KNOWLEDGE Map Across Grades and Content Areas

Kindergarten				
	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
Humanities	**The Five Senses** ***EQ:*** *How do our senses help us learn?* Students learn about the five senses by examining how writers and artists leverage our senses to communicate an experience. They learn how words and illustrations work together to tell a story and to convey information.	**Once Upon a Farm** ***EQ:*** *What makes a good story?* Students explore story structure through informational and fictional texts about farm animals. While building background knowledge of farm animals, students learn how fictional and informational texts are structurally different.	**America, Then & Now** ***EQ:*** *How has life in America changed over time?* Students study how school, home life, transportation, and communication have changed in America over time, and how certain inventions have made life easier. They also learn how authors teach us information about real life through books.	**The Continents** ***EQ:*** *What makes the world fascinating?* Students study the seven continents and the stories, customs, and geographical features that make each unique. *World Atlas* is used to study information you can gather from maps.
Science	**Weather** ***Phenomenon:*** *Cliff Dwellings at Mesa Verde* ***EQ:*** *How did the cliff dwellings at Mesa Verde protect people from the weather?* Students develop an understanding of the parts of weather, the effects of weather on people and their surroundings, and the ways people prepare for severe weather.	**Pushes and Pulls** ***Phenomenon:*** *Tugboats in New York Harbor* ***EQ:*** *How do tugboats move cargo ships through New York Harbor?* Students develop an understanding of what makes objects start to move, how pushes and pulls can change the way objects move, and what happens when two objects bump into each other. Students learn that pushes and pulls can start, stop, and redirect an object's movement.	**Life** ***Phenomenon:*** *Life in Different Areas of the Mojave Desert* ***EQ:*** *How is Mara different from the Wonderland of Rocks?* Students develop and refine a model to represent the living and nonliving parts of each desert environment and use the model to determine why different environments have different plants and animals. Students develop an enduring understanding that plants and nonhuman animals need certain resources to live and grow and can obtain these resources from their environments.	**Environments** ***Phenomenon:*** *Life in a Longleaf Pine Forest* ***EQ:*** *Why are gopher tortoises disappearing?* Students develop and refine a model to represent the living and nonliving parts of the longleaf pine forest environment and the ways that plants and animals, including humans, change the environment when they interact with it. Students develop an understanding that when living things change their environment to get what they need, those changes can affect other living things.
Math	**Numbers to 10** Students describe attributes of two related objects, moving on to classify objects to make categories. They explore the concept of zero and work with numbers 0-10 in different configurations. They use the language "one more" or "one less" to describe numbers 0-10.	**Two-Dimensional and Three-Dimensional Shapes** Students describe flat triangles, squares, rectangles, hexagons, and circles and classify shapes into categories. They move on to describing three-dimensional shapes using informal language, eventually sorting shapes as either two- or three-dimensional. **Comparison of Length, Weight, and Capacity, and Numbers to 10** *(continues in Q3)* Students begin by comparing lengths and heights using string and linking cubes. They compare weights of classroom	**Number Pairs, Addition and Subtraction to 10** Students compose and decompose numbers as a foundation for addition and subtraction within 10. They begin with 2-5, move on to 6-8, and eventually make it to 9-10. They end the module by analyzing patterns with adding 0 and 1 and by "making 10."	**Numbers 10-20 and Counting to 100** The module begins with students compiling ten objects or straws, creating a model for numbers that are 10 plus some ones. They compose and decompose numbers 11-20 and represent and write teen numbers. They count up and down by tens to 100, and across tens by ones to 100. **Analyzing, Comparing, and Composing Shapes** Students build and draw flat and solid shapes using specific lengths. They compare flat shapes using pattern blocks and compose and decompose flat shapes from other shapes.

		objects and then explore volume by pouring. They compare quantities in sets within 10 using “more than,” “less than,” “fewer than,” and “same as” language. They end the module by clarifying attributes that are measurable - such as length, weight, and volume.		
1st Grade				
	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
Humanities	**A World of Books** ***EQ:*** *How do books change lives around the world?* Students read books about children around the world and learn how lives can be changed because of books. They explore how children in other places access books.	**Creature Features** ***EQ:*** *What can we discover about animals’ unique features?* Students explore how artists and experts research animals to convey an appreciation or to explain aspects of the natural world. Students learn about Jane Goodall by engaging with the text *Me...Jane*.	**Powerful Forces** ***EQ:*** *How do people respond to the powerful force of wind?* Students explore the wind, how it can evoke emotions, and how it can be used for energy. They explore hurricanes and read about a young inventor in Malawi who built windmills to combat drought.	**Cinderella Stories** ***EQ:*** *Why do people around the world admire Cinderella?* Students explore the Cinderella story as told through various cultures around the world. Through this lens, they learn how different cultures pass down stories to teach morals.
Science	**Survival** ***Phenomenon:*** *Life in Barnum Pond* ***EQ:*** *How do pond plants and pond animals survive in their environment?* Students develop an understanding that plants and animals have body parts that function in ways that help them survive in their environment. They also learn that plants and animals of the same kind can vary in many ways.	**Light** ***Phenomenon:*** *Wayang Shadow Puppetry* ***EQ:*** *How do Wayang shadow puppet shows use light to tell a story?* Students develop an understanding that the way light interacts with objects affects what people see.	**Sound** ***Phenomenon:*** *The Recycled Orchestra of Cateura* ***EQ:*** *How does the Recycled Orchestra make music?* Students study the Recycled Orchestra of Cateura to develop an understanding of the cause and effects of sound. They learn that sound is caused by a vibrating object and that sound can cause objects to vibrate.	**Sky** ***Phenomenon:*** *Polynesian Navigation* ***EQ:*** *How did the Polynesians use observations of the Sun, stars, and the Moon to navigate from island to island?* Students use their knowledge of patterns in how the Sun, stars, and the Moon move in the sky and develop an understanding that people can see the Sun, stars, and the Moon in predictable locations at predictable times.
Math	**Sums and Differences to 10** Students progress towards fluency with addition and subtraction to 10. They analyze “embedded” numbers within 10 and practice “counting on” from embedded numbers to 10 to build a foundation for addition fluency to 10. They use decomposition strategies to set a foundation for subtraction fluency to 10. They solve addition and subtraction word problems using models and learn about the commutative property.	**Introduction to Place Value Through Addition and Subtraction Within 20** Students solve addition and subtraction problems involving teen numbers, moving from “counting all” to “counting on.” They use composition and decomposition strategies of “making ten” or “taking from ten” to set the foundation for understanding place value and its role in addition and subtraction. This module sets the stage for understanding that all numbers within 100 are composed of a number of units	**Place Value, Comparison, Addition and Subtraction to 40** This module focuses on the role of place value in addition and subtraction within 40. Students begin by representing numbers to 40 with a variety of objects and organize units with place value charts. They learn the symbols for greater than (>) and less than (<) and use strategies to add two-digit numbers. To set the stage for addition with regrouping, the module ends with students interpreting two-digit numbers in varied combinations of tens and ones (such as 34	**Identifying, Composing, and Partitioning Shapes** *(begins end of Q3)* Students identify attributes of two- and three-dimensional shapes, adding *trapezoid*, *rhombus*, *cone*, and *rectangular prism* to their repertoire. They combine familiar shapes to create composite shapes and relate geometric figures to equal parts using “halves” and “fourths.” The module ends with students using their knowledge of halves and fourths to tell time to the hour and half-hour.

		of ten and a number of units of one. **Ordering and Comparing Length Measurements as Numbers** *(continues in Q3)* Students begin the module comparing lengths of one object to that of another with language such as "longer than" and "shorter than." This eventually leads to the idea of a "length unit" such as a centimeter cube, as students explore the usefulness of having a standard unit of measure. The module ends with students representing and interpreting data with "units" such as a centimeter cube representing data points on a graph.	= 3 tens 4 ones = 2 tens 14 ones = 1 ten 24 ones).	**Place Value, Comparison, Addition and Subtraction to 100** Students represent comparisons using tape diagrams with two tapes and solve comparative word problems. They count, write, and solve problems within 120 and compare numbers using >, <, =. They add two-digit numbers with some regrouping (where the ones digits have a sum greater than 10) and use models and numbers to solve. Students use coins (pennies, nickels, dimes, quarters) to decompose and represent values of coins.
2nd Grade				
	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
Humanities	**A Season of Change** ***EQ:*** *How does change impact people and nature?* Students observe change through the cycle of the four seasons and examine how the seasons impact characters in books. As they learn about the science behind the change of seasons, they also explore how personal change can be daunting.	**The American West** ***EQ:*** *What was life like in the West for early Americans?* Students learn about life in the American West for Native Americans and settlers and explore how changes impacted people and the environment.	**Civil Rights Heroes** ***EQ:*** *How can people respond to injustice?* Students build knowledge around the Civil Rights Movement and how its leaders brought change to our country. They closely examine the impact of Martin Luther King Jr., Ruby Bridges, and Sylvia Mendez.	**Good Eating** ***EQ:*** *How does food nourish us?* Students learn about the digestive system and healthy eating through informational texts. They also engage with literary texts that explore how food can bring communities together.
Science	**Matter** ***Phenomenon:*** *Bird Nests* ***EQ:*** *Why do different kinds of birds use certain materials to build their nests?* Students build knowledge of matter and use their understanding to explain the anchor phenomenon. They learn that understanding the properties of matter and the ways in which matter can change helps people to use matter in different ways.	**Earth Changes** ***Phenomenon:*** *The Transformation of Surtsey* ***EQ:*** *How can the island of Surtsey change shape over time?* Students learn how land changes over time. Through a close study of the Icelandic island of Surtsey, they build an understanding of how natural events transform the Earth's landforms as time passes.	**Plants** ***Phenomenon:*** *Plant Recovery Around Mount St. Helens* ***EQ:*** *How did the local plants recover after the eruption of Mount St. Helens?* Students learn the ways in which plants meet their needs for growth and grow in new places. They develop an understanding that different kinds of plants have different needs for growth and depend on certain interactions for pollination and seed travel.	**Biomes** ***Phenomenon:*** *The Environments On and Below Mount Everest* ***EQ:*** *Why do so many kinds of plants and animals live below Mount Everest, but so few live on it?* Students compare environments on and below Mount Everest. They learn why different kinds of plants and animals live in different environments and develop an understanding that Earth's land and water environments support many different species.

Math	**Sums and Differences to 100** The module begins with students practicing fluency, first within 20 and then within 100. They use place value understanding to create "easier" problems to add/subtract within 100. **Addition and Subtraction of Length Units** Students relate addition and subtraction to length, working exclusively with metric units to reinforce place value understanding. After creating centimeter rulers and building an understanding of meter, they estimate lengths and determine appropriate tools for certain measurements. The module ends with students relating addition and subtraction to length. **Place Value, Counting, and Comparison of Numbers to 1,000** *(continues in Q2)* Students extend their understanding of units by bundling ones, tens, and hundreds up to 1,000 straws. Throughout the module, students count by ones, tens, and hundreds, and move fluidly between the models of number line and place-value charts. They move from changing 10 ones for 1 ten to changing 10 tens for 1 hundred.	**Addition and Subtraction Within 200 with Word Problems to 100** Students build on understanding from previous modules to compose and decompose place value units and to add and subtract within 200. Much of the module is focused on computational strategies rather than word problems so that students have time to build a conceptual understanding of why algorithms for addition and subtraction work. **Addition and Subtraction Within 1,000 with Word Problems to 100** *(continues in Q3)* Students extend their conceptual understanding of the addition and subtraction algorithms to numbers within 1,000, using concrete models based on place value and properties of operations. Students begin the module using place value strategies, eventually composing and decomposing tens and hundreds within 1,000.	**Foundations of Multiplication and Division** Students begin forming a conceptual foundation for multiplication and division by making and manipulating equal groups with concrete and pictorial representations, which they eventually relate to repeated addition. These representations evolve into arrays and area models, in which they develop an understanding of square units. The module ends with students focusing on doubles and even numbers, setting a foundation for multiplication by 2's, which they will learn in 3rd grade. **Problem Solving with Length, Money, and Data** *(continues in Q4)* Students practice addition and subtraction strategies within 100 and problem-solving skills as they learn to work with various types of units within the contexts of length, money, and data. Students represent categorical and measurement data using picture graphs, bar graphs, and line plots. They revisit measuring and estimating length, but now use both metric and customary units.	**Time, Shapes, and Fractions as Equal Parts of Shapes** Students develop an understanding of unit fractions as equal parts of a whole by composing and decomposing shapes. They categorize polygons and cubes by attributes and then create composite shapes using tangrams. Then, students decompose circles and rectangles into equal parts to describe halves, thirds, and quarters. The module ends with students using their understanding of halves and fourths to tell time to the nearest five minutes.
3rd Grade				
	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
Humanities	**The Sea** ***EQ:*** *Why do people explore the sea?* Students learn about the many ways humans explore the sea. They learn about the sea as a complex ecosystem, focusing closely on squids and sharks, and how scientists explore the sea. Through thematic poetry, fiction, and	**Outer Space** ***EQ:*** *How do people learn about space:* Students learn about the history of space exploration and of humankind's fascination with outer space. Students read about Galileo Galilei and how his curiosity led to discovery, and move into an exploration of the Apollo 11 mission	**A New Home** ***EQ:*** *How do stories help us understand immigrants' experiences?* Students explore the history of immigration in the United States through informational texts and through stories. They learn about the many groups of people who have immigrated to North	**Artists Make Art** ***EQ:*** *What is an artist?* Students research the lives of great artists through texts, art, and visual performances. They learn about Alvin Ailey, William Carlos Williams, Jackson Pollock, and Marian Anderson, and explore how art helps us gain insight into our society and

	non-fiction texts, students learn how artists and writers use specific elements to express ideas.	through two separate accounts. The module ends with science fiction that further explores how space has inspired imaginations through generations.	America and analyze current immigration patterns. Through fiction and non-fiction texts, students begin to understand and appreciate the challenges of the immigrant experience.	culture.
Science	**Weather and Climate** ***Phenomenon:*** *1900 Galveston Hurricane* ***EQ:*** *How can we prevent a storm from becoming a disaster?* Students develop knowledge of weather, climate, and weather hazards to explain the anchor phenomenon and apply these concepts in new contexts. Through these experiences, students begin to develop the enduring understanding that weather conditions and severe weather events occur in predictable patterns that remain stable over time.	**Survival** ***Phenomenon:*** *Butterfly Survival* ***EQ:*** *How do butterflies survive over time in a changing environment?* Students develop knowledge of fossil evidence, suitability, and changing environments to explain the anchor phenomenon and apply these concepts in new contexts. Through these experiences, students begin to develop an enduring understanding that organisms have characteristics that help them survive over time in changing environments.	**Traits** ***Phenomenon:*** *Individual Variation in Humpback Whales* ***EQ:*** *What makes an individual humpback whale unique?* Students develop knowledge of factors that influence traits and the effect of traits on individuals' lives to explain the anchor phenomenon and apply these concepts in new contexts. Through these experiences, students begin to develop an enduring understanding that traits are influenced by inheritance, growth and development, and interactions between an individual and its environment. Students also develop an understanding of how traits can affect an individual's life and, ultimately, the life cycle of a species.	**Forces and Motion** ***Phenomenon:*** *Motion in Space* ***EQ:*** *Why do objects move differently in space than on Earth?* Students revisit and refine a model comparing the motion of a soccer ball on board the International Space Station with the motion of a soccer ball on Earth. At the end of the module, students use their knowledge of forces and motion to explain the anchor phenomenon and apply these concepts in new contexts. Through these experiences, students begin to develop an enduring understanding that forces can cause changes in the motion of objects and that motion can be observed, measured, described, and predicted.
Math	**Properties of Multiplication and Division and Solving Problems with Units of 2-5 and 10** Beginning with repeated addition, students eventually find that multiplication is more efficient. The array model is used throughout the module, and students work with factors 2, 3, 4, 5, and 10. Students build an understanding of the relationship between multiplication and division, working with "unknown factor" problems. Later in the module, they model, write, and solve partitive and measurement division problems, eventually working with tape diagrams. They learn about the commutative property of multiplication. **Place Value and Problem Solving with Units of Measure** Students explore measurement using	**Multiplication and Division of Units of 0, 1, 6-9, and Multiples of 10** This module extends the study of factors 2, 3, 4, 5, and 10 to include all units from 0 to 10, as well as multiples of 10 within 100. Throughout the module, students continue to build fluency with multiplication and division facts. **Multiplication and Area** Students explore area as an attribute of two-dimensional figures and relate it to their prior understandings of multiplication. They learn that the space within a plane figure can be tiled with unit squares without gaps or overlays. Eventually, they apply their multiplication skills to determine all whole number possibilities for the side lengths of rectangles, given their areas. The module ends with students exploring area of composite two-dimensional figures.	**Fractions as Numbers on the Number Line** Students develop formal knowledge of fractional units (halves, thirds, fourths, sixths, eights) and begin to explore fifth, ninths, and tenths. They use area models, tape diagrams, and number lines to conceptualize fractions as equal partitions of a whole. They use unit fractions (such as one-third) to build non-unit fractions (such as two thirds), and compare unit fractions using fraction strips. In the latter part of the module, students look at fractions on a number line and recognize whole numbers as fractions. Eventually, they compare fractions by reasoning about their size, understanding that fractions with the same numerator and a larger denominator are actually smaller pieces of the whole. **Collecting and Displaying Data** In this module, students show data using tape diagrams, scaled bar graphs, and line plots. They answer questions such as "How	**Geometry and Measurement Word Problems** Students expand their knowledge of quadrilaterals and recognize characteristics of polygons. They use tangrams and tetrominoes to compose and decompose shapes and reason about how shapes can be composed or decomposed to form new ones. They learn about perimeter of plane figures and solve real-world problems involving perimeter and area. They use reasoning to determine lengths of sides of plane figures when given certain information.

	kilograms, grams, liters, milliliters, and intervals of time in minutes. They learn how to tell time using analog and digital clocks. Using a number line, they solve addition and subtraction problems involving intervals of minutes within 1 hour. Students use digital and spring scales to measure kilograms and grams, and they relate metric weight and liquid volume using liters and milliliters. The module ends with students using estimation to test the reasonableness of sums and differences.		many more?" and "How many less?" The module ends with students displaying measurement data in line plots, requiring them to choose appropriate intervals within which to display a particular set of data.	
4th Grade				
	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
Humanities	**A Great Heart** ***EQ:*** *What does it mean to have a great heart, literally and figuratively?* Students learn what it means to literally have a strong and healthy heart, and they compare this to the figurative meaning of "heart" in *Love That Dog.* Students are exposed to figurative language in fiction, non-fiction, and poetry, and end the module by writing an informative essay on what it means to have a great heart, both literally and figuratively.	**Extreme Settings** ***EQ:*** *How does a challenging setting or physical environment change a person?* Students build knowledge about different aspects of the environment, including land features, living creatures, plants, and climate. Students hone in on mountain regions, exploring how elevation and terrain affect resources and adaptations needed for survival.	**The Redcoats are Coming!** ***EQ:*** *Why is it important to understand all sides of a story?* Students learn to view the events leading up to the Revolutionary War with a critical eye. They explore different points of view of the Boston Massacre and read about the different perspectives in *George vs. George: The American Revolution as Seen from Both Sides*.	**Myth Making** ***EQ:*** *What can we learn from myths and stories?* Students compare Greek mythology and Native American tales, exploring how the stories share similar themes and purposes. They learn how authors and cultures teach through storytelling.
Science	**Earth Features** ***Phenomenon:*** *Formation of the Grand Canyon's Features* ***EQ:*** *How did the Grand Canyon's features form?* Students use their knowledge of rock layers, weathering and erosion, and patterns of Earth's features and processes to explain the anchor phenomenon. They develop an understanding that Earth's surface features change constantly as a result of natural processes.	**Energy** ***Phenomenon:*** *Windmills at Work* ***EQ:*** *How do windmills change wind to light?* Students learn about energy classification, transfer, and transformation to explain the windmill phenomenon. THey develop an understanding that energy cannot be created nor destroyed, but it can be transferred and transformed to be more useful.	**Sense and Response** ***Phenomenon:*** *Elephants Sensing Distant Rainstorms* ***EQ:*** *How do elephants sense rainstorms from more than 100 miles away?* Students build on prior knowledge and experiences about waves, sensory structure and function, and information processing to study how animals receive, process, and respond to information. They use their knowledge of animals sensing information in the environment to explain the phenomenon of elephants sensing distant rainstorms.	**Light** ***Phenomenon:*** *Visibility of and Communication to Howland Island* ***EQ:*** *Why didn't Ameila Earhart complete her journey?* Students build on their prior understanding of energy, waves, and senses to explore how light reflects off objects and enters the eye to allow sight, how light interacts with objects of different colors and textures to affect the appearance of objects, and how people communicate effectively across a distance. They use this knowledge to explain the anchor phenomenon,

				developing an understanding that light interacting with objects allows sight and communication.
Math	**Place Value, Rounding, and Algorithms for Addition and Subtraction** Students extend their work with whole numbers, beginning with large numbers using familiar units (hundreds and thousands) to develop their understanding of million by examining the pattern of *times ten* in the base ten system. After using place value to compare numbers, students learn to round to any place value, eventually moving away from a visual model. The module ends with students developing an understanding of standard algorithms for addition and subtraction. **Unit Conversions and Problem Solving with Metric Measurement** This short module focuses on length, mass, and capacity units in the metric system, building from students' understanding of place value. Students build fluency converting from larger to smaller units, building off of knowledge of grams and kilograms, and meters and centimeters. They use reasoning to convert between mixed and single units for computation. They use this knowledge to solve real-world problems and to explore the relationship between place value and conversions.	**Multi-Digit Multiplication and Division** *(begins end of Q1)* Throughout this module, students develop their ability to reason about the methods and models chosen to solve problems with multi-digit factors and dividends. Students begin **Fraction Equivalence, Ordering, and Operations** Students extend their understanding of fraction equivalence to mixed numbers. They begin by decomposing fractions and creating tape diagrams to represent them as sums of fractions with the same denominator in different ways, leading to the understanding that repeated fraction addition is the same as multiplying that unit fraction by a whole number. They represent familiar unit fractions as sums of smaller unit fractions (such as ⅔ = (⅙ + ⅙) + (⅙ + ⅙)). They use tape diagrams and area models to analyze the use of multiplication and division to create equivalent fractions. Expanding on understandings developed in 3rd grade, students compare fractions with unlike denominators and compare fractions to a common benchmark fraction. The second half of the module focuses on fraction addition and subtraction, including mixed numbers. Finally, students explore multiplying a fraction or mixed number by a whole number.	**Decimal Fractions** Students explore decimal numbers via their relationship to decimal fractions. They begin by exploring tenths, expressing these as decimals and as fractions and modeling them with number lines and tape diagrams. They decompose tenths into 10 equal parts to create hundredths. Students comparing decimal numbers, working with concrete representations of measurements. Students are introduced to decimal addition by converting decimal numbers to fractions (1/10 and 1/100). The module ends with students applying their work with decimal fractions to real world problems involving money. **Angle Measure and Plane Figures** *(continues in Q4)* Students are introduced to points, lines, line segments, rays, and angles, and they learn about the relationship between them. Students create and measure angles and solve equations to find unknown measures. They explore symmetry and recognize specific attributes in two-dimensional figures. They use a compass to explore the relationship between the circumference of a circle and angle measurements, understanding that an angle measurement is not the same as a length measurement. They decompose 360 degrees to discover properties of 180 and 90 degree angles. Finally, students develop a precise definition of triangle and of familiar quadrilaterals, and they classify them based on attributes such as angle measurements and parallel or perpendicular lines.	**Exploring Measurement with Multiplication** Students relate multiplication to the conversion of measurement units. They solve multiplicative comparison word problems and are challenged to create and solve their own, reflecting on the efficiency of the strategies that they use. They add and subtract mixed units of capacity, weight, and time using metric and customary units.
5th Grade				
	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**

Humanities	**Cultures in Conflict** ***EQ:*** *How do cultural beliefs and values guide people?* Students learn about the impact of US territorial growth on Native Americans, particularly the Nez Perce tribe, through historical fiction and informational texts. They study Chief Joseph's Lincoln Hall Speech and examine how the beliefs and priorities of different cultures can lead to conflict.	**Word Play** ***EQ:*** *How and why do writers play with words?* Throughout this module, students learn how writers use wordplay and figurative language to engage readers, develop plot and theme, and convey meaning through the text *The Phantom Tollbooth*. They learn how words and phrases can take on literal and figurative meaning, leading to both humor and/or confusion. They also recognize examples of wordplay in various media, such as Abbot and Costello's comedy routine, "Who's on First?"	**A War Between Us** ***EQ:*** *How did the Civil War impact people?* Students investigate the impact of the Civil War on different groups of people, including boy soldiers. They learn about factors that lead to the start of the war and what victory meant to different groups in both the North and the South.	**Breaking Barriers** ***EQ:*** *How can sports influence individuals and society?* By reading about the South African Rugby team and the history of the Negro Beaseball Leagues, students learn how sports have shaped history and continue to have an impact on the world. They also study how coaches, athletes, and teams have broken barriers and overcome challenges.
Science	**Earth and Sun** *(continues in Q2)* ***Phenomenon:*** *Patterns observed in the sky over time and their effect on Earth* ***EQ:*** *How do Earth's geosphere, hydrosphere, atmosphere, and biosphere interact to create a sustainable environment for life?* Students explore the properties of the atmosphere, energy transfer from Sun to Earth, and the dynamics of weather and water cycling in Earth's atmosphere. Students develop and use models to understand Earth's place in the solar system, and the interactions of Earth, the Sun, and the Moon to reveal predictable patterns - daily length and direction of shadows, day and night, and the seasonal appearance of stars in the night sky.	**Mixtures and Solutions** *(continues in Q3)* ***Phenomenon:*** *Matter and its interactions in our everyday life* ***EQ:*** *What is matter and what happens when samples of matter interact?* Students learn that matter is made of particles too small to be seen and develop the understanding that matter is conserved when it changes state - from solid to liquid to gas - when it dissolves in another substance, and when it is part of a chemical reaction. Students have experiences with mixtures, solutions of different concentrations, and reactions forming new substances. Knowing about properties and systems of substances, how things go together and are taken apart, enables us to develop models that explain phenomena too small to see directly.	**Mixtures and Solutions,** continued	**Living Systems** *(begins end of Q3)* ***Phenomenon:*** *Ecosystems and organisms* ***EQ:*** *How can we describe Earth's biosphere as a system of interacting parts?* Students start by looking at Earth as the interaction of four Earth systems or subsystems - the geosphere, the atmosphere, the hydrosphere, and the biosphere. They focus on the biosphere and investigate systems on different scales - nutrient and transport systems within an organism that moves matter and provides energy to the individual organism, and feeding relationships in ecosystems that move matter among plants, animals, decomposers, and the environment. They come to understand that plants get the materials they need for growth primarily from water and air, and that energy in animals' food was once energy from the Sun. Students explore how human activities in agriculture, industry, and everyday life can have major effects on these systems.
Math	**Place Value and Decimal Fractions** Students deepen their knowledge of place value to include decimals to the thousandths place. They develop the generalized understanding of the relationship between and and among the adjacent places on the place value	**Addition and Subtraction of Fractions** Students build on earlier work with fraction equivalence with base ten units to build an understanding of addition and subtraction of more complicated fractional units. They move from concrete to more abstract, beginning	**Addition and Multiplication with Volume and Area** *(continues in Q4)* In this module, students are introduced to volume through concrete explorations of cubic units, culminating with the development of the formula for right rectangular prisms. Students then combine	**Problem Solving with the Coordinate Plane** Students develop a coordinate system for the first quadrant of the coordinate plane and use it to solve problems. Students use the familiar number line as an introduction to the idea of a coordinate and construct

	chart (e.g., one tenth times any digit on the place value chart moves the digit one place value to the right). Students name and write decimal fraction numbers in expanded, unit, and word forms and connect general methods for addition and subtraction of whole numbers to decimal addition and subtraction. By the module's end, students reason about and perform decimal operations through the hundredths place. **Multi-digit Whole Number and Decimal Fraction Operations** *(continues in Q2)* Students apply t he patters of the base ten system to mental strategies and to the multiplication and division algorithms. Students begin at the concrete-pictorial level and build towards the standard algorithm for multiplication and division using distributive property area models and partial products.	with fractions with common denominators and moving to those without common denominators. They also work with fractions greater than one, using a number line to build their skill with more complex tasks. **Multiplication and Division of Fractions and Decimal Fractions** *(continues in Q3)* This module opens with an exploration that builds student understanding of "fractions as division." Using area models, students then build an understanding of whole number division that results in a fraction or mixed number. Next, students interpret finding a fraction of a set as multiplication of a whole number by a fraction, setting the stage for their understanding of division by a whole number being equivalent to multiplication of its reciprocal. Students move on to problems involving multiplication of fractions by fractions, extending their understanding of multiplication as "scaling." Finally, students begin the work of fraction division. In grade 5, fraction division includes the division of a whole number by a unit fraction (such as one-fourth) and of a unit fraction by a whole number.	prior knowledge of area and fraction multiplication to determine the area of rectangular figures with fractional side lengths. Finally, they develop a foundation for classifying shapes (parallelograms, rhombuses, squares, trapezoids) by reasoning about their attributes through a hands-on construction of two dimensional shapes.	two perpendicular number lines to create a coordinate system on the plane. They see that just as points on the line can be located by their distance from 0, the plane's coordinate system can be used to locate and plot points using two coordinates. They then use the coordinate system to explore relationships between points, ordered pairs, patterns, lines and, more abstractly, the rules that generate them. This study culminates in an exploration of the coordinate plane in real-world applications.
6th Grade				
	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
Humanities	**Resilience in the Great Depression** ***EQ:*** *How can enduring tremendous hardship contribute to personal transformation?* Students learn about the causes of the Great Depression and Dust Bowl through fictionalized accounts of hardship in *Bud, Not Buddy* and *Out of the Dust*. They deepen their knowledge of the time by learning about labor strikes, Hoovervilles, and how people can become resilient in	**A Hero's Journey** ***EQ:*** *What is the significance and power of the hero's journey?* Students learn about the hero's journey and the structure of the monomyth by reading contemporary versions of *The Ramayana* and *The Odyssey*. By the end of the module, students connect these ancient myths to the contemporary world, identifying where the hero's journey shows up in present day stories and in our own lives.	**Narrating the Unknown** ***EQ:*** *How did the social and environmental factors in the unknown world of Jamestown shape its development and decline?* In this module, students learn about the development and decline of Jamestown through an exploration of social and environmental factors that impacted the colony. Through *Blood on the River*, students learn about early power struggles and of the early settlers' violent treatment of the Powhatan tribe. The non-fiction text	**Courage in Crisis** ***EQ:*** *How can the challenges of a hostile environment inspire heroism?* Students engage with two stories of survival - Sir Ernest Shackleton in Antarctica and Malala Yousafzai in Pakistan - to contemplate how a single person's heroic actions can impact the entire world. Through these stories, they build background knowledge of Antarctica's brutal environment and of the rise of the Taliban in Pakistan and Afghanistan.

	the face of adversity. **Social Studies Companion Unit** *In development*	**Social Studies Companion Unit** In this unit, students investigate why religions have lasted so long. They begin their investigation by examining the birthplaces and ancient civilization of the five major world religions. Students explore how these religions have changed over time and who or what has caused these changes. Using Hinduism, Buddhism, and India as a model, the whole class studies different aspects of the country and religion--its geography, history, and culture. Students will choose (or be assigned) a major religion (e.g. Christianity, Islam, or Judaism) and conduct a parallel investigation throughout the unit. At the end of the unit, students will participate in a Socratic Seminar answering the Compelling Question: Why do religions last so long?	*Written in Bone* shows students how archaeology can tell us more about the challenges the settlers faced. **Social Studies Companion Unit** In this unit, students will select and research a topic related to a "history mystery" in colonial America. Throughout this unit, students explore the convergence of three specific cultures at Jamestown: the Powhatan Indians, the English, and the Angolans. Students investigate how the cultures interacted with their environment and with each other. Their work in this unit is centered around two compelling questions: Did the need for survival promote unity or division in colonial America? Why did so many colonists die at Jamestown?	**Social Studies Companion Unit** *In development*
Science	*Content in grades 6-8 rotates in an A-B-C sequence so that at the end of three years, students will have engaged in all modules. See full content map below.*			
Math	**Ratios and Unit Rates** Students are introduced to the concepts of ratio and rate. They begin by developing fluidity in using ratio language and notation and by reasoning about ratio equivalence in real-world contexts. They then explore the additive and multiplicative structure of ratio tables, applying reasoning to solve ratio problems in real-world contexts. Building on their experience with number lines, students represent collections of equivalent ratios with a double number line model and they represent collections of equivalent ratios on the coordinate plane. Students then extend their understanding of ratio to the corresponding unit rate, or rate per one unit. They solve unit rate problems involving unit pricing, constant speed, and constant rates of	**Arithmetic Operations Including Division of Fractions** *(begins end of Q1)* In this module, students complete their understanding of the four operations as they study division of whole numbers, division by a fraction, and operations on multi-digit decimals. They begin by dividing fractions by fractions through real-world and conceptual problems. Students look for and uncover patterns while modeling quotients of fractions to ultimately discover the relationship between multiplication and division. Using this relationship, students create equations and formulas to represent and solve problems. After revisiting all decimal operations, students begin to practice using the distributive property within decimal multiplication. They learn to use connections between fraction multiplication and decimal multiplication. Students further their	**Expressions and Equations** *(begins end of Q2)* Students extend their arithmetic work to include using letters to represent numbers. Students understand that letters are simply "stand-ins" for numbers and that arithmetic is carried out exactly as it is with numbers. They begin the module by discovering and exploring arithmetic identities ($w-x+x=w$, $w+x-x=w$, $a\div b\cdot b=a$, $a\cdot b\div b=a$,when $b\neq 0$, and $3x=x+x+x$). They then look at special notations for operations, such as $3x=x+x+x$ and $x^3=x*x*x$. Students simplify expressions using the order of operations, including exponents. Once students become comfortable using letters to represent numbers, they begin to use properties to expand, factor, and distribute expressions (e.g., $a+a=2\cdot a=2a$, $(a+b)+(a+b)=2\cdot(a+b)=2(a+b)=2a+2b$, and $a\div b=a/b$), and they practice using the correct operation terminology when	**Area, Surface Area, and Volume Problems** *(begins end of Q3)* In this module, students utilize their previous experiences in shape composition and decomposition in order to understand and develop formulas for area, volume, and surface area. Beginning with a discovery of the formulas for area of a rectangle and a triangle, they eventually deconstruct parallelograms, trapezoids, and other quadrilaterals and polygons into triangles and rectangles to determine area. Extending their understanding to the coordinate plane, students find side lengths when given coordinates, and use this to solve problems about area and perimeter. Students then solve volume problems involving right rectangular prisms with fractional lengths, eventually moving to composite solid figures. The module concludes with students deconstructing the faces of solid figures to determine

	work and then apply their new understanding to measurement conversions. In the final topic of the module, students are introduced to percent and fine percent of a quantity as a rate per 100. Students express a fraction as a percent and find a percent of a quantity in real-world contexts. They learn to express a ratio using the language of percent and to solve percent problems by selecting from familiar representations, such as tape diagrams and double number lines or a combination of both.	understanding of division as they develop fluency in the use of the standard algorithm to divide multi-digit decimals. They make connections to division of fractions and rely on mental math strategies to implement the division algorithm when finding the quotients of decimals. The module ends with students applying properties of odd and even numbers and divisibility rules to find factors and multiples, including greatest common factors and least common multiples. **Rational Numbers** In this module, students extend the number line to include opposites of whole numbers. The number line serves as a model to relate integers and other rational numbers to statements of order in real-world contexts. They begin by using positive integers to locate negative integers, understanding that a number and its opposite will be the same distance from zero. They apply their understanding of rational numbers' position on the number line to order positive and negative rational numbers and to compare them with inequality symbols (<, >). Students interpret absolute value as magnitude and as distance from zero. The module ends with students extending their understanding of positive and negative rational numbers to the coordinate plane.	reading expressions. They round out their exploration of algebraic expressions by writing and evaluating them in real world contexts when given the value of the variable. Finally, students are introduced to algebraic equations. Students conclude that solving an equation is the process of determining the number or numbers that, when substituted for the variable, result in a true number sentence. They use identities and properties of equality that were introduced earlier in the module to solve one-step, two-step, and multi-step equations. The module ends with an exploration of independent and dependent values in order to analyze equations with two variables in real-life contexts.	surface area. **Statistics** Students move from representing data to analyzing data. They begin to think and reason statistically by first recognizing a statistical question as one that can be answered by collecting data. They summarize their data using mean, mean absolute deviation, median, and interquartile range, developing an understanding of which measure is most useful for different distributions, based on the symmetry of the distribution. Students construct box-plots towards the end of the module.

7th Grade				
	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
Humanities	**ELA (*Wit & Wisdom*)** **Identity in the Middle Ages** ***EQ:*** *How does society both support and limit the development of identity?* Students explore questions of identity in the context of the social hierarchy	**ELA (*Wit & Wisdom*)** **Americans All** ***EQ:*** *How did World War II affect individuals?* Students build background knowledge of World War II by exploring the	**ELA (*Wit & Wisdom*)** **Language and Power** ***EQ:*** *What is the power of language?* Students read *Animal Farm* as a way to study the power of language and how it can be used to oppress and control or to	**ELA (*Wit & Wisdom*)** **Fever** ***EQ:*** *How can times of crisis affect citizens and society?* Through the backdrop of the Yellow Fever epidemic of 1793 in Philadelphia, students

	of the Middle Ages. They discuss how opportunities are influenced by social class in medieval Europe while building an understanding of how historical fiction can give us a sense of life in other times and places. **Social Studies (*Project-Based Learning*)** ***Driving Question:*** *What lessons can we learn from golden age civilizations and/or from their failures, and why do these lessons matter to us today?* Students are introduced to the concept of a "golden age" in the history of civilizations around the world—a time when a civilization flourished and there was peace, prosperity, and achievement. After choosing a particular civilization (such as Ancient Mesopotamia, Egypt, Greece, Rome; the Tang Dynasty in China; the African empires of Ghana, Mali, and Songhai; the Maya, Inca, and Aztecs; Indus Valley Civilization and the Gupta Empire in India; and 8th–14th-century Islam), students conduct research on their civilization's golden age and why it declined or ended, paying attention to the civilization's social hierarchy and how the hierarchy limited and ensured opportunities for people.	experiences of Japanese Amerians and the Navajo tribe before, during, and after the war. They learn about Japanese internment and the role of Navajo code talkers in the module anchor texts *Farewell to Manzanar* and *Code Talker*. **Social Studies (*Project-Based Learning*)** ***Driving Question:*** *Should the United States employ atomic weapons to defeat its enemies in war?* Students grapple with the impact international relations, foreign policy, and diplomacy can have on a group of people, a nation, and the world in two debate-style simulations. First, students build background knowledge about world geography and the events leading up to the United State's involvement in World War II. Students participate in a US Congressional Simulation where they practice applying formal debate rules and skills and answer the question, "Should the US enter WWII?" Halfway through this simulation, the teacher will announce that the Japanese attacked Pearl Harbor and introduce primary sources detailing the events of the attack. The US Congressional Simulation will continue as student representatives determine how the United States will respond to the attack.	uplift and inspire. They connect the story to the Russian Revolution and the rise of Stalin. **Social Studies (*Project-Based Learning*)** ***Driving Question:*** *What is good for society?* Students learn essential background information about the origin and role of government in society while strengthening their critical thinking, research, and argumentative writing skills. Students use the Russian Revolution as a case study and consider if societies need government. These topics and questions are alluded to in Animal Farm, and the milestones provide students with important context so that they can analyze the intent and impact of the rhetoric the characters use with sophistication. Students choose a topic related to civic engagement and/or public policy to research in preparation for a class debate. During their research, groups will analyze purposes, implementation, and consequences of public policies across settings. Students will consider how language used by community leaders and stakeholders has the power to inspire people to do harm or good. Students will draw conclusions about the responsibility the government has to provide its citizens with access to information and apply their ideas to craft their own arguments and counter-arguments related to their research topic.	discuss how societies respond to crises. Throughout the module, they learn about 18th century life, including medical practices and living conditions, and about individuals who displayed heroism in the face of tremendous challenges. They also discuss the role that race, gender, and social class had on individual experiences of the epidemic. **Social Studies (*Project-Based Learning*)** ***Driving Question:*** *Given the history of racism in health care, what can the American healthcare system do to build trust and faith with people of color?* Students study the relationship between race and power and its influence in the design of the American government. Students are introduced to the relationship between power and race, specifically how race is used as a "tool" to protect and justify systems of power. Using resources from the National Museum of African American History and Culture and iCivics, students investigate how the Global Economy transformed from 1400-1866 and the impact it had on the formation of the American Government. Using Nikole Hannah-Jones's essay "The Idea of America" as a framing text, students investigate the dominant "1776" narrative of American history and the "1619" counter-narrative. Students then study how people of color, specifically African Americans, have been treated in the American medical system in the past and present. Students compare the treatment (and scapegoating) of people of color in the Yellow Fever epidemic of 1793 and in the modern COVID-19 pandemic.
Science	*Content in grades 6-8 rotates in an A-B-C sequence so that at the end of three years, students will have engaged in all modules. See full content map below.*			
Math	**Ratios and Proportional Relationships** Students build upon their understanding of ratios, rates, and unit rates to formally define	**Expressions and Equations** This module expands upon students' understanding of equivalent expressions as they apply the properties of	**Percent and Proportional Relationships** In this module, students deepen their understanding of ratios and proportional relationships from Module 1 by solving a	**Geometry** Building on prior knowledge and skills in finding unknown angles, this module begins with students solving for unknown

	proportional relationships and the constant of proportionality. They begin by determining if data in tables, graphs, and verbal descriptions represent proportional relationships. They then learn how to represent proportional relationships with the equation $y=kx$, where k is the constant of proportionality. They extend their knowledge of unit rate and ratios to find rates specified by rational (fractional) numbers. The module ends with students applying proportional reasoning to scale drawings. **Rational Numbers** *(continues in Q2)* Students build on their understanding of rational numbers to add, subtract, multiply, and divide signed numbers. They begin by using the number line to model addition/subtraction of integers and use the Integer Card Game to demonstrate that an integer added to its opposite is zero. After formalizing the rules for adding and subtracting integers, students develop the rules for multiplication and division of integers. They begin by representing multiplication of a negative number as repeated subtraction. By the end of the module, students perform operations with positive and negative numbers by incorporating them into algebraic expressions and equations.	operations (associative, commutative, and distributive) to write expressions in both standard form (by expanding products into sums) and in factored form (by expanding sums into products). They use linear equations to solve unknown angle problems and other problems presented within context to understand that solving algebraic equations is all about the numbers. It is assumed that a number already exists to satisfy the equation and context; we just need to discover it. A number sentence is an equation that is said to be true if both numerical expressions evaluate to the same number; it is said to be false otherwise. Students use the number line to understand the properties of inequality and recognize when to preserve the inequality and when to reverse the inequality when solving problems leading to inequalities. They interpret solutions within the context of problems. Students extend their sixth-grade study of geometric figures and the relationships between them as they apply their work with expressions and equations to solve problems involving area of a circle and composite area in the plane, as well as volume and surface area of right prisms. In this module, students discover the most famous ratio of all, π .	variety of percent problems. They convert between fractions, decimals, and percents to further develop a conceptual understanding of percent (introduced in Grade 6) and use algebraic expressions and equations to represent and solve multi-step percent scenarios. An initial focus on relating 100% to the whole serves as a foundation for students. Students begin the module by solving problems without the use of a calculator to develop a greater fluency and deeper reasoning behind calculations with percent. Material in early lessons is designed to reinforce students' understanding by having them use mental math and basic computational skills. To develop a conceptual understanding, students use visual models and equations, building on earlier work with these strategies. **Statistics and Probability** *(continues in Q4)* In this module, students learn to interpret probability of an event as the proportion of the time that the event will occur when a chance experiment is repeated many times. They compare probabilities from simulations to computed probabilities and use probabilities to make decisions. In the second half of the module, students focus on random sampling to draw inferences from a population.	angles using both their knowledge of angle relationships and of algebra. Then, students work with a ruler, compass, and protractor to construct geometric shapes, mostly triangles, when given certain conditions such as side length and angle measurements. Students notice the conditions that determine a unique triangle, more than one triangle, or no triangle. Next, students study cross-sections of three-dimensional figures in order to see them from a new perspective. The module ends with students studying area, surface area, and volume. The problems become quite challenging as students are presented with tasks that depend on prior knowledge of rates, ratios, and unit conversions.

8th Grade

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Humanities	**ELA (*Wit & Wisdom*)** **The Poetics and Power of Storytelling** ***EQ:*** *What is the power of storytelling?* Throughout the module, students build an understanding of the power that storytelling holds and how stories	**ELA (*Wit & Wisdom*)** **The Great War** ***EQ:*** *How do literature and art illuminate the effects of World War I?* Students study how art and literature inform collective memories of conflict.	**ELA (*Wit & Wisdom*)** **What is Love?** ***EQ:*** *What is love?* Students explore the essential question through Shakespeare's *A Midsummer Night's Dream*. They analyze how love is	**ELA (*Wit & Wisdom*)** **Teens as Change Agents** ***EQ:*** *How do people affect social change?* Students learn about the contributions of different individuals to the Civil RIghts Movement, narrowing their focus on

	can help humans become more empathetic to others and to understand different world views. They study diverse examples of narrative verse through the module's anchor text, *The Crossover*, and by analyzing poetic performances. By the end of the module, students create their own narrative-in-verse. **Social Studies (*Project-Based Learning*)** ***Driving Question:*** *How can we use poetry to promote social justice in our community?* Students create video montages of social justice poetry. Each student chooses a social justice poem and analyzes the elements of content and craft that make it powerful and effective. Students find or create accompanying images that enhance their selected poem's meaning and record an expressive oral performance of the poem. Teams collaborate to storyboard and produce a montage video that ties the poems together around a common theme. Students also create a response poem or social justice poem of their own inspired by one of their classmates' selected poems. Finally, students work together as a class to create a community exhibition featuring their video montages as well as their original poems paired with images and the mentor texts that inspired them.	They learn about the events leading up to World War I and explore the human toll of modern warfare by reading *All Quiet on the Western Front*. **Social Studies (*Project-Based Learning*)** ***Driving Question:*** *Is war just?* Students grapple with the impact war has on a group of people, a nation, and the world in two debate-style simulations. First, students build background knowledge about world geography and the events leading up to the United States' involvement in World War I. Students participate in a US Congressional Simulation where they practice applying formal debate rules and skills and answer the question, "Should the US enter WWI?" Students then study how the war affected soldiers by examining the conditions of war and how new weapons technology impacted a soldier's experience in combat. Students study the war's impact from different perspectives, namely black and white soldiers in the US military, using primary and secondary sources. Students prepare for a Model UN-style simulation where they will gather together as world leaders at the Paris Peace Conference to determine a fair and effective settlement for lasting world peace, using the lessons learned from the Treaty of Versailles as a starting point.	affected by social norms and human agency, and they explore a neuroscientific argument about the state of being in love. By the end of the module, they form an argument that attributes the nature of love in *A Midsummer Night's Dream* to either agency or fate. **Social Studies (*Project-Based Learning*)** ***Driving Question:*** *How are past, present, and future linked in yourself, others, your community, and your country?* After studying "golden ages" throughout history, students zoom in on one golden age of Black literature in America, the Harlem Renaissance. Through a series of knowledge building lessons on identity and American history, students understand the conditions and events that led up to the Harlem Renaissance. By analyzing works from Black artists and scholars through close reading and discussion, students identify and expound on themes of the Harlem Renaissance. After exploring various mediums, artists, and scholars, students choose a mentor to study further. In a series of Research Labs, students use primary and secondary sources to 1) explain their artist's views of Black identity and beliefs about how society views Black people; 2) evaluate how their artist's chosen medium and form impacted their message; and 3) make a claim about the impact their artist had on society.	Claudette Colvin. As they move through the module, they define what it means to challenge injustice and identify strategies to bring about social change. The End of Module task requires students to research a teen change agent and present their findings in a multimedia presentation. **Social Studies (*Project-Based Learning*)** ***Driving Question:*** *How do we, as active members in our community, use public policy to protect and champion civil rights?* Students grapple with how they can leverage democracy and civic participation to create change in their communities. At the beginning of the unit, students learn about the different levels of government and the power and responsibilities they have as citizens in their communities. Using films and resources from *Learning for Justice*, students engage with the systemic racism and oppression Black Americans face. Students study the role young people played in the Civil Rights Movement, specifically in the Children's March and the marches from Selma to Montgomery. Next, students study a present-day example of youth advocating for change. Using the Parkland students' response to gun violence as a case study, students investigate how they might change existing policies or propose new policies to create a positive change for members in their community. Students draft a proposal for the DC City Council to change an existing policy or enact a new policy, and they create an action campaign to garner support in their community for the proposal.
Science	*Content in grades 6-8 rotates in an A-B-C sequence so that at the end of three years, students will have engaged in all modules. See full content map below.*			
Math	**Integer Exponents and Scientific Notation** In this module, students build upon their foundation with exponents to make conjectures about how zero and	**Similarity** In this module, students describe the effect of dilations on two-dimensional figures in general and using coordinates. Students demonstrate the effect dilation	**Examples of Functions from Geometry** In this module, students learn the concept of a function and why functions are necessary for describing geometric concepts and occurrences in everyday life.	**Introduction to Irrational Numbers Using Geometry** The module begins with work related to the Pythagorean theorem and right triangles. It begins with notation related to

	negative exponents should be defined, eventually codifying the laws of exponents. Students learn to express numbers in scientific notation and perform calculations with very large and very small quantities expressed in scientific notation. **The Concept of Congruence** In this module, students learn about basic rigid motions (translations, reflections, and rotations) in the plane and, more importantly, how to use them to precisely define the concept of congruence. Students verify properties of these rigid motions experimentally and using reasoning. They learn how to sequence combinations of rigid motions to move from a pre-image to an image and they learn that the basic properties of the pre-image are maintained. This sets a foundation for congruence as a sequence of rigid motions. Students then learn about angle relationships when parallel lines are cut by a transversal and that the sum of the interior angles of a triangle is 180 degrees. The module ends with an optional introduction to the Pythagorean theorem.	has on a figure when the scale factor is greater than zero but less than one (shrinking of figure), equal to one (congruence), and greater than one (magnification of figure). Students understand that a two-dimensional figure is similar to another if the second can be obtained from a dilation followed by congruence. Knowledge of basic rigid motions is reinforced throughout the module, specifically when students describe the sequence that exhibits a similarity between two given figures. Finally, students apply their knowledge of proportional relationships and rates to determine if two figures are similar, and if so, by what scale factor one can be obtained from the other. By looking at the effect of a scale factor on the length of a segment of a given figure, students write proportions to find missing lengths of similar figures. **Linear Equations** *(continues in Q3)* This module begins with students writing nonlinear and linear expressions and equations, using properties of equality to solve equations. They learn that linear equations can have one solution, no solution, or infinitely many solutions. Students then find solutions to linear equations in two variables, organizing solutions in a table and plotting them on the coordinate plane. Students are introduced to slope by interpreting the unit rate of a graph and discover that slope can be determined using any two distinct points on a line. They derive the slope-intercept form of a linear equation ($y=mx+b$) by examining similar triangles. They generate graphs for linear equations in two variables by completing tables of solutions, using information about slope and y-intercept, and using information about x- and y-intercepts. The module ends with solving simultaneous equations both graphically and algebraically.	Students learn that the assignment of some functions can be described by a mathematical rule or formula. Students apply their knowledge of linear equations and their graphs to graphs of linear functions. Students know that the definition of a graph of a function is the set of ordered pairs consisting of an input and the corresponding output. Students relate a function to an input-output machine: a number or piece of data, known as the input, goes into the machine, and a number or piece of data, known as the output, comes out of the machine. They learn to interpret the equation $y=mx+b$ as defining a linear function whose graph is a line. In the second half of the module, students apply their understanding of functions to solve problems involving volume. **Linear Functions** *(continues in Q4)* Students represent linear functions by using tables and graphs and by specifying rate of change and initial value. Slope is interpreted as an indication of whether the function is increasing or decreasing and as an indication of the steepness of the graph of the linear function. Nonlinear functions are explored by examining nonlinear graphs and verbal descriptions of nonlinear behavior. Students then use linear functions to model relationships between two quantitative variables, setting the foundation for the later study of statistics. They assess the fit of a linear model by judging the closeness of the data points to the line. The module ends with students examining bivariate categorical data by using two-way tables to determine relative frequencies.	roots and with a definition of irrational numbers as those that can not be expressed as a quotient of integers. Students learn to find positive square roots and cube roots. They learn a procedure to find an approximate decimal expansion of numbers like square root of 2 and square root of 5. The second half of the module revisits the Pythagorean Theorem and its applications. Students learn a proof of the Pythagorean Theorem and its converse, and they use the theorem to solve problems involving right triangles. In the final topic of the module, the Pythagorean Theorem is applied to three-dimensional figures.

Science, Grades 6-8				
Science, Grades 6-8 *Content in grades 6-8 rotates in an A-B-C sequence so that at the end of three years, students will have engaged in all modules.*	**Year A (2023-24)**			
	Weather and Water ***Phenomenon:*** *Earth's atmosphere, weather, and water* ***EQ:*** *What makes weather happen?* Students learn that understanding weather is more than reading data from a weather center. Students grapple with ideas about atoms and molecules, changes of state, and energy transfer before they launch into the bigger ideas involving air masses, fronts, convection cells and winds, the development of severe weather, and climate change. They learn that Earth's atmosphere is composed of gasses, with nitrogen and oxygen the most abundant. Students discover that without water vapor and its liquid and solid forms, both on the surface and in the atmosphere, there would be no weather. They learn that an atmosphere without water vapor would be an alien and hostile place.	**Earth History** ***Phenomenon:*** *Grand Canyon* ***EQ:*** *What do we need to know to tell the geologic story of a place?* Students grapple with Earth's processes and systems that have operated over geologic time. Students make observations and do investigations about weathering and erosion that involve constructing and using conceptual models. Through their study of earth history, fossils, and the rock cycle, students become more confident in their ability to ask good questions and to recognize and use evidence from the rocks to come up with explanations of past environments. Through studying the phenomena of earthquakes and volcanoes, students learn how geologic activity shapes Earth's surface.	**Earth History,** continued	**Planetary Science** ***Phenomenon:*** *Earth, as an object in space* ***EQ:*** *What is my cosmic address?* Students begin the module by investigating Earth as a system through its relationship to the Sun and to the Moon, and they develop a model to explain day, night, and year. They explore Moon phases, craters, and contemplate the possibility that Earth could have suffered similar bombardment in its history. They learn the major classifications into which cosmos objects are organized: solar system, galaxy, and universe, and create a sequence of events that resulted in the formation of the solar system. Finally, they are introduced to the spectroscope, which they use to explore the spectral signature elements of the Sun and other light sources. They investigate the techniques that scientists use to search for planetary systems around other stars in our galaxy.
	Year B (2021-22)			
	Diversity of Live ***Phenomenon:*** *Life on Earth* ***EQ:*** *How do you know something is living?* Students consider the characteristics and requirements that all life has. They study microorganisms and cells using a microscope, and learn what it means to be a single-celled or multicellular organism. They are introduced to the domain system of classification and apply this understanding to the study of plant life, reproduction, and growth. The module concludes with a comparison of the vascular system of plants to the	**Human Systems Interactions** ***Phenomenon:*** *The human body* ***EQ:*** *How do humans live, grow, and respond to their environment?* Students explore how organ systems interact and support each and every cell in the body. Students discover the structural levels in human bodies and look for evidence of how the organ systems interact. Through investigation, students learn how cells obtain food and oxygen they need from the digestive, respiratory, and circulatory systems. Finally, students explore the nervous system by engaging in a "neuron relay" to model how sensory information	**Populations and Ecosystems** ***Phenomenon:*** *Population dynamics within ecosystems* ***EQ:*** *How do organisms, matter, and energy interact in an ecosystem?* Students learn that organisms depend on their ecosystem for survival. Energy and matter, in the form of food, flow through an ecosystem. The critical role of photosynthetic organisms in creating food is what allows the rest of the organisms in the ecosystem to exist. They learn that disruption to one element of the ecosystem produces waves and ripples that touch every member of the system. Students also explore the impact that	**Heredity and Adaptation** ***Phenomenon:*** *Biodiversity that exists on Earth* ***EQ:*** *How can we explain the diversity of life that has lived on Earth?* Students learn that all life on Earth shares common characteristics. They come to understand that evolution is the unifying principle that explains both the similarity and diversity of life. Students explore the varied lines of evidence, including the fossil record, the similarities between past and present organisms, the genetic principles of inheritance, and how natural selection produces adaptations that lead to changes in species and eventually the creation of

	transport system of insects and humans.	travels to the brain for processing and how information returns to the body for action.	humans have on ecosystems.	new species.
	Year C (2022-23)			
	Chemical Interactions ***Phenomenon:*** *Interactions of matter* ***EQ:*** *How does matter interact?* Students study the periodic table and develop a particulate model for matter. Students learn that particles are always in motion, how kinetic energy changes when particles warm or cool, and how energy transfers between particles. They learn about phase change in matter and end the module investigating the phenomena of chemical reactions and chemical reactions that stop on their own.	**Electromagnetic Forces** ***Phenomenon:*** *Force interactions and effects* ***EQ:*** *What is the relationship between magnetic and electric forces?* Students manipulate equipment to collect data about magnetic fields and electricity, construct explanations based on observable patterns, and develop models that define the cause-and-effect relationships of the forces and interactions they are measuring. Students consider accessible energy sources and the reliance of modern lifestyles on access to this energy, as well as the consequences of such energy use.	**Gravity and Kinetic Energy** ***Phenomenon:*** *Falling objects and collisions* ***EQ:*** *How can we explain the motion of objects?* Students test motion at various speeds to explore acceleration and to learn about gravity. They observe patterns of collisions to discern how the variables of mass and speed affect energy, and they develop a model of force and energy transfer within systems based on Newton's three laws of motion. They apply what they've learned to solve an engineering challenge to reduce the force transferred in a collision. **Waves** ***Phenomenon:*** *Energy transfer by waves* ***EQ:*** *How is energy transferred through waves?* The module begins with the most concrete observations, those of physical properties of mechanical waves, to the most abstract concepts, by which students develop a model of electromagnetic waves. Students will also delve into engineering applications and real-life connections along the way. Students leave this module with a greater appreciation and understanding of modern communications technology.	**Variables and Designs** ***Phenomenon:*** *Student-identified that can be addressed through engineering design* ***EQ:*** *How can understanding variables help scientists make sense of phenomena and engineers design solutions to problems?* Students explore the practices of scientists and engineers by stepping into the roles of each. Acting as scientists, they design controlled experiments to learn about the variables that affect an air-trolley system. Acting as engineers, they find ways to modify the system to meet criteria and constraints. By the end of the module, students define an engineering problem of their own.