This Teacher Resource Guide, revised in July 2018, provides supporting materials to help educators successfully implement the Indiana Academic Standards for Sixth Grade. This resource guide is provided to help ensure all students meet the rigorous learning expectations set by the academic standards. Use of this guide and the resources on the web page is optional – teachers should decide which resources will work best for their students. However, all guidance contained in this document and on the website has been chosen to best support effective teaching practices and promote the Mathematics Process Standards.
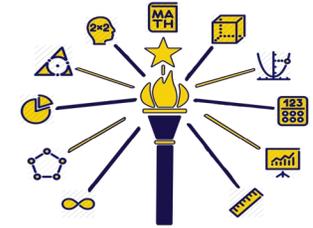
With an increased emphasis on content area literacy, academic vocabulary has been noted and defined. Additionally, necessary vocabulary that should be prior knowledge has also been listed. Best practices should be utilized when teaching students academic vocabulary. Please see the Literacy Framework for examples of best practices.

Examples have been removed from the document as they tend to limit interpretation and classroom application. Rather, success criteria, in the form of "I can" statements, have been included. According to Hattie (2017), success criteria is specific, concrete and measurable, describing what success looks like when a learning goal is reached. Additionally, success criteria contributes to teacher clarity, which has a 0.75 effect size! An effect size of 0.40 reportedly indicates one year of growth. Utilizing success criteria in the classroom allows students to monitor their own learning and increases motivation (Hattie, p. 57). **It is important to note that the success criteria provided here are not intended to be limiting. Teachers may have additional success criteria for their students.**

Guidance around vertical articulation has been provided in the last two columns. Knowing what was expected of students at previous grade levels will help teachers connect new learning to prior knowledge. Additionally, understanding what a student will be expected to learn in the future provides the teacher a context for the current learning. This information is not exhaustive; rather it is provided to give teachers a quick understanding of how the work builds from previous grade levels into subsequent courses. The Indiana Department of Education (IDOE) math team recommends teachers further study this vertical articulation to situate their course objectives in the broader math context.
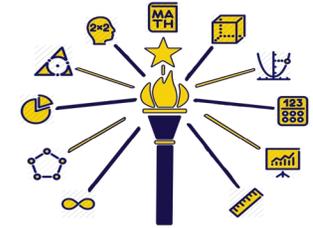
If you have any questions, please do not hesitate to reach out to the IDOE math team. Contact information for the Elementary and Secondary Math Specialists can be found on the website: https://www.doe.in.gov/standards/mathematics. If you have suggested resources for the website, please share those as well.

Hattie, J., Fisher, D., Frey, N., Gojak, L. M., Moore, S. D., & Mellman, W. (2017). *Visible learning for mathematics: What works best to optimize student learning, grades K-12*. Thousand Oaks, CA: Corwin Mathematics.
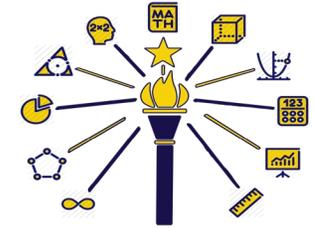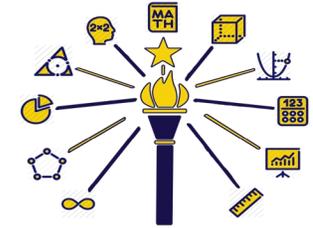
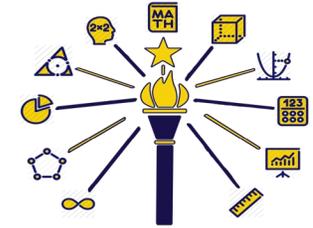| Number Sense					
Grade 6 Mathematics Standards		**Success Criteria**	**Academic Vocabulary**	**Looking Back**	**Looking Ahead**
MA.6.NS.1:	Understand that positive and negative numbers are used to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation 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.	I can show on a number line that a negative number lies in the opposite direction as a positive number. I can show that positive and negative numbers have opposite values. I can use positive and negative numbers to represent and compare quantities in a variety of real-world contexts. I can explain the meaning of 0 in real world contexts.	Integer Positive Negative	Use a number line to compare and order fractions, mixed numbers, and decimals. (MA.5.NS.1)	Identify, compare, and order rational and common irrational numbers and plot them on a number line. (MA.7.NS.3)
MA.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.	I can demonstrate understanding of integers. I can show that numbers with opposite signs are located on opposite sides of zero on the number line. I can explain that the opposite of the opposite of a number is	Integer Opposite	Use a number line to compare and order fractions, mixed numbers, and decimals. (MA.5.NS.1) Understand that positive and negative numbers are used to describe quantities having opposite directions or values. (MA.6.NS.1)	Identify, compare, and order rational and common irrational numbers and plot them on a number line. (MA.7.NS.3)

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		actually the number itself. I can explain that 0 is its own opposite.			
MA.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.	I can plot rational numbers on a number line. I can compare and order rational numbers. I can write statements of order for rational numbers in real-world problems. I can interpret and explain statements of order for rational numbers in real-world problems.	Rational number	Use a number line to compare and order fractions, mixed numbers, and decimals to the thousandths. (MA.5.NS.1)	Identify, compare, and order rational and common irrational numbers and plot them on a number line. (MA.7.NS.3)
MA.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.	I can use a number line to explain that absolute value is the distance a number is away from zero. I can find the absolute value of real numbers. I can show the distance between two numbers on the number line is	Absolute value Magnitude Real numbers	Understand that positive and negative numbers are used to describe quantities having opposite directions or values (MA.6.NS.1)	Understand p + q as the number located $\|q\|$ from p, in the positive or negative direction. (MA.7.C.1) Graph absolute value linear equations in two variables. (MA.AI.L.10)

		the absolute value of their difference. I can relate absolute value to magnitude for a positive or negative quantity in a real-world situation.			
MA.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.	I can give examples of commonly used fractions. I can translate between commonly used fractions and their decimal and percent equivalents. Without using a calculator, I can convert between fractions, decimals and percents of positive rational numbers.	Equivalent	Use a number line to compare and order fractions, mixed numbers, and decimals. (MA.5.NS.1) Understand, interpret, and model percents as part of a hundred. (MA.5.NS.6)	Use proportional relationships to solve ratio and percent problems with multiple operations. (MA.7.C.6)
MA.6.NS.6:	Identify and explain prime and composite numbers.	I can identify prime numbers. I can identify composite numbers. I can explain how to determine if numbers are prime or composite.	Prime numbers Composite numbers Integer	Determine whether a group of objects (up to 20) has an odd or even number of members (MA.2.NS.2)	Find the prime factorization of whole numbers. (MA.7.NS.1)

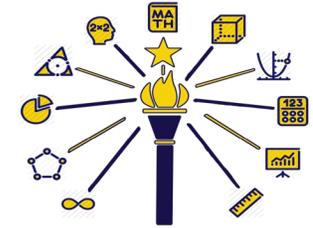|				
MA.6.NS.7:	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers from 1 to 100, with a common factor as a multiple of a sum of two whole numbers with no common factor.	I can find the greatest common factor (GCF) between two numbers less than or equal to 100. I can find the least common multiple (LCM) between two whole numbers less than or equal to 12. I can determine whether two whole numbers from 1 to 100 have a common factor. I can use the distributive property to express a sum of two whole numbers between 1 and 100 with a common factor as a multiple of a sum of two whole numbers without a common factor.	Greatest common factor Least common multiple Distributive Property	Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. (MA.4.NS.8)	Find the prime factorization of whole numbers. (MA.7.NS.1)
MA.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.	I can interpret ratios as relative size between two quantities. I can model and use ratios to show relative sizes of two quantities.	Ratio	Explain different interpretations of fractions. (MA.5.NS.2)	Decide whether two quantities are in a proportional relationship by testing for equivalent ratios. (MA.7.AF.6)

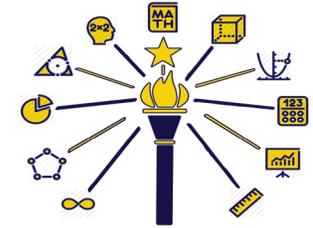|		I can describe how a ratio show the relationship between two quantities. I can represent ratios using the following notations: a/b, a to b, and a:b.			
MA.6.NS.9:	Understand the concept of a unit rate and use terms related to rate in the context of a ratio relationship.	I can demonstrate understanding of unit rates. I can use terms related to rate in the context of a ratio relationship.	Unit Rate Ratio	Explain different interpretations of fractions. (MA.5.NS.2)	Identify unit rates. (MA.7.AF.7)
MA.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).	I can use reasoning to model real-world problems involving rates. I can use reasoning to model real-world problems involving ratios. I can represent real world and other mathematical problems with rates and ratios.	Rate Ratio Tape diagram Double number line	Solve real-world problems involving multiplication of fractions, including mixed numbers (MA.5.AT.3)	Decide whether two quantities are in a proportional relationship. (MA.7.AF.6)
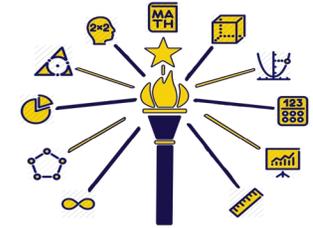
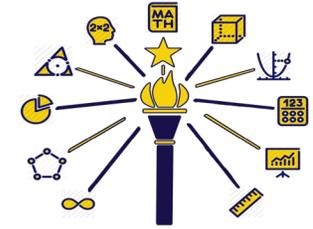| Computation					
Grade 6 Mathematics Standards		**Success Criteria**	**Academic Vocabulary**	**Looking Back**	**Looking Ahead**
MA.6.C.1:	Divide multi-digit whole numbers fluently using a standard algorithmic approach.	I can use a standard algorithm to fluently divide multi-digit whole numbers.	Algorithm Division algorithm	Find whole number quotients and remainders. (MA.5.C.2) Find whole-number quotients and remainders. (MA.4.C.3)	Understand that integers can be divided. (MA.7.C.4)
MA.6.C.2:	Compute with positive fractions and positive decimals fluently using a standard algorithmic approach.	I can compute with positive fractions fluently using a standard algorithm. I can compute with positive decimals fluently using a standard algorithm.	Algorithm	Add and subtract fractions with unlike denominators. (MA.5.C.4) Add, subtract, multiply, and divide decimals to hundredths. (MA.5.C.8)	Compute with rational numbers fluently. (MA.7.C.7)
MA.6.C.3:	Solve real-world problems with positive fractions and decimals by using one or two operations.	I can solve real-world problems that involve positive fractions using up to two operations. I can solve real-world problems with positive decimals using up to two operations.		Solve real-world problems involving. (MA.AT.2) Solve real-world problems involving multiplication of fractions. (MA.5.AT.3) Solve real-world problems involving division of unit	Solve real-world problems with rational numbers by using one or two operations. (MA.7.C.8) Solve real-world problems with rational numbers by using multiple operations. (MA.8.C.1)

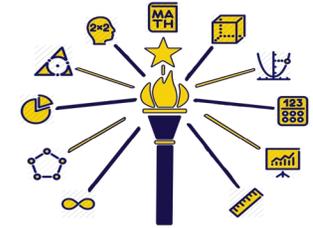|				fractions. (MA.5.AT.4)
MA.6.C.4:	Compute quotients of positive fractions and solve real-world problems involving division of fractions by fractions. Use a visual fraction model and/or equation to represent these calculations.	I can divide two positive fractions. I can solve real-world problems involving division of fractions by fractions. I can use fraction models to represent dividing positive fractions by fractions. I can use equations to divide positive fractions by fractions.	Quotient	Solve real-world problems involving division of unit fractions. (MA.5.AT.4)	Compute unit rates associated with ratios of fractions. (MA.7.C.5)
MA.6.C.5:	Evaluate positive rational numbers with whole number exponents.	I can evaluate positive rational numbers with whole number exponents.	Rational number Whole number Exponent Evaluate	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10. (MA5.NS.4)	Solve real-world and other mathematical problems involving numbers expressed in scientific notation. (MA.8.C.2)
MA.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	I can apply the order of operations to evaluate numerical expressions with nonnegative rational numbers. I can use the identity and inverse properties of addition and multiplication when	Associative Property of Addition Associative Property of Multiplication Commutative Property of Addition	Evaluate expressions with parentheses or brackets involving whole numbers using commutative, associative, and distributive properties. (MA.5.C.9)	Apply the properties of operations. (MA.7.AF.1)

parentheses, and involving whole number exponents. Justify each step in the process.	evaluating numerical expressions with nonnegative rational numbers. I can use the commutative properties of addition and multiplication when evaluating expressions with nonnegative rational numbers. I can evaluate expressions that have grouping symbols and whole number exponents. I can explain and justify steps in the process of evaluating expressions while applying the order of operations and properties of operations.	Commutative Property of Multiplication Distributive Property of Multiplication Identity Property of Addition Identity Property of Multiplication Inverse Property of Addition Inverse Property of Multiplication		

Algebra and Functions					
Grade 6 Mathematics Standards		**Success Criteria**	**Academic Vocabulary**	**Looking Back**	**Looking Ahead**
MA.6.AF.1:	Evaluate expressions for specific values of their variables, including expressions with whole-	I can evaluate variable expressions by substituting specific	Expression Variable	Evaluate linear expressions for given values. (MA.5.AT.8)	Apply the properties of operations. (MA.7.AF.1)

		values in for the variables.			
	number exponents and those that arise from formulas used in real-world problems.	I can evaluate variable expressions with whole number exponents by substituting specific values in for the variables. I can evaluate variable expressions that arise from formulas used in real-world problems by substituting specific values in for the variables.	Exponent Evaluate		
MA.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.	I can use the properties of operations to create equivalent linear expressions. I can use the identity and inverse properties of addition and multiplication to create equivalent linear expressions. I can use the identity and inverse properties of addition and multiplication to justify whether two linear expressions are	Associative Property of Addition Associative Property of Multiplication Commutative Property of Addition Commutative Property of Multiplication Distributive Property of Multiplication Identity Property of Addition	Define and use up to two variables to write linear expressions. (MA.5.AT.8)	Apply the properties of operations to create equivalent linear expressions, including factoring; justify each step. (MA.7.AF.1)

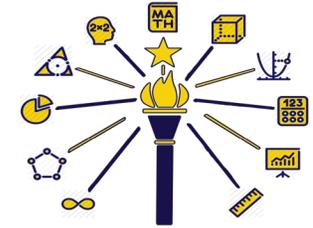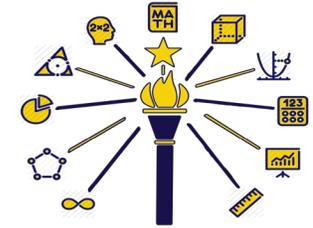|		equivalent when the same number is generated regardless of which value of substituted in to it.	Identity Property of Multiplication Inverse Property of Addition Inverse Property of Multiplication		
		I can use the commutative properties of addition and multiplication to create equivalent linear expressions. I can use the commutative properties of addition and multiplication to justify whether two linear expressions are equivalent when the same number is generated regardless of which value of substituted in to it. I can evaluate expressions that have grouping symbols and whole number exponents. I can use the distributive property to create equivalent linear expressions.			

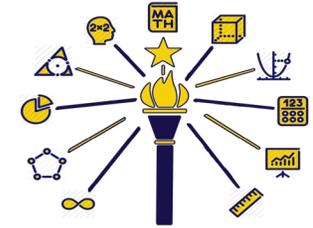|					
		I can use the distributive property to justify whether two linear expressions are equivalent when the same number is generated regardless of which value of substituted in to it. I can determine whether two expressions are equivalent.			
MA.6.AF.3:	Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values.	I can write expressions using multiple variables to represent real-world problems. I can define variables within expressions given in the context of a problem. I can evaluate expressions that include multiple variables in real-world problems for given values.	Variable	Define and use up to two variables to write linear expressions (MA.5.AT.8)	Represent real-world problems using equations of the forms px + q = r and p(x + q) = r and solve such problems. (MA.7.AF.2) Represent real-world problems using inequalities of the form px + q (>, <, $\leq$ or $\geq$) and solve such problems. (MA.7.AF.3) Represent real-world problems using linear inequalities. (MA.AI.L.7)

| MA.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.	I can use substitution to determine whether a number in a set makes an equation or an inequality true. I can explain what the solution to an equation or inequality represents.	Equation Inequality	Understand that an equation is a rule to describe a relationship between two variables. (MA.4.AT.6)	Give examples of linear equations. (MA.8.AF.2)
MA.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.	I can identify the operation and its inverse operation in order to solve one step linear equations. I can solve linear equations using one of four operations when working with nonnegative rational numbers. I can represent real-world problems using one step linear equations. I can solve real-world problems involving one step linear equations.	Rational number Equation Inverse operation	Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). (MA.5.AT.1)	Solve equations of the form px + q= r . (MA.7.AF.2) Solve linear equations. (MA.8.AF.1)
MA.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	I can write inequalities of the form x > c, x ≥ c, x < c, or x ≤ c to	Constraint Infinitely many solutions	Use a number line to compare and order fractions, mixed numbers, and	Solve inequalities of the form px +q. (MA.7.AF.3)

				decimals. (MA.5.NS.1)	
	condition in a real-world or other mathematical problem. Recognize inequalities have infinitely many solutions and represent solutions on a number line diagram.	represent real-world problems. I can write inequalities of the form $x > c$, $x \geq c$, $x < c$, or $x \leq c$ to represent a given visual representation. I can demonstrate understanding that inequalities have infinite solutions. I can graph solutions to inequalities on a number line.			
MA.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.	I can accurately identify the four quadrants of a coordinate plane. I can demonstrate understanding that the signs of the numbers in ordered pairs indicate which quadrant the point lies. I can show that when two ordered pairs differ only by signs, the locations of their points are reflected across one or both axes.	Ordered Pair Quadrant Reflection Axes Rational Number Coordinate Plane	Graph points with whole number coordinates on a coordinate plane. (MA.5.AT.6)	Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. (MA.6.AF.8)

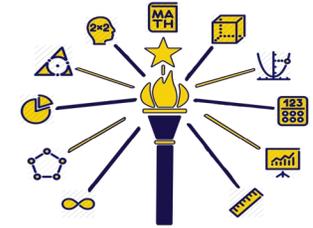|					
		I can graph points with rational number coordinates on a coordinate plane.			
MA.6.AF.8:	Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. Include the use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	I can solve real-world and other problems by graphing points with rational number coordinates on a coordinate plane. I can find the distance between points with the same first coordinate or the same second coordinate.	Rational Number Coordinates Coordinate Plane Absolute Value	Graph points with whole number coordinates on a coordinate plane. (MA.5.AT.6)	Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. (MA.6.AF.8)
MA.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.	I can create tables of equivalent ratios with whole-number measurements. I can find missing values in tables showing equivalent ratios with whole-number measurements. I can interpret the values in a table as coordinates to be plotted on the coordinate plane.	Ratio Equivalent Ratio Coordinate Plane	Graph points with whole number coordinates on a coordinate plane. (MA.5.AT.6)	Define slope as vertical change for each unit of horizontal change. (MA.7.AF.4) Graph a line given its slope and a point on the line. (MA.7.AF.5)

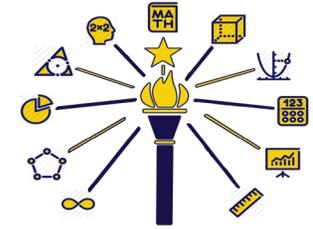|					
		I can plot the pairs of values from a table.			
MA.6.AF.10	Use variables to represent two quantities in a proportional relationship in a real-world problem; write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.	I can use variables to represent quantities in proportional relationships in real-world problems. I can write an equation expressing the dependent variable in terms of the independent variable. I can use graphs to analyze the relationship between dependent and independent variables. I can use tables to analyze the relationship between dependent and independent variables. I can demonstrate how graphs and tables	Proportional Relationship Independent Variable Dependent Variable	Define and use up to two variables to write linear expressions. (MA.5.AT.8)	Identify real-world situations that involve proportional relationships. (MA.7.AF.9) Construct a function to model a linear relationship. (MA.8.AF.6) Compare properties of two linear functions given in different forms. (MA.8.AF.7)
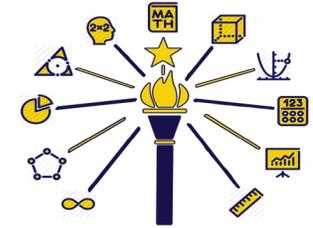
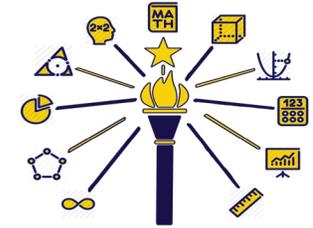|		depicting the relationship between dependent and independent variables relate to equations.			

Geometry and Measurement					
Grade 6 Mathematics Standards		Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
MA.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.	I can use conversion factors to convert between English and metric measurement systems.

Given conversion factors, I can convert between measurement systems to solve real-world problems. | Conversion Factor

Metric System

Imperial System of Measurement | Convert among different-sized standard measurement units within a given measurement system. (MA.5.M.1) | Use proportional relationships to convert within and across measurement system. (MA.7.C.6) |
| MA.6.GM.2: | Know that the sum of the interior angles of any triangle is 180º and that the sum of the interior angles of any quadrilateral is 360º. Use this information to solve real-world and mathematical problems. | I can show that the sum of the interior angles of all triangles is 180º.

I can show that the sum of all interior | Interior Angle

Quadrilateral | Identify and classify polygons, including quadrilaterals, and triangles based on angle measures and sides. (MA.5.G.2) | Prove and apply theorems about triangles, including measures of interior angles of a triangle sum to 180°. (MA.G.T.1) |

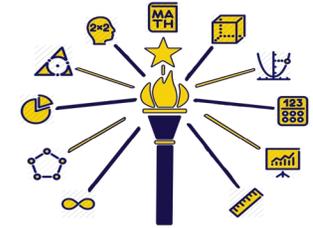|					
		angles of any quadrilateral is 360º. I can solve real-world problems involving missing angles of triangles and quadrilaterals. I can solve problems involving missing angles of triangles and quadrilaterals.			Find measures of interior and exterior angles of polygons. (MA.G.QP.3)
MA.6.GM.3:	Draw 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.	Given coordinates for their vertices, I can draw polygons in the coordinate plane. I can use coordinates with the same first or second coordinate to find side lengths of polygons. I can solve real-world problems involving missing length by using the coordinates of polygons.	Polygon Coordinates Coordinate Plane	Identify and classify polygons. (MA.5.G.2) Represent real-world problems and equations by graphing ordered pairs in the first quadrant of the coordinate plane. (MA.5.AT.7)	Draw triangles with given conditions. (MA.7.GM.1)
MA.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.	I can decompose or compose complex shapes composed of polygons.	Complex Shape Composing Decomposing	Find the area of complex shapes composed of rectangles by decomposing them. (MA.4.M.4)	Understand the formulas for area and circumference of a circle. (MA.7.GM.5)

		I can find the area of shapes composed of polygons. I can solve real-world problems where finding the area of complex shapes is required.	Polygons	Identify and classify polygons. (MA.5.G.2)	
MA.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.	I can use unit cubes (using technology or concrete materials) to find the volume of right rectangular prisms with fractional edge lengths. I can use unit cubes (using technology or concrete materials) to show the volume of a right rectangular prism with fractional edge lengths. I can show that finding the volume of a right rectangular prism using unit cubes is the same as finding the volume by multiplying the edge lengths of the prism. I can apply the volume formulas $V=lwh$ and $V=Bh$ to find the volume of right	Volume Rectangular Prism	Find the volume of a right rectangular prism. (MA.5.M.4) Apply the formulas for right rectangular prisms to find volume. (MA.5.M.5)	Solve real-world and other mathematical problems involving volume of cylinders and three-dimensional objects composed of right rectangular prisms. (MA.7.GM.6)

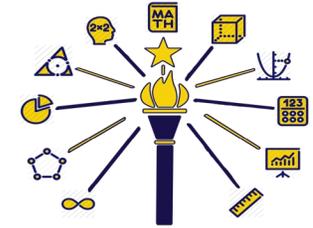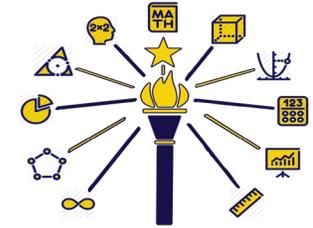|					
		rectangular prisms with fractional edge lengths. I can solve real-world problems by finding the area of right rectangular prisms with fractional edge lengths.			
MA.6.GM.6:	Construct right rectangular prisms from nets and use the nets to compute the surface area of prisms; apply this technique to solve real-world and other mathematical problems.	I can construct right rectangular prisms from nets. I can use the net of a right rectangular prism to find the surface area. I can solve real-world problems asking me to find the surface area of right rectangular prisms by using nets.	Net Surface Area Prisms	Apply the area formulas for rectangles. (MA.4.M.4) Develop and use formulas for the area of triangles, parallelograms, and trapezoids. (MA.5.M.3)	Use nets to compute surface area. (MA.7.GM.7) Identify, define and describe attributes of three-dimensional geometric objects. (MA.8.GM.1)

Data Analysis and Probability					
Grade 6 Mathematics Standards		**Success Criteria**	**Academic Vocabulary**	**Looking Back**	**Looking Ahead**
MA.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	I can recognize that statistical questions anticipate variability in data related to the question.	Variability Distribution Center Spread	Formulate questions that can be addressed with data and make predictions about the data. (MA.5.DS.1)	Understand that statistics can be used to gain information about a population. (MA.7.DSP.1)

	question has a distribution which can be described by its center, spread, and overall shape.	I can explain how statistical questions will account for the variability in responses. I can understand that data collected to answer statistical questions has a distribution and can describe it by its overall shape. I can describe a data distribution by its center and spread.			Use data from a random sample to draw inferences about a population. (MA.7.DSP.2) Understand that statistics and data are non-neutral and designed to serve a particular interest. (MA.AI.DS.6)
MA.6.DS.2:	Select, create, and interpret graphical representations of numerical data, including line plots, histograms, and box plots.	I can identify appropriate graphical representations of numerical data including line plots, histograms, and box plots. I can create and interpret line plots that represent numerical data. I can create and interpret histograms that represent numerical data.	Line Plots Histograms Box Plots	Represent, and interpret the data using tables, line plots, bar graphs, and line graphs. (MA.5.DS.1) Use observations, surveys, and experiments to collect, represent, and interpret the data using tables. (MA.4.DA.1)	Make observations about the degree of visual overlap of two numerical data distributions represented in line plots or box plots. (MA.7.DSP.4)

		I can create and interpret box plots that represent numerical data.			
MA.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).	I can create statistical questions. I can collect the data from a statistical question. I can organize (using technology) data based on statistical questions. I can display and interpret data collected from a statistical question with graphical representations (using technology).	Statistical Question	Formulate questions that can be addressed with data. (MA.4.DA.1)	Use data from a random sample to draw inferences about a population. (MA.7.DSP.2) Design simple experiments or investigations to collect data to answer questions of interest. (MA.AI.DS.1)
MA.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	I can report the number of observations when summarizing numerical data sets. I can describe the nature of the attribute under investigation, including how it was measured and the units	Measures of Center Mean Median Spread Range Outlier	Understand and use measures of center and frequency. (MA.5.DS.2)	Find, use, and interpret measures of center (mean and median) and measures of spread (range, interquartile range, and mean absolute deviation). (MA.7.DSP.3)

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.	of measurement, when summarizing data sets. I can describe overall patterns and deviations from overall patterns with reference to the context in which data was gathered. I can find the mean, median of data sets. I can find the range and interquartile range of data sets. I can communicate my choice of measure of center and spread to the shape of the data distribution and the context in which the data were gathered.			