**Subject**

**Mathematics Grade 6**

**Curriculum Guide**

**­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**LINDEN PUBLIC SCHOOLS**

**LINDEN, NEW JERSEY**

**DR. MARNIE HAZELTON**

 **SUPERINTENDENT**

**DENISE CLEARY**

**ASSISTANT SUPERINTENDENT**

**RICHARD MOLINARO**

**DIRECTOR OF MATHEMATICS, VOCATIONAL, & TECHNICAL SUBJECTS**

**The Linden Board of Education adopted the Curriculum Guide on:**

|  |  |  |
| --- | --- | --- |
| **July 28, 2022**  |  | **Education Report #22** |
| **Date** |  | **Agenda Item** |
|  |
| **Rationale** |

**EDUCATION EQUITY:** The Linden Public School District guarantees each student equal educational opportunity regardless of age, race, color, creed, religion, gender, language, affectional or sexual orientation, ancestry, national origin, marital or economic status. For Information, contact District Educational Equity Officer Kevin Thurston at **(**908) 486-2800 x 8307**.**

**NONDISCRIMATION:** The Linden Public School District does not discriminate against handicapped persons in admission or access to or treatment or employment in its programs, activities, and vocational opportunities. For information contact District Public 504 Officer Annabell Louis at (908) 486-2800 x 8025.

**Linden Public Schools Vision**

The Linden Public School District is committed to developing respect for diversity, excellence in education, and a commitment to service, in order to promote global citizenship and ensure personal success for all students

**Linden Public Schools Mission**

The mission of the Linden Public School District is to promote distinction through the infinite resource that is Linden’s diversity, combined with our profound commitment to instructional excellence, so that each student achieves their maximum potential in an engaging, inspiring, and challenging learning environment.

**Math Department Vision**

To equip students with the understanding and application of mathematical skills and processes to foster a drive for advanced mathematics and higher-level thinking.

**Math Department Mission Statement**

To develop a community of learners who construct and communicate meaning from the mathematical world around them. Students will experience mathematics that encourage them to think critically, discover and apply concepts to solve problems strategically. Students will be encouraged to solve equations with accuracy, efficiency, and flexibility. Furthermore, students will have a multitude of opportunities to apply mathematical tools and practice standards to solve real-world and multi-step problems.

**Math Department Goals**

* Provide opportunities for student to develop computation skills, conceptual understanding, and problem-solving skills
* Require students to explain, justify or prove their thinking through mathematical reasoning, modeling, and speaking

Course Description

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

This is a one-year course designed to develop reasoning and problem-solving skills. The topics studied include: Ratios and Proportional Relationships

Understand ratio concepts and use ratio reasoning to solve problems.

The Number System

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

Multiply and divide multi-digit numbers and find common factors and multiples.

Apply and extend previous understandings of numbers to the system of rational numbers.

Expressions and Equations

Apply and extend previous understandings of arithmetic to algebraic expressions.

Reason about and solve one-variable equations and inequalities.

Represent and analyze quantitative relationships between dependent and independent variables.

Geometry

Solve real-world and mathematical problems involving area, surface area, and volume.

Statistics and Probability

Develop understanding of statistical variability.

Summarize and describe distributions.

Course Instructional Materials

* LPS Adopted Textbooks and Programs
	+ Pearson EnVision Grade 6 Mathematics
	+ Pearson Realize (Computer Based program supplementing Envision)
	+ Go Math Grade 6 Text and Computer Based program
* NJSLA Released Items
* Khan Academy

Standards and NJDOE Mandates Guiding Instruction

* 1. New Jersey Student Learning Standards

 <https://www.nj.gov/education/standards/math/Docs/2016NJSLS-M_Grade6.pdf>

* 1. Power Standards from NJSLS
* 6.RP.A Understand ratio concepts and use ratio reasoning to solve problems.
* 6.NS.A Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
* 6.NS.C Apply and extend previous understandings of numbers to the system of rational numbers.
* 6.EE.A Apply and extend previous understandings of arithmetic to algebraic expressions.
* 6.EE.B Reason about and solve one-variable equations and inequalities.
* 6.EE.C Represent and analyze quantitative relationships between dependent and independent variables.

Diversity, Equity, and Inclusion

* Use students’ interests in conceptualized tasks
* Expose students to a diverse group of mathematicians
* Design assessments and assignments with a variety of response types
* Use systematic grading and participation methods
* Encourage students to embrace a growth mindset

Pacing Guide

 Linden Public Schools

Go Math Pacing Guide

Grade 6

2022-2023

Marking Period 1: Tuesday, September 6, 2022 to Tuesday, November 15, 2022

Topic 1 – Whole Numbers and Decimals – Estimated Time: 13 Days

Topic 2 – Fractions – Estimated Time: 14 Days

Topic 3 – Rational Numbers – Estimated Time: 12 Days

Marking Period 2: Wednesday, November 16, 2022 to Wednesday, January 31, 2023

Topic 4 – Ratios and Rates – Estimated Time: 12 Days

Topic 5 – Percent – Estimated Time: 8 Days

Topic 6 – Units of Measure – Estimated Time: 4 Days

Topic 7 – Algebra: Expressions – Estimated Time: 12 Days

Marking Period 3: Thursday, February 1, 2023 – Wednesday April 5, 2023

Topic 8 – Algebra: Equations and Inequalities – Estimated Time: 15 Days

Topic 9 – Algebra: Relationships Between Variables – Estimated Time: 10 Days

Topic 10 – Area – Estimated Time: 11 Days

Marking Period 4: Monday, April 17, 2023 to Wednesday, June 22, 2023\*

Topic 11 – Surface Area and Volume – Estimated Time: 9 Days

Topic 12 – Data Displays and Measures of Center – Estimated Time: 10 Days

Topic 13 – Variability and Data Distributions – Estimated Time: 10 Days

\*Date may be moved up if inclement weather days are not used

**Assessment days are built into each chapter**.

Pacing Guide

 Linden Public Schools

Envision Pacing Guide

Grade 6 Honors

2021-2022

Marking Period 1: Tuesday, September 6, 2022 to Tuesday, November 15, 2022

Topic 1 – Use Positive Rational Numbers – Estimated Time: 16 Days

Topic 2 – Integers and Rational Numbers – Estimated Time: 16 Days

Marking Period 2: Wednesday, November 16, 2022 to Wednesday, January 31, 2023

Topic 3 – Numeric and Algebraic Expressions – Estimated Time: 17 Days

Topic 4 – Represent and Solve Equations and Inequalities – Estimated Time: 24 Days

Marking Period 3: Wednesday, February 1, 2023 to Wednesday, April 5, 2023

Topic 5 – Understand and use Ratio and Rate – Estimated Time: 25 Days

Topic 6 – Understand and use Percent – Estimated Time: 16 Days

Marking Period 4: Monday, April 17, 2023 to Thursday, June 22, 2023\*

Topic 7 – Solve Area, Surface Area, and Volume Problems – Estimated Time: 12 Days

Topic 8 – Display, Describe, and Summarize Data – Estimated Time: 11 Days

\*Date may be moved up if inclement weather days are not used

**Assessment days are built into each chapter**.

Vertical Integration – Program Mapping

The standards in this unit were introduced in Grade 5. Grade 6 coursework focuses on preparing the students to be proficient in Grade 7 standards.

Accommodations, Modifications, and Teacher Strategies

(Specific recommendations are made in each unit)

|  |  |  |  |
| --- | --- | --- | --- |
| **Instructional Strategies*** Teacher Presentation
* Student Presentation
* Class Discussion
* Reading for Meaning
* Inquiry Design Model
* Interactive Lecture
* Interactive Notetaking
* Compare and Contrast
* Research Based
* Problem Based
* Project Based

**504 Plans**Students can qualify for 504 plans if they have physical or mental impairments that affect or limit any of their abilities to:* walk, breathe, eat, or sleep
* communicate, see, hear, or speak
* read, concentrate, think, or learn
* stand, bend, lift, or work

Examples of accommodations in 504 plans include:* preferential seating
* extended time on tests and assignments
* reduced homework or classwork
* verbal, visual, or technology aids
* modified textbooks or audio-video materials
* behavior management support
* adjusted class schedules or grading
* verbal testing
* excused lateness, absence, or missed classwork
* pre-approved nurse's office visits and accompaniment to visits occupational or physical therapy
 | **Gifted and Talent Accommodations and Modifications*** Increase the level of complexity
* Decrease scaffolding
* Variety of finished products
* Allow for greater independence
* Learning stations, interest groups
* Varied texts and supplementary materials
* Use of technology
* Flexibility in assignments
* Varied questioning strategies
* Encourage research
* Strategy and flexible groups based on formative assessment or student choice
* Acceleration within a unit of study
* Exposure to more advanced or complex concepts, abstractions, and materials
* Encourage students to move through content areas at their own pace
* After mastery of a unit, provide students with more advanced learning activities, not more of the same activity
* Present information using a thematic, broad-based, and integrative content, rather than just single-subject areas
 | **Special Education and At-Risk Accommodations and Modifications*** Remove unnecessary material, words, etc., that can distract from the content
* Use of off-grade level materials
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Time allowed
* Level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials
* Use technology, if available and appropriate
* Varied homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language.
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Ability to work at their own pace
* Present ideas using auditory, visual, kinesthetic, & tactile means
* Provide graphic organizers and/or highlighted materials
* Strategy and flexible groups based on formative assessment
* Differentiated checklists and rubrics, if available and appropriate
 | **English Language Learners Accommodations and Modifications*** Remove unnecessary materials, words, etc., that can distract from the content
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Gradually increase the level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials, including visuals
* Use technology, if available and appropriate
* Differentiate homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language.
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Allow students to work at their own pace
* Presenting ideas through auditory, visual, kinesthetic, & tactile means
* Role play
* Provide graphic organizers, highlighted materials
* Strategy and flexible groups based on formative assessment
 |

**Unit #1: Ratios and Proportions**

Content Area: **Mathematics**
Course(s): **Math 6**
Time Period: **First Marking Period**
Length: **4-6 Weeks**
Status: **Published**

|  |
| --- |
| **Unit Overview** |
|   1. Students will understand ratio concepts and use ratio reasoning to solve problems.    2. Students will recognize the concept of a unit rate associated with a ratio.     3. Students will solve unit rate problems including those involving unit pricing and constant speed.  4. Students will find the percent of a quantity as a rate per 100 and solve problems involving finding the whole.    5. Students will identify units of measurement, both customary and metric, and compute the units of measurement.   |

|  |
| --- |
| **STAGE 1- DESIRED RESULTS** |
|  |

|  |
| --- |
| **Educational Standards** |
| The following goals, as outlined in the NJSLS, will provide a framework for preparation and instruction in mathematics. They make up the eight mathematical practice standards:1. Make sense of problems and persevre 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. |

|  |
| --- |
| **New Jersey Student Learning Standards- Mathematics** |
|  |

|  |
| --- |
| **Introduction- Grade 6** |
|

|  |  |
| --- | --- |
| MA.6.6 | In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.  |
| MA.6.6.1 | Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.  |
| MA.6.6.2 | Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.  |
| MA.6.6.3 | Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as 3x = y) to describe relationships between quantities.  |
| MA.6.6.4 | Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.  |
| MA.6.6A | Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.  |

 |

|  |
| --- |
| **Ratios and Proportional Relationships** |
|

|  |  |
| --- | --- |
| MA.6.RP.A.2 | Understand the concept of a unit rate 𝑎/𝑏 associated with a ratio 𝑎:𝑏 with 𝑏 ≠ 0, and use rate language in the context of a ratio relationship.  |
| MA.6.RP.A.3 | Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.  |
| MA.6.RP.A.3a | Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.  |
| MA.6.RP.A.3b | Solve unit rate problems including those involving unit pricing and constant speed.  |
| MA.6.RP.A.3c | Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.  |
| MA.6.RP.A.3d | Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.  |
| MA.6.RP.A | Understand ratio concepts and use ratio reasoning to solve problems.  |
| MA.6.RP.A.1 | Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.  |

 |

|  |
| --- |
| **The Number System** |
|

|  |  |
| --- | --- |
| MA.6.NS.C.7c | Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.  |
| MA.6.NS.C.7d | Distinguish comparisons of absolute value from statements about order.  |
| MA.6.NS.C.8 | Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.  |
| MA.6.NS.B | Compute fluently with multi-digit numbers and find common factors and multiples.  |
| MA.6.NS.B.2 | Fluently divide multi-digit numbers using the standard algorithm.  |
| MA.6.NS.B.3 | Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.  |
| MA.6.NS.B.4 | Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.  |
| MA.6.NS.C | Apply and extend previous understandings of numbers to the system of rational numbers.  |
| MA.6.NS.C.5 | Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.  |
| MA.6.NS.C.6 | Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.  |
| MA.6.NS.C.6a | Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.  |
| MA.6.NS.C.6b | Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.  |
| MA.6.NS.C.6c | Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.  |
| MA.6.NS.A | Apply and extend previous understandings of multiplication and division to divide fractions by fractions.  |
| MA.6.NS.C.7 | Understand ordering and absolute value of rational numbers.  |
| MA.6.NS.C.7a | Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.  |
| MA.6.NS.A.1 | Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.  |
| MA.6.NS.C.7b | Write, interpret, and explain statements of order for rational numbers in real-world contexts.  |

 |

|  |
| --- |
| **Expressions and Equations** |
|

|  |  |
| --- | --- |
| MA.6.EE.B.5 | Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.  |
| MA.6.EE.B.6 | Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.  |
| MA.6.EE.B.7 | Solve real-world and mathematical problems by writing and solving equations of the form 𝑥 + 𝑝 = 𝑞 and 𝑝𝑥 = 𝑞 for cases in which 𝑝, 𝑞 and 𝑥 are all nonnegative rational numbers.  |
| MA.6.EE.B.8 | Write an inequality of the form 𝑥 > 𝑐 or 𝑥 < 𝑐 to represent a constraint or condition in a real- world or mathematical problem. Recognize that inequalities of the form 𝑥 > 𝑐 or 𝑥 < 𝑐 have infinitely many solutions; represent solutions of such inequalities on number line diagrams.  |
| MA.6.EE.C | Represent and analyze quantitative relationships between dependent and independent variables.  |
| MA.6.EE.A | Apply and extend previous understandings of arithmetic to algebraic expressions.  |
| MA.6.EE.A.1 | Write and evaluate numerical expressions involving whole-number exponents.  |
| MA.6.EE.C.9 | Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.  |
| MA.6.EE.A.2 | Write, read, and evaluate expressions in which letters stand for numbers.  |
| MA.6.EE.A.2a | Write expressions that record operations with numbers and with letters standing for numbers.  |
| MA.6.EE.A.2b | Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.  |
| MA.6.EE.A.2c | Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).  |
| MA.6.EE.A.3 | Apply the properties of operations to generate equivalent expressions.  |
| MA.6.EE.A.4 | Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).  |
| MA.6.EE.B | Reason about and solve one-variable equations and inequalities.  |

 |

|  |
| --- |
| **Geometry** |
|

|  |  |
| --- | --- |
| MA.6.G.A | Solve real-world and mathematical problems involving area, surface area, and volume.  |
| MA.6.G.A.1 | Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.2 | Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas 𝑉 = 𝑙𝑤ℎ and 𝑉 = 𝐵ℎ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.3 | Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.4 | Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.  |

 |

|  |
| --- |
| **Statistics and Probability** |
|

|  |  |
| --- | --- |
| MA.6.SP.B.5c | Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.  |
| MA.6.SP.B.5d | Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.  |
| MA.6.SP.A | Develop understanding of statistical variability.  |
| MA.6.SP.A.1 | Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.  |
| MA.6.SP.A.2 | Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.  |
| MA.6.SP.A.3 | Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.  |
| MA.6.SP.B | Summarize and describe distributions.  |
| MA.6.SP.B.4 | Display numerical data in plots on a number line, including dot plots, histograms, and box plots.  |
| MA.6.SP.B.5 | Summarize numerical data sets in relation to their context, such as by:  |
| MA.6.SP.B.5a | Reporting the number of observations.  |
| MA.6.SP.B.5b | Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.  |

 |

|  |
| --- |
| **Career Ready Practices** |
| CRP2.   Apply appropriate academic and technical skills. CRP4.   Communicate clearly and effectively and with reason. CRP6.   Demonstrate creativity and innovation. CRP8.   Utilize critical thinking to make sense of problems and persevere in solving them. CRP11.   Use technology to enhance productivity. CRP12.   Work productively in teams while using cultural global competence. |

|  |
| --- |
| **Essential Questions** |
| * How does one find an equivalent ratio?
* What is a unit rate?
* How do you use cross products to find equivalent ratios?
* How can ratios and proportions be used to solve real world problems?
* How would one use an algebraic expression to solve a proportion?
* How are percents, decimals, and fractions related to one another?
* What is a proportional relationship?
* What is a scale drawing?
* What is the percent of a quantity as a rate per 100?
* How does one convert units of measurement?
 |

|  |
| --- |
| **Enduring Understanding** |
| * How to find ratios and equivalent ratios.
* If two rates form a proportion and find the proportion.
* How to use crossproducts to find missing terms in a proportion.
* Solve proportions using algebraic equations.
* How to make a scaled drawing.
* How to compare and write ratios to percents.
* How to convert and compute units of measurement.
 |

|  |
| --- |
| **Students will know...** |
| * How to find ratios and equivalent ratios.
* If two rates form a proportion and find the proportion.
* How to use cross products to find missing terms in a proportion.
* How to make a scaled drawing.
 |

|  |
| --- |
| **Students will be able to...** |
| * Find ratios and equivalent ratios.
* Understand if two rates form a proportion.
* Solve proportions using algebraic equations.
* Discover scale drawings.
* Compare ratios to percents.
 |

|  |
| --- |
| **STAGE 2- EVIDENCE OF LEARNING** |
|  |

|  |
| --- |
| **Formative Assessment Suggestions** |
| 3- Minute PauseAnalogy PromptChoral ResponseDebriefingExit Card / TicketHand SignalsIndex card summariesJournal EntryMisconception CheckObservationPortfolio CheckQuestions & AnswersQuizSelf-AssessmentStudent ConferenceThink-Pair-ShareThink-Ink-ShareWeb or Concept Map

|  |  |
| --- | --- |
| • 3- Minute Pause |  **.**  |
| • A-B-C Summaries |  **.**  |
| • Analogy Prompt |  **.**  |
| • Choral Response |  **.**  |
| • Debriefing |  **.**  |
| • Exit Card / Ticket |  **.**  |
| • Hand Signals |  **.**  |
| • Idea Spinner |  **.**  |
| • Index Card Summaries |  **.**  |
| • Inside-Outside Circle Discussion (Fishbowl) |  **.**  |
| • Journal Entry |  **.**  |
| • Misconception Check |  **.**  |
| • Observation |  **.**  |
| • One Minute Essay |  **.**  |
| • One Word Summary |  **.**  |
| • Portfolio Check |  **.**  |
| • Questions & Answers |  **.**  |
| • Quiz |  **.**  |
| • Self-Assessment |  **.**  |
| • Student Conference |  **.**  |
| • Think-Pair-Share |  **.**  |
| • Web or Concept Map |  **.**  |

 |

|  |
| --- |
| **Authentic Assessments Suggestions** |
| Through the following authentic assessments, students will develop traits regarding thinking and reasoning, settings, mathematical tools and attitudes and dispositions:1. Performance Assessments 2. Short Investigations 3. Open Ended Response Questions 4.  Portfolios 5.  Self-Assessments |

|  |
| --- |
| **Benchmark Assessments** |
| Math 6 HonorsTopics 1-2: Cumulative/Benchmark AssessmentTopics 1-4: Cumulative/Benchmark AssessmentTopics 1-6: Cumulative/Benchmark AssessmentEnd-Of-Year AssessmentEdmentum Fall AdministrationEdmentum Winter AdministrationEdmentum Spring Administration Math 6Benchmark 1: Number SystemBenchmark 2: Ratio and ProportionsBenchmark 3: Expressions and EquationsBenchmark 4: Geometry, Statistics and ProbabilityEdmentum Fall AdministrationEdmentum Winter AdministrationEdmentum Spring Administration |

|  |
| --- |
| **STAGE 3- LEARNING PLAN** |
|  |

|  |
| --- |
| **Instructional Map** |
| **Step 1: What is it we want and expect students to learn?*** Read domain overview, learning goal, and essential questions to gain an initial understanding of the domain.
* Analyze cluster of standards, vertical progression, test item specifications to determine full intent of standards (DOK) and student outcomes.
* Determine measurable objectives using unpacked standards. Review the assessments for determining acceptable evidence.

**Step 2: How will they learn it?*** Select problem-based learning/formative assessment tasks.
* Develop learning experiences utilizing the textbook and selected tasks along with higher order questions stems.

**Step 3: How will we know when they have learned it?*** As a PLC, analyze students’ work reflecting on teacher practice and provide student feedback.
* Provide additional assessments as necessary and collaboratively analyze the results.

**Step 4: How will we respond if they don’t learn it? How will we respond to those who already know it?*** Using data analysis, develop small groups for enrichment and remediation.
* Reassess student performance and provide opportunities for application.
 |

|  |
| --- |
| **Modifications/Differentiation of Instruction** |
| Differentiation Strategies for Special Education Students* Remove unnecessary material, words, etc., that can distract from the content
* Use of off-grade level materials
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Time allowed
* Level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials
* Use technology, if available and appropriate
* Varied homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language.
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Ability to work at their own pace
* Present ideas using auditory, visual, kinesthetic, & tactile means
* Provide graphic organizers and/or highlighted materials
* Strategy and flexible groups based on formative assessment
* Differentiated checklists and rubrics, if available and appropriate

  Differentiation Strategies for Gifted and Talented Students* Increase the level of complexity
* Decrease scaffolding
* Variety of finished products
* Allow for greater independence
* Learning stations, interest groups
* Varied texts and supplementary materials
* Use of technology
* Flexibility in assignments
* Varied questioning strategies
* Encourage research
* Strategy and flexible groups based on formative assessment or student choice
* Acceleration within a unit of study
* Exposure to more advanced or complex concepts, abstractions, and materials
* Encourage students to move through content areas at their own pace
* After mastery of a unit, provide students with more advanced learning activities, not more of the same activity
* Present information using a thematic, broad-based, and integrative content, rather than just single-subject areas

  Differentiated Strategies for ELL Students* Remove unnecessary materials, words, etc., that can distract from the content
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Gradually increase the level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials, including visuals
* Use technology, if available and appropriate
* Differentiate homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language.
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Allow students to work at their own pace
* Presenting ideas through auditory, visual, kinesthetic, & tactile means
* Role play
* Provide graphic organizers, highlighted materials
* Strategy and flexible groups based on formative assessment

  Differentiation Strategies for At Risk Students* Remove unnecessary materials, words, etc., that can distract from the content
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Gradually increase the level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials
* Use technology, if available and appropriate
* Differentiate homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Presenting ideas through auditory, visual, kinesthetic, & tactile means
* Provide graphic organizers and/or highlighted materials
* Strategy and flexible groups based on formative assessment

 **504 Plans**Students can qualify for 504 plans if they have physical or mental impairments that affect or limit any of their abilities to:* walk, breathe, eat, or sleep
* communicate, see, hear, or speak
* read, concentrate, think, or learn
* stand, bend, lift, or work

 Examples of accommodations in 504 plans include:* preferential seating
* extended time on tests and assignments
* reduced homework or classwork
* verbal, visual, or technology aids
* modified textbooks or audio-video materials
* behavior management support
* adjusted class schedules or grading
* verbal testing
* excused lateness, absence, or missed classwork
* pre-approved nurse's office visits and accompaniment to visits
* occupational or physical therapy
 |

|  |
| --- |
| **Modification Strategies** |
|

|  |  |
| --- | --- |
| • Extended Time |  **.**  |
| • Frequent Breaks |  **.**  |
| • Highlighted Text |  **.**  |
| • Interactive Notebook |  **.**  |
| • Modified Test |  **.**  |
| • Oral Directions |  **.**  |
| • Peer Tutoring |  **.**  |
| • Preferential Seating |  **.**  |
| • Re-Direct |  **.**  |
| • Repeated Drill / Practice |  **.**  |
| • Shortened Assignments |  **.**  |
| • Teacher Notes |  **.**  |
| • Tutorials |  **.**  |
| • Use of Additional Reference Material |  **.**  |
| • Use of Audio Resources |  **.**  |

 |

|  |
| --- |
| **High Preparation Differentiation** |
|

|  |  |
| --- | --- |
| • Alternative Assessments |  **.**  |
| • Choice Boards |  **.**  |
| • Games and Tournaments |  **.**  |
| • Group Investigations |  **.**  |
| • Guided Reading |  **.**  |
| • Independent Research / Project |  **.**  |
| • Interest Groups |  **.**  |
| • Learning Contracts |  **.**  |
| • Leveled Rubrics |  **.**  |
| • Literature Circles |  **.**  |
| • Menu Assignments |  **.**  |
| • Multiple Intelligence Options |  **.**  |
| • Multiple Texts |  **.**  |
| • Personal Agendas |  **.**  |
| • Project Based Learning (PBL) |  **.**  |
| • Stations / Centers |  **.**  |
| • Think-Tac-Toe |  **.**  |
| • Tiered Activities / Assignments |  **.**  |
| • Varying Graphic Organizers |  **.**  |

 |

|  |
| --- |
| **Low Preparation Differentiation** |
|

|  |  |
| --- | --- |
| • Choice of Book / Activity |  **.**  |
| • Cubing Activities |  **.**  |
| • Exploration by Interest (using interest inventories) |  **.**  |
| • Flexible Grouping |  **.**  |
| • Goal Setting With Student |  **.**  |
| • Homework Options |  **.**  |
| • Jigsaw |  **.**  |
| • Mini Workshops to Extend Skills |  **.**  |
| • Mini Workshops to Re-teach |  **.**  |
| • Open-ended Activities |  **.**  |
| • Think-Pair-Share by Interest |  **.**  |
| • Think-Pair-Share by Learning Style |  **.**  |
| • Think-Pair-Share by Learning Style |  **.**  |
| • Think-Pair-Share by Readiness |  **.**  |
| • Use of Collaboration |  **.**  |
| • Use of Reading Buddies |  **.**  |
| • Varied Journal Prompts |  **.**  |
| • Varied Product Choice |  **.**  |
| • Varied Supplemental Materials |  **.**  |
| • Work Alone / Together |  **.**  |

 |

|  |
| --- |
| **Vertical Integration- Discipline Mapping** |
| Ratio and Proportion Vertical Alignment In Grade 5 Students will be able to do...* Write and interpret numerical expressions.
* Analyze patterns and relationships.
* 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.
* Convert like measurement units within a given measurement system.

In Grade 6 Students will be able to do...* Understand ratio concepts and use ratio reasoning to solve problems.

In Grade 7 Students will be able to do...* Analyze proportional relationships and use them to solve real-world and mathematical problems.
 |

|  |
| --- |
| **Additional Materials** |
| LPS Adopted Textbooks and Programs * Go Math Grade 6
* Think Central and the Math Personal Trainer (Computer Based program supplementing Go Math)
* Pearson EnVision Grade 6 Honors
* Pearson Realize (Computer Based program supplementing Envision)

Edmentum Testing* Data Analysis Reports

NJSLA (PARCC) Released ItemsIXLKhan Academy |

**Unit #2: The Number System**

Content Area: **Mathematics**
Course(s): **Math 6**
Time Period: **First Marking Period**
Length: **8-10 Weeks**
Status: **Published**

|  |
| --- |
| **Unit Overview** |
| 1. Students will add, subtract, multiple, and divide multi-digit  numbers  and  decimals.2. Students will find the greatest common factors of two whole numbers less than or equal to 100 and least common multiples of two whole numbers less than or equal to 12.  3. Students will apply previous understandings of multiplication and division to divide fractions by fractions.   4. Students will compare and order rational numbers.5. Students will use positive and negative numbers in real world contexts (e.g. temperature above/below zero).6. Students will be able to order and find absolute value of rational numbers.  7. Students will graph points on a coordinate plane and graph its reflection across an axis. |

|  |
| --- |
| **STAGE 1- DESIRED RESULTS** |
|  |

|  |
| --- |
| **Educational Standards** |
| The following goals, as outlined in the NJSLS, will provide a framework for preparation and instruction in mathematics. They make up the eight mathematical practice standards:1. Make sense of problems and persevre 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. |

|  |
| --- |
| **New Jersey Student Learning Standards- Mathematics** |
|  |

|  |
| --- |
| **Introduction- Grade 6** |
|

|  |  |
| --- | --- |
| MA.6.6 | In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.  |
| MA.6.6.1 | Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.  |
| MA.6.6.2 | Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.  |
| MA.6.6.3 | Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as 3x = y) to describe relationships between quantities.  |
| MA.6.6.4 | Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.  |
| MA.6.6A | Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.  |

 |

|  |
| --- |
| **Ratios and Proportional Relationships** |
|

|  |  |
| --- | --- |
| MA.6.RP.A.2 | Understand the concept of a unit rate 𝑎/𝑏 associated with a ratio 𝑎:𝑏 with 𝑏 ≠ 0, and use rate language in the context of a ratio relationship.  |
| MA.6.RP.A.3 | Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.  |
| MA.6.RP.A.3a | Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.  |
| MA.6.RP.A.3b | Solve unit rate problems including those involving unit pricing and constant speed.  |
| MA.6.RP.A.3c | Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.  |
| MA.6.RP.A.3d | Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.  |
| MA.6.RP.A | Understand ratio concepts and use ratio reasoning to solve problems.  |
| MA.6.RP.A.1 | Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.  |

 |

|  |
| --- |
| **The Number System** |
|

|  |  |
| --- | --- |
| MA.6.NS.C.7c | Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.  |
| MA.6.NS.C.7d | Distinguish comparisons of absolute value from statements about order.  |
| MA.6.NS.C.8 | Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.  |
| MA.6.NS.B | Compute fluently with multi-digit numbers and find common factors and multiples.  |
| MA.6.NS.B.2 | Fluently divide multi-digit numbers using the standard algorithm.  |
| MA.6.NS.B.3 | Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.  |
| MA.6.NS.B.4 | Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.  |
| MA.6.NS.C | Apply and extend previous understandings of numbers to the system of rational numbers.  |
| MA.6.NS.C.5 | Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.  |
| MA.6.NS.C.6 | Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.  |
| MA.6.NS.C.6a | Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.  |
| MA.6.NS.C.6b | Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.  |
| MA.6.NS.C.6c | Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.  |
| MA.6.NS.A | Apply and extend previous understandings of multiplication and division to divide fractions by fractions.  |
| MA.6.NS.C.7 | Understand ordering and absolute value of rational numbers.  |
| MA.6.NS.C.7a | Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.  |
| MA.6.NS.A.1 | Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.  |
| MA.6.NS.C.7b | Write, interpret, and explain statements of order for rational numbers in real-world contexts.  |

 |

|  |
| --- |
| **Expressions and Equations** |
|

|  |  |
| --- | --- |
| MA.6.EE.B.5 | Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.  |
| MA.6.EE.B.6 | Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.  |
| MA.6.EE.B.7 | Solve real-world and mathematical problems by writing and solving equations of the form 𝑥 + 𝑝 = 𝑞 and 𝑝𝑥 = 𝑞 for cases in which 𝑝, 𝑞 and 𝑥 are all nonnegative rational numbers.  |
| MA.6.EE.B.8 | Write an inequality of the form 𝑥 > 𝑐 or 𝑥 < 𝑐 to represent a constraint or condition in a real- world or mathematical problem. Recognize that inequalities of the form 𝑥 > 𝑐 or 𝑥 < 𝑐 have infinitely many solutions; represent solutions of such inequalities on number line diagrams.  |
| MA.6.EE.C | Represent and analyze quantitative relationships between dependent and independent variables.  |
| MA.6.EE.A | Apply and extend previous understandings of arithmetic to algebraic expressions.  |
| MA.6.EE.A.1 | Write and evaluate numerical expressions involving whole-number exponents.  |
| MA.6.EE.C.9 | Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.  |
| MA.6.EE.A.2 | Write, read, and evaluate expressions in which letters stand for numbers.  |
| MA.6.EE.A.2a | Write expressions that record operations with numbers and with letters standing for numbers.  |
| MA.6.EE.A.2b | Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.  |
| MA.6.EE.A.2c | Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).  |
| MA.6.EE.A.3 | Apply the properties of operations to generate equivalent expressions.  |
| MA.6.EE.A.4 | Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).  |
| MA.6.EE.B | Reason about and solve one-variable equations and inequalities.  |

 |

|  |
| --- |
| **Geometry** |
|

|  |  |
| --- | --- |
| MA.6.G.A | Solve real-world and mathematical problems involving area, surface area, and volume.  |
| MA.6.G.A.1 | Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.2 | Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas 𝑉 = 𝑙𝑤ℎ and 𝑉 = 𝐵ℎ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.3 | Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.4 | Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.  |

 |

|  |
| --- |
| **Statistics and Probability** |
|

|  |  |
| --- | --- |
| MA.6.SP.B.5c | Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.  |
| MA.6.SP.B.5d | Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.  |
| MA.6.SP.A | Develop understanding of statistical variability.  |
| MA.6.SP.A.1 | Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.  |
| MA.6.SP.A.2 | Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.  |
| MA.6.SP.A.3 | Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.  |
| MA.6.SP.B | Summarize and describe distributions.  |
| MA.6.SP.B.4 | Display numerical data in plots on a number line, including dot plots, histograms, and box plots.  |
| MA.6.SP.B.5 | Summarize numerical data sets in relation to their context, such as by:  |
| MA.6.SP.B.5a | Reporting the number of observations.  |
| MA.6.SP.B.5b | Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.  |

 |

|  |
| --- |
| **Career Ready Practices** |
| CRP2.   Apply appropriate academic and technical skills. CRP4.   Communicate clearly and effectively and with reason. CRP6.   Demonstrate creativity and innovation. CRP8.   Utilize critical thinking to make sense of problems and persevere in solving them. CRP11.   Use technology to enhance productivity. CRP12.   Work productively in teams while using cultural global competence. |

|  |
| --- |
| **Essential Questions** |
| * How can we find and use common factors and multiples?
* What is LCM/GCF?
* How can we represent and use integers?
* When are inverses used when dividing fractions?
* How can we locate rational numbers on a number line?
* How can we graph ordered pairs on a coordinate plane?
 |

|  |
| --- |
| **Enduring Understanding** |
| * That multiplication and division is used when dividing fractions by fractions and can be applied and extended in a real-world situation.
* That Multi-digit numbers can be computed fluently by finding common factors and multiples.
* To find and use greatest common factors and least common multiples to solve real-world problems.
* That rational numbers can can be located on a number line by a point.
* Graph points in all four quadrants on a coordinate plan.
 |

|  |
| --- |
| **Students will know...** |
| * That multiplication and division is used when dividing fractions by fractions.
* How to find the greatest common factor of two numbers less than or equal to 100.
* How to find the least common multiple of two numbers less than or equal to twelve.
* The relationship that a rational number is a point on a number line.
* How to graph points in all four quadrants of a coordinate plane.
 |

|  |
| --- |
| **Students will be able to...** |
| * Use multiplication and division to divide fractions by fractions can be applied and extended in a real-world situation.
* Multi-digit numbers can be computed fluently by finding common factors and multiples.
* Rational numbers can be located on a number line.
* Graph all four quadrants on a coordinate plane.
 |

|  |
| --- |
| **STAGE 2- EVIDENCE OF LEARNING** |
|  |

|  |
| --- |
| **Formative Assessment Suggestions** |
| 3- Minute PauseAnalogy PromptChoral ResponseDebriefingExit Card / TicketHand SignalsIndex card summariesJournal EntryMisconception CheckObservationPortfolio CheckQuestions & AnswersQuizSelf-AssessmentStudent ConferenceThink-Pair-ShareThink-Ink-ShareWeb or Concept Map

|  |  |
| --- | --- |
| • 3- Minute Pause |  **.**  |
| • A-B-C Summaries |  **.**  |
| • Analogy Prompt |  **.**  |
| • Choral Response |  **.**  |
| • Debriefing |  **.**  |
| • Exit Card / Ticket |  **.**  |
| • Hand Signals |  **.**  |
| • Idea Spinner |  **.**  |
| • Index Card Summaries |  **.**  |
| • Inside-Outside Circle Discussion (Fishbowl) |  **.**  |
| • Journal Entry |  **.**  |
| • Misconception Check |  **.**  |
| • Observation |  **.**  |
| • One Minute Essay |  **.**  |
| • One Word Summary |  **.**  |
| • Portfolio Check |  **.**  |
| • Questions & Answers |  **.**  |
| • Quiz |  **.**  |
| • Self-Assessment |  **.**  |
| • Student Conference |  **.**  |
| • Think-Pair-Share |  **.**  |
| • Web or Concept Map |  **.**  |

 |

|  |
| --- |
| **Authentic Assessments Suggestions** |
| Through the following authentic assessments, students will develop traits regarding thinking and reasoning, settings, mathematical tools and attitudes and dispositions: 1. Performance Assessments 2. Short Investigations 3. Open Ended Response Questions 4.  Portfolios 5.  Self-Assessments |

|  |
| --- |
| **Benchmark Assessments** |
| Math 6 HonorsTopics 1-2: Cumulative/Benchmark AssessmentTopics 1-4: Cumulative/Benchmark AssessmentTopics 1-6: Cumulative/Benchmark AssessmentEnd-Of-Year AssessmentMAP Fall AdministrationMAP Winter AdministrationMAP Spring Administration Math 6Benchmark 1: Number SystemBenchmark 2: Ratio and ProportionsBenchmark 3: Expressions and EquationsBenchmark 4: Geometry, Statistics and ProbabilityEdmentum Fall AdministrationEdmentum Winter AdministrationEdmentum Spring Administration |

|  |
| --- |
| **STAGE 3- LEARNING PLAN** |
|  |

|  |
| --- |
| **Instructional Map** |
| **Step 1: What is it we want and expect students to learn?*** Read domain overview, learning goal, and essential questions to gain an initial understanding of the domain.
* Analyze cluster of standards, vertical progression, test item specifications to determine full intent of standards (DOK) and student outcomes.
* Determine measurable objectives using unpacked standards. Review the assessments for determining acceptable evidence.

**Step 2: How will they learn it?*** Select problem-based learning/formative assessment tasks.
* Develop learning experiences utilizing the textbook and selected tasks along with higher order questions stems.

**Step 3: How will we know when they have learned it?*** As a PLC, analyze students’ work reflecting on teacher practice and provide student feedback.
* Provide additional assessments as necessary and collaboratively analyze the results.

**Step 4: How will we respond if they don’t learn it? How will we respond to those who already know it?*** Using data analysis, develop small groups for enrichment and remediation.
* Reassess student performance and provide opportunities for application.
 |

|  |
| --- |
| **Modifications/Differentiation of Instruction** |
| Differentiation Strategies for Special Education Students* Remove unnecessary material, words, etc., that can distract from the content
* Use of off-grade level materials
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Time allowed
* Level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials
* Use technology, if available and appropriate
* Varied homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language.
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Ability to work at their own pace
* Present ideas using auditory, visual, kinesthetic, & tactile means
* Provide graphic organizers and/or highlighted materials
* Strategy and flexible groups based on formative assessment
* Differentiated checklists and rubrics, if available and appropriate

 Differentiation Strategies for Gifted and Talented Students* Increase the level of complexity
* Decrease scaffolding
* Variety of finished products
* Allow for greater independence
* Learning stations, interest groups
* Varied texts and supplementary materials
* Use of technology
* Flexibility in assignments
* Varied questioning strategies
* Encourage research
* Strategy and flexible groups based on formative assessment or student choice
* Acceleration within a unit of study
* Exposure to more advanced or complex concepts, abstractions, and materials
* Encourage students to move through content areas at their own pace
* After mastery of a unit, provide students with more advanced learning activities, not more of the same activity
* Present information using a thematic, broad-based, and integrative content, rather than just single-subject areas

  Differentiated Strategies for ELL Students* Remove unnecessary materials, words, etc., that can distract from the content
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Gradually increase the level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials, including visuals
* Use technology, if available and appropriate
* Differentiate homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language.
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Allow students to work at their own pace
* Presenting ideas through auditory, visual, kinesthetic, & tactile means
* Role play
* Provide graphic organizers, highlighted materials
* Strategy and flexible groups based on formative assessment

  Differentiation Strategies for At Risk Students* Remove unnecessary materials, words, etc., that can distract from the content
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Gradually increase the level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials
* Use technology, if available and appropriate
* Differentiate homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Presenting ideas through auditory, visual, kinesthetic, & tactile means
* Provide graphic organizers and/or highlighted materials
* Strategy and flexible groups based on formative assessment

 **504 Plans**Students can qualify for 504 plans if they have physical or mental impairments that affect or limit any of their abilities to:* walk, breathe, eat, or sleep
* communicate, see, hear, or speak
* read, concentrate, think, or learn
* stand, bend, lift, or work

  Examples of accommodations in 504 plans include:* preferential seating
* extended time on tests and assignments
* reduced homework or classwork
* verbal, visual, or technology aids
* modified textbooks or audio-video materials
* behavior management support
* adjusted class schedules or grading
* verbal testing
* excused lateness, absence, or missed classwork
* pre-approved nurse's office visits and accompaniment to visits
* occupational or physical therapy
 |

|  |
| --- |
| **Modification Strategies** |
|

|  |  |
| --- | --- |
| • Extended Time |  **.**  |
| • Frequent Breaks |  **.**  |
| • Highlighted Text |  **.**  |
| • Interactive Notebook |  **.**  |
| • Modified Test |  **.**  |
| • Oral Directions |  **.**  |
| • Peer Tutoring |  **.**  |
| • Preferential Seating |  **.**  |
| • Re-Direct |  **.**  |
| • Repeated Drill / Practice |  **.**  |
| • Shortened Assignments |  **.**  |
| • Teacher Notes |  **.**  |
| • Tutorials |  **.**  |
| • Use of Additional Reference Material |  **.**  |
| • Use of Audio Resources |  **.**  |

 |

|  |
| --- |
| **High Preparation Differentiation** |
|

|  |  |
| --- | --- |
| • Alternative Assessments |  **.**  |
| • Choice Boards |  **.**  |
| • Games and Tournaments |  **.**  |
| • Group Investigations |  **.**  |
| • Guided Reading |  **.**  |
| • Independent Research / Project |  **.**  |
| • Interest Groups |  **.**  |
| • Learning Contracts |  **.**  |
| • Leveled Rubrics |  **.**  |
| • Literature Circles |  **.**  |
| • Menu Assignments |  **.**  |
| • Multiple Intelligence Options |  **.**  |
| • Multiple Texts |  **.**  |
| • Personal Agendas |  **.**  |
| • Project Based Learning (PBL) |  **.**  |
| • Stations / Centers |  **.**  |
| • Think-Tac-Toe |  **.**  |
| • Tiered Activities / Assignments |  **.**  |
| • Varying Graphic Organizers |  **.**  |

 |

|  |
| --- |
| **Low Preparation Differentiation** |
|

|  |  |
| --- | --- |
| • Choice of Book / Activity |  **.**  |
| • Cubing Activities |  **.**  |
| • Exploration by Interest (using interest inventories) |  **.**  |
| • Flexible Grouping |  **.**  |
| • Goal Setting With Student |  **.**  |
| • Homework Options |  **.**  |
| • Jigsaw |  **.**  |
| • Mini Workshops to Extend Skills |  **.**  |
| • Mini Workshops to Re-teach |  **.**  |
| • Open-ended Activities |  **.**  |
| • Think-Pair-Share by Interest |  **.**  |
| • Think-Pair-Share by Learning Style |  **.**  |
| • Think-Pair-Share by Learning Style |  **.**  |
| • Think-Pair-Share by Readiness |  **.**  |
| • Use of Collaboration |  **.**  |
| • Use of Reading Buddies |  **.**  |
| • Varied Journal Prompts |  **.**  |
| • Varied Product Choice |  **.**  |
| • Varied Supplemental Materials |  **.**  |
| • Work Alone / Together |  **.**  |

 |

|  |
| --- |
| **Vertical Integration- Discipline Mapping** |
| The Number System Vertical AlignmentIn Grade 5 Students will be able to do...* Write and interpret numerical expressions.
* Analyze patterns and relationships.
* Understand the place value system.
* Perform operations with multi-digit whole numbers and with decimals to hundredths.
* 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.

In Grade 6 Students will be able to do...* Apply and extend previous understanding of multiplication and division to divide fractions by fractions.
* Compute fluently with multi-digit numbers and find common factors and multiples.
* Apply and extend previous understandings of numbers to the system of rational numbers.

In Grade 7 Students will be able to do...* Apply and extend previous understanding of operations with fractions to add, subtract, multiply, and divide rational numbers.

  |

|  |
| --- |
| **Additional Materials** |
| LPS Adopted Textbooks and Programs * Go Math Grade 6
* Think Central and the Math Personal Trainer (Computer Based program supplementing Go Math)
* Pearson EnVision Grade 6 Honors
* Pearson Realize (Computer Based program supplementing Envision)

Edmentum Testing* Data Analysis Reports

NJSLA (PARCC) Released ItemsKhan AcademyIXL |

**Unit #3: Expressions and Equations**

Content Area: **Mathematics**
Course(s): **Math 6**
Time Period: **Second Marking period**
Length: **6-8 Weeks**
Status: **Published**

|  |
| --- |
| **Unit Overview** |
| 1. Students will be able to write and evaluate algebraic expressions using whole number and exponents.  2. Students will identify parts of an expression using mathematical terms (sum, factor, coefficient).  3. They will identify when two expressions are equivalent.  4. Student will write and solve one variable equations and inequalities.  5. Students will use function tables to solve and equation.  |

|  |
| --- |
| **STAGE 1- DESIRED RESULTS** |
|  |

|  |
| --- |
| **Educational Standards** |
| The following goals, as outlined in the NJSLS, will provide a framework for preparation and instruction in mathematics. They are the eight mathematical practice standards:1. Make sense of problems and persevre 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. |

|  |
| --- |
| **New Jersey Student Learning Standards- Mathematics** |
|  |

|  |
| --- |
| **Introduction- Grade 6** |
|

|  |  |
| --- | --- |
| MA.6.6 | In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.  |
| MA.6.6.1 | Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.  |
| MA.6.6.2 | Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.  |
| MA.6.6.3 | Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as 3x = y) to describe relationships between quantities.  |
| MA.6.6.4 | Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.  |
| MA.6.6A | Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.  |

 |

|  |
| --- |
| **Ratios and Proportional Relationships** |
|

|  |  |
| --- | --- |
| MA.6.RP.A.2 | Understand the concept of a unit rate 𝑎/𝑏 associated with a ratio 𝑎:𝑏 with 𝑏 ≠ 0, and use rate language in the context of a ratio relationship.  |
| MA.6.RP.A.3 | Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.  |
| MA.6.RP.A.3a | Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.  |
| MA.6.RP.A.3b | Solve unit rate problems including those involving unit pricing and constant speed.  |
| MA.6.RP.A.3c | Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.  |
| MA.6.RP.A.3d | Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.  |
| MA.6.RP.A | Understand ratio concepts and use ratio reasoning to solve problems.  |
| MA.6.RP.A.1 | Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.  |

 |

|  |
| --- |
| **The Number System** |
|

|  |  |
| --- | --- |
| MA.6.NS.C.7c | Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.  |
| MA.6.NS.C.7d | Distinguish comparisons of absolute value from statements about order.  |
| MA.6.NS.C.8 | Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.  |
| MA.6.NS.B | Compute fluently with multi-digit numbers and find common factors and multiples.  |
| MA.6.NS.B.2 | Fluently divide multi-digit numbers using the standard algorithm.  |
| MA.6.NS.B.3 | Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.  |
| MA.6.NS.B.4 | Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.  |
| MA.6.NS.C | Apply and extend previous understandings of numbers to the system of rational numbers.  |
| MA.6.NS.C.5 | Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.  |
| MA.6.NS.C.6 | Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.  |
| MA.6.NS.C.6a | Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.  |
| MA.6.NS.C.6b | Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.  |
| MA.6.NS.C.6c | Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.  |
| MA.6.NS.A | Apply and extend previous understandings of multiplication and division to divide fractions by fractions.  |
| MA.6.NS.C.7 | Understand ordering and absolute value of rational numbers.  |
| MA.6.NS.C.7a | Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.  |
| MA.6.NS.A.1 | Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.  |
| MA.6.NS.C.7b | Write, interpret, and explain statements of order for rational numbers in real-world contexts.  |

 |

|  |
| --- |
| **Expressions and Equations** |
|

|  |  |
| --- | --- |
| MA.6.EE.B.5 | Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.  |
| MA.6.EE.B.6 | Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.  |
| MA.6.EE.B.7 | Solve real-world and mathematical problems by writing and solving equations of the form 𝑥 + 𝑝 = 𝑞 and 𝑝𝑥 = 𝑞 for cases in which 𝑝, 𝑞 and 𝑥 are all nonnegative rational numbers.  |
| MA.6.EE.B.8 | Write an inequality of the form 𝑥 > 𝑐 or 𝑥 < 𝑐 to represent a constraint or condition in a real- world or mathematical problem. Recognize that inequalities of the form 𝑥 > 𝑐 or 𝑥 < 𝑐 have infinitely many solutions; represent solutions of such inequalities on number line diagrams.  |
| MA.6.EE.C | Represent and analyze quantitative relationships between dependent and independent variables.  |
| MA.6.EE.A | Apply and extend previous understandings of arithmetic to algebraic expressions.  |
| MA.6.EE.A.1 | Write and evaluate numerical expressions involving whole-number exponents.  |
| MA.6.EE.C.9 | Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.  |
| MA.6.EE.A.2 | Write, read, and evaluate expressions in which letters stand for numbers.  |
| MA.6.EE.A.2a | Write expressions that record operations with numbers and with letters standing for numbers.  |
| MA.6.EE.A.2b | Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.  |
| MA.6.EE.A.2c | Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).  |
| MA.6.EE.A.3 | Apply the properties of operations to generate equivalent expressions.  |
| MA.6.EE.A.4 | Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).  |
| MA.6.EE.B | Reason about and solve one-variable equations and inequalities.  |

 |

|  |
| --- |
| **Geometry** |
|

|  |  |
| --- | --- |
| MA.6.G.A | Solve real-world and mathematical problems involving area, surface area, and volume.  |
| MA.6.G.A.1 | Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.2 | Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas 𝑉 = 𝑙𝑤ℎ and 𝑉 = 𝐵ℎ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.3 | Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.4 | Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.  |

 |

|  |
| --- |
| **Statistics and Probability** |
|

|  |  |
| --- | --- |
| MA.6.SP.B.5c | Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.  |
| MA.6.SP.B.5d | Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.  |
| MA.6.SP.A | Develop understanding of statistical variability.  |
| MA.6.SP.A.1 | Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.  |
| MA.6.SP.A.2 | Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.  |
| MA.6.SP.A.3 | Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.  |
| MA.6.SP.B | Summarize and describe distributions.  |
| MA.6.SP.B.4 | Display numerical data in plots on a number line, including dot plots, histograms, and box plots.  |
| MA.6.SP.B.5 | Summarize numerical data sets in relation to their context, such as by:  |
| MA.6.SP.B.5a | Reporting the number of observations.  |
| MA.6.SP.B.5b | Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.  |

 |

|  |
| --- |
| **Career Ready Practices** |
| CRP2.   Apply appropriate academic and technical skills. CRP4.   Communicate clearly and effectively and with reason. CRP6.   Demonstrate creativity and innovation. CRP8.   Utilize critical thinking to make sense of problems and persevere in solving them. CRP11.   Use technology to enhance productivity. CRP12.   Work productively in teams while using cultural global competence. |

|  |
| --- |
| **Essential Questions** |
| * What is a variable?
* How can we represent and solve situations involving variable quantities?
* What is an equation?
* What is an inequality?
* How can we solve one variable equations and inequalities?
* How can one use a function table to solve an equation?
* How can we represent and analyze quantitative relationships between dependent and independent variables?
* How can we translate and evaluate verbal expressions as algebraic expressions?
 |

|  |
| --- |
| **Enduring Understanding** |
| * How to write and evaluate expressions.
* The parts of an expression using mathematical terms (sum, factor, coefficient).
* When two expressions are equivalent.
* How to write and solve one variable equations and inequalities.
* How to use input and output tables to solve and equation.
* *Informal reasoning can be used to solve one- variable equations and inequalities.*
* Quantitative relationships between dependent and independent variables can be represented and analyzed.
* Verbal expressions can be written and evaluated as algebraic expressions.
 |

|  |
| --- |
| **Students will know...** |
|  * How can we represent and solve situations involving variable quantities?
* How can we solve one variable equations and inequalities?
* How can we represent and analyze quantitative relationships between dependent and independent variables?
* How can we translate and evaluate verbal expressions as algebraic expressions?
 |

|  |
| --- |
| **Students will be able to...** |
| Students will be able to …* Use informal reasoning can be used to solve one-variable equations and inequalities.
* Analyze quantitative relationships between dependent and independent variables.
* Write and evaluate verbal expressions as algebraic expressions.
 |

|  |
| --- |
| **STAGE 2- EVIDENCE OF LEARNING** |
|  |

|  |
| --- |
| **Formative Assessment Suggestions** |
| 3- Minute PauseAnalogy PromptChoral ResponseDebriefingExit Card / TicketHand SignalsIndex card summariesJournal EntryMisconception CheckObservationPortfolio CheckQuestions & AnswersQuizSelf-AssessmentStudent ConferenceThink-Pair-ShareThink-Ink-ShareWeb or Concept Map

|  |  |
| --- | --- |
| • 3- Minute Pause |  **.**  |
| • A-B-C Summaries |  **.**  |
| • Analogy Prompt |  **.**  |
| • Choral Response |  **.**  |
| • Debriefing |  **.**  |
| • Exit Card / Ticket |  **.**  |
| • Hand Signals |  **.**  |
| • Idea Spinner |  **.**  |
| • Index Card Summaries |  **.**  |
| • Inside-Outside Circle Discussion (Fishbowl) |  **.**  |
| • Journal Entry |  **.**  |
| • Misconception Check |  **.**  |
| • Observation |  **.**  |
| • One Minute Essay |  **.**  |
| • One Word Summary |  **.**  |
| • Portfolio Check |  **.**  |
| • Questions & Answers |  **.**  |
| • Quiz |  **.**  |
| • Self-Assessment |  **.**  |
| • Student Conference |  **.**  |
| • Think-Pair-Share |  **.**  |
| • Web or Concept Map |  **.**  |

 |

|  |
| --- |
| **Authentic Assessments Suggestions** |
| Through the following authentic assessments, students will develop traits regarding thinking and reasoning, settings, mathematical tools and attitudes and dispositions: 1. Performance Assessments 2. Short Investigations 3. Open Ended Response Questions 4.  Portfolios 5.  Self-Assessments |

|  |
| --- |
| **Benchmark Assessments** |
| Math 6 HonorsTopics 1-2: Cumulative/Benchmark AssessmentTopics 1-4: Cumulative/Benchmark AssessmentTopics 1-6: Cumulative/Benchmark AssessmentEnd-Of-Year AssessmentEdmentum Fall AdministrationEdmentum Winter AdministrationEdmentum Spring Administration Math 6Benchmark 1: Number SystemBenchmark 2: Ratio and ProportionsBenchmark 3: Expressions and EquationsBenchmark 4: Geometry, Statistics and ProbabilityEdmentum Fall AdministrationEdmentum Winter AdministrationEdmentum Spring Administration |

|  |
| --- |
| **STAGE 3- LEARNING PLAN** |
|  |

|  |
| --- |
| **Instructional Map** |
| **Step 1: What is it we want and expect students to learn?*** Read domain overview, learning goal, and essential questions to gain an initial understanding of the domain.
* Analyze cluster of standards, vertical progression, test item specifications to determine full intent of standards (DOK) and student outcomes.
* Determine measurable objectives using unpacked standards. Review the assessments for determining acceptable evidence.

**Step 2: How will they learn it?*** Select problem-based learning/formative assessment tasks.
* Develop learning experiences utilizing the textbook and selected tasks along with higher order questions stems.

**Step 3: How will we know when they have learned it?*** As a PLC, analyze students’ work reflecting on teacher practice and provide student feedback.
* Provide additional assessments as necessary and collaboratively analyze the results.

**Step 4: How will we respond if they don’t learn it? How will we respond to those who already know it?*** Using data analysis, develop small groups for enrichment and remediation.
* Reassess student performance and provide opportunities for application.
 |

|  |
| --- |
| **Modifications/Differentiation of Instruction** |
| Differentiation Strategies for Special Education Students* Remove unnecessary material, words, etc., that can distract from the content
* Use of off-grade level materials
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Time allowed
* Level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials
* Use technology, if available and appropriate
* Varied homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language.
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Ability to work at their own pace
* Present ideas using auditory, visual, kinesthetic, & tactile means
* Provide graphic organizers and/or highlighted materials
* Strategy and flexible groups based on formative assessment
* Differentiated checklists and rubrics, if available and appropriate

  Differentiation Strategies for Gifted and Talented Students* Increase the level of complexity
* Decrease scaffolding
* Variety of finished products
* Allow for greater independence
* Learning stations, interest groups
* Varied texts and supplementary materials
* Use of technology
* Flexibility in assignments
* Varied questioning strategies
* Encourage research
* Strategy and flexible groups based on formative assessment or student choice
* Acceleration within a unit of study
* Exposure to more advanced or complex concepts, abstractions, and materials
* Encourage students to move through content areas at their own pace
* After mastery of a unit, provide students with more advanced learning activities, not more of the same activity
* Present information using a thematic, broad-based, and integrative content, rather than just single-subject areas

  Differentiated Strategies for ELL Students* Remove unnecessary materials, words, etc., that can distract from the content
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Gradually increase the level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials, including visuals
* Use technology, if available and appropriate
* Differentiate homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language.
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Allow students to work at their own pace
* Presenting ideas through auditory, visual, kinesthetic, & tactile means
* Role play
* Provide graphic organizers, highlighted materials
* Strategy and flexible groups based on formative assessment

  Differentiation Strategies for At Risk Students* Remove unnecessary materials, words, etc., that can distract from the content
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Gradually increase the level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials
* Use technology, if available and appropriate
* Differentiate homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Presenting ideas through auditory, visual, kinesthetic, & tactile means
* Provide graphic organizers and/or highlighted materials
* Strategy and flexible groups based on formative assessment

 **504 Plans**Students can qualify for 504 plans if they have physical or mental impairments that affect or limit any of their abilities to:* walk, breathe, eat, or sleep
* communicate, see, hear, or speak
* read, concentrate, think, or learn
* stand, bend, lift, or work

  Examples of accommodations in 504 plans include:* preferential seating
* extended time on tests and assignments
* reduced homework or classwork
* verbal, visual, or technology aids
* modified textbooks or audio-video materials
* behavior management support
* adjusted class schedules or grading
* verbal testing
* excused lateness, absence, or missed classwork
* pre-approved nurse's office visits and accompaniment to visits
* occupational or physical therapy
 |

|  |
| --- |
| **Modification Strategies** |
|

|  |  |
| --- | --- |
| • Extended Time |  **.**  |
| • Frequent Breaks |  **.**  |
| • Highlighted Text |  **.**  |
| • Interactive Notebook |  **.**  |
| • Modified Test |  **.**  |
| • Oral Directions |  **.**  |
| • Peer Tutoring |  **.**  |
| • Preferential Seating |  **.**  |
| • Re-Direct |  **.**  |
| • Repeated Drill / Practice |  **.**  |
| • Shortened Assignments |  **.**  |
| • Teacher Notes |  **.**  |
| • Tutorials |  **.**  |
| • Use of Additional Reference Material |  **.**  |
| • Use of Audio Resources |  **.**  |

 |

|  |
| --- |
| **High Preparation Differentiation** |
|

|  |  |
| --- | --- |
| • Alternative Assessments |  **.**  |
| • Choice Boards |  **.**  |
| • Games and Tournaments |  **.**  |
| • Group Investigations |  **.**  |
| • Guided Reading |  **.**  |
| • Independent Research / Project |  **.**  |
| • Interest Groups |  **.**  |
| • Learning Contracts |  **.**  |
| • Leveled Rubrics |  **.**  |
| • Literature Circles |  **.**  |
| • Menu Assignments |  **.**  |
| • Multiple Intelligence Options |  **.**  |
| • Multiple Texts |  **.**  |
| • Personal Agendas |  **.**  |
| • Project Based Learning (PBL) |  **.**  |
| • Stations / Centers |  **.**  |
| • Think-Tac-Toe |  **.**  |
| • Tiered Activities / Assignments |  **.**  |
| • Varying Graphic Organizers |  **.**  |

 |

|  |
| --- |
| **Low Preparation Differentiation** |
|

|  |  |
| --- | --- |
| • Choice of Book / Activity |  **.**  |
| • Cubing Activities |  **.**  |
| • Exploration by Interest (using interest inventories) |  **.**  |
| • Flexible Grouping |  **.**  |
| • Goal Setting With Student |  **.**  |
| • Homework Options |  **.**  |
| • Jigsaw |  **.**  |
| • Mini Workshops to Extend Skills |  **.**  |
| • Mini Workshops to Re-teach |  **.**  |
| • Open-ended Activities |  **.**  |
| • Think-Pair-Share by Interest |  **.**  |
| • Think-Pair-Share by Learning Style |  **.**  |
| • Think-Pair-Share by Learning Style |  **.**  |
| • Think-Pair-Share by Readiness |  **.**  |
| • Use of Collaboration |  **.**  |
| • Use of Reading Buddies |  **.**  |
| • Varied Journal Prompts |  **.**  |
| • Varied Product Choice |  **.**  |
| • Varied Supplemental Materials |  **.**  |
| • Work Alone / Together |  **.**  |

 |

|  |
| --- |
| **Vertical Integration- Discipline Mapping** |
| Expressions and Equations Vertical AlignmentIn Grade 5 Students will be able to do...* Write and interpret numerical expressions.
* Analyze patterns and relationships

 In Grade 6 Students will be able to do...* Apply and extend previous understandings of arithmetic to algebraic expressions.
* Reason about and solve one-variable equations and inequalities.
* Represent and analyze quantitative relationships between dependent and independent variables.

In Grade 7 Students will be able to do...* Use properties of operations to generate equivalent expressions.
* Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
 |

|  |
| --- |
| **Additional Materials** |
| LPS Adopted Textbooks and Programs * Go Math Grade 6
* Think Central and the Math Personal Trainer (Computer Based program supplementing Go Math)
* Pearson EnVision Grade 6 Honors
* Pearson Realize (Computer Based program supplementing Envision)

MAP Testing* Data Analysis Reports

NJSLA (PARCC) Released ItemsKhan Academy |

**Unit #4: Geometry**

Content Area: **Mathematics**
Course(s): **Math 6**
Time Period: **Third Marking Period**
Length: **3-5 Weeks**
Status: **Published**

|  |
| --- |
| **Unit Overview** |
| 1. Students will find the area of triangles, quadrilaterals, and polygons.  2. Students will find the volume of a rectangular prism using V=l w h or V= b h (with length and width equaling base).  3. Students will draw three-dimensional figures using nets made up of rectangles and triangles and find surface area of the figure. 4. Students will draw polygons in coordinate planes given coordinates for the vertices.  |

|  |
| --- |
| **STAGE 1- DESIRED RESULTS** |
|  |

|  |
| --- |
| **Educational Standards** |
| The following goals, as outlined in the NJSLS, will provide a framework for preparation and instruction in mathematics. They are the eight mathematical practice standards:1. Make sense of problems and persevre 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. |

|  |
| --- |
| **New Jersey Student Learning Standards- Mathematics** |
|  |

|  |
| --- |
| **Introduction- Grade 6** |
|

|  |  |
| --- | --- |
| MA.6.6 | In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.  |
| MA.6.6.1 | Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.  |
| MA.6.6.2 | Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.  |
| MA.6.6.3 | Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as 3x = y) to describe relationships between quantities.  |
| MA.6.6.4 | Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.  |
| MA.6.6A | Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.  |

 |

|  |
| --- |
| **Ratios and Proportional Relationships** |
|

|  |  |
| --- | --- |
| MA.6.RP.A.2 | Understand the concept of a unit rate 𝑎/𝑏 associated with a ratio 𝑎:𝑏 with 𝑏 ≠ 0, and use rate language in the context of a ratio relationship.  |
| MA.6.RP.A.3 | Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.  |
| MA.6.RP.A.3a | Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.  |
| MA.6.RP.A.3b | Solve unit rate problems including those involving unit pricing and constant speed.  |
| MA.6.RP.A.3c | Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.  |
| MA.6.RP.A.3d | Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.  |
| MA.6.RP.A | Understand ratio concepts and use ratio reasoning to solve problems.  |
| MA.6.RP.A.1 | Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.  |

 |

|  |
| --- |
| **The Number System** |
|

|  |  |
| --- | --- |
| MA.6.NS.C.7c | Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.  |
| MA.6.NS.C.7d | Distinguish comparisons of absolute value from statements about order.  |
| MA.6.NS.C.8 | Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.  |
| MA.6.NS.B | Compute fluently with multi-digit numbers and find common factors and multiples.  |
| MA.6.NS.B.2 | Fluently divide multi-digit numbers using the standard algorithm.  |
| MA.6.NS.B.3 | Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.  |
| MA.6.NS.B.4 | Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.  |
| MA.6.NS.C | Apply and extend previous understandings of numbers to the system of rational numbers.  |
| MA.6.NS.C.5 | Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.  |
| MA.6.NS.C.6 | Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.  |
| MA.6.NS.C.6a | Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.  |
| MA.6.NS.C.6b | Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.  |
| MA.6.NS.C.6c | Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.  |
| MA.6.NS.A | Apply and extend previous understandings of multiplication and division to divide fractions by fractions.  |
| MA.6.NS.C.7 | Understand ordering and absolute value of rational numbers.  |
| MA.6.NS.C.7a | Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.  |
| MA.6.NS.A.1 | Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.  |
| MA.6.NS.C.7b | Write, interpret, and explain statements of order for rational numbers in real-world contexts.  |

 |

|  |
| --- |
| **Expressions and Equations** |
|

|  |  |
| --- | --- |
| MA.6.EE.B.5 | Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.  |
| MA.6.EE.B.6 | Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.  |
| MA.6.EE.B.7 | Solve real-world and mathematical problems by writing and solving equations of the form 𝑥 + 𝑝 = 𝑞 and 𝑝𝑥 = 𝑞 for cases in which 𝑝, 𝑞 and 𝑥 are all nonnegative rational numbers.  |
| MA.6.EE.B.8 | Write an inequality of the form 𝑥 > 𝑐 or 𝑥 < 𝑐 to represent a constraint or condition in a real- world or mathematical problem. Recognize that inequalities of the form 𝑥 > 𝑐 or 𝑥 < 𝑐 have infinitely many solutions; represent solutions of such inequalities on number line diagrams.  |
| MA.6.EE.C | Represent and analyze quantitative relationships between dependent and independent variables.  |
| MA.6.EE.A | Apply and extend previous understandings of arithmetic to algebraic expressions.  |
| MA.6.EE.A.1 | Write and evaluate numerical expressions involving whole-number exponents.  |
| MA.6.EE.C.9 | Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.  |
| MA.6.EE.A.2 | Write, read, and evaluate expressions in which letters stand for numbers.  |
| MA.6.EE.A.2a | Write expressions that record operations with numbers and with letters standing for numbers.  |
| MA.6.EE.A.2b | Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.  |
| MA.6.EE.A.2c | Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).  |
| MA.6.EE.A.3 | Apply the properties of operations to generate equivalent expressions.  |
| MA.6.EE.A.4 | Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).  |
| MA.6.EE.B | Reason about and solve one-variable equations and inequalities.  |

 |

|  |
| --- |
| **Geometry** |
|

|  |  |
| --- | --- |
| MA.6.G.A | Solve real-world and mathematical problems involving area, surface area, and volume.  |
| MA.6.G.A.1 | Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.2 | Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas 𝑉 = 𝑙𝑤ℎ and 𝑉 = 𝐵ℎ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.3 | Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.4 | Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.  |

 |

|  |
| --- |
| **Statistics and Probability** |
|

|  |  |
| --- | --- |
| MA.6.SP.B.5c | Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.  |
| MA.6.SP.B.5d | Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.  |
| MA.6.SP.A | Develop understanding of statistical variability.  |
| MA.6.SP.A.1 | Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.  |
| MA.6.SP.A.2 | Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.  |
| MA.6.SP.A.3 | Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.  |
| MA.6.SP.B | Summarize and describe distributions.  |
| MA.6.SP.B.4 | Display numerical data in plots on a number line, including dot plots, histograms, and box plots.  |
| MA.6.SP.B.5 | Summarize numerical data sets in relation to their context, such as by:  |
| MA.6.SP.B.5a | Reporting the number of observations.  |
| MA.6.SP.B.5b | Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.  |

 |

|  |
| --- |
| **Career Ready Practices** |
| CRP2.   Apply appropriate academic and technical skills. CRP4.   Communicate clearly and effectively and with reason. CRP6.   Demonstrate creativity and innovation. CRP8.   Utilize critical thinking to make sense of problems and persevere in solving them. CRP11.   Use technology to enhance productivity. CRP12.   Work productively in teams while using cultural global competence. |

|  |
| --- |
| **Essential Questions** |
| * What is the formula for area, surface area and volume?
* How do you solve for area, surface area, and volume?
* What are polygons?
* How would one classify a figure by its vertices?
* What are nets?
* How would one use a net of rectangles and triangles to make a three-dimensional figure?
 |

|  |
| --- |
| **Enduring Understanding** |
| * Solving real world and mathematical problems involving area, surface area, and volume.
* Draw polygons in the coordinate plane given coordinates for the vertices.
* Represent three-dimensional figures using nets made up of rectangles and triangles then find surface area of these figures.
* How to find the area of triangles, quadrilaterals, and polygons.
* How to find  the  volume  of  a rectangular prism using V=l w h or V= b h (with length and width equaling base).
* How to draw three-dimensional figures using nets made up of rectangles and triangles and find surface area of the figure.
* How to draw polygons in coordinate planes given coordinates for the vertices.
 |

|  |
| --- |
| **Students will know...** |
|  * How to find the area of triangles, quadrilaterals and polygons.
* How to find the volume of a rectangular prism using V=l w h or V= b h (with length and width equaling base).
* How to draw three-dimensional figures using nets made up of rectangles and triangles and find surface area of the figure.
* How to draw polygons in coordinate planes given coordinates for the vertices.
 |

|  |
| --- |
| **Students will be able to...** |
| Students will be able to …* Solve real world and mathematical problems involving area, surface area, and volume.
* Draw polygons in the coordinate plane given coordinates for the vertices.
* Represent three-dimensional figures using nets made up of rectangles and triangles then find surface area of these figures.
 |

|  |
| --- |
| **STAGE 2- EVIDENCE OF LEARNING** |
|  |

|  |
| --- |
| **Formative Assessment Suggestions** |
| 3- Minute PauseAnalogy PromptChoral ResponseDebriefingExit Card / TicketHand SignalsIndex card summariesJournal EntryMisconception CheckObservationPortfolio CheckQuestions & AnswersQuizSelf-AssessmentStudent ConferenceThink-Pair-ShareThink-Ink-ShareWeb or Concept Map

|  |  |
| --- | --- |
| • 3- Minute Pause |  **.**  |
| • A-B-C Summaries |  **.**  |
| • Analogy Prompt |  **.**  |
| • Choral Response |  **.**  |
| • Debriefing |  **.**  |
| • Exit Card / Ticket |  **.**  |
| • Hand Signals |  **.**  |
| • Idea Spinner |  **.**  |
| • Index Card Summaries |  **.**  |
| • Inside-Outside Circle Discussion (Fishbowl) |  **.**  |
| • Journal Entry |  **.**  |
| • Misconception Check |  **.**  |
| • Observation |  **.**  |
| • One Minute Essay |  **.**  |
| • One Word Summary |  **.**  |
| • Portfolio Check |  **.**  |
| • Questions & Answers |  **.**  |
| • Quiz |  **.**  |
| • Self-Assessment |  **.**  |
| • Student Conference |  **.**  |
| • Think-Pair-Share |  **.**  |
| • Web or Concept Map |  **.**  |

 |

|  |
| --- |
| **Authentic Assessments Suggestions** |
| Through the following authentic assessments, students will develop traits regarding thinking and reasoning, settings, mathematical tools and attitudes and dispositions: 1. Performance Assessments 2. Short Investigations 3. Open Ended Response Questions 4.  Portfolios 5.  Self-Assessments |

|  |
| --- |
| **Benchmark Assessments** |
| Math 6 HonorsTopics 1-2: Cumulative/Benchmark AssessmentTopics 1-4: Cumulative/Benchmark AssessmentTopics 1-6: Cumulative/Benchmark AssessmentEnd-Of-Year AssessmentMAP Fall AdministrationMAP Winter AdministrationMAP Spring Administration Math 6Benchmark 1: Number SystemBenchmark 2: Ratio and ProportionsBenchmark 3: Expressions and EquationsBenchmark 4: Geometry, Statistics and ProbabilityMAP Fall AdministrationMAP Winter AdministrationMAP Spring Administration |

|  |
| --- |
| **STAGE 3- LEARNING PLAN** |
|  |

|  |
| --- |
| **Instructional Map** |
| **Step 1: What is it we want and expect students to learn?*** Read domain overview, learning goal, and essential questions to gain an initial understanding of the domain.
* Analyze cluster of standards, vertical progression, test item specifications to determine full intent of standards (DOK) and student outcomes.
* Determine measurable objectives using unpacked standards. Review the assessments for determining acceptable evidence.

**Step 2: How will they learn it?*** Select problem-based learning/formative assessment tasks.
* Develop learning experiences utilizing the textbook and selected tasks along with higher order questions stems.

**Step 3: How will we know when they have learned it?*** As a PLC, analyze students’ work reflecting on teacher practice and provide student feedback.
* Provide additional assessments as necessary and collaboratively analyze the results.

**Step 4: How will we respond if they don’t learn it? How will we respond to those who already know it?*** Using data analysis, develop small groups for enrichment and remediation.
* Reassess student performance and provide opportunities for application.
 |

|  |
| --- |
| **Modifications/Differentiation of Instruction** |
| Differentiation Strategies for Special Education Students* Remove unnecessary material, words, etc., that can distract from the content
* Use of off-grade level materials
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Time allowed
* Level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials
* Use technology, if available and appropriate
* Varied homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language.
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Ability to work at their own pace
* Present ideas using auditory, visual, kinesthetic, & tactile means
* Provide graphic organizers and/or highlighted materials
* Strategy and flexible groups based on formative assessment
* Differentiated checklists and rubrics, if available and appropriate

  Differentiation Strategies for Gifted and Talented Students* Increase the level of complexity
* Decrease scaffolding
* Variety of finished products
* Allow for greater independence
* Learning stations, interest groups
* Varied texts and supplementary materials
* Use of technology
* Flexibility in assignments
* Varied questioning strategies
* Encourage research
* Strategy and flexible groups based on formative assessment or student choice
* Acceleration within a unit of study
* Exposure to more advanced or complex concepts, abstractions, and materials
* Encourage students to move through content areas at their own pace
* After mastery of a unit, provide students with more advanced learning activities, not more of the same activity
* Present information using a thematic, broad-based, and integrative content, rather than just single-subject areas

  Differentiated Strategies for ELL Students* Remove unnecessary materials, words, etc., that can distract from the content
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Gradually increase the level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials, including visuals
* Use technology, if available and appropriate
* Differentiate homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language.
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Allow students to work at their own pace
* Presenting ideas through auditory, visual, kinesthetic, & tactile means
* Role play
* Provide graphic organizers, highlighted materials
* Strategy and flexible groups based on formative assessment

 Differentiation Strategies for At Risk Students* Remove unnecessary materials, words, etc., that can distract from the content
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Gradually increase the level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials
* Use technology, if available and appropriate
* Differentiate homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Presenting ideas through auditory, visual, kinesthetic, & tactile means
* Provide graphic organizers and/or highlighted materials
* Strategy and flexible groups based on formative assessment

 **504 Plans**Students can qualify for 504 plans if they have physical or mental impairments that affect or limit any of their abilities to:* walk, breathe, eat, or sleep
* communicate, see, hear, or speak
* read, concentrate, think, or learn
* stand, bend, lift, or work

 Examples of accommodations in 504 plans include:* preferential seating
* extended time on tests and assignments
* reduced homework or classwork
* verbal, visual, or technology aids
* modified textbooks or audio-video materials
* behavior management support
* adjusted class schedules or grading
* verbal testing
* excused lateness, absence, or missed classwork
* pre-approved nurse's office visits and accompaniment to visits
* occupational or physical therapy
 |

|  |
| --- |
| **Modification Strategies** |
|

|  |  |
| --- | --- |
| • Extended Time |  **.**  |
| • Frequent Breaks |  **.**  |
| • Highlighted Text |  **.**  |
| • Interactive Notebook |  **.**  |
| • Modified Test |  **.**  |
| • Oral Directions |  **.**  |
| • Peer Tutoring |  **.**  |
| • Preferential Seating |  **.**  |
| • Re-Direct |  **.**  |
| • Repeated Drill / Practice |  **.**  |
| • Shortened Assignments |  **.**  |
| • Teacher Notes |  **.**  |
| • Tutorials |  **.**  |
| • Use of Additional Reference Material |  **.**  |
| • Use of Audio Resources |  **.**  |

 |

|  |
| --- |
| **High Preparation Differentiation** |
|

|  |  |
| --- | --- |
| • Alternative Assessments |  **.**  |
| • Choice Boards |  **.**  |
| • Games and Tournaments |  **.**  |
| • Group Investigations |  **.**  |
| • Guided Reading |  **.**  |
| • Independent Research / Project |  **.**  |
| • Interest Groups |  **.**  |
| • Learning Contracts |  **.**  |
| • Leveled Rubrics |  **.**  |
| • Literature Circles |  **.**  |
| • Menu Assignments |  **.**  |
| • Multiple Intelligence Options |  **.**  |
| • Multiple Texts |  **.**  |
| • Personal Agendas |  **.**  |
| • Project Based Learning (PBL) |  **.**  |
| • Stations / Centers |  **.**  |
| • Think-Tac-Toe |  **.**  |
| • Tiered Activities / Assignments |  **.**  |
| • Varying Graphic Organizers |  **.**  |

 |

|  |
| --- |
| **Low Preparation Differentiation** |
|

|  |  |
| --- | --- |
| • Choice of Book / Activity |  **.**  |
| • Cubing Activities |  **.**  |
| • Exploration by Interest (using interest inventories) |  **.**  |
| • Flexible Grouping |  **.**  |
| • Goal Setting With Student |  **.**  |
| • Homework Options |  **.**  |
| • Jigsaw |  **.**  |
| • Mini Workshops to Extend Skills |  **.**  |
| • Mini Workshops to Re-teach |  **.**  |
| • Open-ended Activities |  **.**  |
| • Think-Pair-Share by Interest |  **.**  |
| • Think-Pair-Share by Learning Style |  **.**  |
| • Think-Pair-Share by Learning Style |  **.**  |
| • Think-Pair-Share by Readiness |  **.**  |
| • Use of Collaboration |  **.**  |
| • Use of Reading Buddies |  **.**  |
| • Varied Journal Prompts |  **.**  |
| • Varied Product Choice |  **.**  |
| • Varied Supplemental Materials |  **.**  |
| • Work Alone / Together |  **.**  |

 |

|  |
| --- |
| **Vertical Integration- Discipline Mapping** |
| Geometry Vertical Alignment In Grade 5 Students will be able to do... * Convert like measurement units within a given measurement system.
* Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.
* Graph points on the coordinate plane to solve real-world and mathematical problems.
* Classify two-dimensional figures into categories based on their properties.

In Grade 6 Students will be able to do...* Solve real-world and mathematical problems involving area, surface area, and volume.

In Grade 7 Students will be able to do...* Draw, construct and describe geometrical figures and describe the relationships between them.
* Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
 |

|  |
| --- |
| **Additional Materials** |
| LPS Adopted Textbooks and Programs * Go Math Grade 6
* Think Central and the Math Personal Trainer (Computer Based program supplementing Go Math)
* Pearson EnVision Grade 6 Honors
* Pearson Realize (Computer Based program supplementing Envision)

Edmentum Testing* Data Analysis Reports

NJSLA (PARCC) Released ItemsKhan Academy |

**Unit #5: Statistics and Probability**

Content Area: **Mathematics**
Course(s): **Math 6**
Time Period: **Fourth Marking Period**
Length: **4-6 Weeks**
Status: **Published**

|  |
| --- |
| **Unit Overview** |
| 1. Students will identify representative samples.   2. Students will collect data and describe it by its measure of center (mean, median, mode) and variations (range, quartiles).  3. Students will graph information using histograms, line plots, and box-and- whisker plots. |

|  |
| --- |
| **STAGE 1- DESIRED RESULTS** |
|  |

|  |
| --- |
| **Educational Standards** |
| The following goals, as outlined in the NJSLS, will provide a framework for preparation and instruction in mathematics. They are the eight mathematical practice standards:1. Make sense of problems and persevre 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. |

|  |
| --- |
| **New Jersey Student Learning Standards- Mathematics** |
|  |

|  |
| --- |
| **Introduction- Grade 6** |
|

|  |  |
| --- | --- |
| MA.6.6 | In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.  |
| MA.6.6.1 | Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.  |
| MA.6.6.2 | Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.  |
| MA.6.6.3 | Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as 3x = y) to describe relationships between quantities.  |
| MA.6.6.4 | Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.  |
| MA.6.6A | Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.  |

 |

|  |
| --- |
| **Ratios and Proportional Relationships** |
|

|  |  |
| --- | --- |
| MA.6.RP.A.2 | Understand the concept of a unit rate 𝑎/𝑏 associated with a ratio 𝑎:𝑏 with 𝑏 ≠ 0, and use rate language in the context of a ratio relationship.  |
| MA.6.RP.A.3 | Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.  |
| MA.6.RP.A.3a | Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.  |
| MA.6.RP.A.3b | Solve unit rate problems including those involving unit pricing and constant speed.  |
| MA.6.RP.A.3c | Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.  |
| MA.6.RP.A.3d | Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.  |
| MA.6.RP.A | Understand ratio concepts and use ratio reasoning to solve problems.  |
| MA.6.RP.A.1 | Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.  |

 |

|  |
| --- |
| **The Number System** |
|

|  |  |
| --- | --- |
| MA.6.NS.C.7c | Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.  |
| MA.6.NS.C.7d | Distinguish comparisons of absolute value from statements about order.  |
| MA.6.NS.C.8 | Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.  |
| MA.6.NS.B | Compute fluently with multi-digit numbers and find common factors and multiples.  |
| MA.6.NS.B.2 | Fluently divide multi-digit numbers using the standard algorithm.  |
| MA.6.NS.B.3 | Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.  |
| MA.6.NS.B.4 | Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.  |
| MA.6.NS.C | Apply and extend previous understandings of numbers to the system of rational numbers.  |
| MA.6.NS.C.5 | Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.  |
| MA.6.NS.C.6 | Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.  |
| MA.6.NS.C.6a | Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.  |
| MA.6.NS.C.6b | Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.  |
| MA.6.NS.C.6c | Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.  |
| MA.6.NS.A | Apply and extend previous understandings of multiplication and division to divide fractions by fractions.  |
| MA.6.NS.C.7 | Understand ordering and absolute value of rational numbers.  |
| MA.6.NS.C.7a | Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.  |
| MA.6.NS.A.1 | Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.  |
| MA.6.NS.C.7b | Write, interpret, and explain statements of order for rational numbers in real-world contexts.  |

 |

|  |
| --- |
| **Expressions and Equations** |
|

|  |  |
| --- | --- |
| MA.6.EE.B.5 | Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.  |
| MA.6.EE.B.6 | Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.  |
| MA.6.EE.B.7 | Solve real-world and mathematical problems by writing and solving equations of the form 𝑥 + 𝑝 = 𝑞 and 𝑝𝑥 = 𝑞 for cases in which 𝑝, 𝑞 and 𝑥 are all nonnegative rational numbers.  |
| MA.6.EE.B.8 | Write an inequality of the form 𝑥 > 𝑐 or 𝑥 < 𝑐 to represent a constraint or condition in a real- world or mathematical problem. Recognize that inequalities of the form 𝑥 > 𝑐 or 𝑥 < 𝑐 have infinitely many solutions; represent solutions of such inequalities on number line diagrams.  |
| MA.6.EE.C | Represent and analyze quantitative relationships between dependent and independent variables.  |
| MA.6.EE.A | Apply and extend previous understandings of arithmetic to algebraic expressions.  |
| MA.6.EE.A.1 | Write and evaluate numerical expressions involving whole-number exponents.  |
| MA.6.EE.C.9 | Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.  |
| MA.6.EE.A.2 | Write, read, and evaluate expressions in which letters stand for numbers.  |
| MA.6.EE.A.2a | Write expressions that record operations with numbers and with letters standing for numbers.  |
| MA.6.EE.A.2b | Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.  |
| MA.6.EE.A.2c | Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).  |
| MA.6.EE.A.3 | Apply the properties of operations to generate equivalent expressions.  |
| MA.6.EE.A.4 | Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).  |
| MA.6.EE.B | Reason about and solve one-variable equations and inequalities.  |

 |

|  |
| --- |
| **Geometry** |
|

|  |  |
| --- | --- |
| MA.6.G.A | Solve real-world and mathematical problems involving area, surface area, and volume.  |
| MA.6.G.A.1 | Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.2 | Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas 𝑉 = 𝑙𝑤ℎ and 𝑉 = 𝐵ℎ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.3 | Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.  |
| MA.6.G.A.4 | Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.  |

 |

|  |
| --- |
| **Statistics and Probability** |
|

|  |  |
| --- | --- |
| MA.6.SP.B.5c | Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.  |
| MA.6.SP.B.5d | Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.  |
| MA.6.SP.A | Develop understanding of statistical variability.  |
| MA.6.SP.A.1 | Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.  |
| MA.6.SP.A.2 | Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.  |
| MA.6.SP.A.3 | Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.  |
| MA.6.SP.B | Summarize and describe distributions.  |
| MA.6.SP.B.4 | Display numerical data in plots on a number line, including dot plots, histograms, and box plots.  |
| MA.6.SP.B.5 | Summarize numerical data sets in relation to their context, such as by:  |
| MA.6.SP.B.5a | Reporting the number of observations.  |
| MA.6.SP.B.5b | Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.  |

 |

|  |
| --- |
| **Career Ready Practices** |
| CRP2.   Apply appropriate academic and technical skills. CRP4.   Communicate clearly and effectively and with reason. CRP6.   Demonstrate creativity and innovation. CRP8.   Utilize critical thinking to make sense of problems and persevere in solving them. CRP11.   Use technology to enhance productivity. CRP12.   Work productively in teams while using cultural global competence. |

|  |
| --- |
| **Essential Questions** |
| * How can the collection, organization, interpretation, and display of data be used to answer questions?
* How can I use the measures of center and variability to interpret data?
* What is the definition of mean/median/mode?
* How does one solve for mean/median/mode?
* What is range and how does one solve for range?
* What is a box-and-whisker plot?
* Where are the quartiles in a box-and-whisker plot?
* What makes a histogram different than a bar graph?
* How does a representative sample contribute to a statistical question?
 |

|  |
| --- |
| **Enduring Understanding** |
| * Distributions of data can be summarized and described in various ways.
* Measures of center and variability can be used to interpret data.
* How to identify representative samples.
* The collection of data and describe it by its measure of center (mean, median, mode) and variations (range, quartiles).
* How to graph information using histograms, line plots, and box-and-whisker plots.
 |

|  |
| --- |
| **Students will know...** |
|  * How to identify representative samples.
* The collection of data and describe it by its measure of center (mean, median, mode) and variations (range, quartiles).
* How to graph information using histograms, line plots, and box-and-whisker plots
 |

|  |
| --- |
| **Students will be able to...** |
|  * Summarize and describe in various ways the distribution of data.
* Interpret the measures of center and variability.
 |

|  |
| --- |
| **STAGE 2- EVIDENCE OF LEARNING** |
|  |

|  |
| --- |
| **Formative Assessment Suggestions** |
| 3- Minute PauseAnalogy PromptChoral ResponseDebriefingExit Card / TicketHand SignalsIndex card summariesJournal EntryMisconception CheckObservationPortfolio CheckQuestions & AnswersQuizSelf-AssessmentStudent ConferenceThink-Pair-ShareThink-Ink-ShareWeb or Concept Map

|  |  |
| --- | --- |
| • 3- Minute Pause |  **.**  |
| • A-B-C Summaries |  **.**  |
| • Analogy Prompt |  **.**  |
| • Choral Response |  **.**  |
| • Debriefing |  **.**  |
| • Exit Card / Ticket |  **.**  |
| • Hand Signals |  **.**  |
| • Idea Spinner |  **.**  |
| • Index Card Summaries |  **.**  |
| • Inside-Outside Circle Discussion (Fishbowl) |  **.**  |
| • Journal Entry |  **.**  |
| • Misconception Check |  **.**  |
| • Observation |  **.**  |
| • One Minute Essay |  **.**  |
| • One Word Summary |  **.**  |
| • Portfolio Check |  **.**  |
| • Questions & Answers |  **.**  |
| • Quiz |  **.**  |
| • Self-Assessment |  **.**  |
| • Student Conference |  **.**  |
| • Think-Pair-Share |  **.**  |
| • Web or Concept Map |  **.**  |

 |

|  |
| --- |
| **Authentic Assessments Suggestions** |
| Through the following authentic assessments, students will develop traits regarding thinking and reasoning, settings, mathematical tools and attitudes and dispositions: 1. Performance Assessments 2. Short Investigations 3. Open Ended Response Questions 4.  Portfolios 5.  Self-Assessments |

|  |
| --- |
| **Benchmark Assessments** |
| Math 6 HonorsTopics 1-2: Cumulative/Benchmark AssessmentTopics 1-4: Cumulative/Benchmark AssessmentTopics 1-6: Cumulative/Benchmark AssessmentEnd-Of-Year AssessmentEdmentum Fall AdministrationEdmentum Winter AdministrationEdmentum Spring Administration Math 6Benchmark 1: Number SystemBenchmark 2: Ratio and ProportionsBenchmark 3: Expressions and EquationsBenchmark 4: Geometry, Statistics and Probability |

|  |
| --- |
| **STAGE 3- LEARNING PLAN** |
|  |

|  |
| --- |
| **Instructional Map** |
| **Step 1: What is it we want and expect students to learn?*** Read domain overview, learning goal, and essential questions to gain an initial understanding of the domain.
* Analyze cluster of standards, vertical progression, test item specifications to determine full intent of standards (DOK) and student outcomes.
* Determine measurable objectives using unpacked standards. Review the assessments for determining acceptable evidence.

**Step 2: How will they learn it?*** Select problem-based learning/formative assessment tasks.
* Develop learning experiences utilizing the textbook and selected tasks along with higher order questions stems.

**Step 3: How will we know when they have learned it?*** As a PLC, analyze students’ work reflecting on teacher practice and provide student feedback.
* Provide additional assessments as necessary and collaboratively analyze the results.

**Step 4: How will we respond if they don’t learn it? How will we respond to those who already know it?*** Using data analysis, develop small groups for enrichment and remediation.
* Reassess student performance and provide opportunities for application.
 |

|  |
| --- |
| **Instructional MAP for Financial Literacy Standards** |
| Implementation of the Financial Literacy Standards will take place in the Statistics and Probability section of our curriculum. The following activities will be completed: |

|  |
| --- |
| **Modifications/Differentiation of Instruction** |
| Differentiation Strategies for Special Education Students* Remove unnecessary material, words, etc., that can distract from the content
* Use of off-grade level materials
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Time allowed
* Level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials
* Use technology, if available and appropriate
* Varied homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language.
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Ability to work at their own pace
* Present ideas using auditory, visual, kinesthetic, & tactile means
* Provide graphic organizers and/or highlighted materials
* Strategy and flexible groups based on formative assessment
* Differentiated checklists and rubrics, if available and appropriate

  Differentiation Strategies for Gifted and Talented Students* Increase the level of complexity
* Decrease scaffolding
* Variety of finished products
* Allow for greater independence
* Learning stations, interest groups
* Varied texts and supplementary materials
* Use of technology
* Flexibility in assignments
* Varied questioning strategies
* Encourage research
* Strategy and flexible groups based on formative assessment or student choice
* Acceleration within a unit of study
* Exposure to more advanced or complex concepts, abstractions, and materials
* Encourage students to move through content areas at their own pace
* After mastery of a unit, provide students with more advanced learning activities, not more of the same activity
* Present information using a thematic, broad-based, and integrative content, rather than just single-subject areas

  Differentiated Strategies for ELL Students* Remove unnecessary materials, words, etc., that can distract from the content
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Gradually increase the level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials, including visuals
* Use technology, if available and appropriate
* Differentiate homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language.
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Allow students to work at their own pace
* Presenting ideas through auditory, visual, kinesthetic, & tactile means
* Role play
* Provide graphic organizers, highlighted materials
* Strategy and flexible groups based on formative assessment

  Differentiation Strategies for At Risk Students* Remove unnecessary materials, words, etc., that can distract from the content
* Provide appropriate scaffolding
* Limit the number of steps required for completion
* Gradually increase the level of independence required
* Tiered centers, assignments, lessons, or products
* Provide appropriate leveled reading materials
* Deliver the content in “chunks”
* Varied texts and supplementary materials
* Use technology, if available and appropriate
* Differentiate homework and products
* Varied questioning strategies
* Provide background knowledge
* Define key vocabulary, multiple-meaning words, and figurative language
* Use audio and visual supports, if available and appropriate
* Provide multiple learning opportunities to reinforce key concepts and vocabulary
* Meet with small groups to reteach idea/skill
* Provide cross-content application of concepts
* Presenting ideas through auditory, visual, kinesthetic, & tactile means
* Provide graphic organizers and/or highlighted materials
* Strategy and flexible groups based on formative assessment

 **504 Plans**Students can qualify for 504 plans if they have physical or mental impairments that affect or limit any of their abilities to:* walk, breathe, eat, or sleep
* communicate, see, hear, or speak
* read, concentrate, think, or learn
* stand, bend, lift, or work

 Examples of accommodations in 504 plans include:* preferential seating
* extended time on tests and assignments
* reduced homework or classwork
* verbal, visual, or technology aids
* modified textbooks or audio-video materials
* behavior management support
* adjusted class schedules or grading
* verbal testing
* excused lateness, absence, or missed classwork
* pre-approved nurse's office visits and accompaniment to visits
* occupational or physical therapy
 |

|  |
| --- |
| **Modification Strategies** |
|

|  |  |
| --- | --- |
| • Extended Time |  **.**  |
| • Frequent Breaks |  **.**  |
| • Highlighted Text |  **.**  |
| • Interactive Notebook |  **.**  |
| • Modified Test |  **.**  |
| • Oral Directions |  **.**  |
| • Peer Tutoring |  **.**  |
| • Preferential Seating |  **.**  |
| • Re-Direct |  **.**  |
| • Repeated Drill / Practice |  **.**  |
| • Shortened Assignments |  **.**  |
| • Teacher Notes |  **.**  |
| • Tutorials |  **.**  |
| • Use of Additional Reference Material |  **.**  |
| • Use of Audio Resources |  **.**  |

 |

|  |
| --- |
| **High Preparation Differentiation** |
|

|  |  |
| --- | --- |
| • Alternative Assessments |  **.**  |
| • Choice Boards |  **.**  |
| • Games and Tournaments |  **.**  |
| • Group Investigations |  **.**  |
| • Guided Reading |  **.**  |
| • Independent Research / Project |  **.**  |
| • Interest Groups |  **.**  |
| • Learning Contracts |  **.**  |
| • Leveled Rubrics |  **.**  |
| • Literature Circles |  **.**  |
| • Menu Assignments |  **.**  |
| • Multiple Intelligence Options |  **.**  |
| • Multiple Texts |  **.**  |
| • Personal Agendas |  **.**  |
| • Project Based Learning (PBL) |  **.**  |
| • Stations / Centers |  **.**  |
| • Think-Tac-Toe |  **.**  |
| • Tiered Activities / Assignments |  **.**  |
| • Varying Graphic Organizers |  **.**  |

 |

|  |
| --- |
| **Low Preparation Differentiation** |
|

|  |  |
| --- | --- |
| • Choice of Book / Activity |  **.**  |
| • Cubing Activities |  **.**  |
| • Exploration by Interest (using interest inventories) |  **.**  |
| • Flexible Grouping |  **.**  |
| • Goal Setting With Student |  **.**  |
| • Homework Options |  **.**  |
| • Jigsaw |  **.**  |
| • Mini Workshops to Extend Skills |  **.**  |
| • Mini Workshops to Re-teach |  **.**  |
| • Open-ended Activities |  **.**  |
| • Think-Pair-Share by Interest |  **.**  |
| • Think-Pair-Share by Learning Style |  **.**  |
| • Think-Pair-Share by Learning Style |  **.**  |
| • Think-Pair-Share by Readiness |  **.**  |
| • Use of Collaboration |  **.**  |
| • Use of Reading Buddies |  **.**  |
| • Varied Journal Prompts |  **.**  |
| • Varied Product Choice |  **.**  |
| • Varied Supplemental Materials |  **.**  |
| • Work Alone / Together |  **.**  |

 |

|  |
| --- |
| **Vertical Integration- Discipline Mapping** |
| Statistics and Probability Vertical AlignmentIn Grade 5 Students will be able to do... (Measurement and Data)* Convert like measurement units within a given measurement system.
* Represent and interpret data.

In Grade 6 Students will be able to do...* Develop understanding of statistical variability.
* Summarize and describe distributions.

In Grade 7 Students will be able to do...* Use random sampling to draw inferences about a population.
* Draw informal comparative inferences about two populations.
* Investigate chance processes and develop, use, and evaluate probability models.
 |

|  |
| --- |
| **Additional Materials** |
| LPS Adopted Textbooks and Programs * Go Math Grade 6
* Think Central and the Math Personal Trainer (Computer Based program supplementing Go Math)
* Pearson EnVision Grade 6 Honors
* Pearson Realize (Computer Based program supplementing Envision)

Edmentum Testing* Data Analysis Reports

NJSLA (PARCC) Released Items**Unit Specific Interdisciplinary Connections / Materials**With interdisciplinary instruction, the subject areas are woven together and explored through an overarching theme or concept. We use math to help us solve everyday problems in the kitchen, in the garden, and for many of us at our jobs.Brain research has shown that information in our brains is organized in schematic structures. These structures are made up of interconnected bits of information and serve as a framework for the knowledge we acquire. When a learner’s knowledge is connected, it is much more likely that they will apply the prior knowledge to a wide variety of new situations. They will acquire new information in a way that is more accessible and will be better able to relate it to previously acquired knowledge.Students learn about patterns in math, science, social studies, and even literature. Because of this, they are much more likely to “see” these patterns when they encounter new situations. Since patterns are not only studied in math they are able to make the connection and gain the understanding that patterns can be found in many areas of their lives. Interdisciplinary instruction allows students to understand the interconnectedness of the disciplines and makes learning more meaningful and relevant as fascinating connections are made across the subject areas.**Science**MS-PS3-5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.MS-ESS1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.**Language Arts**RL.6.1. Cite textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text.RI.6.1. Cite textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text.**Social Studies**6.3.8.CivicsPI.4: Investigate the roles of political, civil, and economic organizations in shaping people’s lives and share this information with individuals who might benefit from this information.6.3.8.EconET.1: Using quantitative data, evaluate the opportunity cost of a proposed economic action, and take a position and support it (e.g., healthcare, education, transportation). |