. When an object has less friction, it moves easier. If an object has more friction, it is moves slower. Objects with smooth surfaces have less friction, and objects with rougher surfaces have more friction. **DCIs: PS2.A, PS2.B**	Students **use a model** of a slide to **carry out an investigation.** They **ask questions** about different materials and weights and test their ideas to explore which combinations move the fastest down the slide. Students then complete a fair test to determine which material has the least friction. They **engage in argument from evidence** to share their findings.	Students consider the **cause and effect** relationship between a material's surface and the amount of friction it has.

(continued)

Invisible Forces *Forces & Motion, Magnetism*

Grade 3 Mystery Science & NGSS Alignment - Physical Sciences (PS)

Grade 3 Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 What can magnets do?	3-PS2-3 3-PS2-4	Magnets, Forces	Magnetism is another special kind of force. Magnets can pull on things without actually touching them--the force can even go right through a solid object. But not all objects are affected by magnetism, only objects that contain iron. Magnets have a lot of interesting properties. The closer a magnet is to a magnetic object, the stronger its force will be.. Also, magnets have two sides. When two magnets line up at the same side, they will push away from each other. When they are lined up at different sides, they will pull toward each other. **DCIs: PS2.B**	Students **ask questions** about magnets and **develop and carry out investigations** to observe the different properties of them.	Students consider the **cause and effect** relationship between this distance of a magnet and the strength of the force. Students consider the **cause and effect** relationship between which direction two magnets are facing and if they will push or pull on one another.
Mystery 5 How could you unlock a door using a magnet?	3-PS2-3 3-PS2-4 3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	Magnets & Engineering	We've learned that magnets have a lot of interesting properties! One of them, is that magnets can push and pull on each other. In fact, they can do this even with space or another object between them! Since magnets have many useful properties, they can be used to design solutions to a variety of problems. **DCIs: PS2.B, ETS1.A, ETS1.B, ETS1.C**	Students **design a solution** for a magnetic lock by **developing a model**.	Students consider the **cause and effect** relationship between two magnets as a way to so design solutions using the engineering process.

Stormy Skies *Weather, Climate, & Water Cycle*

Grade 3 Mystery Science & NGSS Alignment - Earth Sciences (ES)

Profound Perspective: This unit develops the idea that by paying careful attention to clouds, wind, and other weather clues around us, we can predict the daily weather and make sense of why places on earth look and feel the way they do.

Grade 3 Earth Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Where do clouds come from?	Foundational for 3-ESS2-1	Water Cycle, Phases of Matter	Clouds may look like white, fluffy, cotton, but they are actually made of water! When liquid water is heated it turns into gas water. This process is called evaporation. Some liquid water from Earth's surface (like oceans and lakes) is heated and turns into invisible water gas. It rises up into the atmosphere and becomes trapped! These trapped water droplets make clouds. **DCIs: *Foundational* ESS2.D**	Students **carry out an investigation** by **using a model** to observe evaporation. They **engage in argument from evidence** using observations from their investigation to explain what clouds are.	Students consider the **cause and effect** relationship between heated liquid water and the evaporation of gas water that forms into clouds.
Mystery 2 How can we predict when it's going to storm?	3-ESS2-1	Local Weather Patterns, Weather Prediction	There are many different types of clouds! Knowing what types of clouds bring stormy weather (and the wind's direction) can help you prepare for a rainstorm. Understanding this patterns help scientists, and you, predict what kind of weather might happen next! **DCIs: ESS2.D**	Students **obtain and communicate information** about different types of clouds by creating a Storm Spotter's Guide. They **engage in argument from evidence** by using this information to analyze multiple scenarios and determine if a storm will occur and why.	Students explore **patterns** of changing clouds as a way to predict weather.
Mystery 3 Why are some	3-ESS2-2	Climate, Geography, & Global Weather	Weather conditions that are predictable and occur over long periods of time are called climates. There are 5 climates--tropical, polar, temperate, mild, and desert. Each	Students **obtain and evaluate information** about multiple location's weather. They	Students recognize climate across the world as an observable **pattern**.

places always hot?		Patterns	climate occurs in a specific part of the world, depending on how much sunlight and rain it gets throughout the year. **DCIs: ESS2.D**	**communicate the information** by color coding a map based on climate. Students **analyze and interpret the data** to determine climate patterns across the world.	
Mystery 4 How can you keep a house from blowing away in a windstorm?	3-ESS3-1 3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	Natural Hazards & Engineering	Strong winds can cause different types of natural hazards such as hurricanes, dust storms, and tornadoes. Strong winds can cause a lot of problems--they blow down all kinds of things! Engineers design solutions for the damage strong winds can cause. They identify problems and brainstorm a lot of different ideas until they find a solution. **DCIs: ESS3.B, ETS1.A, ETS1.B, ETS1.C**	Students **define problems** that strong winds cause. They **develop and use a model** of a home in order to **design a solution** that keeps the roof attached to the home and stops the home from blowing away in the wind. They test and improve their prototype.	Students identify the **cause and effect** relationship between strong winds and the problems they cause.

Mystery Science Grade 4 - Pacing Guide

Mystery Science recommends teaching the mysteries within each unit in the order they are presented. The units themselves can be taught in any order. The core Mystery (exploration & activity) are designed to take an hour per week with 2 hours of Optional Extras.

	Birth of Rocks (4-8 weeks)	Energizing Everything (6-12 weeks)	Human Machine (4-8 weeks)	Waves of Sound (3-6 weeks)
Week 1	Mystery 1: Could a volcano pop up in your backyard? ***(4-ESS1-1 and 4-ESS2-2)***	Mystery 1: How can a car run without gas? ***(4-PS3-1 and 4-PS3-4)*** ****Revision Coming November 2018***	Mystery 1: Why do your biceps bulge? ***(4-LS1-1)***	Mystery 1: How far can a whisper travel? ***(4-PS4-1 and 4-PS4-3)***
Week 2	Mystery 2: Why do some volcanoes explode? ***(4-ESS1-1)***	Mystery 2: What makes roller coasters go fast? ***(4-PS3-1 and 4-PS3-3)***	Mystery 2: What do people who are blind see? ***(4-LS1-1, 4-LS1-2 and 4-PS4-2)***	Mystery 2: What would happen if you screamed in outer space? ***(4-PS4-1)***
Week 3	Mystery 3: Will a mountain last forever? ***(4-ESS1-1 and 4-ESS2-1)***	Mystery 3: Why is the first hill of a roller coaster always the highest? ***(4-PS3-3)***	Mystery 3: How can animals see in the dark? ***(4-LS1-1, 4-LS1-2 and 4-PS4-2)***	Mystery 3: Why are some places sounds high and some sounds low? ***(4-PS4-1)***
Week 4	Mystery 4: How could you survive a landslide? ***(4-ESS2-1 and 4-ESS3-2)***	Mystery 4: Could you knock down a building using only dominoes? ***(4-PS3-4 and 3-5-ETS1-1)***	Mystery 4: How does your brain control your body? ***(4-LS1-1 and 4-LS1-2)***	
Week 5		Mystery 5: Can you build a chain reaction machine? ***(4-PS3-4, 3-5-ETS1-1, 3-5-ETS1-2 and 3-5-ETS1-3)***		

Week 6		Mystery 6: What if there were no electricity? ***(4-PS3-2 and 4-PS3-4)***		
Week 7		Mystery 7: *Coming September 2018*		
Week 8		Mystery 8: *Coming September 2018*		

Have extra time? "Optional Extras" are extensions to each Mystery. We recommend you use them during your 6 week unit or to extend the length of each unit. They include an informational text reading that builds on the Mystery's topic, assessments, and suggestions for supplemental activities.

More Science each week	Longer Science units	Cross Curricular Integration
Use items from the Optional Extras to extend each Mystery if you have more time.	Add a week after each Mystery to teach items from the Optional Extras.	If you want to extend the Mystery but don't have extra time, use Optional Extras during literacy time.

Birth of Rocks *Rock Cycle, Erosion, & Natural Hazards*

Grade 4 Mystery Science & NGSS Alignment - Earth & Space Sciences (ESS)

Profound Perspective: Every rock has a story that it tells, if you know how to "read" it, i.e. by identifying *patterns* and know ing the *causes* of how the various rocks are formed. Take any place that seems mundane to people now --like a parking lot--and a rock w ill tell you something extraordinary about w hat that place *used* to be like: it may w ell have been the site of a volcano. You w ill soon discover that now here on earth has been mundane forever. One of the most seemingly dull things you can imagine--a simple rock--is actually the relic of something astounding.

Grade 4 Earth Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Could a volcano erupt in your backyard?	4-ESS1-1 4-ESS2-2	Volcanoes, Rock Cycle & Earth's Surface	Rocks begin as lava--volcanic rocks are lava that has been frozen in time. Volcanoes don't just exist--they *form*, or 'pop up'. There is a pattern to w here most volcanoes exist today on the earth. And yet dead volcanoes--and volcanic rock they erupted--can be found in *lots* of places. (So the pattern today isn't necessarily w hat it used to be.) You can look for volcanic rocks near you. **DCIs: ESS1.C, ESS2.B**	Students **analyze and interpret data** from recent volcanic eruptions. They use their findings as **evidence for an argument** that volcanoes are (or are not) likely to erupt in their backyard.	Students identify **patterns** about the location of the w orld's volcanoes and use these patterns as evidence to support an argument about w hy a volcano may or may not erupt in their backyard.
Mystery 2 Why do volcanoes explode?	4-ESS1-1	Volcanoes, Lava & Rock Cycle	Volcanic rocks are lava frozen in time. There are tw o primary types of lava, each of w hose thickness explains tw o major differences in a volcano's shape & style of eruption. These tw o lavas also account for tw o commonly observed volcanic rocks that you might find. **DCIs: *Foundational for* ESS2.B; *Extends* ESS2.B**	Student **conduct an investigation** to **construct an explanation** for w hy some volcanoes explode and w hy some do not. Students **model** thick and thin lava to conduct their investigations.	Students reason about the **cause and effect** of the type of lava (cause) and the nature of the eruption (effect) as w ell as the shape of the volcano (effect).

Mystery 3 Will a mountain last forever?	4-ESS1-1 4-ESS2-1	Weathering & Destructive Forces	Rock does not stay as massive monoliths of volcanoes--it tends to get broken into smaller pieces ("sediments") over time due to natural forces ("weathering"), and tumble downhill. You can look for evidence of this where you live. **DCIs: ESS2.A**	Students **conduct an investigation** by **modeling** how rocks erode over time. Students **construct an explanation** for why rocks erode.	Students consider the **cause and effect** of ice and root wedging on rock as it is broken down into small pieces.
Mystery 4 How could you survive a landslide?	4-ESS2-1 4-ESS3-2	Erosion, Natural Hazards & Engineering	The weathering process is not benign; it creates some of the worst natural hazards, including rock falls, landslides, and debris flows. If we are to be safe from these hazards, we have to design solutions to protect us. **DCIs: ESS3.B**	Students **design solutions** to protect their "homes" from rock slides. Students **argue** for the merits of their design.	**Engineering** a solution to landslide hazards **depends on scientific knowledge** about the causes of landslides.

Note: *Mysteries that address DCI ESS2.E are in development.*

Human Machine *Body, Senses, & the Brain*

Grade 4 Mystery Science & NGSS Alignment - Life Science (LS)

Profound Perspective: Your body is like a machine or robot. It has parts for moving around, sensors, a built-in computer (and it all even runs on power--but that's a topic for a later time).

Grade 4 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Why do your biceps bulge?	4-LS1-1	Muscles & Skeleton	Like a machine or robot, the body has parts, or structures, for moving around (e.g. the limbs). In order to move (one of the body's functions), the body needs at least two things: muscles and bones. The contraction of your muscles pulls on tendons, which in turn pull on the bones, causing you to move. Your external parts (such as appendages) are controlled by your brain like a marionette puppet (a topic we explore in Mystery 4). **DCIs: LS1.A**	Students **build a model** of a finger that they then use to **construct an explanation** for how fingers move.	Students consider how human motion is made possible by a **system** of muscles, tendons and bones. Students consider the **cause and effect** relationship between tendons and the muscles and bones that they move.
Mystery 2 What do people who are blind see?	4-LS1-1 4-LS1-2 4-PS4-2	Eyes & Vision	Continuing the analogy of the body as a machine or robot, we now consider its "sensors"--the sensory organs, in this lesson focusing specifically on the eyes. Students discover the basics of how their eyes work, and figure out some of the causes of vision problems.	Students **build a model** of a eyeball that they then use to **construct an explanation** of why some people have blurry vision.	Students think about how the eye works as a **system** of different parts that interact to facilitate vision. Students consider how light interacts with the system to determine what images we see

			DCIs: LS1.A; *Foundational for* LS1.D, PS4.B		**(cause and effect.)**
Mystery 3 How can some animals see in the dark?	4-LS1-1 4-LS1-2 4-PS4-2	How Eyes Work	Students delve further into the w orkings of the eye, exploring the function of their iris and pupil. **DCIs: LS1.A; *Extends* LS1.D, PS4.B**	Students **conduct an investigation** to see how pupils change in response to light. Students **build a model** of an eye (extending the model they built in Mystery 3) to **explain** how changes in pupil size changes the image that appears on the retina.	Students continue to think about how the eye w orks as a **system** and how changes to each part impact the system as a w hole. Students also reason about the effect of changes in pupil size **(cause and effect).**
Mystery 4 How does your brain control your body?	4-LS1-1 4-LS1-2	Brain & Nerves	Continuing the analogy of the body as a machine or robot, w e finally consider the body's 'build-in computer' or central processor: the brain, and its accompanying nerves. Students explore the brain's role in receiving information from the senses, processing that information, and controlling the muscles to enable movement. **DCIs: LS1.A, LS1.D**	Students **conduct investigations** to explore how the brain processes information and responds to that information. Students **analyze and interpret data** from the investigations to determine how fast their reflexes are.	Students identify **patterns** based on how their brains process information.

Energizing Everything *Energy & Motion*

Grade 4 Mystery Science & NGSS Alignment - Physical Science (PS)

Profound Perspective: "Energy" is a real thing--not just some vague term--almost like a power or substance that causes objects to move, speed up, or slow down. This power or substance can be transferred between objects when they collide. Thinking about the world in terms of energy helps us to make sense of how and why things speed up and slow down.

Grade 4 Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 How can a car run without gas?	4-PS3-1 4-PS3-4	Stored Energy, Motion	When something is moving, it has energy. Moving things get their energy from stored energy, and energy can be *stored* in different w ays (such as gasoline, batteries, or even food). DCIs: PS3.B, Foundational for PS3.A	Students build rubber-band racers and use them to **carry out an investigation** to examine the relationship betw een stored energy and motion. Students **analyze and interpret data** from their races. As engineers, students modify their racers to improve how w ell they move.	Students explore how **energy** can be stored and released using a rubber band. The amount of **energy** that is put into the **system** is related to the amount of energy that is released.
Mystery 2 What makes roller coasters go so fast?	4-PS3-1 4-PS3-3	Stored Energy, Speed, Collisions	Giving something "height" (putting it up high) is another w ay to store energy in something. When the object falls or drops, that stored energy is released: this explains w hy roller coasters w ork, but also bicycling dow nhill, skiing, skydiving, even meteors. The higher up you place	Students **build a model** of a roller coaster and carry out an investigation using marbles. Students **analyze and interpret data** from the model to **explain** the connection betw een height, energy and motion.	Students consider how **energy** is stored and released in a system as they experiment w ith their marble roller coasters.

			an object, the more energy you store in it, and the faster it goes when released or dropped. DCIs: PS3.A		
Mystery 3 Why is the first hill of a roller coaster always the highest?	4-PS3-3	Energy & Collisions	Something that's falling only has as much energy as was stored in it in the first place. This is why the first hill of a rollercoaster is always the highest. When an object collides with another object, some of its energy is transferred. DCIs: PS3.B	Students **conduct an investigation** using a model roller coaster to determine how energy can be stored in the hills of the coaster and how that energy is released to make the marbles go different distances. Students **analyze and interpret data** from the model to explain how the heights of different hills give marbles the energy to roll.	Students consider how **energy** is stored and released in a system as they experiment with their marble roller coasters.

(continued)

Energizing Everything *Energy & Motion*

Grade 4 Mystery Science & NGSS Alignment - Physical Science (PS)

Grade 4 Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 Could you knock down a building using only dominoes?	4-PS3-4 3-5-ETS1-1	Energy & Engineering	We can invent devices that convert stored energy into movement, and transfer that energy to various other objects along a pathway. DCIs: PS3.A, PS3.C, ETS1.A	Students begin to **design** a chain reaction machine. They start by figuring out how to connect two components of the chain reaction: the lever and the slide. This is the basis of the machine they will further develop in Mystery 5.	Students consider the ways in which energy can be stored and released as they trace the path of energy through a chain reaction.
Mystery 5 Can you build a chain reaction machine? (continuation of Mystery 4)	4-PS3-4 3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	Energy & Engineering	Engineers are people who design or invent solutions to problems by using knowledge of science. All engineers think about what their goal is, come up with multiple ideas, test those ideas out, and repeatedly fail until they figure out what works. DCIs: PS3.A, PS3.C, ETS1.A	Students **design** a chain reaction machine that displays a message at the end. The chain reaction machines use multiple components that transfer energy from one part to the next.	Students consider the ways in which energy can be stored and released as they trace the path of energy through a chain reaction.
	4-PS3-2	Electrical		Students **design** a flashlights using	Electricity is a form of **energy** that

Mystery 6 What if there were no electricity?	4-PS3-4	Energy	Electricity--the stuff from our outlets and batteries--is a form of energy that we use to produce *movement*, but also light, heat, and more. Just like the energy in a chain reaction machine, electricity moves along a path and so can be transferred from one place to another. We can use such know ledge about electrical energy to design solutions to problems (such as flashlights for seeing in the dark). DCIs: PS3.B, ETS1.A	batteries, flights and tin foil. Students experiment with different ways of constructing their flashlights so that they turn on and off.	can be stored (such as in batteries) and transferred via wires, where it is used to produce not only movement, but also light, heat, and more.

Note: *Mysteries that address DCI PS3.D and ESS3.A are in development.*

Waves of Sound *Sound, Waves, & Communication*

Grade 4 Mystery Science & NGSS Alignment - Physical Science (PS)

Profound Perspective: Even though "sound" might seem like a short-lived phenomenon without any real form, it is very much a physical thing, a wave of vibrations traveling through the air. Sound has properties: it takes time to travel, it can be transmitted over a string, manipulated to become high or low, turned into music, even captured and frozen in time. Equipped with this understanding, students can begin to make sense of how sound and music work.

Grade 4 Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 How far can a whisper travel?	4-PS4-1 4-PS4-3	Sound & Vibrations	Sounds aren't something we can see or touch, and so it's easy to dismiss them as not fully real. But if you've experienced an echo before, then clearly there is something interesting and very real about sound--we can even feel and see that sound has something to do with vibrations. Students observe a relationship between sound and vibration, and through the activity, discover evidence that sound isn't merely related to vibrations, but perhaps, *is* a vibration. **DCIs: *Foundational for* PS4.A**	Students document their understanding of how vibrations travel using a **model** of their paper cup telephones. Students then **design their own series of investigations** to figure out how to make their telephone work better in different circumstances. Students **construct an explanation** of how the telephone works. Students extend the lesson by developing a way to send a message using a pattern of sounds.	Students identify **patterns** about the relationship between the tension of the string and the quality of the sound it produces. Students also investigate **patterns** in the how different materials affect the quality of the sound that is transmitted.
Mystery 2 What would	4-PS4-1	Sound & Vibrations	Sound can travel through lots of different materials: through water, through string... it's possible to even *feel* the	Students **conduct investigations** with balloons to experience the vibrations caused by	Students consider the **effect** of vibrations on

happen if you scream in outer space?			vibrations in the string, pinch the string, and stop the vibrations from reaching the other side. It would seem that sound is a vibration that must travel from one place to another. So does that mean sound is vibrating the air? (It is.) And what happens if there is no air? (There is no sound!) **DCIs: PS4.A**	sound of their voices. Students **construct an explanation** that sound is a vibration. Students then **develop a model** to explain how sound travels through a medium and how it can cause distant objects to move.	the movement of distant objects.
Mystery 3 Why are some sounds high and some sounds low?	4-PS4-1	Sound, Vibrations & Waves	Some sounds are very high-pitched, while others are low-pitched. For example, young people can even hear certain high-pitched sounds that adults can no longer hear. What makes one sound high and another low? By examining some musical instruments played in slow motion, we can begin to detect some differences in the vibrations. Special instruments enable us to visualize the resulting air vibrations, and reveal that sound vibrations travel as waves in the air. Students discover that the difference between high and low-pitched sounds has to do with the length of these waves ("wavelength"). **DCIs: PS4.A**	Students **analyze and interpret data** from oscilloscopes to determine how wavelengths differ between high and low pitch sounds. Students make claims and **argue from evidence** about which wavelength patterns were generated from different pitches. Students then use a rope to **model** waves created by different pitches and begin to explore the relationship between wavelength and frequency.	Students identify and analyze the oscilloscope **patterns** made by sounds with low and high pitches.

Note: *Mysteries that address DCI PS4.C are in development.*

Mystery Science Grade 5 - Pacing Guide

Mystery Science recommends teaching the mysteries within each unit in the order they are presented. The units themselves can be taught in any order. The core Mystery (exploration & activity) are designed to take an hour per week with 2 hours of Optional Extras.

	Spaceship Earth (6-12 weeks)	Web of Life (6-12 weeks)	Chemical Magic (6-12 weeks)	Watery Planet (4-8 weeks)
Week 1	Mystery 1: Why does the sun rise and set? (*5-ESS1-2*)	Mystery 1: Why would a hawk move to New York City? (*5-LS2-1*)	Mystery 1: Are magic potions real? (*5-PS1-1, 5-PS1-2*)	Mystery 1: How much water is in the world? (*5-ESS2-2*)
Week 2	Mystery 2: Who set the first clock? (*5-ESS1-2*)	Mystery 2: What do plants eat? (*5-LS1-1 and 5-LS2-1*)	Mystery 2: Could you transform something worthless into gold? (*5-PS1-1, 5-PS1-2*)	Mystery 2: When you turn on the faucet, where does the water come from? (*5-ESS2-2 and 5-ESS3-1*)
Week 3	Mystery 3: Why do the stars change with the seasons? (*5-ESS1-2*)	Mystery 3: Where do fallen leaves go? (*5-LS2-1*)	Mystery 3: What would happen if you drank a glass of acid? (*5-PS1-3*)	Mystery 3: Can we make it rain? (*5-ESS2-1*)
Week 4	Mystery 4: How can the sun tell you the season? (*5-ESS1-2*)	Mystery 4: Do worms really eat dirt? (*5-LS2-1, 5-LS1-1*)	Mystery 4: What do fireworks, rubber, and silly putty have in common? (*5-PS1-4*)	Mystery 4: How can you save a town from a hurricane? (*5-ESS2-1, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3*)

Week 5	Mystery 5: Why does the moon change shape? (*5-ESS1-2*)	Mystery 5: Why do you have to clean a fish tank but not a pond? (*5-LS2-1*)	Mystery 5: Why do some things explode? (*5-PS1-1*)	
Week 6	Mystery 6: What are wandering stars? (*5-ESS1-2*)	Mystery 6: Why did the dinosaurs go extinct? (*5-PS3-1*)		
Week 7	Mystery 7: *Coming October 2018*			
Week 8	Mystery 8: *Coming October 2018*			

Have extra time? "Optional Extras" are extensions to each Mystery. We recommend you use them during your unit or to extend the length of each unit. They include an informational text reading that builds on the Mystery's topic, assessments, and suggestions for supplemental activities.

More Science each week	Longer Science units	Cross Curricular Integration
Use items from the Optional Extras to extend each Mystery if you have more time.	Add a week after each Mystery to teach items from the Optional Extras.	If you want to extend the Mystery but don't have extra time, use Optional Extras during literacy time.

Spaceship Earth *Sun, Moon, Stars & Planets*

Grade 5 Mystery Science & NGSS Alignment - Earth & Space Science (ESS)

Profound Perspective: This astronomy unit helps students develop a new perspective on the world they're standing on. They will be given evidence that the Earth beneath our feet is actually moving through space, both spinning on its axis, and traveling in a great orbit around the Sun. They will see how these movements account for the patterns we see in our sky (the paths of our Sun across the sky, the changing seasons, and the changing constellations). Accompanying us on this journey are the Moon and planets, which the students will observe have their own patterns of movement in the sky.

Grade 5 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Why does the sun rise and set?	5-ESS1-2	Sun, Daily Patterns, Earth's Rotation	The sun appears to move across the sky each day, creating an observable pattern. It rises in the morning, and sets in the evening. It is natural for us to assume that the sun is moving--this is what we believed for most of human history. But to much surprise, scientists eventually figured out that this is not the case; it's actually the Earth that is spinning. There is no simple way to demonstrate this from the ground without using advanced knowledge of physics and math. But now that we've been to space and can film it, we have direct proof.	Students **carry out an investigation** to explore the phenomena of the sun appearing to move across the sky. They investigate **using two models**, one of the sun rotating around the Earth and another of the Earth rotating around the sun. Students create an **argument using the evidence** they gathered in the investigation to explain why the sun rises and sets.	Students observe the **pattern** of the rising and setting sun. In this Mystery, they notice the similar **patterns** between two different models. They recognize that the sun moving across the sky is a **pattern** that can be explained by either model. With additional data, students come to understand which model is accurate.

			DCIs: ESS1.B		
Mystery 2 Who set the first clock?	5-ESS1-2	Sun, Daily Patterns, Earth's Rotation	A long time ago, our ancestors divided the day into 24 hours. Clocks measure the Sun's apparent movement. But before clocks existed, the change in shadows helped us measure the Sun's movement. The sun's position causes the length and direction of an object's shadow. Since the Sun moves across the sky each day in a pattern, shadow clocks (sundials) can be used to tell the time of day. **DCIs: ESS1.B**	Students create a shadow clock, to observe how shadows change throughout the day. Students **carry out an investigation** to determine how the position of the sun changes the direction of the shadow at different times of day. Then, they go outside and **interpret data** from their shadow clock to determine what time of day it is.	Students observe **patterns** in the **change** of shadow length and position throughout the day. They use shadow **patterns** to determine what time of day it is, without the use of a clock.
Mystery 3 Why do the stars change with the seasons?	5-ESS1-2	Stars & Constellations, Earth's Orbit, Annual Patterns	The night sky is full of stars that are grouped into constellations. The stars are seasonal, which means we only see certain stars depending on the season. As the Earth orbits around the sun, its position in the universe changes and we see different parts of the night sky. The seasonal patterns of the constellations repeat each year. **DCIs: ESS1.B**	Students **develop a model** of the universe, in order to **construct an explanation** for why we see different stars during different seasons. Using **evidence** from their **model**, students make an **argument** that supports the claim that the Earth orbits around the sun.	Students observe the seasonal **pattern** of stars. They note the **change** of constellations that are visible in the night sky, based on the season. This pattern is used as evidence to argue that Earth is orbiting the Sun, and we only see a part of the night sky at a time.

(continued)

Spaceship Earth *Sun, Moon, Stars & Planets*

Grade 5 Mystery Science & NGSS Alignment - Earth & Space Science (ESS)

Grade 5 Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 How can the sun tell you the season?	5-ESS1-2	Sun, Earth's Orbit, Annual Patterns	The sun's path changes with the seasons. Summer days are longer and warmer, because the Sun follows a higher path across the sky. Winter days are shorter and colder, because the Sun follows a low path across the sky. In the summer, shadows are shorter because the Sun is high. In the winter, they are longer because the Sun is low. **DCIs: ESS1.B**	Students **analyze and interpret data** from photographs taken during different seasons and times of day, to determine how the sun's path affects Earth's surface. Students use **evidence** from the photos-- such as weather, shadow length, and sunrise/sunset time-- to **construct an argument** as to which season it is.	Students observe the **pattern** of seasons **caused** by the sun's path. The unique characteristics of each season are **caused** by the sun's position in the sky. Each season repeats each year.
Mystery 5 How does the moon change shape?	5-ESS1-2	Moon, Moon's Orbit, Lunar Cycle	If you look up at the night sky and see the moon, then do it again a week later- it will be a different shape! But the Moon isn't actually changing shape, it's always a sphere. The Moon orbits Earth, and when it is farther away from the sun, more of it is lit up; when it is closer to the sun,	Students **develop a model** of the sun and moon to **carry out an investigation** of the Moon's orbit and the different moon phases. Through this investigation, they **obtain**	Students consider the phases of the moon as a **pattern**. They learn that the orbit of the Moon around Earth **causes** each different phase. The phases repeat in the

			less of it is lit up. The Moon's phases are a pattern that go in a very certain order. Just like other sky patterns we've learned about, the cycle of the Moon is used to measure time. A full cycle takes about 28 days, or about a month, to repeat! **DCIs: ESS1.B**	**information** about how the Moon goes through each phase. Then, they **communicate this information** by constructing an explanation about what causes the Moon's phases for someone who doesn't already know.	same order every 14 days, and then reverse in the same order for another 14 days. The total orbit of the Moon around the Earth takes 28 days, and then the **pattern** repeats.
Mystery 6 What are the wandering stars?	5-ESS1-2	Planets & Solar System	We've already learned that the sky is full of stars. If you look closely, some of those stars appear to be wandering-or moving- across the night sky! The ancient Greeks gave these wandering stars a special name, "planetes." Look familiar? That's right-these wandering stars are actually planets. We'll take a tour through the solar system and learn about some interesting discoveries of each planet.	Students **use a model** of the solar system to learn the order of the planets and their relative distance from the sun, and each other. Using sidewalk chalk, they draw the sun and the planets at their relative distances from one another. Then, they play "Running to Neptune," where they run to different planets in the model in order to help them learn their order in the solar system.	Students use a **system model** of the solar system to understand the parts (the planets and sun) that make up the whole (the solar system). By creating a **scaled model**, they are able to observe an immensely large system of natural objects. They learn that by creating **scaled models**, people can interact with **systems** they wouldn't otherwise be able to.

Note: *Mysteries that address PE 5-PS2-1 and 5-ESS1-1 will be developed in the future.*

Watery Planet *Water Cycle, Resources, & Systems*

Grade 5 Mystery Science & NGSS Alignment - Earth Science (ES)

Profound Perspective: This unit helps students develop the idea that water is a profoundly important natural resource, but one which requires surprising ingenuity to find and maintain.

Grade 5 Earth Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 How much water is in the world?	5-ESS2-2	Water on Earth's Surface	Water is our most basic human need. Despite the fact that Earth is a watery planet, Earth's water is mostly salt water--a form not fit to drink. Easily accessible fresh water is a surprisingly small amount by comparison. Of that fresh water, much of it is frozen in glaciers and ice caps. **DCIs: ESS2.C**	Students **analyze and interpret data** from world maps to determine the relative amounts of fresh, salt and frozen water. Students **use mathematics and computational thinking** to calculate areas on a map and graph values to compare and graph quantities of fresh, salt and frozen water on Earth.	Students use standardized units of area to compare the **quantity** of fresh, salt and frozen water on Earth. Students use **proportional reasoning** to represent **quantities** in their graph comparing different types of water.
Mystery 2 When you turn on the faucet,	5-ESS2-2 5-ESS3-1	Water as a Natural Resource	Most people get their drinking water from water that's located underground, where there turns out to be a surprisingly large amount within structures called "aquifers." People use science ideas about	Students are asked to determine where is the best place to settle a new town by considering features of the landscape and what they know about where to find	Students reason about information they get about natural patterns to determine where underground water is most likely to be found.

where does the water come from?			the location of aquifers to make decisions about where to build communities. **DCIs: ESS2.C, Foundational for ESS3.C & ESS2.A**	water. Students **obtain, evaluate and communicate** information from different sources about topography, plants and soil to inform their decision. Students **argue using evidence** to justify where their town should be built.	These **patterns** involve correlations between elevation and water depth as well as how plant and soil **patterns** can give clues about where drinkable water may be found.
Mystery 3 Can we make it rain?	5-ESS2-1	Water Cycle	Evaporation of ocean water is the ultimate source of rain, and thus all our easily accessible fresh water. (All water on Earth's surface is part of an interconnected system, the hydrosphere.) **DCIs: Foundational for ESS2.A**	Students create a **model** of the ocean and sky (hydrosphere and atmosphere). Students use the model to **plan and carry out an investigation** to determine how temperature influences evaporation and condensation.	Students reason about how the hydrosphere and atmosphere **systems** interact to produce rain. Students model the systems to explain how rain is created.
Mystery 4 How can you save a town from a hurricane?	5-ESS2-1 3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	Natural Disasters & Engineering	Hurricanes start out as small storms over the ocean. As they move across the ocean, warm water evaporates into the storm cloud, making the hurricane grow bigger and bigger. Hurricanes bring tons of rain, flooding entire cities. Engineers design solutions to protect towns from extreme flooding. **DCIs: ESS2.A, ETS1.A, ETS1.B, ETS1.C**	Students **define the problem** that a town needs protection from flooding. They **obtain and communicate information** about different types of engineers and work as a team to design solutions using their different types of flood protection. Students use **mathematics and computational thinking** design a solution under budget.	Students reason about how the hydrosphere and atmosphere **systems** interact to produce hurricanes and extreme flooding. They also consider the impact of hurricanes on the biosphere and geosphere system.

Note: *Mysteries that address ESS3.C are in development.*

Web of Life *Ecosystems and the Food Chain*

Grade 5 Mystery Science & NGSS Alignment - Life Science (LS)

Profound Perspective: The food materials and energy that our bodies use for growth ultimately come from plants. Plants in turn derive their materials from air, water, and soil and their energy from the sun. Thus in a very real way, our bodies come from the earth and the sun. And when we die, decomposers return our materials and energy to the earth, to be used again by future organisms. The whole of nature forms a great system--the ecosystem.

Grade 5 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Why would a hawk move to New York City?	5-LS2-1	Food Chains, Predators, Herbivores & Carnivores	Animals are all around us--even in cities. We can learn to spot them by bearing in mind of one of the most basic relationships that all animals have with each other: some of them are predators and others are prey. (Where there are prey, there are predators, and vice versa.) **DCIs: LS2.A, Foundational for LS1.C**	Students **construct models** of different food chains by linking cards representing different organisms. The chains are used to explain the relationship between predators and prey. Students **argue using evidence and reasoning** about which organisms can be linked together and in what order.	This Mystery begins to lay the foundation for thinking about **systems and energy/matter flow**. By constructing chains of relationships between organisms, students are exposed to an example of a system. Food chains set students up for considering energy & matter flow in future Mysteries in this unit.

Mystery 2 What do plants eat?	5-LS1-1 5-LS2-1	Matter Cycle, Food Chain	Because predators depend on prey, all animals ultimately depend on plants--even carnivores that do not eat plants. Plants in turn derive their grow th material primarily from w ater and air. **DCIs: LS1.C, Foundational for LS2.B**	Students **plan an investigation** to determine w hether or not air has w eight. As a w hole class, students **conduct an investigation** to compare the w eights of balloons w ith and w ithout air. Students **analyze and interpret data** from the investigation to **explain** w hat happened and how the evidence may **explain** how plants gain w eight.	Students observe that deflating a balloon **causes** the balloon to w eigh less, leading to the conclusion that air has w eight. This Mystery also lays the foundation for an understanding of **conservation of matter** by considering how plants gain w eight as they grow due to the air they absorb.
Mystery 3 Where do fallen leaves go?	5-LS2-1	Decomposers & Matter Cycle	Decomposers are yet another category of living thing, w hich consume dead plant and animal material and produce soil. Fungi--of w hich mushrooms and mold are types--is a conspicuous decomposer found everyw here, even in your home. **DCIs: LS2.A, Foundational for LS2.B**	Students **ask questions** about w hat conditions they think w ill induce and prevent the grow th of mold. Students **plan and conduct an investigation** to test different conditions. Students **analyze and interpret data** that they record from their experiments to **explain** how different conditions impact mold grow th.	Students observe **patterns** in the rates of **change** in the mold terrariums. They note similarities and differences to analyze how mold grow s on different foods under different conditions.

(continued)

Web of Life *Ecosystems and the Food Chain*

Grade 5 Mystery Science & NGSS Alignment - Life Science (LS)

Grade 5 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 Do worms really eat dirt?	5-LS2-1 5-LS1-1	Decomposers, Nutrients, & Matter Cycle	Earthw orms aren't pests, they are decomposers! They eat dead and decaying matter, bacteria, and animal w aste that is in soil. Worm castings (their excretions) release the nutrients from their food back into the soil. In addition to w ater and carbon dioxide from the air, plants need these nutrients to grow. Worms help gardens, not hurt them. **DCIs: LS2.A, LS2.B, *Supplementary* LS1.C**	Students observe w orm behavior to help them determine a w orm's role in a garden. Then, they **conduct an investigation** to test if w orms prefer damp or dry places. They **create an argument** using the investigations results as **evidence** to support a claim about the w orm's preferences. Lastly, students **plan and carry out an investigation** to answ er a question they have about w orms.	Students recognize that earthw orms are part of a **system**, a food chain, w ith other organisms. Earthw orms help **matter** flow back into the food chain.

Mystery 5 Why do you have to clean a fish tank but not a pond?	5-LS2-1	Ecosystems & Matter Cycle	All living things in an ecosystem depend on one another. In a pond, fish depend on plants as food and as a source of oxygen. Decomposers break down dead plant and animal matter, releasing micronutrients into the water. They also give off carbon dioxide. Plants take in carbon dioxide and give off oxygen. If one part is removed, the ecosystem would not function. **DCIs: LS2.A, LS2.B**	Students **develop a model** to show the flow of energy and matter within an ecosystem. Then, students **develop a model** of a pond ecosystem. They add different living things to the pond, considering what each organism needs to eat and how much carbon dioxide each organism adds or removes from the ecosystem.	Students recognize the living organisms in a habitat as a **system**, an ecosystem. If one organism were to disappear, the whole ecosystem would break down.
Mystery 6 Why did the dinosaurs go extinct?	5-PS3-1	Flow of Energy	It is believed that an asteroid impact *could* have caused the dinosaurs to go extinct. When the asteroid hit the earth it filled the sky with dust, ash and debris which blocked sunlight. Plants all over the world couldn't get the sun's energy they needed to grow. When plants died out, the herbivores would eventually die as well, followed by the carnivores. Ultimately, the asteroid collapsed the dinosaur's food web causing a mass extinction. **DCIs: PS3.D, LS1.C**	Students **develop a model** of a dinosaur food web to show how all animals get their energy. They use the model to help **construct an explanation** about how an asteroid killed all of the dinosaurs.	Students identify the sun as the ultimate source of **energy** in an ecosystem. The sun's energy is used by plants to grow and transferred through an ecosystem in the form of food.

Chemical Magic *Chemical Reactions and Properties of Matter*

Grade 5 Mystery Science & NGSS Alignment - Physical Sciences (PS)

Profound Perspective: This unit helps students develop the concepts of "substances" and "chemical reactions." Students see that chemical reactions enable us to make new materials by transforming the ones we have. The results of these reactions are interesting and sometimes profoundly useful.

Grade 5 Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Are magic potions real?	5-PS1-1 5-PS1-2	Introduction to Chemistry	The alchemists were a historic group of people who experimented with mixing different substances together to make a potion. They wondered if their potions could transform materials. **DCIs: *Foundational PS1.A and PS1.B***	Students **plan and carry out an investigation** to see which solution will turn a dull penny into a shiny penny. Students **develop a conceptual model** in order to **construct an explanation** for their test results. They revise their conceptual **model** as they develop a more sophisticated understanding of particles.	Students observe the **effect** of solutions on a dull penny. Students explore that substances undergo **change**.

Mystery 2 Could you transform something worthless into gold?	5-PS1-1 5-PS1-2	Particulate Nature of Matter	The alchemists were on a quest to transform ordinary metal into gold, so that they could become rich. To do this, the alchemists observed and investigated the many materials around them--the substances which things are made of. They discovered that substances are able to change form, and that some substances may even *appear* to vanish, almost like magic. **DCIs: *Foundational PS1.A and PS1.B***	Students **carry out an investigation** to determine what happens when they place a steel object in the same solution that turned their pennies shiny in Mystery 1. Students **construct an explanation** by **developing a conceptual model** to show how the solution affects the steel nail.	This Mystery lays the foundation for an understanding of **conservation of matter** by considering that the copper from the penny did not disappear, but only dissolved into the solution. Students consider the variety of **scale** within natural objects. They understand that there are extremely small, to small to see, copper particles dissolved in their solution.
Mystery 3 What would happen if you drank a glass of acid?	5-PS1-3	Acids, Reactions & Properties of Matter	The alchemists discovered acids--a set of substances that is extremely *reactive* (undergoes chemical changes easily). A chemical *reaction* happens when different substances are mixed and it causes some kind of change. We can tell a chemical change is happening by observing indications such as fizzing, a color change, or dissolving. **DCIs: PS1.A**	Students **conduct an investigation** to discover if a reaction occurs when mixing two substances. **Analyzing the data**, students determine which substances react with acid. Next, students decide how to test unknown liquids to see if they are acids.	Students consider the **cause and effect** relationship when combining chemicals to produce reactions. Students consider that combining two chemicals may result in a **change** in the substance.

(continued)

Chemical Magic *Chemical Reactions and Properties of Matter*

Grade 5 Mystery Science & NGSS Alignment - Physical Sciences (PS)

Grade 5 Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 4 What do fireworks, rubber, and silly putty have in common?	5-PS1-4	Chemical Reactions	The alchemists were not successful in finding an easy way to make gold, but all of their observations and experimenting with substances turned out to be hugely important. For example, when acids react with other substances, they form entirely new substances. The new substance will have different properties	Students **conduct an investigation** to see which chemicals, when combined, result in a chemical reaction. They **construct an explanation** to share which chemicals reacted and formed a new substance with a goo consistency. In Part 2 of the activity, students make their own goo by mixing the two chemicals	Students consider the **cause and effect** relationship between chemicals that are combined to form new substances. Students consider that combining two chemicals may result in a **change** when a substance with

			from the original substances. Some of these properties are useful. Chemical reactions are how we get new substances and discover new properties! **DCIs: PS1.B**	which formed a goo-like substance in Part 1.	unique properties is created.
Mystery 5 Why do some things explode?	5-PS1-1	Gases & Particulate Nature of Matter	Not all explosions are big and fiery, they can be small too! The alchemists were the first to discover these small explosions. They noticed small bubbles forming when some substances and objects were placed in an acid. The substance, gas, was hard to capture--it would escape the container, or make it burst. Gases can be visible or invisible and are made up of many tiny particles that you can't see. All explosions are caused by a buildup of gas moving outward that bursts the container they are in. **DCIs: PS1.A**	Students **conduct an investigation** to see what happens when baking soda and vinegar react inside a closed ziplock bag. They **develop a particle model** to explain their results--that gas particles are created and move outward, causing the ziplock bag to expand or even burst.	Students consider that combining two chemicals may result in a **change** when a substance with unique properties is created. Students understand that particles are very small, to small to see, compared to other natural objects.

Course Description:

Title: Myself and Others

The kindergarten social studies curriculum is designed to help students gain an increased awareness of themselves and the world around them. Using the framework of "Myself and Others," students learn about the social studies disciplines of history, geography, civics and government, and economics. Using events from their own lives, they begin to explore and learn the basic historical concept of time and to distinguish past, present, and future. They develop the geographic concept of space by learning positional words and recognizing that maps and globes represent places in the world. To lay the foundation for the study of civics and government, students identify the flag as an important symbol of the United States. They also act as classroom citizens by following appropriate rules for individual and group activities and decision making. An awareness of economics is developed as students connect familiar economic wants to how those wants are met. Throughout the year students are introduced to simple core values of democracy as they learn to respond appropriately to classroom issues and individual responses.

Sequencing of Units within this Course

Careful thought has been given to the order in which the units are presented. Certain scaffolds have been created based on this order and schools should take care in moving units from their intended placement in the curriculum. In an effort to answer the question, "How should we live together?" students first learn about who they are (historical context) and where they live (geographic context) as this information will affect the economic and political choices they make and their consequences.

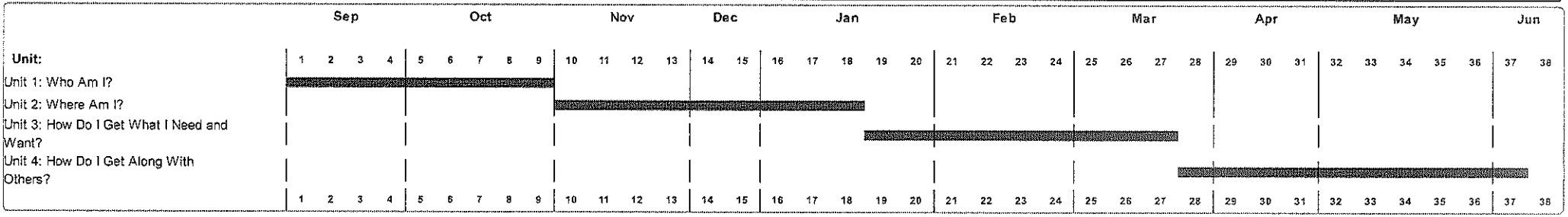
Rationale

In order to sustain our democratic republic, students must be "aware of their changing cultural and physical environments; know the past; read, write, and think deeply; and act in ways that promote the common good." - *C3 Framework, P. vii.* Using the expanding environments model of social studies from kindergarten through grade 4, students apply historical, economic, geographic, and civic concepts to increasingly sophisticated social environments. The kindergarten course sets the foundation for developing skills essential in a participatory democracy by focusing on how children can respect the individual rights of others while advancing the common good. Students at this early age need guidance to develop the practices of citizenship and to understand how diversity strengthens the groups to which they belong. As students move through elementary school, it is essential that they understand their social world and develop the academic vocabulary and cultural competencies that will enable them to be successful in later grades, as well as in career and civic life.

Alignment

This curriculum is aligned to the Michigan Content Expectations as promulgated by the Michigan Department of Education and adopted by the State Board of Education in 2007. It is also aligned to the C3 Framework promulgated by the National Council for the Social Studies.

Kindergarten SS Essential Understanding.doc



Course Description:

Title: Families and Schools

The first grade social studies curriculum uses the context of "Families and Schools" to guide students in the study of history, geography, civics and government, and economics. Using family histories, students develop historical thinking skills as they explore how life today (present) is like or different from family life in the past. As they use ideas of time and chronology, students also learn about the people and events that are celebrated as part of the national holidays of the United States. Students address geographic concepts and develop spatial skills through map construction and visual representations. In addition, students begin to explore how humans interact with their environments and some of the consequences of those interactions. In civics and government, school is used as a context for learning about why people create rules, the distinction between power and authority, and the characteristics of citizenship. Economic principles are explored using the context of family. Students investigate ways in which families consume goods and services, how people make a living, and how scarcity and choice affect economic decisions. Students continue to develop an understanding of public issues, the importance of citizen action, and begin to communicate their positions on public issues.

Sequencing of Units within this Course

The order in which the units are taught are interchangeable and can be moved into any order. However, the last unit in the proposed sequence is the most cognitively challenging and it is recommended that it be placed at the end of the course.

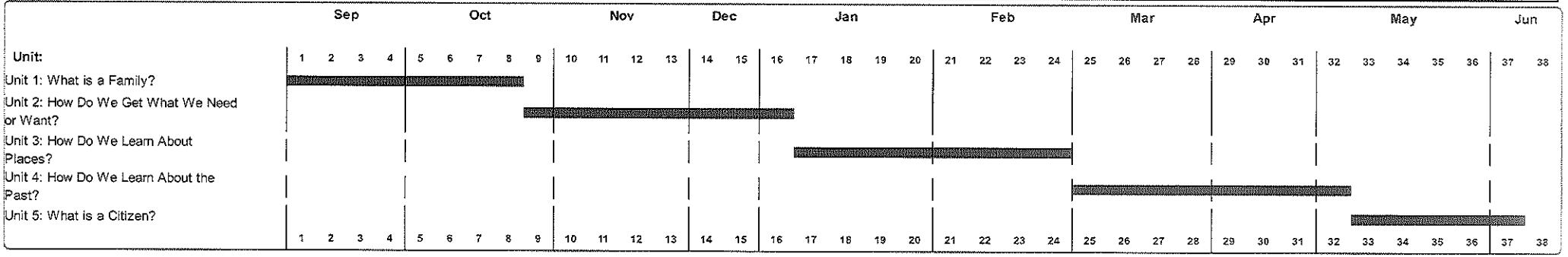
Rationale

In order to sustain our democratic republic, students must be "aware of their changing cultural and physical environments; know the past; read, write, and think deeply; and act in ways that promote the common good." - *C3 Framework, P. vii.* Using the expanding environments model of social studies from kindergarten through grade 4, students apply historical, economic, geographic, and civic concepts to increasingly sophisticated social environments. Social studies in first grade sets the foundation for developing skills essential in a participatory democracy by focusing on how children can respect the individual rights of others while advancing the common good. Students at this early age need guidance to develop the practices of citizenship and to understand how diversity strengthens the groups to which they belong. As students move through elementary school, it is essential that they understand their social world and develop the academic vocabulary and cultural competencies that will enable them to be successful in later grades, as well as in career and civic life.

Alignment

This curriculum is aligned to the Michigan Content Expectations as promulgated by the Michigan Department of Education and adopted by the State Board of Education in 2007.

First Grade SS Essential Understandings.doc



Course Description:

Title: The Local Community

The second grade social studies curriculum addresses concepts in geography, history, government, and economics through the lens of the local community. Students examine what is a community, how citizens live and work together in community, how communities change over time, and the role of citizens in a community. Using historical thinking, students create timelines of key events from their community's past, explore changes over time, and investigate how descriptions of common events can differ. Students draw upon prior knowledge of spatial awareness, physical and human systems, and human-environment interaction from earlier grades to create more complex understandings and apply these concepts to the local community. They begin to understand how people, goods, and services move within the community. By exploring the role of local businesses in the community, students consider what happens when people cannot produce everything they want and how they depend on trade to meet those wants. Students are also introduced to local government and its functions. Through an examination of local public issues, students practice public discourse and decision making around community issues.

Sequencing of Units within this Course

Careful thought has been given to the order in which the units are presented. Certain scaffolds have been created based on this order and schools should take care in moving units from their intended placement in the curriculum. In an effort to answer the fundamental question, "How should we live together?" students first learn what a community is and its geographic attributes before considering questions about how citizens should live and work together. The historical perspective and civic action units are deliberately placed at the end of the course so that students have an opportunity to revisit economic and geographic concepts by engaging in historical analysis and problem solving.

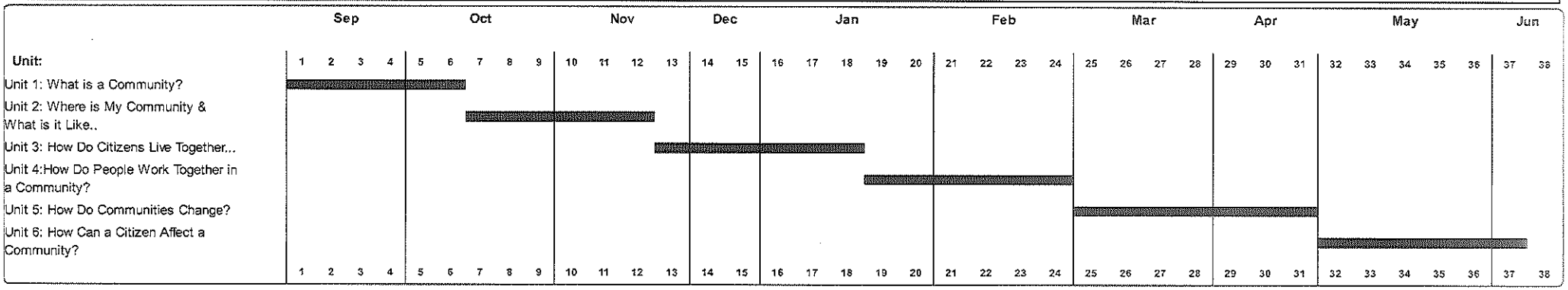
Rationale

In order to sustain our democratic republic, students must be "aware of their changing cultural and physical environments; know the past; read, write, and think deeply; and act in ways that promote the common good." - *C3 Framework, P. vii.* Using the expanding environments model of social studies from kindergarten through grade 4, students apply historical, economic, geographic, and civic concepts to increasingly sophisticated social environments. Social studies in second grade sets the foundation for developing skills essential in a participatory democracy by focusing on how children can respect the individual rights of others while advancing the common good. Students at this early age need guidance to develop the practices of citizenship and to understand how diversity strengthens the groups to which they belong. As students move through elementary school, it is essential that they understand their social world and develop the academic vocabulary and cultural competencies that will enable them to be successful in later grades, as well as in career and civic life.

Alignment

This curriculum is aligned to the Michigan Content Expectations as promulgated by the Michigan Department of Education and adopted by the State Board of Education in 2007. It is also aligned to the C3 Framework promulgated by the National Council for the Social Studies.

✎ Second Grade SS Essential Understandings.docx



Course Description:

Title: Michigan Studies

The third grade social studies curriculum introduces the history, geography, government, and economy of Michigan. Students learn about people and events from the past that have influenced the state in which they live. They study the geography of Michigan including the physical and cultural characteristics of different areas of the state. Using the context of their state, students explore human-environment interactions and their consequences. Using a geographic lens, students also examine the movement of people, products, and ideas across the state, and investigate how Michigan can be divided into distinct regions. Economic concepts are applied to the context of Michigan as students explore how Michiganians support themselves through the production, consumption, and distribution of goods and services. By studying economic ties between Michigan and other places, students discover how their state is an interdependent part of both the national and global economies. The purposes, structure, and functions of state government are introduced. Students explore the relationship between rights and responsibilities of citizens. They examine current issues facing Michigan residents and practice making and expressing informed decisions as citizens. Throughout the year, students locate, analyze, and present data pertaining to the state of Michigan.

Sequencing of Units within this Course

Careful thought has been given to the order in which the units are presented. Certain scaffolds have been created based on this order and schools should take care in moving units from their intended placement in the curriculum. The geography unit is strategically placed first in this course because the availability and types of natural resources has affected and continues to shape our economic and political decisions. Moreover, the geography of Michigan has huge implications for how Michigan developed and grew into a state. As a result, history, government, and civics units are deliberately placed at the end of the course so that students have an opportunity to revisit economic and geographic concepts by engaging in historical analysis and problem solving.

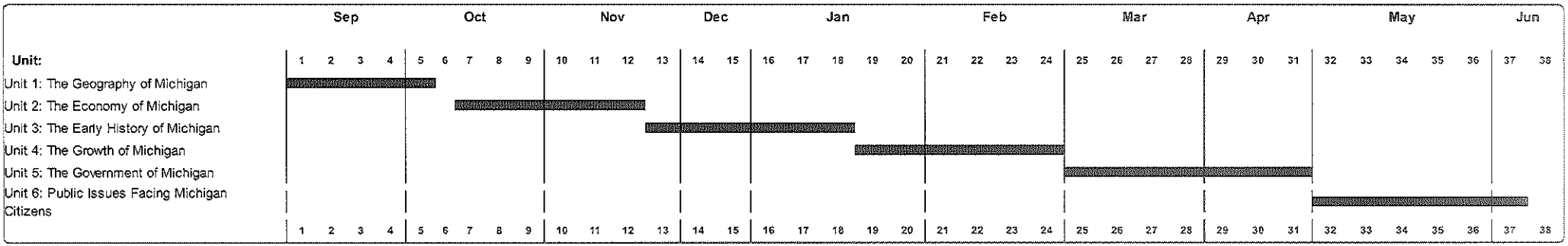
Rationale

In order to sustain our democratic republic, students must be "aware of their changing cultural and physical environments; know the past; read, write, and think deeply; and act in ways that promote the common good." - *C3 Framework, P. vii.* Using the expanding environments model of social studies from kindergarten through grade 4, students apply historical, economic, geographic, and civic concepts to increasingly sophisticated social environments. Social studies in third grade develops skills essential in a participatory democracy by focusing on how children can respect the individual rights of others while advancing the common good. Students at this age need guidance to develop the practices of citizenship and to understand how diversity strengthens the groups to which they belong. As students move through elementary school, it is essential that they understand their social world and develop the academic vocabulary and cultural competencies that will enable them to be successful in later grades, as well as in career and civic life.

Alignment

This curriculum is aligned to the Michigan Content Expectations as promulgated by the Michigan Department of Education and adopted by the State Board of Education in 2007. It is also aligned to the C3 Framework promulgated by the National Council for the Social Studies.

Third Grade SS Essential Understandings.docx



Course Description:

Title: United States Studies

The fourth grade social studies curriculum introduces students to geographic, economic, governmental concepts through the lens of the United States. They study the physical geography of the United States as well as the cultural characteristics of regions of the country. Students analyze human systems in the United States by exploring the interaction between the people and their natural environments, the movement of people, products, and ideas, and the distinguishing features of various regions within the country. By focusing on the characteristics of the U.S. economy, students learn fundamental economic concepts and apply these to their own lives. They study economic ties between the United States and other places, and discover how their country is an interdependent part of the global economy. Students are introduced to the purposes, structure, and function of our federal government. They also examine the relationship between the rights and responsibilities of citizens in a democratic republic. Students examine current issues facing the United States and practice making and expressing informed decisions as citizens.

Sequencing of Units within this Course

Careful thought has been given to the order in which the units are presented. Certain scaffolds have been created based on this order and schools should take care in moving units from their intended placement in the curriculum. The first unit provides students with an understanding of the different perspectives that the social sciences provide to understanding our social world. Each discipline within the social sciences is then explored; however, it is important that the geography unit precede the economics unit as the types and availability of natural resources affects economic decisions. Since the government and citizenship units contains the most cognitively challenging concepts, they have been place towards the end of the course.

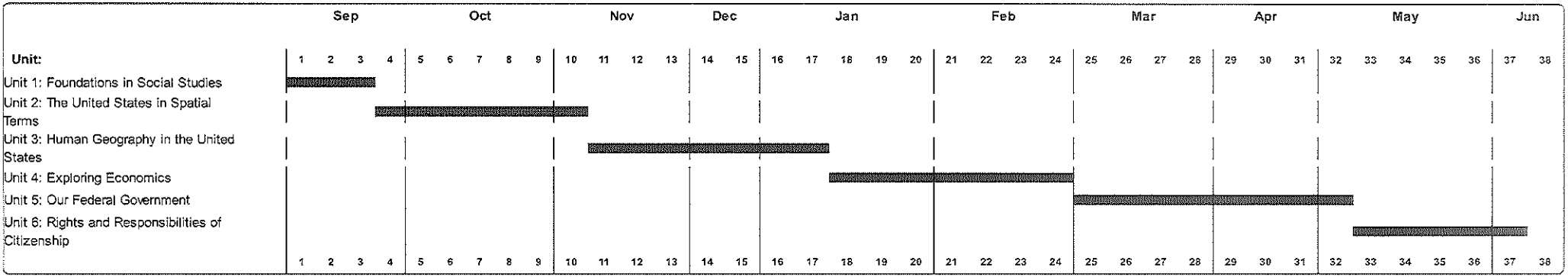
Rationale

In order to sustain our democratic republic, students must be "aware of their changing cultural and physical environments; know the past; read, write, and think deeply; and act in ways that promote the common good." - *C3 Framework, P. vii.* Using the expanding environments model of social studies from kindergarten through grade 4, students apply historical, economic, geographic, and civic concepts to increasingly sophisticated social environments. Social studies in fourth grade is designed to develop skills essential in a participatory democracy by focusing on geographic, economic, and civics concepts that affect people throughout our nation. Moreover, the curriculum reinforces how we, as a nation, respect the individual rights of others while advancing the common good. Students need guidance and practice to develop skills essential to citizenship in a participatory democracy, and to reinforce how diversity strengthens our ability to address national public issues. As students move through elementary school, it is essential that they understand their social world and develop the academic vocabulary and cultural competencies that will enable them to be successful in later grades, as well as in career and civic life.

Alignment

This curriculum is aligned to the Michigan Content Expectations as promulgated by the Michigan Department of Education and adopted by the State Board of Education in 2007.

Fourth Grade SS Essential Understandings.doc



Course Description:

Title: Early American History

The fifth grade social studies curriculum is a chronological study of early American history through the adoption of the United States' Bill of Rights. By applying the tools of historians, including the use of primary and secondary sources, students explore how significant events shaped the nation. They begin with an introduction to the United States Constitution which, as the first unit of study, retrospectively frames their study of the early history of the nation. As they study the meeting of "Three Worlds" they explore interactions among American Indians, Africans, and Europeans in North America. Students also examine how these interactions affected colonization and settlement. They explore how the geography of North America influenced daily life and economic activities as the three distinct English colonial regions developed. Throughout the course, students learn how ideas about government, colonial experiences with self-government, and interactions with Great Britain influenced the decision to declare independence. Within the historical study, emphasis is placed on ideas about government as reflected in the Declaration of Independence, Articles of Confederation, the U.S. Constitution, and the Bill of Rights. Students examine how and why the Founders gave and limited the power of government through the principles of separation of powers, checks and balances, federalism, protection of individual rights, popular sovereignty, and the rule of law (core democratic values). Throughout the course students develop capacity for responsible citizenship as they apply the values and principles of constitutional democracy in the United States to contemporary issues facing the nation.

Sequencing of Units within this Course

Careful thought has been given to the order in which the units are presented. Certain scaffolds have been created based on this order and schools should take care in moving units from their intended placement in the curriculum. The first unit provides students with an understanding of our current system of government and coincides with the setting of classroom norms. Students then investigate how and why the constitution created the type of government we have through an historical perspective (chronological approach). It is important for students to develop a chronological narrative of our nation's shared history. Without developing this mental timeline, students will be challenged to understand the historical context and developments, explore different perspectives of the events, analyze continuity and change over time, and evaluate cause and effect relationships in this course and subsequent history courses.

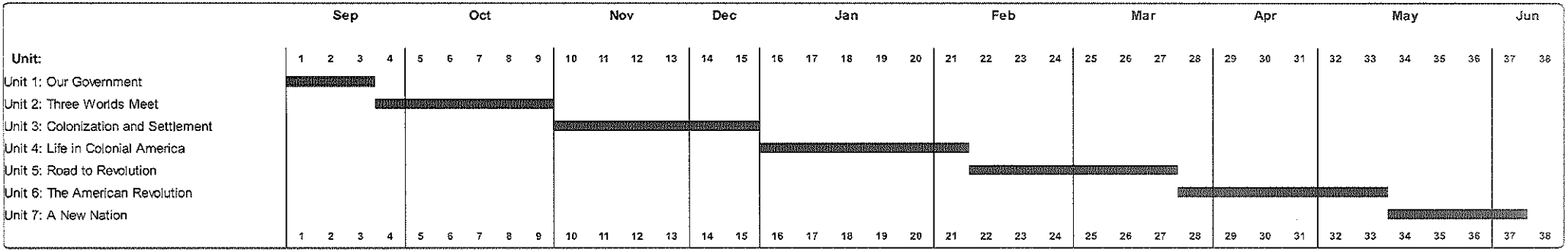
Rationale

In order to sustain our democratic republic, students must be "aware of their changing cultural and physical environments: know the past; read, write, and think deeply; and act in ways that promote the common good." - *C3 Framework, P. vii.* Fifth grade is critical to developing students understanding of our shared national past. It also provides the first truly discipline-specific approach to social social studies. By positioning history as accounts of the past, the curriculum gives voice to perspective and enables students to take up more cognitively challenging investigations and analyses. Through history, students learn how to gather and evaluate evidence to support claims about the past as well as how to assess the arguments others make about the past. As they prepare to enter middle school, this course exposes students to academic vocabulary essential to success at the secondary level and to cultural competencies in preparation for career and civic life.

Alignment

This curriculum is aligned to the Michigan Social Studies Content Expectations and Common Core State Standards for Literacy in History/Social Studies as adopted by the State Board of Education. It is also aligned to the C3 Framework promulgated by the National Council for the Social Studies.

Fifth Grade SS Essential Understandings.doc



Course Description:

Course Rationale: Why study world geography? Why focus on global issues? Why does geographic thinking matter?

In an ever flattening world, nearly all Americans are affected by world events. The global impact of events emanates not only from political and diplomatic forces and events, but also from the powerful "crosscurrents of an increasingly global economy."[1] Traditional human concerns about economic, political, social, and environmental issues manifest themselves across the globe in a variety of ways. Using a geographic lens to explore global phenomena provides a means for students to compare how humans in different places address similar issues. It also enables students to study broad patterns of human behavior and the global consequences of those actions. Knowledge, understanding, and application of geographic content and perspectives are essential to bring coherence to the causes and effects of physical and human events that occur on Earth's surface.[2] While traditionally schools have adopted a hemispheric approach to studying the world, this course adopts a more holistic view of the world. Instead, this course is designed to challenge students to think globally, exploring global or cross regional patterns and interactions, which are essential if students are to be successful in an increasingly flat, interconnected world.

The Course

The sixth grade social studies curriculum is a geography-based course which introduces students to the physical and human geography of the world. Beginning with a spatial perspective, students explore different ways in which the earth has been represented, how geographers use specific tools and technologies in geographic inquiry, and some of the limitations of these tools. They investigate patterns of natural and human characteristics and use case studies to examine how the physical environment has provided both benefits and obstacles to human societies. In doing so, students explore how humans have used, adapted, or modified their environment and the consequences. Through the study of culture, cultural characteristics and cultural diffusion, students learn how culture both influences and affects people throughout the world in similar yet distinct ways. Students also consider globalization and its impact on economic and political institutions and people worldwide.

In this course, students will examine a variety of global issues that emanate from human activities such as population change, migration, urbanization, culture and cultural diffusion, resource use, increased networks of trade and economic interdependence, and the interactions among nations. Students investigate how local, national, and international governmental and non-governmental organizations respond to a variety of contemporary issues. The different regions of the world are used to illuminate examples of how these global issues or problems affect people in places around the world. Thus, students explore the similarities among regions of the world in terms of causes and consequences of global issues. They also assess the extent to which geographic, historical, political, socio-cultural, and/or economic factors account for differences in the causes and/or consequences of global phenomena. Simply put, the curriculum and accompanying materials push students to take a global view of their world.

Throughout the course, students employ different spatial scales (local, regional, interregional, and global), to study human patterns and global issues throughout the course. In doing so, students deepen their understanding of the disciplines of history, geography, economics and political science, as well as broaden their understanding to other fields within the social studies such as anthropology, sociology, and archeology. Students explore how all of these social studies fields are both complementary and interdependent. Grounded in research on students' thinking and learning in geography and other social science disciplines, the curriculum emphasizes how evidence from a myriad of social studies fields collectively provides a broad and detailed picture of our world.

[1] *NAEP Geography Framework Project*. 3 August 2012 .

[2] *Ibid.*

Integrated through the Lens of Geography

Throughout the course, students will use different spatial scales (local, regional, interregional, and global), to study human patterns and global issues. In doing so, students deepen their understanding of the disciplines of history, geography, economics and political science, as well as broaden their understanding to other fields within the social studies such as anthropology, sociology, and archaeology. Students explore how all of these social studies fields are both complementary and interdependent. Grounded in research on students' thinking and learning in geography and other social science disciplines, the curriculum emphasizes how evidence from a myriad of social studies fields collectively provides a broad yet detailed picture of our world.

Focus on Content Literacy

Particular attention has been placed on the English Language Arts Common Core State Standards for English Language Arts and the CCSS for Literacy in History and Social Studies. The development of content literacy skills is a critical component in this course and is integrated throughout the materials. By leveraging the content of social studies to teach students to read, write, and think deeply about their world, students gain additional instruction and support in the development of their literacy skills.

Sequencing of Units within this Course

Traditional human concerns about economic, political, social, and environmental issues manifest themselves across the globe in a variety of ways. Using a geographic lens to explore global phenomena provides a means for students to compare how humans in different places address similar issues. It also enables students to study broad patterns of human behavior and the global consequences of those actions. Knowledge, understanding, and application of geographic content and perspectives are essential to bring coherence to the causes and effects of physical and human events that occur on the Earth's surface.[2] While traditionally schools have adopted a hemispheric approach to studying the world, this course adopts a more holistic view of the world. Instead of a hemispheric or regional approach to world geography, this course is designed to challenge students to think globally, exploring global or cross regional patterns and interactions, which are essential if students are to be successful in an increasingly flat, interconnected world.

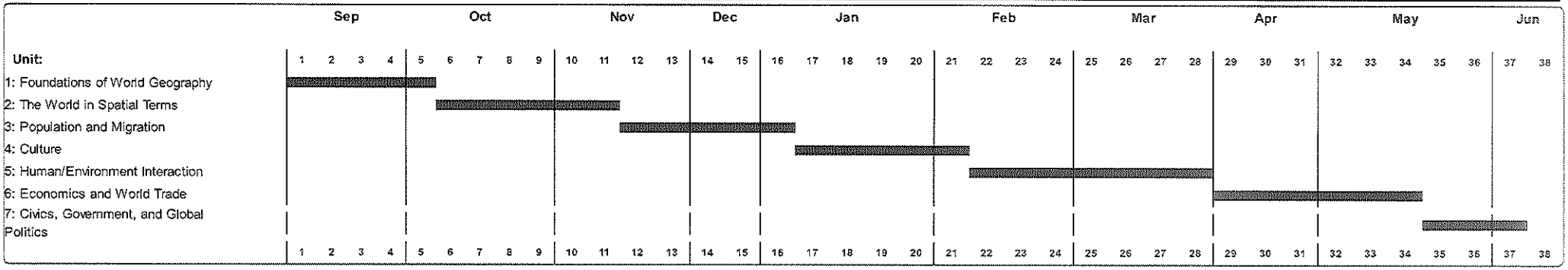
Rationale

In an ever flattening world, nearly all Americans are affected by world events. The global impact of events emanates not only from political and diplomatic forces and events, but also from the powerful "crosscurrents of an increasingly global economy." *(NAEP Geography Framework Project).* Traditional human concerns about economic, political, social, and environmental issues manifest themselves across the globe in a variety of ways. Using a geographic lens to explore global phenomena provides a means for students to compare how humans in different places address similar issues. It also enables students to study broad patterns of human behavior and the global consequences of those actions. Knowledge, understanding, and application of geographic content and perspectives are essential to bring coherence to the causes and effects of physical and human events that occur on the Earth's surface. While traditionally schools have adopted a hemispheric approach to studying the world, this course adopts a more holistic view of the world. Instead of a hemispheric or regional approach to world geography, this course is designed to challenge students to think globally, exploring global or cross regional patterns and interactions, which are essential if students are to be successful in an increasingly flat, interconnected world.

Alignment to Michigan Grade Level Content Expectations, CCSS, and NAEP

Oakland Schools is committed to helping schools meet the social studies content expectations adopted by the Michigan State Board of Education in 2007. The Grade Level Content Expectations document explicitly provides for flexibility in organizing how schools meet the content expectations, stating "districts are afforded flexibility on the organization delivery models for the content in grades 6 and 7" (K-8 Social Studies Content Expectations, page 41). One of the overarching goals of the intermediate school district is to design curricula and instructional materials that systematically address the development of students' social studies knowledge and skills for increasingly sophisticated understandings from one grade to the next. In providing an on-ramp for future success, this curriculum goes beyond the content expectations in terms of rigor, depth of knowledge, and connections to content literacy. It also is designed to address the NAEP's three content outcomes: Space and Place, Environment and Society, and Spatial Dynamics and Connections.

Sixth Grade Course Overview (2015)
Sixth Grade SS Essential Understandings



Course Description:

Seventh Grade Early World History

The seventh grade social studies curriculum focuses on early world history and geography with a deliberate focus on the content literacy. Students begin their exploration into world history with a focus on historical thinking. By unpacking historical and geographic thinking, students learn how these disciplines are distinct in how they ask questions and frame problems to organize and drive inquiry. Students learn that historians must have some evidence to support the claims they make in their accounts. They investigate how these social scientists select, analyze, and organize evidence, and then use that evidence to create accounts that answer questions or problems. By introducing students to the "invisible" tools that historians use to create historical accounts – significance, social institutions, temporal frames (time), and spatial scales (space) – the course deepens students' historical habits of mind and builds students' social and content literacy.

In this grade, students investigate human history from the beginning until around 1500. They explore major and significant changes in each era through a chronological organization. Students learn about the earliest humans and explore early migration and settlement patterns. In studying the origins of farming and its impact upon emerging human cultures, students analyze evidence from the fields of archaeology and anthropology, and employ a wide range of data sources including artifacts, photographs, and geographic information. Students examine how the emergence of pastoral and agrarian societies set the stage for the development of powerful empires, trade networks, and the diffusion of people, resources, and ideas.

Extending students study of world history through Era 4 (300 CE – 1500 CE) places world religions and development of empires in the Americas (Aztecs, Incas, Mayans) in their historical context. The rise and fall of empires, as well as the nomadic groups in Afro-Eurasia, generated new zones of cultural and commercial exchange that linked regions across the world and enabled ideas to spread. Students also examine the development of belief systems in their historical context. These new belief systems had distinctive beliefs, texts, and rituals. Each shaped cultures by developing ethical practices and establishing codes within which diverse people were able to communicate and interact, often well beyond their local neighborhood. In doing so, students consider why some belief systems grew into world religions. In studying the precursors to the meeting of the "Three Worlds," students expand their view of human history and begin to see the story of the United States in a more global context. The course concludes with students analyzing global patterns of continuity and change over time, and using evidence to construct historical arguments about the past.

Scope and Sequence

Careful thought has been given to the order in which the units are presented. Certain scaffolds have been created based on this order and schools should take care in moving units from their intended placement in the curriculum. It is essential that the introductory be taught first as students are expected to apply these "invisible thinking tools" in subsequent units. Moreover, the chronological approach of the course is designed to develop students' understanding of the narrative of human history. The chronological approach better positions students to examine and make arguments about cause-effect relationships, change and continuity over time, and turning points.

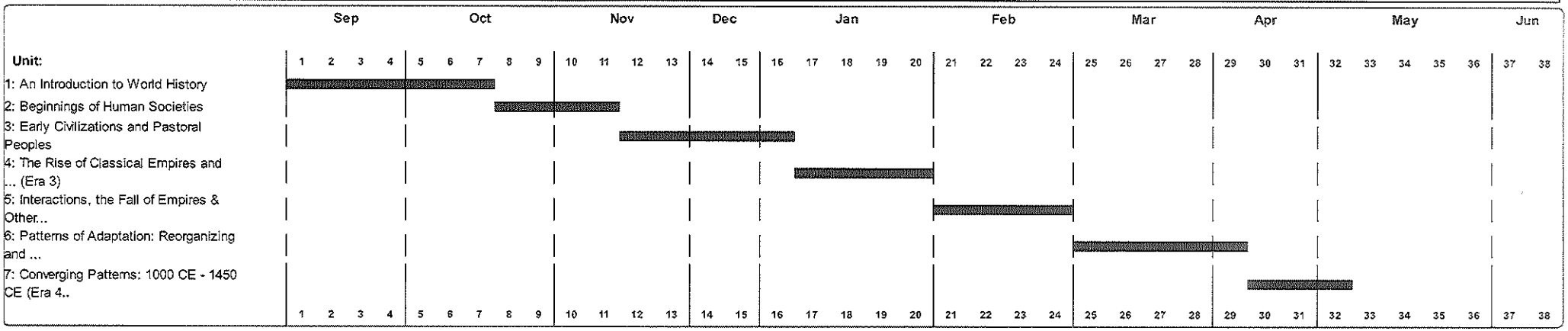
Rationale

History provides us with the "invaluable mental power we call judgment." Recent research supports the "basic assumption that history teaches us a way to make choices, to balance opinions, to tell stories, and to become uneasy – when necessary – about the stories we tell." Ultimately, democracy and effective citizenship rests significantly on each generation's ability to think historically. Moreover, as reflected in the C3 Framework, "[n]ow more than ever, students need the intellectual power to recognize societal problems; ask good questions and develop robust investigations into them; consider possible solutions and consequences; separate evidence-based claims from parochial opinions; and communicate and act upon what they learn." This is the vein of social studies education.

Alignment to Michigan Grade Level Content Expectations and Common Core Literacy Standards for History/Social Studies

These materials are aligned to the Michigan Social Studies Content Expectations adopted by the State Board of Education in 2007, as well as the Common Core State Standards for Literacy in History/Social Studies and the C3 Framework promulgated by the National Council for the Social Studies.

Seventh Grade SS Essential Understandings



Course Description:

Eighth Grade Social Studies: Integrated American History
This course introduces students to American history from the Revolution through the Reconstruction Era, with an emphasis on the values and ideals of our constitutional republic. Using the text of the Preamble to the U.S. Constitution as the touchstone for the course, students assess how the meaning of the phrases "We the People" and "to form a more perfect Union" are reflected in past decisions and events and have inspired generations of Americans.

Beginning with the political and intellectual transformations that preceded the American Revolution, students explore how the ideas of inalienable rights, limited government, social compact, rule of law, equality, and the right of revolution stimulated English colonists to declare independence. Students further their understanding of American government from an in-depth study of the United States Constitution and the evolution of the government created during its first century. They examine the challenges faced by the new nation and the role of political and social leaders in meeting these challenges. Students also analyze the nature and effect of geographic, demographic, and economic growth during the 19th century. Using economic, social/cultural, and geographic/environmental events, trends, and issues, students also assess the nature and effects of growth through 1877. They analyze and evaluate early attempts to abolish or contain slavery and efforts to realize the ideals of the Declaration of Independence for all. In studying the Civil War and Reconstruction, students evaluate multiple causes, key events, and complex consequences of the war and its aftermath.

While a chronological frame structures the course, there are many opportunities for students to consider contemporary public issues, which emanate from the inherent tensions among the values found in our nation's founding documents (liberty, common good, security, equality, etc.). This course will highlight how the nation addressed these tensions within their historical context and ask students to consider their role in a participatory democracy.

Significant attention is paid to developing students' literacy skills, including reading informational text, writing, and speaking. Using primary and secondary sources, the course also develops students' disciplinary literacy in history. Students become investigators of the past as they engage in the analytical skills of sourcing, contextualizing, and corroborating evidence, thereby granting agency to students in the learning process. Students deepen their understanding of the evidentiary nature of history as they use historical evidence to both support and analyze historical arguments and narratives. In an effort to cultivate students' analytical reasoning skills, this course encourages the use of multiple texts to explore: 1) ideas of significance, 2) continuity and change over time, and 3) the importance of perspective in understanding the past.

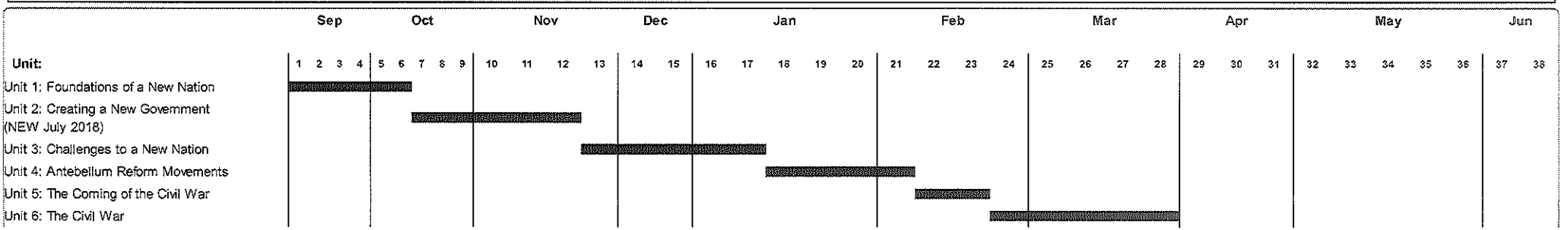
Sequencing of Units within this Course
Careful thought has been given to the order in which the units are presented. Following a traditional chronological approach, the units build upon each other and provide opportunities for students to make arguments about cause-and-effect relationships, turning points, and continuity and change over time. Embedded literacy scaffolds are gradually removed as students move through the units, and subsequent units require students to apply knowledge and skills learned in earlier ones.

Course Rationale:
American history plays a unique role in educating the next generation for democratic public life in the United States. First, engagement in civic life requires culturally aware citizens who have a sense of our shared national past. Secondly, by framing the course around values identified in the Preamble, students learn how Americans have balanced competing national interests and values in addressing public issues and events over time and within a variety of historical contexts. This approach is designed to provide opportunities to prepare students to assume their role in a democracy by carefully considering various perspectives when analyzing current public issues. Third, historical reading and thinking skills empower students to be critical consumers of information. By providing students with tools to evaluate evidence, students will be well equipped to traverse their political world and develop the skills necessary for sustaining our democracy. Finally, this course seeks to cultivate students' critical thinking, problem-solving, and collaborative skills, so that they will develop the "invaluable mental power we call judgment." (Sam Wineburg, *Historical Thinking and Other Unnatural Acts*, quoting Woodrow Wilson).

Alignment to Michigan Grade Level Content Expectations
This course is aligned to the Michigan Social Studies Content Expectations adopted by the Michigan State Board of Education in 2007 and the Michigan English Language Arts Standards for Literacy in History/Social Studies. This course also implements the inquiry arc from the C3 (College, Career, and Civic Life) Framework promulgated by the National Council for the Social Studies.

Units of Study
Unit 1: Foundations of a New Nation (6 weeks)
Unit 2: Creating a New Government (7 weeks)
Unit 3: Challenges to an Emerging Nation (5 weeks)
Unit 4: Regional and Economic Growth (4 weeks)
Unit 5: Antebellum Reform Movements (2 weeks)
Unit 6: The Coming of the Civil War (5 weeks)
Unit 7: The Civil War (3 weeks)
Unit 8: Reconstruction (4 weeks)

Additional units to be added as they are completed.
✎ Important Information about this Course!



Technology

Grand Blanc Academy students in grades K-5 are afforded the opportunity to go to the technology lab two or three times per week. In the technology lab, students work to reinforce the standards where there are deficits as identified in their most recent NWEA MAP assessment. The Academy has partnered with the State of Michigan to implement Imagine Math. The modules pair up with the Learning Continuum aligned to NWEA.

Grand Blanc Academy currently has two mobile computer carts that teachers can use in the classroom for added instruction. (Middle School uses a cart to implement the Imagine Math program at the middle school level.

As stated in the curriculum portion of the charter, Grades 6-8 have a lab designated specifically for the use of the Reading Plus program.