

Alignment to State Standards:

Mississippi Math Standards

E101 Principles/Topics

Mississippi Math Standards (Green print is Common Core Standards)

1. Estuaries are interconnected-

Activity 1: Where Rivers Meet the Sea (Climate Extension)

6th grade: 6.RP Ratios and Proportional Relationships

- **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.

- Write a ratio to describe objects in a picture (Sixth grade - AA.1)
- Ratios: word problems (Sixth grade - AA.3)

6. RP.A.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with b is not equal to 0, and use rate language in the context of a ratio relationship.

- Unit rates and equivalent rates (Sixth grade - AA.8)
- Unit rates: word problems (Sixth grade - AA.9)

6. RP.A.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

- Unit prices with customary unit conversions (Sixth grade - G.4)
- Convert and compare customary units (Sixth grade - Y.3)
- Convert, compare, add, and subtract mixed customary units (Sixth grade - Y.4)
- Multiply and divide mixed customary units (Sixth grade - Y.5)
- Customary unit conversions involving fractions and mixed numbers (Sixth grade - Y.6)
- Convert and compare metric units (Sixth grade - Y.7)
- Convert between customary and metric systems (Sixth grade - Y.8)

6th grade: 6.NS The Number System

- **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.

- Understanding integers (Sixth grade - C.1)
- Working with temperatures above and below zero (Sixth grade - Y.9)

6th grade: 6.EE Expressions and Equations

- **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).**

- Write variable expressions to represent word problems (Sixth grade - P.1)
- Evaluate variable expressions with whole numbers (Sixth grade - P.2)
- Evaluate variable expressions involving decimals, fractions, and mixed numbers (Sixth grade - P.4)
- Evaluate multi-variable expressions (Sixth grade - P.8)
- Complete a function table (Sixth grade - P.10)
- Convert between Celsius and Fahrenheit (Sixth grade - Y.10)

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.

- Write variable expressions to represent word problems (Sixth grade - P.1)
- Solve word problems involving two-variable equations (Sixth grade - P.3)
- Convert between Celsius and Fahrenheit (Sixth grade - Y.10)

6th grade: 6. SP Statistics and Probability

. 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.

- Identify representative, random, and biased samples (Sixth grade - S.4)

6. SP.B.5b Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.

- Identify representative, random, and biased samples (Sixth grade - S.4)

7th grade: 7.RP Ratios and Proportional Relationships

▪ 7. RP.A.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

- Find the constant of variation (Seventh grade - X.2)

7th grade: 7.NS The Number System

▪ 7. NS.A.1d Apply properties of operations as strategies to add and subtract rational numbers.

- Add and subtract decimals (Seventh grade - C.1)
- Simplify expressions involving decimals (Seventh grade - C.11)
- Simplify expressions involving integers (Seventh grade - E.9)
- Add and subtract fractions (Seventh grade - G.1)
- Add and subtract mixed numbers (Seventh grade - G.3)
- Apply addition and subtraction rules (Seventh grade - H.7)
- Properties of addition and multiplication (Seventh grade - Y.1)

○ **7. NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.**

○ **7. NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.**

- Add and subtract decimals (Seventh grade - C.1)
- Add and subtract decimals: word problems (Seventh grade - C.2)

- Multiply decimals (Seventh grade - C.3)
- Multiply decimals and whole numbers: word problems (Seventh grade - C.4)
- Divide decimals (Seventh grade - C.5)
- Divide decimals by whole numbers: word problems (Seventh grade - C.6)
- Add, subtract, multiply, and divide decimals: word problems (Seventh grade - C.8)
- Add and subtract integers (Seventh grade - E.3)
- Complete addition and subtraction sentences with integers (Seventh grade - E.4)
- Add and subtract integers: word problems (Seventh grade - E.5)
- Integer multiplication and division rules (Seventh grade - E.6)
- Multiply and divide integers (Seventh grade - E.7)
- Complete multiplication and division sentences with integers (Seventh grade - E.8)
- Add and subtract fractions (Seventh grade - G.1)
- Add and subtract fractions: word problems (Seventh grade - G.2)
- Add and subtract mixed numbers (Seventh grade - G.3)
- Add and subtract mixed numbers: word problems (Seventh grade - G.4)
- Inequalities with addition and subtraction of fractions and mixed numbers (Seventh grade - G.5)
- Multiply fractions and whole numbers (Seventh grade - G.7)
- Multiply fractions (Seventh grade - G.9)
- Multiply mixed numbers (Seventh grade - G.10)
- Multiply fractions and mixed numbers: word problems (Seventh grade - G.11)
- Divide fractions (Seventh grade - G.12)
- Divide mixed numbers (Seventh grade - G.13)
- Divide fractions and mixed numbers: word problems (Seventh grade - G.14)
- Add, subtract, multiply, and divide fractions and mixed numbers: word problems (Seventh grade - G.16)
- Add and subtract rational numbers (Seventh grade - H.6)
- Multiply and divide rational numbers (Seventh grade - H.8)
- Add, subtract, multiply, and divide money amounts: word problems (Seventh grade - L.1)
- Price lists (Seventh grade - L.2)

7. EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

8th grade: 8.F Functions

8. F.A Define, evaluate, and compare functions.

8. F.B Use functions to model relationships between quantities.

2. Estuaries are dynamic-

Activity 2: Seasonal Swings (Climate Extension)

Activity 3: Water Going Up, Water Going Down (Climate Extension)

6th grade: 6. RP Ratios and Proportional Relationships

• **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.

- Write a ratio to describe objects in a picture (Sixth grade - AA.1)
- Ratios: word problems (Sixth grade - AA.3)

6. RP.A.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with b is not equal to 0, and use rate language in the context of a ratio relationship.

- Unit rates and equivalent rates (Sixth grade - AA.8)
- Unit rates: word problems (Sixth grade - AA.9)

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.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.

- Coordinate graphs review (Sixth grade - Q.1)
- Ratio tables (Sixth grade - AA.2)
- Equivalent ratios (Sixth grade - AA.4)
- Equivalent ratios: word problems (Sixth grade - AA.5)
- Compare ratios: word problems (Sixth grade - AA.6)

6. RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed.

- Unit prices with fractions and decimals (Sixth grade - G.3)
- Unit prices with customary unit conversions (Sixth grade - G.4)
- Unit rates and equivalent rates (Sixth grade - AA.8)
- Unit rates: word problems (Sixth grade - AA.9)

6. RP.A.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

- Unit prices with customary unit conversions (Sixth grade - G.4)
- Convert and compare customary units (Sixth grade - Y.3)
- Convert, compare, add, and subtract mixed customary units (Sixth grade - Y.4)
- Multiply and divide mixed customary units (Sixth grade - Y.5)
- Customary unit conversions involving fractions and mixed numbers (Sixth grade - Y.6)
- Convert and compare metric units (Sixth grade - Y.7)
- Convert between customary and metric systems (Sixth grade - Y.8)

6th grade: 6.NS The Number System

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

- Add and subtract decimal numbers (Sixth grade - J.1)
- Add and subtract decimals: word problems (Sixth grade - J.2)
- Estimate sums and differences of decimals (Sixth grade - J.3)
- Maps with decimal distances (Sixth grade - J.4)
- Multiply decimals (Sixth grade - O.1)
- Estimate products of decimal numbers (Sixth grade - O.2)
- Inequalities with decimal multiplication (Sixth grade - O.3)
- Divide decimals by whole numbers (Sixth grade - O.4)
- Divide decimals by whole numbers: word problems (Sixth grade - O.5)
- Multiply and divide decimals by powers of ten (Sixth grade - O.6)
- Division with decimal quotients (Sixth grade - O.7)
- Inequalities with decimal division (Sixth grade - O.8)
- Evaluate expressions involving decimals (Sixth grade - O.9)
- Add, subtract, multiply, and divide decimals (Sixth grade - X.4)
- Add, subtract, multiply, and divide decimals: word problems (Sixth grade - X.5)

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.

- Understanding integers (Sixth grade - C.1)
- Working with temperatures above and below zero (Sixth grade - Y.9)

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.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.

- Absolute value and opposite integers (Sixth grade - C.2)
- Integers on number lines (Sixth grade - C.3)

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.

- Coordinate graphs review (Sixth grade - Q.1)
- Graph points on a coordinate plane (Sixth grade - Q.2)
- Reflections: graph the image (Sixth grade - Z.18)

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.

- Decimal number lines (Sixth grade - B.9)
- Integers on number lines (Sixth grade - C.3)
- Graph integers on number lines (Sixth grade - C.4)
- Rational numbers: find the sign (Sixth grade - D.6)
- Coordinate graphs review (Sixth grade - Q.1)
- Graph points on a coordinate plane (Sixth grade - Q.2)
- Coordinate graphs as maps (Sixth grade - Q.3)
- Translations: graph the image (Sixth grade - Z.17)

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.

- Coordinate graphs review (Sixth grade - Q.1)
- Graph points on a coordinate plane (Sixth grade - Q.2)
- Coordinate graphs as maps (Sixth grade - Q.3)
- Distance between two points (Sixth grade - Q.4)
- Relative coordinates (Sixth grade - Q.8)

6th grade: 6.EE Expressions and Equations

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).

- Write variable expressions to represent word problems (Sixth grade - P.1)
- Evaluate variable expressions with whole numbers (Sixth grade - P.2)
- Evaluate variable expressions involving decimals, fractions, and mixed numbers (Sixth grade - P.4)
- Evaluate multi-variable expressions (Sixth grade - P.8)
- Complete a function table (Sixth grade - P.10)
- Convert between Celsius and Fahrenheit (Sixth grade - Y.10)

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.

- Write variable expressions to represent word problems (Sixth grade - P.1)
- Solve word problems involving two-variable equations (Sixth grade - P.3)
- Convert between Celsius and Fahrenheit (Sixth grade - Y.10)

6th grade: 6.SP Statistics and Probability

- **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.

- Interpret pictographs (Sixth grade - R.1)
- Create pictographs (Sixth grade - R.2)
- Stem-and-leaf plots (Sixth grade - R.3)
- Interpret line plots (Sixth grade - R.4)
- Create line plots (Sixth grade - R.5)
- Create frequency tables (Sixth grade - R.7)
- Interpret bar graphs (Sixth grade - R.8)
- Create bar graphs (Sixth grade - R.9)
- Interpret double bar graphs (Sixth grade - R.10)
- Create double bar graphs (Sixth grade - R.11)
- Create histograms (Sixth grade - R.13)
- Circle graphs with fractions (Sixth grade - R.14)
- Interpret line graphs (Sixth grade - R.15)
- Create line graphs (Sixth grade - R.16)
- Interpret double line graphs (Sixth grade - R.17)
- Create double line graphs (Sixth grade - R.18)
- Interpret box-and-whisker plots (Sixth grade - R.19)
- Choose the best type of graph (Sixth grade - R.20)

6. SP.B.5 Summarize numerical data sets in relation to their context, such as by:

- **6. SP.B.5a Reporting the number of observations.**
 - Create frequency tables (Sixth grade - R.7)
 - Create histograms (Sixth grade - R.13)
- **6. SP.B.5b Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.**
 - Identify representative, random, and biased samples (Sixth grade - S.4)
- **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.**
 - Calculate mean, median, mode, and range (Sixth grade - S.1)
 - Interpret charts to find mean, median, mode, and range (Sixth grade - S.2)
 - Mean, median, mode, and range: find the missing number (Sixth grade - S.3)
- **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.**

7th grade: 7.RP Ratios and Proportional Relationships

7. RP.A Analyze proportional relationships and use them to solve real-world and mathematical problems.

7. RP.A.2 Recognize and represent proportional relationships between quantities.

7th grade: 7.NS The Number System

7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

7. NS.A.2d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

- Classify numbers (Seventh grade - A.10)
- Convert between decimals and fractions or mixed numbers (Seventh grade - H.2)

7. NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.

- Add and subtract decimals (Seventh grade - C.1)
- Add and subtract decimals: word problems (Seventh grade - C.2)
- Multiply decimals (Seventh grade - C.3)
- Multiply decimals and whole numbers: word problems (Seventh grade - C.4)
- Divide decimals (Seventh grade - C.5)
- Divide decimals by whole numbers: word problems (Seventh grade - C.6)
- Add, subtract, multiply, and divide decimals: word problems (Seventh grade - C.8)
- Add and subtract integers (Seventh grade - E.3)
- Complete addition and subtraction sentences with integers (Seventh grade - E.4)
- Add and subtract integers: word problems (Seventh grade - E.5)
- Integer multiplication and division rules (Seventh grade - E.6)
- Multiply and divide integers (Seventh grade - E.7)
- Complete multiplication and division sentences with integers (Seventh grade - E.8)
- Add and subtract fractions (Seventh grade - G.1)
- Add and subtract fractions: word problems (Seventh grade - G.2)
- Add and subtract mixed numbers (Seventh grade - G.3)
- Add and subtract mixed numbers: word problems (Seventh grade - G.4)
- Inequalities with addition and subtraction of fractions and mixed numbers (Seventh grade - G.5)
- Multiply fractions and whole numbers (Seventh grade - G.7)
- Multiply fractions (Seventh grade - G.9)

- Multiply mixed numbers (Seventh grade - G.10)
- Multiply fractions and mixed numbers: word problems (Seventh grade - G.11)
- Divide fractions (Seventh grade - G.12)
- Divide mixed numbers (Seventh grade - G.13)
- Divide fractions and mixed numbers: word problems (Seventh grade - G.14)
- Add, subtract, multiply, and divide fractions and mixed numbers: word problems (Seventh grade - G.16)
- Add and subtract rational numbers (Seventh grade - H.6)
- Multiply and divide rational numbers (Seventh grade - H.8)
- Add, subtract, multiply, and divide money amounts: word problems (Seventh grade - L.1)
- Price lists (Seventh grade - L.2)

7th grade: 7.EE Expressions and Equations

7. EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.

7th grade: 7. SP Statistics and Probability

- **7. SP.A Use random sampling to draw inferences about a population.**

7. SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

- Identify representative, random, and biased samples (Seventh grade - AA.5)

7. SP.B Draw informal comparative inferences about two populations.

7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

7. SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

- Calculate mean, median, mode, and range (Seventh grade - AA.1)
- Interpret charts to find mean, median, mode, and range (Seventh grade - AA.2)

- Mean, median, mode, and range: find the missing number (Seventh grade - AA.3)
- Changes in mean, median, mode, and range (Seventh grade - AA.4)

7. SP.C Investigate chance processes and develop, use, and evaluate probability models.

7. SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

- Probability of simple events (Seventh grade - Z.1)

8th grade: 8. EE Expressions and Equations

8. EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

- Unit rates (Eighth grade - H.5)
- Do the ratios form a proportion? (Eighth grade - H.6)
- Do the ratios form a proportion: word problems (Eighth grade - H.7)
- Solve proportions (Eighth grade - H.8)
- Solve proportions: word problems (Eighth grade - H.9)
- Find the constant of variation: graphs (Eighth grade - I.2)
- Graph a proportional relationship (Eighth grade - I.4)
- Proportional relationships: word problems (Eighth grade - I.6)

8. EE.C.8c Solve real-world and mathematical problems leading to two linear equations in two variables.

- Solve a system of equations by graphing: word problems (Eighth grade - Y.3)
- Solve a system of equations using substitution: word problems (Eighth grade - Y.9)
- Solve a system of equations using elimination: word problems (Eighth grade - Y.11)

8th grade: 8. F Functions

8. F.A Define, evaluate, and compare functions.

8. F.A.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.

- Complete a function table (Eighth grade - V.3)
- Find points on a function graph (Eighth grade - V.4)
- Graph a line from a function table (Eighth grade - V.5)

8. F.B Use functions to model relationships between quantities.

8. F.B.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

- Linear function word problems (Eighth grade - V.14)

3. Estuaries support an abundance of life-

Activity 4: Estuary Food Pyramid(Climate Extension)

Activity 5: Planet Plankton(Climate Extension)

Activity 6: An Ode to the Oyster(Climate Extension)

Activity 7: Hooray for Horseshoe Crabs(Climate Extension)

Activity 8: Sharks in the Estuary(Climate Extension)

Activity 9: Bountiful Birds(Climate Extension)

6th grade: 6. RP Ratios and Proportional Relationships

- **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.

- Write a ratio to describe objects in a picture (Sixth grade - AA.1)
- Ratios: word problems (Sixth grade - AA.3)

6th grade: 6. NS The Number System

- **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.

- Understanding integers (Sixth grade - C.1)
- Working with temperatures above and below zero (Sixth grade - Y.9)

6th grade: 6. EE Expressions and Equations

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.

- Identify terms, coefficients, and monomials (Sixth grade - P.16)

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).

- Write variable expressions to represent word problems (Sixth grade - P.1)
- Evaluate variable expressions with whole numbers (Sixth grade - P.2)
- Evaluate variable expressions involving decimals, fractions, and mixed numbers (Sixth grade - P.4)
- Evaluate multi-variable expressions (Sixth grade - P.8)
- Complete a function table (Sixth grade - P.10)
- Convert between Celsius and Fahrenheit (Sixth grade - Y.10)

6th grade: 6. SP Statistics and Probability

- **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.

- Identify representative, random, and biased samples (Sixth grade - S.4)

7th grade: 7. RP Ratios and Proportional Relationships

7th grade: 7. RP Ratios and Proportional Relationships

- **7. RP.A Analyze proportional relationships and use them to solve real-world and mathematical problems.**

7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.

- Divide fractions and mixed numbers: word problems (Seventh grade - G.14)
- Understanding ratios (Seventh grade - J.1)
- Unit rates (Seventh grade - J.5)
- Unit prices (Seventh grade - L.3)
- Unit prices with unit conversions (Seventh grade - L.4)

7. RP.A.2 Recognize and represent proportional relationships between quantities.

- **7.RP.A.2a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.**
 - Equivalent ratios (Seventh grade - J.2)
 - Equivalent ratios: word problems (Seventh grade - J.3)
 - Do the ratios form a proportion? (Seventh grade - J.6)
 - Do the ratios form a proportion: word problems (Seventh grade - J.7)
 - Identify proportional relationships (Seventh grade - X.1)

7. RP.A.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

- Find the constant of variation (Seventh grade - X.2)

7th grade: 7. EE Expressions and Equations

7. EE.B Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

7. EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

7th grade: 7. SP Statistics and Probability

- **7. SP.A Use random sampling to draw inferences about a population.**

7. SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a

population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

- Identify representative, random, and biased samples (Seventh grade - AA.5)

7. SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

- Estimate population size using proportions (Seventh grade - J.10)

7. SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

- Probability of simple events (Seventh grade - Z.1)

7. SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.

- Experimental probability (Seventh grade - Z.3)
- Make predictions (Seventh grade - Z.4)

8th grade: 8.NS The Number System

- **8. NS.A Know that there are numbers that are not rational, and approximate them by rational numbers.**

8. NS.A.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

- Identify rational and irrational numbers (Eighth grade - D.1)
- Convert between decimals and fractions or mixed numbers (Eighth grade - D.6)

8th grade: 8. F Functions

8. F.B Use functions to model relationships between quantities.

8. F.B.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

- Linear function word problems (Eighth grade - V.14)

8th grade: 8. SP Statistics and Probability

- **8. SP.A Investigate patterns of association in bivariate data.**

8. SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

- Scatter plots (Eighth grade - N.14)

4. Research and Monitoring-

Activity 10: The Jubilee Phenomenon (Climate Extension)

Activity 11: The Great Oyster Mystery (Climate Extension)

Activity 12: Migrating Mangroves and Marshes (Climate Extension)

6th grade: 6. RP Ratios and Proportional Relationships

- **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.

- Write a ratio to describe objects in a picture (Sixth grade - AA.1)
- Ratios: word problems (Sixth grade - AA.3)

- Unit rates: word problems (Sixth grade - AA.9)

- **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.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.**
 - Coordinate graphs review (Sixth grade - Q.1)
 - Ratio tables (Sixth grade - AA.2)
 - Equivalent ratios (Sixth grade - AA.4)
 - Equivalent ratios: word problems (Sixth grade - AA.5)
 - Compare ratios: word problems (Sixth grade - AA.6)

- **6. RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed.**
 - Unit prices with fractions and decimals (Sixth grade - G.3)
 - Unit prices with customary unit conversions (Sixth grade - G.4)
 - Unit rates and equivalent rates (Sixth grade - AA.8)
 - Unit rates: word problems (Sixth grade - AA.9)

- **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.**
 - Which is the better coupon? (Sixth grade - G.1)
 - Unit prices: which is the better buy? (Sixth grade - G.2)
 - Sale prices (Sixth grade - G.5)
 - Sale prices: find the original price (Sixth grade - G.6)
 - Percents - calculate tax, tip, mark-up, and more (Sixth grade - G.7)
 - Percents of numbers and money amounts (Sixth grade - AA.14)
 - Percents of numbers: word problems (Sixth grade - AA.15)

- **6. RP.A.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.**
 - Unit prices with customary unit conversions (Sixth grade - G.4)
 - Convert and compare customary units (Sixth grade - Y.3)
 - Convert, compare, add, and subtract mixed customary units (Sixth grade - Y.4)
 - Multiply and divide mixed customary units (Sixth grade - Y.5)
 - Customary unit conversions involving fractions and mixed numbers (Sixth grade - Y.6)
 - Convert and compare metric units (Sixth grade - Y.7)

- Convert between customary and metric systems (Sixth grade - Y.8)

6th grade: 6. NS The Number System

- **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.

- Divide whole numbers by unit fractions using models (Sixth grade - W.1)
- Reciprocals (Sixth grade - W.2)
- Divide whole numbers and unit fractions (Sixth grade - W.3)
- Divide fractions (Sixth grade - W.5)
- Estimate quotients when dividing mixed numbers (Sixth grade - W.6)
- Divide fractions and mixed numbers (Sixth grade - W.7)
- Divide fractions and mixed numbers: word problems (Sixth grade - W.8)
- Add, subtract, multiply, and divide fractions and mixed numbers (Sixth grade - X.6)
- Add, subtract, multiply, and divide fractions and mixed numbers: word problems (Sixth grade - X.7)

- **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.

- Divisibility rules (Sixth grade - L.1)
- Division patterns with zeroes (Sixth grade - L.2)
- Divide numbers ending in zeroes: word problems (Sixth grade - L.3)
- Estimate quotients (Sixth grade - L.4)
- Divide whole numbers - 2-digit divisors (Sixth grade - L.5)
- Divide whole numbers - 3-digit divisors (Sixth grade - L.6)
- Add, subtract, multiply, and divide whole numbers (Sixth grade - X.1)
- Add, subtract, multiply, and divide whole numbers: word problems (Sixth grade - X.2)

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

- Add and subtract decimal numbers (Sixth grade - J.1)
- Add and subtract decimals: word problems (Sixth grade - J.2)
- Estimate sums and differences of decimals (Sixth grade - J.3)
- Maps with decimal distances (Sixth grade - J.4)
- Multiply decimals (Sixth grade - O.1)

- Estimate products of decimal numbers (Sixth grade - O.2)
- Inequalities with decimal multiplication (Sixth grade - O.3)
- Divide decimals by whole numbers (Sixth grade - O.4)
- Divide decimals by whole numbers: word problems (Sixth grade - O.5)
- Multiply and divide decimals by powers of ten (Sixth grade - O.6)
- Division with decimal quotients (Sixth grade - O.7)
- Inequalities with decimal division (Sixth grade - O.8)
- Evaluate expressions involving decimals (Sixth grade - O.9)
- Add, subtract, multiply, and divide decimals (Sixth grade - X.4)
- Add, subtract, multiply, and divide decimals: word problems (Sixth grade - X.5)

- **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.

- Understanding integers (Sixth grade - C.1)
- Working with temperatures above and below zero (Sixth grade - Y.9)

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.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.**
 - Absolute value and opposite integers (Sixth grade - C.2)
 - Integers on number lines (Sixth grade - C.3)
- **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.**

- Coordinate graphs review (Sixth grade - Q.1)
- Graph points on a coordinate plane (Sixth grade - Q.2)
- Reflections: graph the image (Sixth grade - Z.18)
- **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.**
 - Decimal number lines (Sixth grade - B.9)
 - Integers on number lines (Sixth grade - C.3)
 - Graph integers on number lines (Sixth grade - C.4)
 - Rational numbers: find the sign (Sixth grade - D.6)
 - Coordinate graphs review (Sixth grade - Q.1)
 - Graph points on a coordinate plane (Sixth grade - Q.2)
 - Coordinate graphs as maps (Sixth grade - Q.3)
 - Translations: graph the image (Sixth grade - Z.17)

6. NS.C.7 Understand ordering and absolute value of rational numbers.

- **6. NS.C.7a Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.**
 - Inequalities on number lines (Sixth grade - P.22)
- **6. NS.C.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts.**
 - Compare rational numbers (Sixth grade - D.1)
 - Put rational numbers in order (Sixth grade - D.2)
- **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.**
 - Absolute value and opposite integers (Sixth grade - C.2)
 - Absolute value of rational numbers (Sixth grade - D.3)
- **6. NS.C.7d Distinguish comparisons of absolute value from statements about order.**
 - Put rational numbers in order (Sixth grade - D.2)
 - Absolute value of rational numbers (Sixth grade - D.3)

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.

- Coordinate graphs review (Sixth grade - Q.1)
- Graph points on a coordinate plane (Sixth grade - Q.2)
- Coordinate graphs as maps (Sixth grade - Q.3)
- Distance between two points (Sixth grade - Q.4)
- Relative coordinates (Sixth grade - Q.8)

6. EE Expressions and Equations

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.

- Write variable expressions to represent word problems (Sixth grade - P.1)
- Solve word problems involving two-variable equations (Sixth grade - P.3)
- Convert between Celsius and Fahrenheit (Sixth grade - Y.10)

6th grade: 6. SP Statistics and Probability

- **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.

- Identify representative, random, and biased samples (Sixth grade - S.4)

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.

- Stem-and-leaf plots (Sixth grade - R.3)
- Create line plots (Sixth grade - R.5)
- Interpret box-and-whisker plots (Sixth grade - R.19)

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.

- Calculate mean, median, mode, and range (Sixth grade - S.1)
- Interpret charts to find mean, median, mode, and range (Sixth grade - S.2)

- Mean, median, mode, and range: find the missing number (Sixth grade - S.3)

- **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.**

- Interpret pictographs (Sixth grade - R.1)
- Create pictographs (Sixth grade - R.2)
- Stem-and-leaf plots (Sixth grade - R.3)
- Interpret line plots (Sixth grade - R.4)
- Create line plots (Sixth grade - R.5)
- Create frequency tables (Sixth grade - R.7)
- Interpret bar graphs (Sixth grade - R.8)
- Create bar graphs (Sixth grade - R.9)
- Interpret double bar graphs (Sixth grade - R.10)
- Create double bar graphs (Sixth grade - R.11)
- Create histograms (Sixth grade - R.13)
- Circle graphs with fractions (Sixth grade - R.14)
- Interpret line graphs (Sixth grade - R.15)
- Create line graphs (Sixth grade - R.16)
- Interpret double line graphs (Sixth grade - R.17)
- Create double line graphs (Sixth grade - R.18)
- Interpret box-and-whisker plots (Sixth grade - R.19)
- Choose the best type of graph (Sixth grade - R.20)

- **6. SP.B.5 Summarize numerical data sets in relation to their context, such as by:**

- **6. SP.B.5a Reporting the number of observations.**
 - Create frequency tables (Sixth grade - R.7)
 - Create histograms (Sixth grade - R.13)
- **6. SP.B.5b Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.**
 - Identify representative, random, and biased samples (Sixth grade - S.4)
- **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.**
 - Calculate mean, median, mode, and range (Sixth grade - S.1)
 - Interpret charts to find mean, median, mode, and range (Sixth grade - S.2)
 - Mean, median, mode, and range: find the missing number (Sixth grade - S.3)

- **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.**

7th grade: 7.RP Ratios and Proportional Relationships

- **7. RP.A Analyze proportional relationships and use them to solve real-world and mathematical problems.**

7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.

- Divide fractions and mixed numbers: word problems (Seventh grade - G.14)
- Understanding ratios (Seventh grade - J.1)
- Unit rates (Seventh grade - J.5)
- Unit prices (Seventh grade - L.3)
- Unit prices with unit conversions (Seventh grade - L.4)

7. RP.A.2 Recognize and represent proportional relationships between quantities.

- **7.RP.A.2a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.**
 - Equivalent ratios (Seventh grade - J.2)
 - Equivalent ratios: word problems (Seventh grade - J.3)
 - Do the ratios form a proportion? (Seventh grade - J.6)
 - Do the ratios form a proportion: word problems (Seventh grade - J.7)
 - Identify proportional relationships (Seventh grade - X.1)
- **7. RP.A.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.**
 - Find the constant of variation (Seventh grade - X.2)
- **7. RP.A.2c Represent proportional relationships by equations.**
 - Solve proportions (Seventh grade - J.8)
 - Solve proportions: word problems (Seventh grade - J.9)
 - Write an equation for a proportional relationship (Eighth grade - I.5)
- **7. RP.A.2d Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.**

7. RP.A.3 Use proportional relationships to solve multistep ratio and percent problems.

- Estimate population size using proportions (Seventh grade - J.10)
- Estimate percents of numbers (Seventh grade - K.4)
- Percents of numbers and money amounts (Seventh grade - K.5)
- Percents of numbers: word problems (Seventh grade - K.6)
- Solve percent equations (Seventh grade - K.7)
- Solve percent equations: word problems (Seventh grade - K.8)
- Percent of change (Seventh grade - K.9)
- Percent of change: word problems (Seventh grade - K.10)
- Unit prices with unit conversions (Seventh grade - L.4)
- Unit prices: find the total price (Seventh grade - L.5)
- Percent of a number: tax, discount, and more (Seventh grade - L.6)
- Find the percent: tax, discount, and more (Seventh grade - L.7)
- Sale prices: find the original price (Seventh grade - L.8)
- Multi-step problems with percents (Seventh grade - L.9)
- Estimate tips (Seventh grade - L.10)
- Simple interest (Seventh grade - L.11)
- Compound interest (Seventh grade - L.12)
- Experimental probability (Seventh grade - Z.3)

7th grade: 7.NS The Number System

- **7. NS.A Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.**

7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

- **7. NS.A.1a Describe situations in which opposite quantities combine to make 0.**
 - Absolute value and opposite integers (Seventh grade - D.4)
- **7. NS.A.1b Understand $p + q$ as the number located a distance $|q|$ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.**
 - Decimal number lines (Seventh grade - B.3)

- Integers on number lines (Seventh grade - D.2)
 - Absolute value and opposite integers (Seventh grade - D.4)
 - Integer inequalities with absolute values (Seventh grade - D.6)
 - Integer addition and subtraction rules (Seventh grade - E.1)
 - Add and subtract integers (Seventh grade - E.3)
 - Complete addition and subtraction sentences with integers (Seventh grade - E.4)
 - Add and subtract integers: word problems (Seventh grade - E.5)
 - Absolute value of rational numbers (Seventh grade - H.3)
 - Add and subtract rational numbers (Seventh grade - H.6)
- **7. NS.A.1c Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.**
 - Decimal number lines (Seventh grade - B.3)
 - Understanding integers (Seventh grade - D.1)
 - Integers on number lines (Seventh grade - D.2)
 - Integer addition and subtraction rules (Seventh grade - E.1)
 - Add and subtract integers (Seventh grade - E.3)
 - Complete addition and subtraction sentences with integers (Seventh grade - E.4)
 - Add and subtract integers: word problems (Seventh grade - E.5)
 - Add and subtract rational numbers (Seventh grade - H.6)
 - **7. NS.A.1d Apply properties of operations as strategies to add and subtract rational numbers.**
 - Add and subtract decimals (Seventh grade - C.1)
 - Simplify expressions involving decimals (Seventh grade - C.11)
 - Simplify expressions involving integers (Seventh grade - E.9)
 - Add and subtract fractions (Seventh grade - G.1)
 - Add and subtract mixed numbers (Seventh grade - G.3)
 - Apply addition and subtraction rules (Seventh grade - H.7)
 - Properties of addition and multiplication (Seventh grade - Y.1)

7. NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

- **7.NS.A.2a Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.**
 - Integer multiplication and division rules (Seventh grade - E.6)

- Multiply and divide integers (Seventh grade - E.7)
- Complete multiplication and division sentences with integers (Seventh grade - E.8)
- Multiply and divide rational numbers (Seventh grade - H.8)
- Distributive property (Seventh grade - Y.2)
- **7. NS.A.2b Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.**
 - Multiplicative inverses (Seventh grade - A.3)
 - Divisibility rules (Seventh grade - A.4)
 - Divide decimals by whole numbers: word problems (Seventh grade - C.6)
 - Integer multiplication and division rules (Seventh grade - E.6)
 - Multiply and divide integers (Seventh grade - E.7)
 - Complete multiplication and division sentences with integers (Seventh grade - E.8)
 - Understanding fractions: word problems (Seventh grade - F.3)
 - Divide fractions and mixed numbers: word problems (Seventh grade - G.14)
 - Multiply and divide rational numbers (Seventh grade - H.8)
- **7. NS.A.2c Apply properties of operations as strategies to multiply and divide rational numbers.**
 - Multiply decimals (Seventh grade - C.3)
 - Divide decimals (Seventh grade - C.5)
 - Simplify expressions involving decimals (Seventh grade - C.11)
 - Simplify expressions involving integers (Seventh grade - E.9)
 - Multiply fractions and whole numbers (Seventh grade - G.7)
 - Multiply fractions (Seventh grade - G.9)
 - Multiply mixed numbers (Seventh grade - G.10)
 - Divide fractions (Seventh grade - G.12)
 - Divide mixed numbers (Seventh grade - G.13)
 - Apply multiplication and division rules (Seventh grade - H.9)
 - Properties of addition and multiplication (Seventh grade - Y.1)
- **7. NS.A.2d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.**
 - Classify numbers (Seventh grade - A.10)
 - Convert between decimals and fractions or mixed numbers (Seventh grade - H.2)

7. NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.

- Add and subtract decimals (Seventh grade - C.1)

- Add and subtract decimals: word problems (Seventh grade - C.2)
- Multiply decimals (Seventh grade - C.3)
- Multiply decimals and whole numbers: word problems (Seventh grade - C.4)
- Divide decimals (Seventh grade - C.5)
- Divide decimals by whole numbers: word problems (Seventh grade - C.6)
- Add, subtract, multiply, and divide decimals: word problems (Seventh grade - C.8)
- Add and subtract integers (Seventh grade - E.3)
- Complete addition and subtraction sentences with integers (Seventh grade - E.4)
- Add and subtract integers: word problems (Seventh grade - E.5)
- Integer multiplication and division rules (Seventh grade - E.6)
- Multiply and divide integers (Seventh grade - E.7)
- Complete multiplication and division sentences with integers (Seventh grade - E.8)
- Add and subtract fractions (Seventh grade - G.1)
- Add and subtract fractions: word problems (Seventh grade - G.2)
- Add and subtract mixed numbers (Seventh grade - G.3)
- Add and subtract mixed numbers: word problems (Seventh grade - G.4)
- Inequalities with addition and subtraction of fractions and mixed numbers (Seventh grade - G.5)
- Multiply fractions and whole numbers (Seventh grade - G.7)
- Multiply fractions (Seventh grade - G.9)
- Multiply mixed numbers (Seventh grade - G.10)
- Multiply fractions and mixed numbers: word problems (Seventh grade - G.11)
- Divide fractions (Seventh grade - G.12)
- Divide mixed numbers (Seventh grade - G.13)
- Divide fractions and mixed numbers: word problems (Seventh grade - G.14)
- Add, subtract, multiply, and divide fractions and mixed numbers: word problems (Seventh grade - G.16)
- Add and subtract rational numbers (Seventh grade - H.6)
- Multiply and divide rational numbers (Seventh grade - H.8)
- Add, subtract, multiply, and divide money amounts: word problems (Seventh grade - L.1)
- Price lists (Seventh grade - L.2)

7th grade: 7.EE Expressions and Equations

- **7. EE.A Use properties of operations to generate equivalent expressions.**

- **7. EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.**

- Add and subtract like terms (Seventh grade - U.6)
 - Properties of addition and multiplication (Seventh grade - Y.1)
 - Distributive property (Seventh grade - Y.2)
 - Simplify variable expressions using properties (Seventh grade - Y.3)

7. EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.

- **7. EE.B Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**

7. EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

- Scientific notation (Seventh grade - A.8)
- Compare numbers written in scientific notation (Seventh grade - A.9)
- Round decimals (Seventh grade - B.4)
- Estimate sums, differences, and products of decimals (Seventh grade - C.7)
- Multi-step inequalities with decimals (Seventh grade - C.9)
- Maps with decimal distances (Seventh grade - C.10)
- Simplify expressions involving decimals (Seventh grade - C.11)
- Simplify expressions involving integers (Seventh grade - E.9)
- Equivalent fractions (Seventh grade - F.1)
- Simplify fractions (Seventh grade - F.2)
- Compare and order fractions (Seventh grade - F.5)
- Compare fractions: word problems (Seventh grade - F.6)
- Convert between mixed numbers and improper fractions (Seventh grade - F.7)
- Compare mixed numbers and improper fractions (Seventh grade - F.8)
- Round mixed numbers (Seventh grade - F.9)
- Estimate sums and differences of mixed numbers (Seventh grade - G.6)
- Estimate products and quotients of fractions and mixed numbers (Seventh grade - G.15)
- Maps with fractional distances (Seventh grade - G.17)
- Convert between decimals and fractions or mixed numbers (Seventh grade - H.2)
- Compare ratios: word problems (Seventh grade - J.4)
- Convert between percents, fractions, and decimals (Seventh grade - K.2)
- Compare percents to fractions and decimals (Seventh grade - K.3)
- Unit prices with unit conversions (Seventh grade - L.4)
- Unit prices: find the total price (Seventh grade - L.5)
- Estimate to solve word problems (Seventh grade - M.1)
- Multi-step word problems (Seventh grade - M.2)
- Guess-and-check word problems (Seventh grade - M.3)
- Use Venn diagrams to solve problems (Seventh grade - M.4)
- Find the number of each type of coin (Seventh grade - M.5)

- Elapsed time word problems (Seventh grade - M.6)

7. EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

- **7. EE.B.4a Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.**
 - Solve proportions: word problems (Seventh grade - J.9)
 - Model and solve equations using algebra tiles (Seventh grade - V.2)
 - Solve one-step linear equations (Seventh grade - V.3)
 - Solve two-step linear equations (Seventh grade - V.4)
 - Solve equations involving like terms (Seventh grade - V.5)
 - Linear function word problems (Seventh grade - X.10)
 - Solve equations using properties (Seventh grade - Y.4)
- **7. EE.B.4b Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.**
 - Inequalities on number lines (Seventh grade - W.1)
 - Solutions to variable inequalities (Seventh grade - W.2)
 - Graph inequalities on number lines (Seventh grade - W.3)
 - Solve one-step linear inequalities (Seventh grade - W.4)
 - Graph solutions to one-step linear inequalities (Seventh grade - W.5)
 - Solve two-step linear inequalities (Seventh grade - W.6)
 - Graph solutions to two-step linear inequalities (Seventh grade - W.7)

7th grade: 7. SP Statistics and Probability

- **7. SP.A Use random sampling to draw inferences about a population.**

7. SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

- Identify representative, random, and biased samples (Seventh grade - AA.5)

7. SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

- Estimate population size using proportions (Seventh grade - J.10)

• **7. SP.B Draw informal comparative inferences about two populations.**

7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

7. SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

- Calculate mean, median, mode, and range (Seventh grade - AA.1)
- Interpret charts to find mean, median, mode, and range (Seventh grade - AA.2)
- Mean, median, mode, and range: find the missing number (Seventh grade - AA.3)
- Changes in mean, median, mode, and range (Seventh grade - AA.4)

• **7. SP.C Investigate chance processes and develop, use, and evaluate probability models.**

7. SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

- Probability of simple events (Seventh grade - Z.1)

7. SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.

- Experimental probability (Seventh grade - Z.3)
- Make predictions (Seventh grade - Z.4)

7. SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

- **7. SP.C.7a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.**
 - Probability of simple events (Seventh grade - Z.1)
 - **7. SP.C.7b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.**
 - Experimental probability (Seventh grade - Z.3)
- 7. SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.**
- **7. SP.C.8a Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.**
 - Probability of opposite, mutually exclusive, and overlapping events (Seventh grade - Z.2)
 - Identify independent and dependent events (Seventh grade - Z.6)
 - Probability of independent and dependent events (Seventh grade - Z.7)
 - **7. SP.C.8b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.**
 - Compound events: find the number of outcomes (Seventh grade - Z.5)
 - Factorials (Seventh grade - Z.8)
 - Permutations (Seventh grade - Z.9)
 - Counting principle (Seventh grade - Z.10)
 - Combination and permutation notation (Seventh grade - Z.11)
 - **7. SP.C.8c Design and use a simulation to generate frequencies for compound events.**

8th grade: 8. NS The Number System

- **8. NS.A Know that there are numbers that are not rational, and approximate them by rational numbers.**

8. NS.A.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

- Identify rational and irrational numbers (Eighth grade - D.1)
- Convert between decimals and fractions or mixed numbers (Eighth grade - D.6)

8th grade: 8. EE Expressions and Equations

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8. EE.A.3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.

- Convert between standard and scientific notation (Eighth grade - G.1)
- Compare numbers written in scientific notation (Eighth grade - G.2)

8. EE.A.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

- Convert between standard and scientific notation (Eighth grade - G.1)
- Multiply numbers written in scientific notation (Eighth grade - G.3)
- Divide numbers written in scientific notation (Eighth grade - G.4)

- **8. EE.B Understand the connections between proportional relationships, lines, and linear equations.**

8. EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

- Unit rates (Eighth grade - H.5)
- Do the ratios form a proportion? (Eighth grade - H.6)
- Do the ratios form a proportion: word problems (Eighth grade - H.7)
- Solve proportions (Eighth grade - H.8)
- Solve proportions: word problems (Eighth grade - H.9)
- Find the constant of variation: graphs (Eighth grade - I.2)
- Graph a proportional relationship (Eighth grade - I.4)
- Proportional relationships: word problems (Eighth grade - I.6)

8.EE.B.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .

- Write an equation for a proportional relationship (Eighth grade - I.5)
 - Graph a line from an equation (Eighth grade - V.6)
 - Find the slope of a graph (Eighth grade - V.7)
 - Find slope from two points (Eighth grade - V.8)
 - Find slope from an equation (Eighth grade - V.10)
 - Graph a linear function (Eighth grade - V.12)
 - Write a linear function from a graph (Eighth grade - V.13)
- **8. EE.C Analyze and solve linear equations and pairs of simultaneous linear equations.**

8. EE.C.7 Solve linear equations in one variable.

- **8. EE.C.7a Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).**
 - Identities and equations with no solutions (Eighth grade - U.10)
- **8. EE.C.7b Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.**
 - Model and solve equations using algebra tiles (Eighth grade - U.2)
 - Write and solve equations that represent diagrams (Eighth grade - U.3)
 - Solve one-step linear equations (Eighth grade - U.4)
 - Solve two-step linear equations (Eighth grade - U.5)
 - Solve multi-step equations (Eighth grade - U.6)
 - Solve equations involving like terms (Eighth grade - U.7)
 - Solve equations with variables on both sides (Eighth grade - U.8)
 - Solve linear equations: mixed review (Eighth grade - U.9)
 - Solve equations involving squares and square roots (Eighth grade - U.11)
 - Properties of addition and multiplication (Eighth grade - AA.1)
 - Distributive property (Eighth grade - AA.2)
 - Simplify variable expressions using properties (Eighth grade - AA.3)

8. EE.C.8 Analyze and solve pairs of simultaneous linear equations.

- **8. EE.C.8a Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.**
 - Is (x, y) a solution to the system of equations? (Eighth grade - Y.1)

- Solve a system of equations by graphing (Eighth grade - Y.2)
- Find the number of solutions to a system of equations by graphing (Eighth grade - Y.4)
- **8. EE.C.8b Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection.**
 - Find the number of solutions to a system of equations (Eighth grade - Y.5)
 - Classify a system of equations by graphing (Eighth grade - Y.6)
 - Classify a system of equations (Eighth grade - Y.7)
 - Solve a system of equations using substitution (Eighth grade - Y.8)
 - Solve a system of equations using elimination (Eighth grade - Y.10)
- **8. EE.C.8c Solve real-world and mathematical problems leading to two linear equations in two variables.**
 - Solve a system of equations by graphing: word problems (Eighth grade - Y.3)
 - Solve a system of equations using substitution: word problems (Eighth grade - Y.9)
 - Solve a system of equations using elimination: word problems (Eighth grade - Y.11)

8th grade: 8. F Functions

- **8. F.A Define, evaluate, and compare functions.**

8. F.A.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.

- Complete a function table (Eighth grade - V.3)
- Find points on a function graph (Eighth grade - V.4)
- Graph a line from a function table (Eighth grade - V.5)

8. F.A.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).

- Graph a line from a function table (Eighth grade - V.5)
- Graph a line from an equation (Eighth grade - V.6)
- Write a rule for a function table (Eighth grade - V.16)
- Identify linear and nonlinear functions (Eighth grade - W.1)

8.F.A.3 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.

- Graph a line from an equation (Eighth grade - V.6)
- Identify linear and nonlinear functions (Eighth grade - W.1)

- **8. F.B Use functions to model relationships between quantities.**

8. F.B.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

- Rate of change (Eighth grade - H.11)
- Constant rate of change (Eighth grade - H.12)
- Find the constant of variation: graphs (Eighth grade - I.2)
- Find the constant of variation: word problems (Eighth grade - I.3)
- Write an equation for a proportional relationship (Eighth grade - I.5)
- Proportional relationships: word problems (Eighth grade - I.6)
- Find the slope of a graph (Eighth grade - V.7)
- Find slope from two points (Eighth grade - V.8)
- Find a missing coordinate using slope (Eighth grade - V.9)
- Write a linear function from a graph (Eighth grade - V.13)
- Linear function word problems (Eighth grade - V.14)
- Write a rule for a function table (Eighth grade - V.16)
- Write a linear function from two points (Eighth grade - V.17)

8. F.B.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

- Linear function word problems (Eighth grade - V.14)

8. SP Statistics and Probability

- **8. SP.A Investigate patterns of association in bivariate data.**

8. SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

- Scatter plots (Eighth grade - N.14)

8. SP.A.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association,

informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.

8. SP.A.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.

- Constant rate of change (Eighth grade - H.12)
- Graph a line from an equation (Eighth grade - V.6)
- Find the slope of a graph (Eighth grade - V.7)
- Linear function word problems (Eighth grade - V.14)

8. SP.A.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.

- Interpret stem-and-leaf plots (Eighth grade - N.9)
- Interpret histograms (Eighth grade - N.10)
- Create histograms (Eighth grade - N.11)
- Create frequency charts (Eighth grade - N.12)

5. Humans rely on goods and services-

Activity 13: Port to Port (Climate Extension)

6th grade: 6. RP Ratios and Proportional Relationships

- **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.

- Write a ratio to describe objects in a picture (Sixth grade - AA.1)
- Ratios: word problems (Sixth grade - AA.3)

6. RP.A.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with b is not equal to 0, and use rate language in the context of a ratio relationship.

- Unit rates and equivalent rates (Sixth grade - AA.8)
- Unit rates: word problems (Sixth grade - AA.9)

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.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.**
 - Coordinate graphs review (Sixth grade - Q.1)
 - Ratio tables (Sixth grade - AA.2)
 - Equivalent ratios (Sixth grade - AA.4)
 - Equivalent ratios: word problems (Sixth grade - AA.5)
 - Compare ratios: word problems (Sixth grade - AA.6)
- **6. RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed.**
 - Unit prices with fractions and decimals (Sixth grade - G.3)
 - Unit prices with customary unit conversions (Sixth grade - G.4)
 - Unit rates and equivalent rates (Sixth grade - AA.8)
 - Unit rates: word problems (Sixth grade - AA.9)
- **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.**
 - Which is the better coupon? (Sixth grade - G.1)
 - Unit prices: which is the better buy? (Sixth grade - G.2)
 - Sale prices (Sixth grade - G.5)
 - Sale prices: find the original price (Sixth grade - G.6)
 - Percents - calculate tax, tip, mark-up, and more (Sixth grade - G.7)
 - Percents of numbers and money amounts (Sixth grade - AA.14)
 - Percents of numbers: word problems (Sixth grade - AA.15)
- **6. RP.A.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.**
 - Unit prices with customary unit conversions (Sixth grade - G.4)
 - Convert and compare customary units (Sixth grade - Y.3)
 - Convert, compare, add, and subtract mixed customary units (Sixth grade - Y.4)
 - Multiply and divide mixed customary units (Sixth grade - Y.5)
 - Customary unit conversions involving fractions and mixed numbers (Sixth grade - Y.6)
 - Convert and compare metric units (Sixth grade - Y.7)
 - Convert between customary and metric systems (Sixth grade - Y.8)

6th grade: 6.NS The Number System

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

- Add and subtract decimal numbers (Sixth grade - J.1)
- Add and subtract decimals: word problems (Sixth grade - J.2)
- Estimate sums and differences of decimals (Sixth grade - J.3)
- Maps with decimal distances (Sixth grade - J.4)
- Multiply decimals (Sixth grade - O.1)
- Estimate products of decimal numbers (Sixth grade - O.2)
- Inequalities with decimal multiplication (Sixth grade - O.3)
- Divide decimals by whole numbers (Sixth grade - O.4)
- Divide decimals by whole numbers: word problems (Sixth grade - O.5)
- Multiply and divide decimals by powers of ten (Sixth grade - O.6)
- Division with decimal quotients (Sixth grade - O.7)
- Inequalities with decimal division (Sixth grade - O.8)
- Evaluate expressions involving decimals (Sixth grade - O.9)
- Add, subtract, multiply, and divide decimals (Sixth grade - X.4)
- Add, subtract, multiply, and divide decimals: word problems (Sixth grade - X.5)

- **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.

- Understanding integers (Sixth grade - C.1)
- Working with temperatures above and below zero (Sixth grade - Y.9)
- **6. NS.C.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts.**
 - Compare rational numbers (Sixth grade - D.1)
 - Put rational numbers in order (Sixth grade - D.2)
- **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.

- Absolute value and opposite integers (Sixth grade - C.2)
- Absolute value of rational numbers (Sixth grade - D.3)
- **6. NS.C.7d Distinguish comparisons of absolute value from statements about order.**
 - Put rational numbers in order (Sixth grade - D.2)
 - Absolute value of rational numbers (Sixth grade - D.3)

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.

- Coordinate graphs review (Sixth grade - Q.1)
- Graph points on a coordinate plane (Sixth grade - Q.2)
- Coordinate graphs as maps (Sixth grade - Q.3)
- Distance between two points (Sixth grade - Q.4)
- Relative coordinates (Sixth grade - Q.8)
- **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.

- Solve word problems involving two-variable equations (Sixth grade - P.3)
- Complete a function table (Sixth grade - P.10)
- Write linear functions (Sixth grade - P.11)
- Linear function word problems (Sixth grade - P.12)

6th grade: 6. SP Statistics and Probability

- **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.

- Identify representative, random, and biased samples (Sixth grade - S.4)

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.

- Stem-and-leaf plots (Sixth grade - R.3)
- Create line plots (Sixth grade - R.5)
- Interpret box-and-whisker plots (Sixth grade - R.19)

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.

- Calculate mean, median, mode, and range (Sixth grade - S.1)
 - Interpret charts to find mean, median, mode, and range (Sixth grade - S.2)
 - Mean, median, mode, and range: find the missing number (Sixth grade - S.3)
- **6. SP.B.5b Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.**
 - Identify representative, random, and biased samples (Sixth grade - S.4)
 - **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.**
 - Calculate mean, median, mode, and range (Sixth grade - S.1)
 - Interpret charts to find mean, median, mode, and range (Sixth grade - S.2)
 - Mean, median, mode, and range: find the missing number (Sixth grade - S.3)
 - **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.**

7th grade: 7. RP Ratios and Proportional Relationships

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7. RP.A Analyze proportional relationships and use them to solve real-world and mathematical problems.

7. NS The Number System

7. NS.A Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

- **7. NS.A.1d Apply properties of operations as strategies to add and subtract rational numbers.**
 - Add and subtract decimals (Seventh grade - C.1)
 - Simplify expressions involving decimals (Seventh grade - C.11)
 - Simplify expressions involving integers (Seventh grade - E.9)
 - Add and subtract fractions (Seventh grade - G.1)
 - Add and subtract mixed numbers (Seventh grade - G.3)
 - Apply addition and subtraction rules (Seventh grade - H.7)
 - Properties of addition and multiplication (Seventh grade - Y.1)
- **7. NS.A.2d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.**
 - Classify numbers (Seventh grade - A.10)
 - Convert between decimals and fractions or mixed numbers (Seventh grade - H.2)

7. NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.

- Add and subtract decimals (Seventh grade - C.1)
- Add and subtract decimals: word problems (Seventh grade - C.2)
- Multiply decimals (Seventh grade - C.3)
- Multiply decimals and whole numbers: word problems (Seventh grade - C.4)
- Divide decimals (Seventh grade - C.5)
- Divide decimals by whole numbers: word problems (Seventh grade - C.6)
- Add, subtract, multiply, and divide decimals: word problems (Seventh grade - C.8)
- Add and subtract integers (Seventh grade - E.3)
- Complete addition and subtraction sentences with integers (Seventh grade - E.4)
- Add and subtract integers: word problems (Seventh grade - E.5)
- Integer multiplication and division rules (Seventh grade - E.6)
- Multiply and divide integers (Seventh grade - E.7)

- Complete multiplication and division sentences with integers (Seventh grade - E.8)
- Add and subtract fractions (Seventh grade - G.1)
- Add and subtract fractions: word problems (Seventh grade - G.2)
- Add and subtract mixed numbers (Seventh grade - G.3)
- Add and subtract mixed numbers: word problems (Seventh grade - G.4)
- Inequalities with addition and subtraction of fractions and mixed numbers (Seventh grade - G.5)
- Multiply fractions and whole numbers (Seventh grade - G.7)
- Multiply fractions (Seventh grade - G.9)
- Multiply mixed numbers (Seventh grade - G.10)
- Multiply fractions and mixed numbers: word problems (Seventh grade - G.11)
- Divide fractions (Seventh grade - G.12)
- Divide mixed numbers (Seventh grade - G.13)
- Divide fractions and mixed numbers: word problems (Seventh grade - G.14)
- Add, subtract, multiply, and divide fractions and mixed numbers: word problems (Seventh grade - G.16)
- Add and subtract rational numbers (Seventh grade - H.6)
- Multiply and divide rational numbers (Seventh grade - H.8)
- Add, subtract, multiply, and divide money amounts: word problems (Seventh grade - L.1)
- Price lists (Seventh grade - L.2)

7th grade: 7.EE Expressions and Equations

7. EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

7th grade: 7.SP Statistics and Probability

- **7. SP.A Use random sampling to draw inferences about a population.**

7. SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

- Identify representative, random, and biased samples (Seventh grade - AA.5)

7. SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or

simulated samples) of the same size to gauge the variation in estimates or predictions.

- Estimate population size using proportions (Seventh grade - J.10)

• **7. SP.B Draw informal comparative inferences about two populations.**

7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

7. SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

- Calculate mean, median, mode, and range (Seventh grade - AA.1)
- Interpret charts to find mean, median, mode, and range (Seventh grade - AA.2)
- Mean, median, mode, and range: find the missing number (Seventh grade - AA.3)
- Changes in mean, median, mode, and range (Seventh grade - AA.4)

• **7. SP.C Investigate chance processes and develop, use, and evaluate probability models.**

7. SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

- Probability of simple events (Seventh grade - Z.1)

7. SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.

- Experimental probability (Seventh grade - Z.3)
- Make predictions (Seventh grade - Z.4)

7. SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

- **7. SP.C.7a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.**
 - Probability of simple events (Seventh grade - Z.1)
- **7. SP.C.7b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.**
 - Experimental probability (Seventh grade - Z.3)

8th grade: 8.NS The Number System

- **8. NS.A Know that there are numbers that are not rational, and approximate them by rational numbers.**

8. NS.A.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

- Identify rational and irrational numbers (Eighth grade - D.1)
- Convert between decimals and fractions or mixed numbers (Eighth grade - D.6)

8th grade: 8.F Functions

8. F.A Define, evaluate, and compare functions.

8th grade: 8.SP Statistics and Probability

8. SP.A Investigate patterns of association in bivariate data.

6. Human activities can impact Estuaries-

Activity 14: Oil Spill- The Rest of the Story(Climate Extension)

Activity 15: Score One for the Estuarine(Climate Extension)

6th grade: 6. RP Ratios and Proportional Relationships

- **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.

- Write a ratio to describe objects in a picture (Sixth grade - AA.1)
- Ratios: word problems (Sixth grade - AA.3)

6. RP.A.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with b is not equal to 0, and use rate language in the context of a ratio relationship.

- Unit rates and equivalent rates (Sixth grade - AA.8)
- Unit rates: word problems (Sixth grade - AA.9)

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.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.**
 - Coordinate graphs review (Sixth grade - Q.1)
 - Ratio tables (Sixth grade - AA.2)
 - Equivalent ratios (Sixth grade - AA.4)
 - Equivalent ratios: word problems (Sixth grade - AA.5)
 - Compare ratios: word problems (Sixth grade - AA.6)
- **6. RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed.**
 - Unit prices with fractions and decimals (Sixth grade - G.3)
 - Unit prices with customary unit conversions (Sixth grade - G.4)
 - Unit rates and equivalent rates (Sixth grade - AA.8)
 - Unit rates: word problems (Sixth grade - AA.9)
- **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.**
 - Which is the better coupon? (Sixth grade - G.1)
 - Unit prices: which is the better buy? (Sixth grade - G.2)
 - Sale prices (Sixth grade - G.5)
 - Sale prices: find the original price (Sixth grade - G.6)
 - Percents - calculate tax, tip, mark-up, and more (Sixth grade - G.7)
 - Percents of numbers and money amounts (Sixth grade - AA.14)
 - Percents of numbers: word problems (Sixth grade - AA.15)
- **6. RP.A.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.**
 - Unit prices with customary unit conversions (Sixth grade - G.4)
 - Convert and compare customary units (Sixth grade - Y.3)

- Convert, compare, add, and subtract mixed customary units (Sixth grade - Y.4)
- Multiply and divide mixed customary units (Sixth grade - Y.5)
- Customary unit conversions involving fractions and mixed numbers (Sixth grade - Y.6)
- Convert and compare metric units (Sixth grade - Y.7)
- Convert between customary and metric systems (Sixth grade - Y.8)

6th grade: 6.NS The Number System

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.

- Understanding integers (Sixth grade - C.1)
- Working with temperatures above and below zero (Sixth grade - Y.9)
- **6. NS.C.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts.**
 - Compare rational numbers (Sixth grade - D.1)

Put rational numbers in order (Sixth grade - D.2)

6th grade: 6. SP Statistics and Probability

- **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.**

7th grade: 7. RP Ratios and Proportional Relationships

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7. RP.A Analyze proportional relationships and use them to solve real-world and mathematical problems.

7. NS The Number System

7. NS.A Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

- **7. NS.A.1d Apply properties of operations as strategies to add and subtract rational numbers.**

- Add and subtract decimals (Seventh grade - C.1)
- Simplify expressions involving decimals (Seventh grade - C.11)
- Simplify expressions involving integers (Seventh grade - E.9)
- Add and subtract fractions (Seventh grade - G.1)
- Add and subtract mixed numbers (Seventh grade - G.3)
- Apply addition and subtraction rules (Seventh grade - H.7)
- Properties of addition and multiplication (Seventh grade - Y.1)

7th grade: 7.EE Expressions and Equations

7. EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

7th grade: 7.SP Statistics and Probability

- **7. SP.A Use random sampling to draw inferences about a population.**

7. SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

- Identify representative, random, and biased samples (Seventh grade - AA.5)

7. SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

- Estimate population size using proportions (Seventh grade - J.10)

- **7. SP.B Draw informal comparative inferences about two populations.**

7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

7. SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

- Calculate mean, median, mode, and range (Seventh grade - AA.1)
- Interpret charts to find mean, median, mode, and range (Seventh grade - AA.2)
- Mean, median, mode, and range: find the missing number (Seventh grade - AA.3)
- Changes in mean, median, mode, and range (Seventh grade - AA.4)

- **7. SP.C Investigate chance processes and develop, use, and evaluate probability models.**

7. SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

- Probability of simple events (Seventh grade - Z.1)

7. SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.

- Experimental probability (Seventh grade - Z.3)
- Make predictions (Seventh grade - Z.4)

7. SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

- **7. SP.C.7a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.**
 - Probability of simple events (Seventh grade - Z.1)
- **7. SP.C.7b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.**
 - Experimental probability (Seventh grade - Z.3)

8th grade: 8.NS The Number System

- **8. NS.A Know that there are numbers that are not rational, and approximate them by rational numbers.**

8. NS.A.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational

numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

- Identify rational and irrational numbers (Eighth grade - D.1)
- Convert between decimals and fractions or mixed numbers (Eighth grade - D.6)

8th grade: 8.F Functions

8. F.A Define, evaluate, and compare functions.

8th grade: 8.SP Statistics and Probability

8. SP.A Investigate patterns of association in bivariate data.