MATH 6

Curriculum/Content Area: Mathematics	**Course Length:** 1 year
Course Title: Math 6	**Date last reviewed:** 2014/15
Prerequisites: NA	**Board approval date:** 8/2020
Primary Resource: REVEAL Math Course 1	

Desired Results

Course description and purpose:

In this course students will understand ratio concepts and use ratio reasoning to solve problems, apply and extend previous understandings of multiplication and division to divide fractions by fractions, apply and extend previous understandings of numbers to the system of rational numbers, apply and extend previous understandings of arithmetic to algebraic expressions, Reason about and solve one-variable equations and inequalities, and represent and analyze quantitative relationships between dependent and independent variables. Communication (both written and oral), connections, problem solving, reasoning abstractly and quantitatively, construction of viable arguments, and real life problems are also integral parts of each lesson.

Enduring Understandings: *We will utilize the math practice standards as our Enduring Understandings.*	**Essential Questions:** *big picture questions, aligned with enduring understandings*
Mathematicians make sense of problems and persevere in solving them.	a. How do we as mathematicians analyze the problem in order to choose the best strategy(ies) or resource to make sense of the problem? b. How do we as mathematicians persevere in solving problems?
Mathematicians attend to precision.	How do we as mathematicians know if we fully & accurately answered the problem and does the results make sense in the context of the problem?
Mathematicians reason abstractly and quantitatively.	How do we as mathematicians make sense of quantities and situations symbolically?
Mathematicians construct viable arguments and critique the reasoning of others.	a. How can we as mathematicians justify our answer(s)? b. How can we as mathematicians evaluate and question whether a mathematical argument is accurate?
Mathematicians model with mathematics.	a. What model(s) can we as mathematicians use to solve a problem? b. How can we as mathematicians determine an effective model to use to solve a problem?
Mathematicians use appropriate tools strategically.	What tools are available and efficient for us as mathematicians to use while solving a problem?
Mathematicians look for and make	How can we as mathematicians use and apply patterns and

use of structure	structures to solve problems?	
Mathematicians look for and express regularity in repeated reasoning.	How can we as mathematicians create and apply generalizations from repeated reasoning?	

Mathematical Practice Standards
The Standards for Mathematical Practice are central to the teaching and learning of mathematics. These practices describe the behaviors and habits of mind that are exhibited by students who are mathematically proficient. Mathematical understanding is the intersection of these practices and mathematics content. It is critical that the Standards for Mathematical Practice are embedded in daily mathematics instruction.

Mathematical Practice Standards		**Grade Level/Course**
Habits of Mind	MP.1 Make sense of problems and persevere in solving them	Understand the meaning of a problem and look for entry points to its conclusion. Analyze information (givens, constraints, relationships, goals. Make conjectures and plan a solution pathway. Monitor and evaluate the progress and change course as necessary Check answers to problems and ask, "Does this make sense?"
	MP.6 Attend to precision.	Communicate precisely using clear definitions. State the meaning of symbols, carefully specifying units of measure, and providing accurate labels. State the meaning of symbols, carefully specifying units of measure, and providing accurate labels. Calculate accurately and efficiently, expressing. numerical answers with a degree of precision. Provide carefully formulated explanations. Label accurately when measuring and graphing.
Reasoning & Explaining	MP.2 Reason abstractly and quantitatively.	Make sense of quantities and relationships in problem situations. Represent abstract situations symbolically and understand the meaning of quantities. Create a coherent representation of the problem at hand. Consider the units involved. Flexibility use properties of operations.
	MP.3 Construct viable arguments and critique the reasoning of others.	Use definitions and previously established causes/effects (results) in constructing arguments. Make conjectures and use counterexamples to build a logical progression of statements to explore and support ideas.

		Communicate and defend mathematical reasoning using objects, drawings, diagrams, and/or actions. Listen to or read the arguments of others. Decide if the arguments of others make sense and ask probing questions to clarify or improve the arguments.
Modeling & Using Tools	MP.4 Model with mathematics.	Apply prior knowledge to solve real world problems. Identify important quantities and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts, and/or formulas.Use assumptions and approximations to make a problem simpler. Check to see if an answer makes sense within the context of a situation and change a model when necessary.
	MP.5 Use appropriate tools strategically.	Make sound decisions about the use of specific tools (examples might include: calculator, concrete models, digital, technologies, pencil/paper, ruler, compass, protractor) Use technology tools to visualize the results of assumptions, explore consequences, and compare predictions with data. Identify relevant external math resources (digital content on a website) and use them to pose or solve problems. Use technological tools to explore and deepen understanding of concepts.
Seeing Structure & Generalizing	MP.7 Look for and make use of structure.	Look for patterns or structure, recognizing that quantities can be represented in different ways. Recognize the significance in concepts and models and use the patterns or structure for solving related problems. View complicated quantities both as single objects or compositions of several objects and use operations to make sense of problems.
	MP.8 Look for and express regularity in repeated reasoning.	Notice repeated calculations and look for general methods and shortcuts. Continually evaluate the reasonableness of intermediate results (comparing estimates), while attending to details, and make generalizations based on findings.

Priority Standard Clusters

6.RP.A Understand ratio concepts and use ratio reasoning to solve problems.
- *6.RP.A.1* Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- *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.
- *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.
- *6.RP.A.3.a* 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.
- *6.RP.A.3.b* Solve unit rate problems including those involving unit pricing and constant speed.
- *6.RP.A.3.c* Find a percent of a quantity as a rate per 100
- *6.RP.A.3.d* Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

6.NS.A Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- *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.

6.NS.C Apply and extend previous understandings of numbers to the system of rational numbers.
- *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.
- *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.
- *6.NS.C.6.a* 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
- *6.NS.C.6.b* 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.
- *6.NS.C.6.c* 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.
- *6.NS.C.7* Understand ordering and absolute value of rational numbers.
- *6.NS.C.7.a* Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
- *6.NS.C.7.b* Write, interpret, and explain statements of order for rational numbers in real-world contexts.
- *6.NS.C.7.c* 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.
- *6.NS.C.7.d* Distinguish comparisons of absolute value from statements about order.
- *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.

6.EE.A Apply and extend previous understandings of arithmetic to algebraic expressions.
- *6.EE.A.1* Write and evaluate numerical expressions involving whole-number exponents.
- *6.EE.A.2* Write, read, and evaluate expressions in which letters stand for numbers.
- *6.EE.A.2.a* Write expressions that record operations with numbers and with letters standing for numbers.

- *6.EE.A.2.b* 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.
- *6.EE.A.2.c* 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).
- *6.EE.A.3* Apply the properties of operations to generate equivalent expressions.
- *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).

6.EE.B Reason about and solve one-variable equations and inequalities.
- *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.
- *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.
- *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.
- *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.

6.EE.C Represent and analyze quantitative relationships between dependent and independent variables.
- *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. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

Supporting Standard Clusters

6.G.A Solve real-world and mathematical problems involving area, surface area, and volume.
- *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.
- *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 $V = l\,w\,h$ and $V = b\,h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
- *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.
- *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.

6.NS.B Compute fluently with multi-digit numbers and find common factors and multiples.
- *6.NS.B.2* Fluently divide multi-digit numbers using the standard algorithm.
- *6.NS.B.3* Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

- *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. For example, express $36 + 8$ as $4 (9 + 2)$.

6.SP.A Develop understanding of statistical variability.
- *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. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.
- *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.
- *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.

6.SP.B Summarize and describe distributions.
- *6.SP.B.4* Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- *6.SP.B.5* Summarize numerical data sets in relation to their context, such as by:
- *6.SP.B.5.a* Reporting the number of observations.
- *6.SP.B.5.b* Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
- *6.SP.B.5.c* 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.
- *6.SP.B.5.d* 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.

Unit 1 - Ratios and Rates

Essential Questions:
1. What model(s) can we as mathematicians use to solve a problem?
2. How can we as mathematicians use and apply patterns and structures to solve problems?
3. *How can you describe how two quantities are related?*

Unit Standards

Priority Standards
6.RP.A Understand ratio concepts and use ratio reasoning to solve problems.
- *6.RP.A.1* Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- *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.
- *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.
- *6.RP.A.3.a* 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.
- *6.RP.A.3.b* Solve unit rate problems including those involving unit pricing and constant speed.
- *6.RP.A.3.d* Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Learning Targets

- I understand the concept of a ratio
  - I can define a ratio. (L1-1)
  - I can determine when a ratio is part to part and part to whole. (L1-1)
  - I can use ratio language (For example: For every…, For each…) (L1-1)
  - I can use different ratio formats interchangeably. (L1-1)
- I can use tables to find equivalent ratios
  - I can use a table to compare ratios. (L1-2)
  - I can create and interpret a representation (table, double number line) of equivalent ratios. (L1-2)
- I can use graphs to represent ratio relationships
  - I can plot ordered pairs from a table to a coordinate plane. (L1-3)
- I can use graphs and tables to compare ratio relationships
  - I can use graphs to represent ratio relationships. (1-4)
  - I can use graphs and tables to compare ratio relationships. (1-4)
- I can solve real world problems using ratios..
  - I can determine the better buy. (L1-5)
- I can use ratio reasoning to convert between customary units of measure
  - I can explain that rate problems compare two different units. (L1-6)
  - I can convert units by multiplication or division. (L1-6)
- I can compare quantities by using unit rates.

- ○ I can define a rate and unit rate. (L1-7)
    - ○ I can explain the difference between a rate and unit rate. (L1-7)
- I can solve real world problems using rates and unit rates.
    - ○ I can use models to solve a real world problem involving rates (L1-8)

Assessment Evidence

Performance Assessment Options & Rubrics
May include, but are not limited to the following:

- Math 6 Feedback & Scoring Rubric based on Priority Standards
- Module Pre-Test
- End of Unit Assessment (3 versions)
- End of Unit Assessment (3 versions - differentiation)
- Mid-unit checks/quizzes

Other assessment options
May include, but are not limited to the following:

- Student work samples
- Classroom exit tickets
- AVID Strategies
    - ○ Quick Writes
    - ○ KWL Chart - (What I Know, Want to know, Learned)
    - ○ Marking Text
    - ○ Learning Log Reflection - Daily/Weekly
    - ○ I-Chart - Gather/Organize Information on a topic
    - ○ Focused Note Taking
    - ○ CSG - Collaborative Study Groups
    - ○ Socratic Seminar
    - ○ Philosophical Chairs
    - ○ Think/Pair/Share
    - ○ Talking Trios
    - ○ World Cafe

Digital Tools & Supplementary Resources

- ALEKS
- Web Sketch Pad
- Learnsmart
- Desmos
- REVEAL performance tasks
- Open Resources (Illustrative)

Unit 2 - Fractions, Decimals, and Percents

Essential Questions:
1. What model(s) can we as mathematicians use to solve a problem?
2. How do we as mathematicians make sense of quantities and situations symbolically?
3. *How can you use fractions, decimals, and percents to solve everyday problems?*

Unit Standards

Priority Standards
6.RP.A Understand ratio concepts and use ratio reasoning to solve problems.
- *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.
- *6.RP.A.3.c* Find a percent of a quantity as a rate per 100.

Learning Targets

- I can model percents using 10x10 grids and bar diagrams
  - I use models to represent the relationship of part to whole to describe Percents. (L2-1, L 2-2)
  - I write a percent as a rate per 100, including percents greater than 100 and less than 1 (L2-2)
- I can relate fractions, decimals, and percents
  - I write a percent as a rate per 100, including percents greater than 100 and less than 1. (L2-3)
  - I find the percent of a number using rate methods (L2-3)
- I can use bar diagrams, equivalent ratios, double number lines, and ratio tables to find the percent of a number
  - I use models to represent the relationship of part to whole to describe Percents. (2-4)
- I can estimate the percent of a number
  - I use models to represent the relationship of part to whole to describe Percents. (2-5)
- I can find the whole when given the percent and the part
  - I use models to represent the relationship of part to whole to describe Percents. (L2-6)

Assessment Evidence

Performance Assessment Options & Rubrics	Other assessment options
May include, but are not limited to the following:	*May include, but are not limited to the following:*

● Math 6 Feedback & Scoring Rubric based on Priority Standards
● Module Pre-Test
● End of Unit Assessment (3 versions)
● End of Unit Assessment (3 versions - differentiation)
	
	● Student work samples
	● Classroom exit tickets
	● AVID Strategies
	   ○ Quick Writes
	   ○ KWL Chart - (What I Know, Want to know, Learned)
	   ○ Marking Text
	   ○ Learning Log Reflection - Daily/Weekly

● Mid-unit checks/quizzes	○ I-Chart - Gather/Organize Information on a topic ○ Focused Note Taking ○ CSG - Collaborative Study Groups ○ Socratic Seminar ○ Philosophical Chairs ○ Think/Pair/Share ○ Talking Trios ○ World Cafe

Digital Tools & Supplementary Resources

- ALEKS
- Web Sketch Pad
- Learnsmart
- Desmos
- REVEAL performance tasks
- Open Resources (Illustrative)

Unit 3 - Compute Multi-Digit Numbers and Fractions

Essential Questions:
1. How do we as mathematicians analyze the problem in order to choose the best strategy(ies) or resource to make sense of the problem?
2. How do we as mathematicians persevere in solving problems?
3. *How are operations with fractions and decimals related to operations with whole numbers?*

Unit Standards

Priority Standards
6.NS.A Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- *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.

Additional Standards
- *6.NS.B.2* Fluently divide multi-digit numbers using the standard algorithm.
- *6.NS.B.3* Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Learning Targets

- I can find quotients of multi-digit whole numbers.
    - I communicate the meaning of division using precise mathematical vocabulary. (L3-1)
    - I develop fluency with the traditional standard algorithm for division of multi-digit whole numbers. (L3-1)
    - I use compatible numbers to estimate the reasonableness of answers. (Not explicitly taught in Reveal - Need another resource)
- I can perform operations on multi-digit decimals.
    - I add, subtract, multiply, and divide multi-digit decimals using the standard algorithm. (L3-2)
    - I identify decimal place values (*tenths, hundredths, thousandths*). (Not explicitly taught in Reveal - Need another resource)
- I can divide whole numbers by fractions.
    - I model division of fractions with manipulatives, visual diagrams (bar models, number lines), and word problems. (L3-3)
    - I divide fractions procedurally using the multiplicative inverse. (L3-3)
    - I interpret what the quotient represents in mathematical and real-world problems. (L3-3)
    - I explain that multiplication and division are inverse operations. (L3-3)
- I can divide fractions by fractions.
    - I model division of fractions with manipulatives, visual diagrams (bar models, number lines), and word problems. (L3-4)
    - I divide fractions procedurally using the multiplicative inverse. (L3-4)
    - I interpret what the quotient represents in mathematical and real-world problems. (L3-4)
    - I explain that multiplication and division are inverse operations. (L3-4)
- I can divide whole and mixed numbers

- I model division of fractions with manipulatives, visual diagrams (bar models, number lines), and word problems. (L3-5)
- I divide fractions procedurally using the multiplicative inverse. (L3-5)
- I interpret what the quotient represents in mathematical and real-world problems. (L3-5)
- I explain that multiplication and division are inverse operations. (L3-5)

Performance Assessment Options & Rubrics *May include, but are not limited to the following:*	**Other assessment options** *May include, but are not limited to the following:*
- Math 6 Feedback & Scoring Rubric based on Priority Standards - Module Pre-Test - End of Unit Assessment (3 versions) - End of Unit Assessment (3 versions - differentiation) - Mid-unit checks/quizzes	- Student work samples - Classroom exit tickets - AVID Strategies - Quick Writes - KWL Chart - (What I Know, Want to know, Learned) - Marking Text - Learning Log Reflection - Daily/Weekly - I-Chart - Gather/Organize Information on a topic - Focused Note Taking - CSG - Collaborative Study Groups - Socratic Seminar - Philosophical Chairs - Think/Pair/Share - Talking Trios - World Cafe

- **Digital Tools & Supplementary Resources**

- ALEKS
- Web Sketch Pad
- Learnsmart
- Desmos
- REVEAL performance tasks
- Open Resources (Illustrative)

Unit 4 - Integers, Rational Numbers, and the Coordinate Plane

Essential Questions:
1. How do we as mathematicians analyze the problem in order to choose the best strategy(ies) or resource to make sense of the problem?
2. How do we as mathematicians make sense of quantities and situations symbolically?
3. *How are integers and rational numbers related to the coordinate plane?*

Unit Standards

Priority Standards
6.NS.C Apply and extend previous understandings of numbers to the system of rational numbers.
- *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.
- *6.NS.C6* 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.
- *6.NS.C.6.a* 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
- *6.NS.C.6.b* 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.
- *6.NS.C.6.c* 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.
- *6.NS.C7* Understand ordering and absolute value of rational numbers.
- *6.NS.C.7.a* Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
- *6.NS.C.7.b* Write, interpret, and explain statements of order for rational numbers in real-world contexts.
- *6.NS.C.7.c* 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.
- *6.NS.C.7.d* Distinguish comparisons of absolute value from statements about order.
- *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.

Learning Targets

- I can use integers on a number line to represent quantities.
  - I understand that zero represents a position on the number line. (L4-1)
  - I discover that every negative integer is less than zero. (L4-1)
  - I plot integers on vertical and horizontal number lines. (L4-1)
  - I represent real-world scenarios such as bank account balances, temperature, and sea level with integers. (L4-1)
- I can find the opposites of integers and use opposites to understand absolute value

- ○ I understand the meaning of the term opposite and plot opposites on a number line. (L4-2)
        - ○ I reason that the opposite of the opposite of a number (-(-3)) is the number itself and zero is its own opposite. (L4-2)
        - ○ I describe quantities having opposite values. (L4-2)
- I can compare and order integers using a number line
    - ○ I order rational numbers on a number line. (L4-3)
    - ○ I discover absolute value of a rational number as its distance from 0 on a number line (L4-3)
    - ○ I correctly use absolute value symbols. (L4-3)
    - ○ I explain the reasoning that as the value on a negative rational number decreases, its absolute value (distance from zero) increases. (L4-3)
- I can reason about rational numbers using a number line.
    - ○ I order rational numbers on a number line (L4-4)
    - ○ I model absolute value with number lines. (L4-4)
    - ○ I compare rational numbers using inequality symbols and justify (orally and/or in writing) the inequality symbol used. (L4-4)
    - ○ I understand, compare, and interpret rational numbers found in real-world scenarios. (L4-4)
- I can identify ordered pairs, points, and quadrants and graph ordered pairs on the coordinate plane.
    - ○ I recognize the signs of all ordered pairs on the coordinate plane: Quadrant I (+,+), Quadrant II (-,+), Quadrant III (-,-), Quadrant IV (+,-) (L4-5)
    - ○ I understand that the signs of numbers in ordered pairs represent a single location on the coordinate plane. (L4-5)
    - ○ I understand that an ordered pair is composed of two parts: the first coordinate refers to the x-axis and the second coordinate refers to the y-axis (L4-5)
    - ○ I plot integers on coordinates in all four quadrants of a coordinate plane. (L4-5)
    - ○ I use the coordinate plane to represent real-world scenarios, such as streets of a map. (L4-5)
- I can graph reflections of points within the coordinate plane.
    - ○ I understand that changing the sign of one or both numbers in the ordered pair will create a reflection of the point (L4-6)
    - ○ I find reflection points across the *x and y axes*. (L4-6)
    - ○ I understand that the distance from a point on the coordinate plane to an axis is an absolute value. (L4-6)
    - ○ I use the coordinate plane to represent real-world scenarios, such as streets of a map. (L4-6)
- I can use absolute value to find the distance between *horizontal and vertical* points on the coordinate plane
    - ○ I understand that a line segment from one coordinate pair to another represents a distance. (L4-7)
    - ○ I understand that if two coordinates have the same X or Y value, they are on the same line. (L4-7)
    - ○ I use the coordinate plane to represent real-world scenarios, such as streets of a map. (L4-7)
    - ○ I model solutions to real-world problems on a coordinate plane. (L4-7)

Assessment Evidence

Performance Assessment Options & Rubrics *May include, but are not limited to the following:*	**Other assessment options** *May include, but are not limited to the following:*
● Math 6 Feedback & Scoring Rubric	● Student work samples

based on Priority Standards
● Module Pre-Test
● End of Unit Assessment
(3 versions)
● End of Unit Assessment
(3 versions - differentiation)
● Mid-unit checks/quizzes
	● Classroom exit tickets
	● AVID Strategies
	  ○ Quick Writes
	  ○ KWL Chart - (What I Know, Want to know, Learned)
	  ○ Marking Text
	  ○ Learning Log Reflection - Daily/Weekly
	  ○ I-Chart - Gather/Organize Information on a topic
	  ○ Focused Note Taking
	  ○ CSG - Collaborative Study Groups
	  ○ Socratic Seminar
	  ○ Philosophical Chairs
	  ○ Think/Pair/Share
	  ○ Talking Trios
	  ○ World Cafe

Digital Tools & Supplementary Resources

● ALEKS
● Web Sketch Pad
● Learnsmart
● Desmos
● REVEAL performance tasks
● Open Resources (Illustrative)

Unit 5 - Numerical and Algebraic Expressions

Essential Questions:
1. What model(s) can we as mathematicians use to solve a problem?
2. How do we as mathematicians make sense of quantities and situations symbolically?
3. *How can we communicate algebraic relationships with mathematical symbols?*

Unit Standards

Priority Standards
6.EE.A Apply and extend previous understandings of arithmetic to algebraic expressions.
- *6.EE.A.1* Write and evaluate numerical expressions involving whole-number exponents.
- *6.EE.A.2* Write, read, and evaluate expressions in which letters stand for numbers.
- *6.EE.A.2.a* Write expressions that record operations with numbers and with letters standing for numbers.
- *6.EE.A.2.b* 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.
- *6.EE.A.2.c* 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).
- *6.EE.A.3* Apply the properties of operations to generate equivalent expressions.
- *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).

6.EE.B Reason about and solve one-variable equations and inequalities.
- *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.

Supporting Standards
- *6.NS.B* Compute fluently with multi-digit numbers and find common factors and multiples

Additional Standards
- *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. For example, express 36 + 8 as 4 (9 + 2).

Learning Targets

- I can write and evaluate powers.
  - I understand the meaning of exponents and exponential notation. (L5-1)
  - I use appropriate vocabulary to explain how to evaluate an expression. (L5-1)
- I can write and evaluate numerical expressions
  - I evaluate numerical expressions containing exponents. (L5-2)
  - I evaluate expressions for given values of variables using the order of operations. (L5.2)
- I can write algebraic expressions
  - I recognize that variables represent unknown quantities.(L5-3)
  - I translate verbal expressions into numerical expressions and numerical expressions into verbal expressions. (L5-3)

- - I communicate (orally and/or in writing) about translating and evaluating variable expressions using math vocabulary, including the words variables, coefficients, constant, and term. (L5-3)
  - I evaluate algebraic expressions
    - I evaluate expressions for given values of variables using the order of operations.(L5.4)
    - I represent real-world situations with variable expressions, identifying what the variable represents. (L5-4)
  - I can solve problems by finding the greatest common factor and least common multiple of two whole numbers (Additional Standard) *(Have teachers determine if necessary)*
    - I calculate GCF and LCM for given sets of numbers. (L5-5)
  - I can use the Distributive Property to expand and factor equations
    - I understand that the properties used with numbers also apply to expressions with variables. (L5-6)
    - I generate equivalent expressions using the properties (*distributive property*) of operations with expressions involving variables. (L5-6)
    - I communicate, using precise mathematical language, how the distributive property makes use of factors and multiples. (L5-6)
  - I can identify and generate equivalent algebraic expressions
    - I generate equivalent expressions using the properties of operations with expressions involving variables. (L5-7)
    - I explore the concept of like terms and combine like terms in expressions. (L5-7)
    - I reason that two expressions are equivalent through the use of substitution. (L5-7)
    - I explain reasoning to other classmates and the teacher using precise mathematical vocabulary. (L5-7)

Assessment Evidence

Performance Assessment Options & Rubrics *May include, but are not limited to the following:*	**Other assessment options** *May include, but are not limited to the following:*
- Math 6 Feedback & Scoring Rubric based on Priority Standards - Module Pre-Test - End of Unit Assessment (3 versions) - End of Unit Assessment (3 versions - differentiation) - Mid-unit checks/quizzes	- Student work samples - Classroom exit tickets - AVID Strategies - Quick Writes - KWL Chart - (What I Know, Want to know, Learned) - Marking Text - Learning Log Reflection - Daily/Weekly - I-Chart - Gather/Organize Information on a topic - Focused Note Taking - CSG - Collaborative Study Groups - Socratic Seminar - Philosophical Chairs - Think/Pair/Share - Talking Trios - World Cafe

Digital Tools & Supplementary Resources

- ALEKS
- Web Sketch Pad
- Learnsmart
- Desmos
- REVEAL performance tasks
- Open Resources (Illustrative)

Unit 6 - Equations and Inequalities

Essential Questions:
1. What model(s) can we as mathematicians use to solve a problem?
2. How can we as mathematicians use and apply patterns and structures to solve problems?
3. *How are the solutions of equations and inequalities different?*

Unit Standards

Priority Standards
6.EE.B Reason about and solve one-variable equations and inequalities.
- *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.
- *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.
- *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.
- *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.
- *6.NS.C.6.c* 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.

Learning Targets

- I can use substitution to solve one-step equations
  - I reason the value(s) that make an equation or inequality true and select from a given set of values.
  - I simplify numerical expressions by substituting values for given variables.
  - I use the precise mathematical vocabulary when discussing expressions and equations.
- I can use the Subtraction Property of Equality to write and solve one-step addition equations
  - I model real-world situations with equations and use multiple strategies to solve them.
  - I solve equations that represent real-world mathematical problems that involve positive rational numbers and zero.
  - I represent real-world situations with variable expressions, identifying what the variable represents.
  - I use precise mathematical vocabulary when discussing equations and variables.
- I can use the Addition Property of Equality to write and solve one-step subtraction problems.
  - I model real-world situations with equations and use multiple strategies to solve them. (L6-3)
  - I solve equations that represent real-world mathematical problems that involve positive rational numbers and zero. (L6-3)
  - I represent real-world situations with variable expressions, identifying what the variable represents. (L6-3)

- ○ I use precise mathematical vocabulary when discussing equations and variables. (L6-3)
- I can use the Division Property of Equality to write and solve one-step multiplication equations.
  - ○ I model real-world situations with equations and use multiple strategies to solve them. (L6-4)
  - ○ I solve equations that represent real-world mathematical problems that involve positive rational numbers and zero. (L6-4)
  - ○ I represent real-world situations with variable expressions, identifying what the variable represents. (L6-4)
  - ○ I use the precise mathematical vocabulary when discussing expressions and variables. (L6-4)
- I can use the Multiplication Property of Equality to write and solve one-step division equations.
  - ○ I model real-world situations with equations and use multiple strategies to solve them. (L6-5)
  - ○ I solve equations that represent real-world mathematical problems that involve positive rational numbers and zero. (L6-5)
  - ○ I represent real-world situations with variable expressions, identifying what the variable represents. (L6-5)
  - ○ I use the precise mathematical vocabulary when discussing expressions and variables. (L6-5)
- I can write, solve, and graph inequalities
  - ○ I use precise mathematical vocabulary to explain the differences between equations and inequalities. (L6-6)
  - ○ I discover and explain that solutions to inequalities represent a range of possible values rather than a single solution. (L6-6)
  - ○ I discover and explain that a variable can stand for an infinite number of solutions when used in inequalities. (L6-6)
  - ○ I graph inequalities on a number line. (L6-6)
  - ○ I write inequalities to solve real-world mathematical problems. (L6-6)
  - ○ I check by substitution to determine if the graph of an inequality is correct. (6-6)
  - ○ I plot integers on vertical and horizontal number lines.

Assessment Evidence

Performance Assessment Options & Rubrics *May include, but are not limited to the following:*	**Other assessment options** *May include, but are not limited to the following:*
- Math 6 Feedback & Scoring Rubric based on Priority Standards - Module Pre-Test - End of Unit Assessment (3 versions) - End of Unit Assessment (3 versions - differentiation) - Mid-unit checks/quizzes	- Student work samples - Classroom exit tickets - AVID Strategies - Quick Writes - KWL Chart - (What I Know, Want to know, Learned) - Marking Text - Learning Log Reflection - Daily/Weekly - I-Chart - Gather/Organize Information on a topic - Focused Note Taking - CSG - Collaborative Study Groups

	○ Socratic Seminar 21 ○ Philosophical Chairs ○ Think/Pair/Share ○ Talking Trios ○ World Cafe

Digital Tools & Supplementary Resources

- ALEKS
- Web Sketch Pad
- Learnsmart
- Desmos
- REVEAL performance tasks
- Open Resources (Illustrative)

Unit 7 - Relationships Between Two Variables

Essential Questions:
1. How do we as mathematicians make sense of quantities and situations symbolically?
2. *What are ways in which a relationship between two variables can be displayed?*

Unit Standards

Priority Standards
6.EE.C Represent and analyze quantitative relationships between dependent and independent variables.
1. *6.NS.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. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.
2. *6.EE.A.2.c* 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).
3. *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.
4. *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.
5. *6.EE.A.3* Apply the properties of operations to generate equivalent expressions.
6. *6.NS.C.6.c* 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.

Learning Targets

- I can identify and use independent and dependent variables in relationships.
  - I identify relationships between variables using tables
  - I recognize that a change in the independent variable creates a change in the dependent variable such as the following: As x changes, y also changes.
- I can write equations to represent relationships
  - I use variables to represent two quantities.
  - I identify relationships between variables using equations
  - I understand that a variable represents a number or a specified set of numbers.
  - I represent real-world situations with variable expressions, identifying what the variable represents.
- Students will write equations and graph lines to represent relationships
  - I identify relationships between variables using graphs
  - I write an equation to express the quantity in terms of the dependent and independent variable.
- I can use tables, equations, and graphs to represent relationships.
  - I identify relationships between variables using tables, graphs, and equations.

Assessment Evidence

Performance Assessment Options & Rubrics
May include, but are not limited to the following:

- Math 6 Feedback & Scoring Rubric based on Priority Standards
- Module Pre-Test
- End of Unit Assessment (3 versions)
- End of Unit Assessment (3 versions - differentiation)
- Mid-unit checks/quizzes

Other assessment options
May include, but are not limited to the following:

- Student work samples
- Classroom exit tickets
- AVID Strategies
  - Quick Writes
  - KWL Chart - (What I Know, Want to know, Learned)
  - Marking Text
  - Learning Log Reflection - Daily/Weekly
  - I-Chart - Gather/Organize Information on a topic
  - Focused Note Taking
  - CSG - Collaborative Study Groups
  - Socratic Seminar
  - Philosophical Chairs
  - Think/Pair/Share
  - Talking Trios
  - World Cafe

Digital Tools & Supplementary Resources

- ALEKS
- Web Sketch Pad
- Learnsmart
- Desmos
- REVEAL performance tasks
- Open Resources (Illustrative)

Unit 8 - Area

Essential Questions:
1. How do we as mathematicians make sense of quantities and situations symbolically?
2. How can we as mathematicians determine an effective model to use to solve a problem?
3. *How are the areas of triangles and rectangles used to find the areas of other polygons?*

Unit Standards

Priority Standards
6.EE.A Apply and extend previous understandings of arithmetic to algebraic expressions.
- *6.EE.A.2* Write, read, and evaluate expressions in which letters stand for numbers.
- *6.EE.A.2.c* 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).

Supporting Standards
6.G.A Solve real-world and mathematical problems involving area, surface area, and volume.
- *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.
- *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.

Learning Targets

- I can find and use the area of parallelograms
  - I reason that familiar shapes can be put together to create composite shapes whose area is equal to that of the sum of the areas of the joining shapes.
  - I decompose shapes into familiar and shapes and use the areas of the familiar shapes to find the area of the composite shape.
  - I solve problems from the real-world using composite figures to model real-world examples.
- I can find and use the area of triangles
  - I solve problems from the real-world using composite figures to model real-world examples.
- I can find and use the area of trapezoids by composting and decomposing into other shapes
  - I reason that familiar shapes can be put together to create composite shapes whose area is equal to that of the sum of the areas of the joining shapes.
  - I decompose shapes into familiar and shapes and use the areas of the familiar shapes to find the area of the composite shape.
  - I solve problems from the real-world using composite figures to model real-world examples.
- I can find the area of regular polygons decomposing into other shapes
  - I reason that familiar shapes can be put together to create composite shapes whose area is equal to that of the sum of the areas of the joining shapes.
  - I decompose shapes into familiar and shapes and use the areas of the familiar shapes to find the area of the composite shape.
  - I solve problems from the real-world using composite figures to model real-world examples.

- I can use the coordinate plane to draw and find attributes of polygons
  - I draw polygons in the coordinate plane with attention to naming the vertices with coordinate points.
  - I discover how to find the length of sides of polygons using the coordinates of the vertices having the same first coordinate (or second coordinate) and generalize a technique.

Assessment Evidence

Performance Assessment Options & Rubrics
May include, but are not limited to the following:

- Math 6 Feedback & Scoring Rubric based on Priority Standards
- Module Pre-Test
- End of Unit Assessment (3 versions)
- End of Unit Assessment (3 versions - differentiation)
- Mid-unit checks/quizzes

Other assessment options
May include, but are not limited to the following:

- Student work samples
- Classroom exit tickets
- AVID Strategies
  - Quick Writes
  - KWL Chart - (What I Know, Want to know, Learned)
  - Marking Text
  - Learning Log Reflection - Daily/Weekly
  - I-Chart - Gather/Organize Information on a topic
  - Focused Note Taking
  - CSG - Collaborative Study Groups
  - Socratic Seminar
  - Philosophical Chairs
  - Think/Pair/Share
  - Talking Trios
  - World Cafe

Digital Tools & Supplementary Resources

- ALEKS
- Web Sketch Pad
- Learnsmart
- Desmos
- REVEAL performance tasks
- Open Resources (Illustrative)

Unit 9 - Volume and Surface Area

Essential Questions:
1. What model(s) can we as mathematicians use to solve a problem?
2. *How can you describe the size of a three dimensional figure?*

Unit Standards

Supporting Standards
6.G.A 6.G.A Solve real-world and mathematical problems involving area, surface area, and volume.
- *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 = l w h and V = b h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
- *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.

Learning Targets

- I can find and use the volume of rectangular prisms (May need to find manipulatives for this)
    - I model volume by filling a rectangular prism with unit cubes of a fractional length and use the model to determine volume of the prism. (9-1)
    - I discover that filling a solid with cubes and counting them gives the same result as using the volume formula. (9-1)
    - I reason that finding volume is the same process and uses the same formulas whether the edge lengths are whole units or fractional lengths. (9-1)
    - I solve real-world volume problems where one of the edge lengths is a fractional unit. (9-1)
- I can make nets and find the surface area of rectangular prisms.
    - I visualize how nets relate to three-dimensional figures.
    - I use a model to determine surface area.
    - I understand how the area of two-dimensional figures relates to the surface area of three-dimensional figures.
    - I compare and contrast area and surface area using mathematical vocabulary.
    - I find the repeated dimensions in nets and explain them in terms of the structure of the three-dimensional figure.
    - I solve real-world and mathematical problems involving surface area.
- I can make nets and find the surface area of triangular prisms.
    - I visualize how nets relate to three-dimensional figures.
    - I use a model to determine surface area.
    - I understand how the area of two-dimensional figures relates to the surface area of three-dimensional figures.
    - I find the repeated dimensions in nets and explain them in terms of the structure of the three-dimensional figure.
    - I solve real-world and mathematical problems involving surface area.

- I can make nets and find the surface area of pyramids.
    - I visualize how nets relate to three-dimensional figures.
    - I use a model to determine surface area.
    - I understand how the area of two-dimensional figures relates to the surface area of three-dimensional figures.
    - I find the repeated dimensions in nets and explain them in terms of the structure of the three-dimensional figure.
    - I solve real-world and mathematical problems involving surface area.

Assessment Evidence

Performance Assessment Options & Rubrics
May include, but are not limited to the following:

- Math 6 Feedback & Scoring Rubric based on Priority Standards
- Module Pre-Test
- End of Unit Assessment (3 versions)
- End of Unit Assessment (3 versions - differentiation)
- Mid-unit checks/quizzes

Other assessment options
May include, but are not limited to the following:

- Student work samples
- Classroom exit tickets
- AVID Strategies
    - Quick Writes
    - KWL Chart - (What I Know, Want to know, Learned)
    - Marking Text
    - Learning Log Reflection - Daily/Weekly
    - I-Chart - Gather/Organize Information on a topic
    - Focused Note Taking
    - CSG - Collaborative Study Groups
    - Socratic Seminar
    - Philosophical Chairs
    - Think/Pair/Share
    - Talking Trios
    - World Cafe

Digital Tools & Supplementary Resources

- ALEKS
- Web Sketch Pad
- Learnsmart
- Desmos
- REVEAL performance tasks
- Open Resources (Illustrative)

Unit 10 - Statistical Measures and Displays

Essential Questions:
1. How can we as mathematicians determine an effective model to use to solve a problem?
2. How do we as mathematicians know if we fully & accurately answered the problem and does the results make sense in the context of the problem?
3. *Why is data collected and analyzed and how can it be displayed?*

Unit Standards

Additional Standards
6.SP.A Develop understanding of statistical variability.
- *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. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.
- *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.
- *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.

6.SP.B Summarize and describe distributions.
- *6.SP.B.4* Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- *6.SP.B.5* Summarize numerical data sets in relation to their context, such as by:
- *6.SP.B.5.a* Reporting the number of observations.
- *6.SP.B.5.b* Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
- *6.SP.B.5.c* 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.
- *6.SP.B.5.d* 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.

Learning Targets

- I can identify and use statistical questions
  - I understand and explain that data generated from statistical questions vary. (10-1)
  - I identify the difference between a statistical and non-statistical question. (10-1)
  - I create appropriate displays of data sets. (10-1)
  - I recognize that responses to statistical questions have variations that can be used to draw conclusions about the data set. (10-1)
- I can construct a dot plot and histogram to represent a data set (10-2)
  - I understand that data are organized in graphs for the purpose of analyzing the data. (10-2)
  - I represent given data on the most appropriate graph (dot plot, and histogram). (10-2)
  - I interpret data represented on dot plots, box plots, and histograms for given situations
  - I create a line plot, histogram, and box plot. (10-2)

- I can apply different measures of center
  - I can find mean, median. (Mode is not explicitly taught in Reveal - Need another resource). (10-3)
  - I communicate observations of data sets. (10-3)
  - I identify the sample size of a data set. (10-3)
  - I find the appropriate measure of center and spread for data sets. (10-3)
- I can find interquartile range and construct box plots.
  - I understand that data collected to answer a statistical question can be analyzed by their distribution. (10-4)
  - I can find mean, median. (10-4) (Range is not explicitly taught in Reveal - Need another resource)
  - I describe a set of data using its center (mean, median, and mode), spread (range), and overall shape. (10-4)
  - I create a line plot, histogram, and box plot. (10-4)
  - I model with examples the difference between measures of center and measures of spread. (10-4)
  - I represent given data on the most appropriate graph (dot plot, histogram, or box plot). (10-4)
  - I interpret data represented on dot plots, box plots, and histograms for given situations. (10-4)
- I can calculate the mean absolute deviation.
  - I determine appropriate center and variation for various data sets. (10-5)
  - I find the appropriate measure of center and spread for data sets. (10-5)
- I can describe outliers and their effect on measures of center.
  - I model with examples the difference between measures of center and measures of spread. (10-6)
  - I determine appropriate center and variation for various data sets. (10-6)
- I can interpret dot plots, histograms, and box plots.
  - I determine appropriate center and variation for various data sets. (10-7)
  - I interpret data represented on dot plots, box plots, and histograms for given situations. (10-7)
  - I identify patterns of distribution and determine which measure of center is most appropriate to use. (10-7)

Assessment Evidence

Performance Assessment Options & Rubrics *May include, but are not limited to the following:*	**Other assessment options** *May include, but are not limited to the following:*

● Math 6 Feedback & Scoring Rubric based on Priority Standards
● Module Pre-Test
● End of Unit Assessment (3 versions)
● End of Unit Assessment (3 versions - differentiation)
	
	● Student work samples
	● Classroom exit tickets
	● AVID Strategies
	   ○ Quick Writes
	   ○ KWL Chart - (What I Know, Want to know, Learned)
	   ○ Marking Text
	   ○ Learning Log Reflection - Daily/Weekly

● Mid-unit checks/quizzes	○ I-Chart - Gather/Organize Information on a topic ○ Focused Note Taking ○ CSG - Collaborative Study Groups ○ Socratic Seminar ○ Philosophical Chairs ○ Think/Pair/Share ○ Talking Trios ○ World Cafe

Digital Tools & Supplementary Resources

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- Desmos
- REVEAL performance tasks
- Open Resources (Illustrative)