Sixth Grade Math: Core Essentials

CMP3 Prime Time

Factors and Multiples: Understand relationships among factors, multiples, divisors, and products

Goal	Standard
Classify numbers as prime, composite, even, odd, or square	
Recognize that factors of a number occur in pairs	
Recognize situations that call for common factors and situations that call for common multiples	
Recognize situations that call for the greatest common factor and situations that call for the least common multiple	
Develop strategies for finding factors and multiples	
Develop strategies for finding the least common multiple and the greatest common factor	
Recognize and use the fact that every whole number can be written in exactly one way as a product of prime numbers	
Use exponential notation to write repeated factors	
Relate the prime factorization of two numbers to the least common multiple and greatest common factor of two numbers	
Solve problems involving factors and multiples	

Equivalent Expressions: Understand why two expressions are equivalent

Goal	Standard
Relate the area of a rectangle to the Distributive Property	
Recognize that the Distributive Property relates the multiplicative and additive structures of whole numbers	
Use the properties of operations of numbers, including the Distributive Property, and the Order of Operations convention to write equivalent numerical expressions	
Solve problems involving the Order of Operations and Distributive Property	

List of Common Core Standards in Prime Time:

6.NS.B.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *Investigations 2, 3, and 4*

Note: The development of the Distributive Property with variables is continued in *Variables and Patterns*.

6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents. *Investigations 3 and 4*

6.EE.A.2a Write expressions that record operations with numbers and with letters standing for numbers. *Investigations 1, 2, 3, and 4*

Note: The development in this Unit is primarily with numerical expressions and is further developed with expressions containing variables in *Variables and Patterns*.

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. *Investigations 1, 2, and 4*

Note: The words *term* and *coefficient* are developed in *Variables and Patterns*.

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). *Investigation 4*

Note: Expressions with variables are further developed in *Variables and Patterns* and *Covering and Surrounding*.

6.EE.A.3 Apply the properties of operations to generate equivalent expressions. *Investigations 1, 3, and 4*

Note: The development in this Unit is primarily with numerical expressions and is further developed with expressions containing variables in *Variables and Patterns*.

6.EE.A.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *Investigations 1, 3, and 4*

Note: The development in this Unit is primarily with numerical expressions and is generalized to expressions containing variables in *Variables and Patterns*.

CMP3 Comparing Bits and Pieces

Fractions as Numbers: Understand fractions and decimals as numbers that can be located on the number line, compared, counted, partitioned, and decomposed

Goal	Standard
Expand interpretations of a fraction to include expressing a fraction as a part–whole relationship, as a number, and as an indicated division	
Reason about the roles of the numerator and denominator in each of the interpretations of a fraction	
Use multiple interpretations of proper fractions, improper fractions, and mixed numbers	
Use decimals to represent fractional quantities with attention to place value	
Recognize that fractions are called *rational numbers* and that rational numbers are points on the number line	
Use the number line to reason about rational number relationships	
Use benchmarks to estimate the values of fractions and decimals and to compare and order fractions and decimals	
Recognize that fractions can represent both locations and distances on the number line	
Recognize that a number and its opposite are at equal distances from zero on the number line; the opposite of a is $-a$ and the opposite of $-a$ is a	
Recognize that the absolute value of a number is its distance from 0 on the number line and use it to describe real-world quantities	
Introduce percent as a part–whole relationship in which the whole is not necessarily out of 100, but is scaled or partitioned to be “out of 100” or “per 100”	
Apply a variety of partitioning strategies to solve problems	

Ratios as Comparisons: Understand ratios as comparisons of two numbers

Goal	Standard
Use ratios and associated rates to compare quantities	
Distinguish between a difference, which is an additive comparison, and a ratio, which is a multiplicative comparison	

Distinguish between fractions as numbers and ratios as comparisons	
Apply a variety of scaling strategies to solve problems involving ratios and unit rates	
Recognize that a unit rate is a ratio in which one of the quantities being compared has a value of 1; use rate language in the context of a ratio relationship	
Scale percents to predict new outcomes	

Equivalence: Understand equivalence of fractions and ratios, and use equivalence to solve problems

Goal	Standard
Recognize that equivalent fractions represent the same amount, distance, or location; develop strategies for finding and using equivalent fractions	
Recognize that comparing situations with different-sized wholes is difficult without some common basis of comparison	
Use partitioning and scaling strategies to generate equivalent fractions and ratios and to solve problems	
Develop meaningful strategies for representing fraction amounts greater than 1 or less than –1 as both mixed numbers and improper fractions	
Recognize that equivalent ratios represent the same relationship between two quantities; develop strategies for finding and using equivalent ratios	
Build and use rate tables of equivalent ratios to solve problems	

List of Common Core Standards in Comparing Bits and Pieces:

6.RP.A Understand ratio concepts and use ratio reasoning to solve problems. *Investigations 2 and 4*

6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *Investigations 1, 2, and 4*

6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio $a : b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *Investigations 1, 2, and 4*

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. *Investigations 1, 2, and 4*

6.RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed. *Investigation 2*

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. *Investigations 2 and 4*

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. *Investigation 3*

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. *Investigation 3*

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. *Investigation 3*

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. *Investigation 3*

6.NS.C.7 Understand ordering and absolute value of rational numbers. *Investigation 3*

CMP3 Let's Be Rational

Numeric Estimation: Understand that estimation is a tool used in a variety of situations including checking answers and making decisions, and develop strategies for estimating results of arithmetic operations

Goal	Standard
Use benchmarks and other strategies to estimate results of operations with fractions	
Use estimates to check the reasonableness of exact computations	
Give various reasons to estimate and identify when a situation calls for an overestimate or an underestimate	
Use estimates and exact solutions to make decisions	

Fraction Operations: Revisit and continue to develop meanings for the four arithmetic operations and skill at using algorithms for each

Goal	Standard
Determine when addition, subtraction, multiplication, or division is the appropriate operation to solve a problem	
Develop ways to model sums, differences, products, and quotients with areas, fraction strips, and number lines	
Use knowledge of fractions and equivalence of fractions to develop algorithms for adding, subtracting, multiplying, and dividing fractions	
Write fact families with fractions to show the inverse relationship between addition and subtraction, and between multiplication and division	
Compare and contrast dividing a whole number by a fraction to dividing a fraction by a whole number	
Recognize that when you multiply or divide a fraction, your answer might be less than or more than the numbers you started with	
Solve real-world problems using arithmetic operations on fractions	

Variables and Equations: Use variables to represent unknown values and equations to represent relationships

Goal	Standard
Represent unknown real-world and abstract values with variables	
Write equations (or number sentences) to represent relationships among real-world and abstract values	
Use fact families to solve for unknown values	

List of Common Core Standards in Let's Be Rational:

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. *Investigations 2 and 3*

6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. *Investigation 1*

6.NS.B.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *Investigation 1*

6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers. *Investigations 1 and 4*

6.EE.A.2a Write expressions that record operations with numbers and with letters standing for numbers. *Investigation 4*

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. *Investigations 1, 3, and 4*

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). *Investigation 4*

6.EE.A.3 Apply the properties of operations to generate equivalent expressions. *Investigation 2*

Essential for 6.EE.A.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *Investigation 1*

Essential for 6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. *Investigation 1*

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. *Investigations 1 and 4*

6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form $x+p=q$ and $px=q$ for cases in which p, q and x are all nonnegative rational numbers. *Investigations 1 and 4*

CMP3 Covering and Surrounding

Area and Perimeter: Understand that perimeter is a measure of linear units needed to surround a two-dimensional shape and that area is a measure of square units needed to cover a two-dimensional shape

Goal	Standard
Deepen the understanding of area and perimeter of rectangular and nonrectangular shapes	
Relate area to covering a figure	
Relate perimeter to surrounding a figure	
Analyze what it means to measure area and perimeter	
Develop and use formulas for calculating area and perimeter	
Develop techniques for estimating the area and perimeter of an irregular figure	
Explore relationships between perimeter and area, including that one can vary considerably while the other stays fixed	
Visually represent relationships between perimeter and area on a graph	
Solve problems involving area and perimeter of rectangles	

Area and Perimeter of Parallelograms and Triangles: Understand that the linear measurements of the base, height, and slanted height of parallelograms and triangles are essential to finding the area and perimeter of these shapes

Goal	Standard
Analyze how the area of a triangle and the area of a parallelogram are related to each other and to the area of a rectangle	
Recognize that a triangle can be thought of as half of a rectangle whose sides are equal to the base and height of the triangle	
Recognize that a parallelogram can be decomposed into two triangles. Thus the area of a parallelogram is twice the area of a triangle with the same base and height as the parallelogram	
Know that the choice of base of a triangle (or parallelogram) is arbitrary but that the choice of the base determines the height	
Recognize that there are many triangles (or parallelograms) that can be drawn	

with the same base and height	
Develop formulas and strategies, stated in words or symbols, for finding the area and perimeter of triangles and parallelograms	
Find the side lengths and area of polygons on a coordinate grid	
Solve problems involving area and perimeter of parallelograms and triangles	
Solve problems involving area and perimeter of polygons by composing into rectangles or decomposing into triangles	

Surface Area of Prisms and Pyramids and Volume of Rectangular Prisms: Understand that the surface area of a three-dimensional shape is the sum of the areas of each two-dimensional surface of the shape and that the volume of a rectangular prism is a measure in cubic units of the capacity of the prism

Goal	Standard
Extend the understanding of the volume of rectangular prisms	
Relate volume to filling a three-dimensional figure	
Extend understanding of the strategies for finding the volume of rectangular prisms to accommodate fractional side lengths	
Relate finding area of two-dimensional shapes to finding the surface area of three-dimensional objects	
Develop strategies for finding the surface area of three-dimensional objects made from rectangles and triangles	
Solve problems involving surface area of prisms and pyramids and volume of rectangular prisms	

List of Common Core Standards in Covering and Surrounding:

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. *Investigations 1 and 3*

6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers. *Investigations 1, 2, 3, and 4*

6.EE.A.2a Write expressions that record operations with numbers and with letters standing for numbers. *Investigations 1, 2, 3, and 4*

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). *Investigations 1, 2, 3, and 4*

6.EE.A.3 Apply the properties of operations to generate equivalent expressions. *Investigations 1, 2, and 4*

6.EE.A.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *Investigations 2 and 4*

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. *Investigations 1, 2, 3, and 4*

6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d=65t$ to represent the relationship between distance and time. *Investigations 1, 2, 3, and 4*

6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. *Investigations 1, 2, 3, and 4*

6.G.A.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V=lwh$ and $V=bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. *Investigation 4*

6.G.A.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems. *Investigation 3*

6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. *Investigation 4*

CMP3 Decimal Ops

Numeric Estimation: Understand that estimation can be used as a tool in a variety of situations, including as a way to check answers and make decisions

Goals	Standards
Use estimates to solve problems and check answers	

Decimal Operations Revisit and continue to develop meanings for the four arithmetic operations on rational numbers, and practice using algorithms to operate on decimals

Goals	Standards
Recognize when addition, subtraction, multiplication, or division is the appropriate operation to solve a problem	
Use place value to develop understanding of algorithms and to relate operations with decimals to the same operations with fractions	
Extend understanding of multiplication and division of multidigit whole numbers	
Develop standard algorithms for multiplying and dividing decimals with the aid of, at most, paper and pencil	
Find a repeating or terminating decimal equivalent to a given fraction	
Solve problems using arithmetic operations on decimals, including finding unit rates	

Variables and Number Sentences Use variables to represent unknown values and number sentences to represent relationships between values

Goals	Standards
Write number sentences to represent relationships between both real-world and abstract values	
Use fact families to write and solve equivalent number sentences	
Use multiplication sentences to check division sentences	

Percents Develop understanding of percents through various contexts, such as sales tax, tips, discounts, and percent increases

Goals	Standards
Develop models for percent problems	
Write and solve number sentences involving percents	

List of Common Core Standards in Decimal Ops:

6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *Investigation 1*

6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio $a : b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *Investigation 1*

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. *Investigations 1 and 4*

6.RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed. *Investigation 1*

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. *Investigation 4*

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. *Investigation 3*

6.NS.B.2 Fluently divide multi-digit numbers using the standard algorithm. *Investigation 3*

6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. *Investigations 2, 3, and 4*

6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers. *Investigation 2*

6.EE.A.2a Write expressions that record operations with numbers and with letters standing for numbers. *Investigation 2*

6.EE.A.3 Apply the properties of operations to generate equivalent expressions. *Investigation 4*

6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. *Investigation 2*

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. *Investigations 2 and 4*

6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form $x+p=q$ and $px=q$ for cases in which p, q, and x are all nonnegative rational numbers. *Investigations 2, 3, and 4*

CMP3 Variables and Patterns

Variables and Patterns (Relationships): Develop understanding of variables and how they are related

Goal	Standard
Explore problem situations that involve variables and relationships	
Identify the dependent and independent variables and describe how they are related in a situation	
Interpret the "stories" told by patterns in tables and coordinate graphs of numeric (x, y) data	
Represent the pattern of change that relates two variables in words, data tables, graphs, and equations	
Investigate situations that change over time	
Examine increasing and decreasing patterns of change	
Compare linear and nonlinear patterns of change by using tables or graphs	
Use tables, graphs, and equations to find the value of a variable given the value of the associated variable	
Explore relationships that require graphing in all four quadrants	
Describe advantages and disadvantages of using words, tables, graphs, and equations to represent patterns of change relating two variables and make connections across those representations	
Write an equation to express the relationship between two variables in one and two operations: $y=mx$, $y=b+x$, and $y=b+mx$	
Calculate average speed and show how it is reflected in a table or graph and vice versa	
Recognize and express direct proportionality relationships with a unit rate ($y=mx$) and represent these relationships in rate tables and graphs	
Solve problems that involve variables	

Expressions and Equations: Develop understanding of expressions and equations

Goal	Standard
Use properties of operations, including the Distributive Property and the Order of Operations, to write equivalent expressions for the dependent variable in terms	

of the independent variable	
Use tables, graphs, or properties of numbers such as the Distributive Property to show that two expressions are equivalent	
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	
Interpret and evaluate expressions in which letters stand for numbers and apply the Order of Operations as needed	
Recognize that equations are statements of equivalence between two expressions	
Solve linear equations of the forms $y=ax$, $y=b+x$, and $y=b+ax$ using numeric guess and check, tables of (x,y) values, and graphs or fact families	
Write an inequality and associate it with an equation to find solutions and graph the solutions on a number line	

List of Common Core Standards in Variables and Patterns:

6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *Investigation 3*

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. *Investigations 1, 3, and 4*

6.RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed.*Investigations 1 and 3*

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

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. *Investigation 2*

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. *Investigation 2*

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. *Investigation 2*

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. *Investigations 1 and 2*

6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents. *Investigation 4*

6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers. *Investigation 3*

6.EE.A.2a Write expressions that record operations with numbers and with letters standing for numbers. *Investigation 3*

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. *Investigation 4*

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). *Investigations 3 and 4*

6.EE.A.3 Apply the properties of operations to generate equivalent expressions. *Investigations 3 and 4*

6.EE.A.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *Investigations 3 and 4*

6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. *Investigation 4*

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. *Investigations 2, 3, and 4*

6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form $x+p=q$ and $px=q$ for cases in which p, q and x are all nonnegative rational numbers. *Investigations 3 and 4*

6.EE.B.8 Write an inequality of the form $x>c$ or $x<c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x>c$ or $x<c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams. *Investigation 4*

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. *Investigations 1, 3, and 4*

CMP3 Data About Us

Statistical Process: Understand and use the process of statistical investigation

Goal	Standard
Ask questions, collect and analyze data, and interpret data to answer questions	
Describe data with respect to its shape, center, and variability or spread	
Construct and use simple surveys as a method of collecting data	

Attributes of Data: Distinguish data and data types

Goal	Standard
Recognize that data consist of counts or measurements of a variable, or an attribute; these observations comprise a distribution of data values	
Distinguish between categorical data and numerical data, and identify which graphs and statistics can be used to represent each kind of data	

Multiple Representations for Displaying Data: Display data with multiple representations

Goal	Standard
Organize and represent data using tables, dot plots, line plots, ordered-value bar graphs, frequency bar graphs, histograms, and box-and-whisker plots	
Make informed decisions about which graphs or tables can be used to display a particular set of data	
Recognize that a graph shows the overall shape of a distribution, whether the data values are symmetrical around a central value, and whether the graph contains any unusual characteristics such as gaps, clusters, or outliers	

Measures of Central Tendency and Variability: Recognize that a single number may be used to characterize the center of a distribution of data and the degree of variability (or spread)

Goal	Standard
Distinguish between and compute measures of central tendency (mean, median, and mode) and measures of spread (range, interquartile range (IQR), and mean absolute deviation (MAD))	
Identify how the median and mean respond to changes in the data values of a	

distribution	
Relate the choice of measures of central tendency and variability to the shape of the distribution and the context	
Describe the amount of variability in a distribution by noting whether the data values cluster in one or more areas or are fairly spread out	
Use measures of center and spread to compare data distributions	

List of Common Core Standards in Data About Us:

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. *Investigation 3*

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. *Investigation 3*

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. *Investigations 1, 2, 3, and 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. *Investigations 1, 2, 3, and 4*

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. *Investigations 1, 2, 3, and 4*

6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots. *Investigations 1, 2, 3, and 4*

6.SP.B.5A Summarize numerical data sets in relation to their context, such as by reporting the number of observations. *Investigations 1, 2, and 4*

6.SP.B.5B Summarize numerical data sets in relation to their context, such as by describing the nature of the attribute under investigation including how it was measured and its units of measurement. *Investigation 2*

6.SP.B.5C Summarize numerical data sets in relation to their context, such as by 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. *Investigations 1, 2, 3, and 4*

6.SP.B.5D Summarize numerical data sets in relation to their context, such as by 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. *Investigations 2, 3, and 4*

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. *Investigations 2, 3, and 4*

6.NS.C.7 Understand ordering and absolute value of rational numbers. *Investigations 2, 3, and 4*