A Correlation of

Indiana Academic Standards Mathematics (2014)
Grade 6

To the Lessons of

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Grade 6

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1-2 Evaluate Numerical Expressions	**6.C.5** Evaluate positive rational numbers with whole number exponents. **6.C.6** Apply the order of operations and properties of operations (identity, inverse, commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property) to evaluate numerical expressions with nonnegative rational numbers, including those using grouping symbols, such as parentheses, and involving whole number exponents. Justify each step in the process.
1-3 Use Variables to Write Expressions	**6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values.
1-4 Identify Parts of an Expression	**6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values.
1-5 Evaluate Algebraic Expressions	**6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values.

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1-6 Write Equivalent Expressions	**6.C.6** Apply the order of operations and properties of operations (identity, inverse, commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property) to evaluate numerical expressions with nonnegative rational numbers, including those using grouping symbols, such as parentheses, and involving whole number exponents. Justify each step in the process. **6.AF.2** Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions and to justify whether two linear expressions are equivalent when the two expressions name the same number regardless of which value is substituted into them.
1-7 Simplify Algebraic Expressions	**6.C.6** Apply the order of operations and properties of operations (identity, inverse, commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property) to evaluate numerical expressions with nonnegative rational numbers, including those using grouping symbols, such as parentheses, and involving whole number exponents. Justify each step in the process. **6.AF.2** Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions and to justify whether two linear expressions are equivalent when the two expressions name the same number regardless of which value is substituted into them.
1-8 Equivalent Expressions	**6.C.6** Apply the order of operations and properties of operations (identity, inverse, commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property) to evaluate numerical expressions with nonnegative rational numbers, including those using grouping symbols, such as parentheses, and involving whole number exponents. Justify each step in the process.

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(Continued) 1-8 Equivalent Expressions	**6.AF.2** Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions and to justify whether two linear expressions are equivalent when the two expressions name the same number regardless of which value is substituted into them.
1-9 Formulas	**6.AF.2** Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions and to justify whether two linear expressions are equivalent when the two expressions name the same number regardless of which value is substituted into them.
1-10 Math Practices and Problem Solving: Look For and Use Structure	**6.C.6** Apply the order of operations and properties of operations (identity, inverse, commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property) to evaluate numerical expressions with nonnegative rational numbers, including those using grouping symbols, such as parentheses, and involving whole number exponents. Justify each step in the process. **6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.AF.2** Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions and to justify whether two linear expressions are equivalent when the two expressions name the same number regardless of which value is substituted into them.
TOPIC 2 Algebra: Solve Equations and Inequalities	
2-1 Understand Equations and Solutions	**6.AF.4** Understand that solving an equation or inequality is the process of answering the following 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.

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2-2 Properties of Equality	**6.AF.2** Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions and to justify whether two linear expressions are equivalent when the two expressions name the same number regardless of which value is substituted into them. **6.AF.4** Understand that solving an equation or inequality is the process of answering the following 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.
2-3 Solve Addition and Subtraction Equations	**6.AF.5** Solve equations of the form $x + p = q$, $x - p = q$, $px = q$, and $x/p = q$ fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.
2-4 Solve Multiplication and Division Equations	**6.C.6** Apply the order of operations and properties of operations (identity, inverse, commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property) to evaluate numerical expressions with nonnegative rational numbers, including those using grouping symbols, such as parentheses, and involving whole number exponents. Justify each step in the process. **6.AF.5** Solve equations of the form $x + p = q$, $x - p = q$, $px = q$, and $x/p = q$ fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.
2-5 Solve Equations with Fractions	**6.AF.5** Solve equations of the form $x + p = q$, $x - p = q$, $px = q$, and $x/p = q$ fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.

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2-6 Write Inequalities	**6.AF.6** Write an inequality of the form $x > c$, $x ≥ c$, $x < c$, or $x ≤ c$, where c is a rational number, to represent a constraint or condition in a real-world or other mathematical problem. Recognize inequalities have infinitely many solutions and represent solutions on a number line diagram.
2-7 Solve Inequalities	**6.AF.6** Write an inequality of the form $x > c$, $x ≥ c$, $x < c$, or $x ≤ c$, where c is a rational number, to represent a constraint or condition in a real-world or other mathematical problem. Recognize inequalities have infinitely many solutions and represent solutions on a number line diagram.
2-8 Math Practices and Problem Solving: Make Sense and Persevere	**6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values. **6.AF.5** Solve equations of the form $x + p = q$, $x - p = q$, $px = q$, and $x/p = q$ fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.
TOPIC 3 Rational Numbers	
3-1 Understand Integers	**6.NS.1** Understand that positive and negative numbers are used 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 and compare quantities in real-world contexts, explaining the meaning of 0 in each situation. **6.NS.2** Understand the integer number system. 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.

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3-2 Rational Numbers on a Number Line	**6.NS.2** Understand the integer number system. 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. **6.NS.3** Compare and order rational numbers and plot them on a number line. Write, interpret, and explain statements of order for rational numbers in real-world contexts.
3-3 Compare and Order Rational Numbers	**6.NS.3** Compare and order rational numbers and plot them on a number line. Write, interpret, and explain statements of order for rational numbers in real-world contexts.
3-4 Absolute Value	**6.NS.4** Understand that the absolute value of a number is the distance from zero on a number line. Find the absolute value of real numbers and know that the distance between two numbers on the number line is the absolute value of their difference. Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
3-5 Math Practices and Problem Solving: Reasoning	**6.NS.1** Understand that positive and negative numbers are used 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 and compare quantities in real-world contexts, explaining the meaning of 0 in each situation. **6.NS.2** Understand the integer number system. 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. **6.NS.3** Compare and order rational numbers and plot them on a number line. Write, interpret, and explain statements of order for rational numbers in real-world contexts.

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TOPIC 4 Algebra: Coordinate Geometry	
4-1 Integers on the Coordinate Plane	**6.AF.7** Understand that signs of numbers in ordered pairs indicate the quadrant containing the point; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. Graph points with rational number coordinates on a coordinate plane. **6.AF.8** Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. Include the use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
4-2 Rational Numbers on the Coordinate Plane	**6.AF.7** Understand that signs of numbers in ordered pairs indicate the quadrant containing the point; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. Graph points with rational number coordinates on a coordinate plane. **6.AF.8** Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. Include the use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
4-3 Distance on the Coordinate Plane	**6.AF.7** Understand that signs of numbers in ordered pairs indicate the quadrant containing the point; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. Graph points with rational number coordinates on a coordinate plane. **6.AF.8** Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. Include the use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

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4-4 Polygons on the Coordinate Plane	**6.AF.7** Understand that signs of numbers in ordered pairs indicate the quadrant containing the point; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. Graph points with rational number coordinates on a coordinate plane. **6.AF.8** Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. Include the use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. **6.GM.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 to solve real-world and other mathematical problems.
4-5 Math Practices and Problem Solving: Construct Arguments	**6.AF.7** Understand that signs of numbers in ordered pairs indicate the quadrant containing the point; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. Graph points with rational number coordinates on a coordinate plane. **6.AF.8** Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. Include the use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. **6.GM.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 to solve real-world and other mathematical problems.

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TOPIC 5 Algebra: Patterns and Equations	
5-1 Dependent and Independent Variables	**6.AF.10** Use variables to represent two quantities in a proportional relationship in a real-world problem; write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.
5-2 Patterns and Equations	**6.AF.10** Use variables to represent two quantities in a proportional relationship in a real-world problem; write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.
5-3 More Patterns and Equations	**6.AF.10** Use variables to represent two quantities in a proportional relationship in a real-world problem; write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.
5-4 Graph Equations	**6.AF.10** Use variables to represent two quantities in a proportional relationship in a real-world problem; write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.
5-5 Continue to Graph Equations	**6.AF.10** Use variables to represent two quantities in a proportional relationship in a real-world problem; write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

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5-6 Math Practices and Problem Solving: Model with Math	**6.AF.4** Understand that solving an equation or inequality is the process of answering the following question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. **6.AF.5** Solve equations of the form x + p = q, x - p = q, px = q, and x/p = q fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems. **6.AF.10** Use variables to represent two quantities in a proportional relationship in a real-world problem; write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.
TOPIC 6 Fluently Divide Whole Numbers	
6-1 Estimate Quotients Involving Whole Numbers	**6.C.1** Divide multi-digit whole numbers fluently using a standard algorithmic approach.
6-2 Divide Whole Numbers	**6.C.1** Divide multi-digit whole numbers fluently using a standard algorithmic approach.
6-3 Continue to Divide Whole Numbers	**6.C.1** Divide multi-digit whole numbers fluently using a standard algorithmic approach.
6-4 Evaluate Expressions	**6.C.1** Divide multi-digit whole numbers fluently using a standard algorithmic approach. **6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values.

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6-5 Solve Division Equations	**6.C.1** Divide multi-digit whole numbers fluently using a standard algorithmic approach. **6.AF.4** Understand that solving an equation or inequality is the process of answering the following question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. **6.AF.5** Solve equations of the form x + p = q, x - p = q, px = q, and x/p = q fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.
6-6 Math Practices and Problem Solving: Precision	**6.C.1** Divide multi-digit whole numbers fluently using a standard algorithmic approach. **6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values.
TOPIC 7 Fluently Add, Subtract, Multiply, and Divide Decimals	
7-1 Estimate Sums and Differences	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations.
7-2 Add and Subtract Decimals	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations.

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7-3 Estimate Products	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations.
7-4 Multiply Decimals	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations.
7-5 Divide Decimals by a Whole Number	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations.
7-6 Divide Decimals	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations.
7-7 Continue to Divide Decimals	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations.
7-8 Evaluate Expressions with Decimals	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.5** Evaluate positive rational numbers with whole number exponents. **6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values.

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7-9 Solve Equations with Decimals	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.AF.4** Understand that solving an equation or inequality is the process of answering the following question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. **6.AF.5** Solve equations of the form x + p = q, x - p = q, px = q, and x/p = q fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.
7-10 Math Practices and Problem Solving: Use Appropriate Tools	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations.
TOPIC 8 Common Factors and Multiples	
8-1 Prime and Composite Numbers	**6.NS.6** Identify and explain prime and composite numbers. **6.C.5** Evaluate positive rational numbers with whole number exponents.
8-2 Find the Greatest Common Factor	**6.NS.7** 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 from 1 to 100, with a common factor as a multiple of a sum of two whole numbers with no common factor. **6.C.6** Apply the order of operations and properties of operations (identity, inverse, commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property) to evaluate numerical expressions with nonnegative rational numbers, including those using grouping symbols, such as parentheses, and involving whole number exponents. Justify each step in the process.

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8-3 Least Common Multiple	**6.NS**.7 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 from 1 to 100, with a common factor as a multiple of a sum of two whole numbers with no common factor.
8-4 Math Practices and Problem Solving: Critique Reasoning	**6.NS.6** Identify and explain prime and composite numbers. **6.NS.7** 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 from 1 to 100, with a common factor as a multiple of a sum of two whole numbers with no common factor. **6.C.6** Apply the order of operations and properties of operations (identity, inverse, commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property) to evaluate numerical expressions with nonnegative rational numbers, including those using grouping symbols, such as parentheses, and involving whole number exponents. Justify each step in the process.
TOPIC 9 Ratio Concepts and Reasoning	
9-1 Understand Ratios	**6.NS**.8 Interpret, model, and use ratios to show the relative sizes of two quantities. Describe how a ratio shows the relationship between two quantities. Use the following notations: a/b, a to b, a:b.
9-2 Model Ratios	**6.NS**.8 Interpret, model, and use ratios to show the relative sizes of two quantities. Describe how a ratio shows the relationship between two quantities. Use the following notations: a/b, a to b, a:b.

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9-3 Equivalent Ratios	**6.NS.8** Interpret, model, and use ratios to show the relative sizes of two quantities. Describe how a ratio shows the relationship between two quantities. Use the following notations: a/b, a to b, a:b. **6.NS.10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).
9-4 Compare Ratios	**6.NS.8** Interpret, model, and use ratios to show the relative sizes of two quantities. Describe how a ratio shows the relationship between two quantities. Use the following notations: a/b, a to b, a:b. **6.NS.10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).
9-5 Ratios and Graphs	**6.NS.8** Interpret, model, and use ratios to show the relative sizes of two quantities. Describe how a ratio shows the relationship between two quantities. Use the following notations: a/b, a to b, a:b. **6.AF.9** 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. **6.NS.10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).
9-6 Math Practices and Problem Solving: Make Sense and Persevere	**6.NS.8** Interpret, model, and use ratios to show the relative sizes of two quantities. Describe how a ratio shows the relationship between two quantities. Use the following notations: a/b, a to b, a:b. **6.AF.9** 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.

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(Continued) 9-6 Math Practices and Problem Solving: Make Sense and Persevere	**6.NS.10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).
TOPIC 10 Ratio Concepts: Rates	
10-1 Understand Rates	**6.NS.9** Understand the concept of a unit rate and use terms related to rate in the context of a ratio relationship. **6.NS.10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).
10-2 Understand Unit Rates	**6.NS.9** Understand the concept of a unit rate and use terms related to rate in the context of a ratio relationship. **6.NS.10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).
10-3 Compare Rates	**6.NS.9** Understand the concept of a unit rate and use terms related to rate in the context of a ratio relationship. **6.NS.10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).
10-4 Apply Unit Rates: Unit Price	**6.NS.9** Understand the concept of a unit rate and use terms related to rate in the context of a ratio relationship. **6.NS.10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).

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10-5　Apply Unit Rates: Constant Speed	**6.NS.9** Understand the concept of a unit rate and use terms related to rate in the context of a ratio relationship. **6.NS.10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).
10-6　Convert Customary Units	**6.NS.10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations). **6.GM.1** Convert between measurement systems (English to metric and metric to English) given conversion factors, and use these conversions in solving real-world problems.
10-7　Convert Metric Units	**6.GM.1** Convert between measurement systems (English to metric and metric to English) given conversion factors, and use these conversions in solving real-world problems.
10-8　Relate Customary and Metric Units	**6.GM.1** Convert between measurement systems (English to metric and metric to English) given conversion factors, and use these conversions in solving real-world problems.
10-9　Math Practices and Problem Solving: Precision	**6.NS.10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).
TOPIC 11 Ratio Concepts: Percent	
11-1　Understand Percent	**6.NS.5** Know commonly used fractions (halves, thirds, fourths, fifths, eighths, tenths) and their decimal and percent equivalents. Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator.

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(Continued) 11-1 Understand Percent	**6.NS**.**10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).
11-2 Fractions, Decimals, and Percents	**6.NS**.**5** Know commonly used fractions (halves, thirds, fourths, fifths, eighths, tenths) and their decimal and percent equivalents. Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator. **6.NS**.**10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).
11-3 Percents Greater Than 100 or Less Than 1	**6.NS**.**5** Know commonly used fractions (halves, thirds, fourths, fifths, eighths, tenths) and their decimal and percent equivalents. Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator. **6.NS**.**10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).
11-4 Estimate Percent	**6.NS**.**5** Know commonly used fractions (halves, thirds, fourths, fifths, eighths, tenths) and their decimal and percent equivalents. Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator. **6.NS**.**10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).

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11-5 Find the Percent of a Number	**6.NS**.5 Know commonly used fractions (halves, thirds, fourths, fifths, eighths, tenths) and their decimal and percent equivalents. Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator. **6.NS**.10 Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations). **6.AF**.3 Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values. **6.AF**.5 Solve equations of the form x + p = q, x - p = q, px = q, and x/p = q fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.
11-6 Find the Whole	**6.NS**.5 Know commonly used fractions (halves, thirds, fourths, fifths, eighths, tenths) and their decimal and percent equivalents. Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator. **6.NS**.10 Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations). **6.AF**.3 Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values. **6.AF**.5 Solve equations of the form x + p = q, x - p = q, px = q, and x/p = q fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.

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11-7 Math Practices and Problem Solving: Repeated Reasoning	**6.NS.5** Know commonly used fractions (halves, thirds, fourths, fifths, eighths, tenths) and their decimal and percent equivalents. Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator. **6.NS.10** Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations). **6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values. **6.AF.5** Solve equations of the form $x + p = q$, $x - p = q$, $px = q$, and $x/p = q$ fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.
TOPIC 12 Divide Fractions by Fractions	
12-1 Understand Division of Fractions	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations. **6.C.4** Compute quotients of positive fractions and solve real-world problems involving division of fractions by fractions. Use a visual fraction model and/or equation to represent these calculations.
12-2 Divide Whole Numbers by Fractions	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations. **6.C.4** Compute quotients of positive fractions and solve real-world problems involving division of fractions by fractions. Use a visual fraction model and/or equation to represent these calculations.

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12-3 Use Models to Divide Fractions	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations. **6.C.4** Compute quotients of positive fractions and solve real-world problems involving division of fractions by fractions. Use a visual fraction model and/or equation to represent these calculations.
12-4 Divide Fractions	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations. **6.C.4** Compute quotients of positive fractions and solve real-world problems involving division of fractions by fractions. Use a visual fraction model and/or equation to represent these calculations.
12-5 Estimate Mixed-Number Quotients	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations. **6.C.4** Compute quotients of positive fractions and solve real-world problems involving division of fractions by fractions. Use a visual fraction model and/or equation to represent these calculations.
12-6 Divide Mixed Numbers	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations. **6.C.4** Compute quotients of positive fractions and solve real-world problems involving division of fractions by fractions. Use a visual fraction model and/or equation to represent these calculations.

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12-7 Evaluate Expressions with Fractions	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations. **6.C.4** Compute quotients of positive fractions and solve real-world problems involving division of fractions by fractions. Use a visual fraction model and/or equation to represent these calculations. **6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values.
12-8 Solve Equations with Fractions	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations. **6.C.4** Compute quotients of positive fractions and solve real-world problems involving division of fractions by fractions. Use a visual fraction model and/or equation to represent these calculations. **6.AF.4** Understand that solving an equation or inequality is the process of answering the following question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. **6.AF.5** Solve equations of the form $x + p = q$, $x - p = q$, $px = q$, and $x/p = q$ fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.

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12-9 Math Practices and Problem Solving: Precision	**6.C.2** Compute with positive fractions and positive decimals fluently using a standard algorithmic approach. **6.C.3** Solve real-world problems with positive fractions and decimals by using one or two operations. **6.C.4** Compute quotients of positive fractions and solve real-world problems involving division of fractions by fractions. Use a visual fraction model and/or equation to represent these calculations. **6.AF.5** Solve equations of the form $x + p = q$, $x - p = q$, $px = q$, and $x/p = q$ fluently for cases in which p, q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.
TOPIC 13 Solve Area Problems	
13-1 Areas of Parallelograms and Rhombuses	**6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.GM.4** Find the area of complex shapes composed of polygons by composing or decomposing into simple shapes; apply this technique to solve real-world and other mathematical problems.
13-2 Areas of Triangles	**6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.GM.4** Find the area of complex shapes composed of polygons by composing or decomposing into simple shapes; apply this technique to solve real-world and other mathematical problems.

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13-3 Areas of Special Quadrilaterals	**6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.GM.4** Find the area of complex shapes composed of polygons by composing or decomposing into simple shapes; apply this technique to solve real-world and other mathematical problems.
13-4 Areas of Polygons	**6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.GM.4** Find the area of complex shapes composed of polygons by composing or decomposing into simple shapes; apply this technique to solve real-world and other mathematical problems.
13-5 Polygons on the Coordinate Plane	**6.AF.7** Understand that signs of numbers in ordered pairs indicate the quadrant containing the point; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. Graph points with rational number coordinates on a coordinate plane. **6.AF.8** Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. Include the use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. **6.GM.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 to solve real-world and other mathematical problems. **6.GM.4** Find the area of complex shapes composed of polygons by composing or decomposing into simple shapes; apply this technique to solve real-world and other mathematical problems.

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13-6 Math Practices and Problem Solving: Look For and Use Structure	**6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.GM.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 to solve real-world and other mathematical problems. **6.GM.4** Find the area of complex shapes composed of polygons by composing or decomposing into simple shapes; apply this technique to solve real-world and other mathematical problems.
TOPIC 14 Solve Surface Area and Volume Problems	
14-1 Solid Figures and Nets	**6.GM.6** Construct right rectangular prisms from nets and use the nets to compute the surface area of prisms; apply this technique to solve real-world and other mathematical problems.
14-2 Surface Area of Prisms	**6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values. **6.GM.6** Construct right rectangular prisms from nets and use the nets to compute the surface area of prisms; apply this technique to solve real-world and other mathematical problems.
14-3 Surface Area of Pyramids	**6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values.

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	6.GM.6 Construct right rectangular prisms from nets and use the nets to compute the surface area of prisms; apply this technique to solve real-world and other mathematical problems.
14-4 Volume with Fractional Edge Lengths	**6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values. **6.GM.5** Find the volume of a right rectangular prism with fractional edge lengths using unit cubes of the appropriate unit fraction edge lengths (e.g., using technology or concrete materials), 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 to solve real-world and other mathematical problems. **6.GM.6** Construct right rectangular prisms from nets and use the nets to compute the surface area of prisms; apply this technique to solve real-world and other mathematical problems.

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14-5 Math Practices and Problem Solving: Reasoning	**6.AF.1** Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems. **6.AF.3** Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values. **6.GM.5** Find the volume of a right rectangular prism with fractional edge lengths using unit cubes of the appropriate unit fraction edge lengths (e.g., using technology or concrete materials), 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 to solve real-world and other mathematical problems. **6.GM.6** Construct right rectangular prisms from nets and use the nets to compute the surface area of prisms; apply this technique to solve real-world and other mathematical problems.
TOPIC 15 Measures of Center and Variability	
15-1 Statistical Questions	**6.DS.1** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for the variability in the answers. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. **6.DS.3** Formulate statistical questions; collect and organize the data (e.g., using technology); display and interpret the data with graphical representations (e.g., using technology).

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15-2 Mean	**6.DS**.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for the variability in the answers. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. **6.DS**.4 Summarize numerical data sets in relation to their context in multiple ways, such as: report the number of observations; describe the nature of the attribute under investigation, including how it was measured and its units of measurement; determine quantitative measures of center (mean and/or median) and spread (range and interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered; and relate the choice of measures of center and spread to the shape of the data distribution and the context in which the data were gathered.
15-3 Median, Mode, and Range	**6.DS**.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for the variability in the answers. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. **6.DS**.4 Summarize numerical data sets in relation to their context in multiple ways, such as: report the number of observations; describe the nature of the attribute under investigation, including how it was measured and its units of measurement; determine quantitative measures of center (mean and/or median) and spread (range and interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered; and relate the choice of measures of center and spread to the shape of the data distribution and the context in which the data were gathered.

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15-4 Math Practices and Problem Solving: Make Sense and Persevere	**6.DS.1** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for the variability in the answers. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. **6.DS.4** Summarize numerical data sets in relation to their context in multiple ways, such as: report the number of observations; describe the nature of the attribute under investigation, including how it was measured and its units of measurement; determine quantitative measures of center (mean and/or median) and spread (range and interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered; and relate the choice of measures of center and spread to the shape of the data distribution and the context in which the data were gathered.
TOPIC 16 Display and Summarize Data	
16-1 Frequency Tables and Histograms	**6.DS.2** Select, create, and interpret graphical representations of numerical data, including line plots, histograms, and box plots.
16-2 Box Plots	**6.DS.2** Select, create, and interpret graphical representations of numerical data, including line plots, histograms, and box plots.

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16-3 Measures of Variability	**6.DS**.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for the variability in the answers. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. **6.DS**.4 Summarize numerical data sets in relation to their context in multiple ways, such as: report the number of observations; describe the nature of the attribute under investigation, including how it was measured and its units of measurement; determine quantitative measures of center (mean and/or median) and spread (range and interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered; and relate the choice of measures of center and spread to the shape of the data distribution and the context in which the data were gathered.
16-4 Appropriate Use of Statistical Measures	**6.DS**.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for the variability in the answers. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. **6.DS**.4 Summarize numerical data sets in relation to their context in multiple ways, such as: report the number of observations; describe the nature of the attribute under investigation, including how it was measured and its units of measurement; determine quantitative measures of center (mean and/or median) and spread (range and interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered; and relate the choice of measures of center and spread to the shape of the data distribution and the context in which the data were gathered.

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16-5 Summarize Data Distributions	**6.DS.1** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for the variability in the answers. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. **6.DS.4** Summarize numerical data sets in relation to their context in multiple ways, such as: report the number of observations; describe the nature of the attribute under investigation, including how it was measured and its units of measurement; determine quantitative measures of center (mean and/or median) and spread (range and interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered; and relate the choice of measures of center and spread to the shape of the data distribution and the context in which the data were gathered.
16-6 Math Practices and Problem Solving: Critique Reasoning	**6.DS.1** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for the variability in the answers. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. **6.DS.2** Select, create, and interpret graphical representations of numerical data, including line plots, histograms, and box plots. **6.DS.3** Formulate statistical questions; collect and organize the data (e.g., using technology); display and interpret the data with graphical representations (e.g., using technology).

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(Continued) 16-6 Math Practices and Problem Solving: Critique Reasoning	**6.DS.4** Summarize numerical data sets in relation to their context in multiple ways, such as: report the number of observations; describe the nature of the attribute under investigation, including how it was measured and its units of measurement; determine quantitative measures of center (mean and/or median) and spread (range and interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered; and relate the choice of measures of center and spread to the shape of the data distribution and the context in which the data were gathered.