## Grade 6 Common Core Pacing Guide 6th Grade Math

| Units of Study | Target Standard | $\begin{gathered} \text { "I Can" } \\ \text { Statements } \end{gathered}$ | Vocabulary | Time Frame |
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| Unit 1: Using Factors and Multiples | 6. NS.B. 4 - Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. <br> 6.EE.A. 1 - Write and evaluate numerical <br> expressions involving whole-number exponents. <br> 6.EE.A.2b - Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity <br> 6.EE.A.2c - Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). | 6.NS.B. 4 I can find the greatest common factor of two whole numbers less than or equal to 100. <br> 6.NS.B. 4 I can find the least common multiple of two whole numbers less than or equal to 12. 6.NS.B. 4 I can use the distributive property to show the sum of two whole numbers (1-100) in different ways. <br> 6.EE.A. 1 I can write and figure out numerical expressions that have whole-number exponents. <br> 6.EE.A.2.B I can name the parts of an expression using mathematical words (sum, term, product, factor, quotient, coefficient.) <br> 6.EE.A.2.B I can look at one or more parts of an | Greatest common factor (GCF) <br> Least common multiple (LCM) <br> composite/prime number exponent (prime) factorization multiplicative identity square numbers distributive property | 3 weeks Trimester 1 |


|  |  | expression in different ways. (Ex: $8+7$ can be seen as the addition sentence or as the number 15.) <br> 6.EE.A.2.C I can figure out different answers to expressions when given specific values for the variable. <br> 6.EE.A.2.C I can solve real-world math problems involving expressions that arise from formulas. <br> 6.EE.A.2.C I can solve math problems including those with exponents, in the usual order (when no parentheses are there to give a particular order). |  |  |
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| Unit 2: Rate and Ratio Reasoning | 6.RP.A.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. <br> 6.RP.A.2. Understand the concept of a unit rate $a / b$ associated with a ratio $a: b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. <br> 6.RP.A.3. Use ratio and rate reasoning to solve realworld and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. <br> 6.RP.A.3a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of | 6.RP.A.1. I can use what I know about ratios to describe the relationship between two quantities. 6.RP.A.2. I can understand how to find a rate when given a specific ratio. <br> 6.RP.A. 3 I can use reasoning to solve word problems involving rate and ratios. <br> 6.RP.A.3.A I can make tables of equivalent ratios, find missing | ratio and rate language (for each, for every, $a / b$, a to $b, a: b)$ <br> unit rate (for every 1, per) <br> equivalent ratios <br> percent | 5 weeks Trimester 1 |


|  | values on the coordinate plane. Use tables to compare ratios. <br> 6.RP.A.3b. Solve unit rate problems including those involving unit pricing and constant speed. <br> 6.RP.A.3c. Find a percent of a quantity as a rate per 100 (e.g., $30 \%$ of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. <br> 6.RP.A.3d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. 6.NS.C.6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. <br> 6.NS.C.6c - Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane. <br> 6.EE.C. 9 - Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d=65 t$ to represent the relationship between distance and time. | values in the tables and use the tables to compare ratios. <br> 6.RP.A.3.A I can plot ratios on a coordinate plane. <br> 6.RP.A.3.B I can solve unit rate problems. <br> 6.RP.A.3.C I can find a percent of a quantity as a rate per 100. <br> 6.RP.A.3.C I can solve problems involving finding the whole if I am given a part and the percent. <br> 6.RP.A.3.D I can use what I know about ratios to convert units of measurement. <br> 6.RP.A.3.D I can change units of measurement correctly when multiplying or dividing quantities. <br> 6.NS.C. 6 I can understand that a rational number is a point on a number line. 6.NS.C.6.C I can find and place integers and other rational numbers on a number line diagram. <br> 6.NS.C.6.C I can find and place ordered pairs on a coordinate plane. <br> 6.EE.C. 9 I can use variables that change in | unit ratio <br> ratio unit <br> convert measurement <br> units |  |
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|  |  | relationship to one another to represent two quantities in a real world problem. <br> T.6.EE.C. 9 I can write an equation to show one quantity (the dependent variable) in terms of the other quantity (the independent variable). <br> 6.EE.C. 9 I can use graphs and tables to show the relationship between dependent and independent variables. |  |  |
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| Unit 3: Using Fraction Operations | 5.NF. 2 - Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. <br> 5.NF.6 - Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. <br> 5.NF. 7 - Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. <br> 6.NS.A. 1 - Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. <br> 6.EE.A. 2 - Write, read, and evaluate expressions in which letters stand for numbers. <br> 6.EE.A. 3 - Apply the properties of operations to generate equivalent expressions. <br> 6.EE.B.6 - Use variables to represent numbers and | 6.NS.A. 1 I can divide two fractions. <br> 6.NS.A. 1 I can solve word problems involving the division of fractions by fractions. <br> 6.EE.A. 2 I can write, read and figure out expressions in which letters stand for numbers. <br> 6.EE.A. 3 I can apply what I know about the properties of operations (associative, commutative and distributive) to create equivalent (or equal) expressions. <br> 6.EE.B. 6 I can use variables to represent numbers and write expressions to solve | common denominator <br> developing and applying algorithms <br> inverse operations <br> mixed numbers <br> improper fractions <br> operations with fractions | 5 weeks Trimester 1 |


|  | write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. <br> 6.EE.B. 7 - Solve real-world and mathematical problems by writing and solving equations of the form $x+p=q$ and $p x=q$ for cases in which $p, q$ and $x$ are all nonnegative rational numbers. | real-world problems. <br> 6.EE.B. 6 I can <br> understand that a variable can stand for an unknown number or any number in a given set of numbers. <br> 6.EE.B. 7 I can solve real-world and mathematical problems by writing and solving equations of the form $x$ $+p=q$ and $p x=q$ (where $p, q$ and $x$ are all nonnegative rational numbers). |  |  |
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| Unit 4: Extending Representations of Rational Numbers | 6.NS.C. 5 - Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in realworld contexts, explaining the meaning of 0 in each situation. <br> 6.NS.C. 6 - Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. <br> 6.NS.C.6a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3)$ $=3$, and that 0 is its own opposite. <br> 6.NS.C.6b - Understand signs of numbers in ordered pairs as indicating locations in quadrants of | 6.NS.C. 5 I can understand that positive and negative numbers are used to describe amounts having opposite values. <br> 6.NS.C. 5 I can use positive and negative numbers to show amounts in real-world situations and explain what the number 0 means in those situations. <br> 6.NS.C. 6 I can understand that a rational number is a point on a number line. 6.NS.C. 6 I can extend number line diagrams to show positive and | absolute value <br> comparing rational number <br> coordinate plane(all four quadrants) <br> direction and magnitude of signed numbers <br> integers <br> opposite | 3 weeks Trimester 2 |


|  | the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. <br> 6.NS.C.6c - Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane. <br> 6.NS.C.7 - Understand ordering and absolute value of rational numbers. <br> 6.NS.C.7a - Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. <br> 6.NS.C.7b - Write, interpret, and explain statements of order for rational numbers in real-world contexts <br> 6.NS.C.7c - Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation <br> 6.NS.C.7d - Distinguish comparisons of absolute value from statements about order. <br> 6.NS.C. 8 - Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. | negative numbers on the line. <br> 6.NS.C. 6 I can extend coordinate axes to show positive and negative numbers in the plane. <br> 6.NS.C.6.A I can <br> recognize opposite <br> signs of numbers as <br> showing places on <br> opposite sides of 0 on the number line <br> 6.NS.C.6.A I can <br> recognize that the opposite of the opposite of a number is actually the number itself. <br> 6.NS.C.6.A I can recognize that 0 is its own opposite. <br> 6.NS.C.6.B I can understand that the signs (- or +) of numbers in ordered pairs indicate locations in quadrants of the coordinate plane. 6.NS.C.6.B I can recognize two ordered pairs with differing signs as reflections of each other across one or both axes. <br> 6.NS.C.6.C I can find and place integers and other rational numbers | positive/negative <br> quadrants <br> rational numbers |  |
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|  |  | on a number line diagram. <br> 6.NS.C.6.C I can find and place ordered pairs on a coordinate plane. 6.NS.C. 7 I can order rational numbers. 6.NS.C. 7 I can understand absolute value of rational numbers. <br> 6.NS.C.7.A I can understand statements of inequality (ex: -3>7) and explain their positions and distances apart on a number line. 6.NS.C.7.B I can write, understand and explain how the order of rational numbers applies in real-world situations (Ex: $-3^{\circ} \mathrm{C}>-$ $7^{\circ} \mathrm{C}$ to show that $-3^{\circ} \mathrm{C}$ is warmer than $-7^{\circ} \mathrm{C}$ ). <br> 6.NS.C.7.C I can understand the absolute value of a number as its distance from 0 on the number line. <br> 6.NS.C.7.C I can understand absolute values as they apply to real-world |  |  |
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|  |  | situations (Ex: for an account balance of 30 dollars, write (-30) =30 to describe the size of the debt in dollars.). <br> 6.NS.C.7.D I can tell the difference between comparisons of absolute value from statements of order. <br> 6.NS.C. 8 I can graph points in all four quadrants of the coordinate plane to help me solve realworld and mathematical problems. <br> 6.NS.C. 8 I can use what I know about coordinates and absolute values to figure out the distance between points with the same first coordinate or the same second coordinate. |  |  |
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| Unit 5: Univariate Data | 6.SP.A.1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers <br> 6.SP.A.2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. <br> 6.SP.A.3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. <br> 6.SP.B.4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots. <br> 6.SP.B.5. Summarize numerical data sets in relation to their context, such as by: <br> 6.SP.B.5a. Reporting the number of observations. <br> 6.SP.B.5b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. <br> 6.SP.B.5c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. <br> 6.SP.B.5d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered. | 6.SP.A. 1 l can <br> recognize a statistical question as one that expects variability in the data related to the question. <br> 6.SP.A. 2 I can <br> understand that a set of data collected to answer a statistical question has a distribution that can be described by its center, spread and overall shape when plotted on a graph. <br> 6.SP.A. 3 I can <br> understand that a set of numerical data has a measure of center (median and/or mean) that summarizes all of its values with a single number. <br> 6.SP.A. 3 I can <br> understand that in a set of numerical data, the measure of variation describes how its values vary with a single number. | distribution <br> mean, median, mode range, interquartile range, outliers, mean absolute deviation line plot/dot plot histogram box plot bar graph/chart frequency table statistical questions | 4 weeks Trimester 2 |
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|  |  | 6.SP.B.4 I can <br> understand that a <br> distribution of a <br> variable is the <br> description of the <br> relative number of <br> times each possible <br> outcome will occur. <br> 6.SP.B.4 I can show <br> numerical data in <br> plots on a number <br> line (including dot <br> plots, histograms and <br> box plots). <br> 6.SP.B.5 I can <br> summarize sets of <br> numerical data in <br> relation to their <br> circumstances. <br> 6.SP.B.5.A I can <br> summarize data by <br> stating the number of |  |
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| observations. |  |  |  |
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|  |  | summarize data by giving numerical measures of center and variability. <br> 6.SP.B.5.C I can summarize data by describing the overall pattern of the data and noticing unusual deviations from the overall pattern. 6.SP.B.5.D I can summarize data by explaining how the distribution of the data on a graph relates to the choice of measures of center and variability. |  |  |
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| Unit 6: Computing with Decimals and Percents | 5.NBT.2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10 . Use whole-number exponents to denote powers of 10 . <br> 5.NBT.7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. 6.RP.A.3c. Find a percent of a quantity as a rate per 100 (e.g., $30 \%$ of a quantity means 30/100 times the quantity); solve problems involving finding the whole, | 6.RP.A.3.C I can find a percent of a quantity as a rate per 100. 6.RP.A.3.C I can solve problems involving finding the whole if I am given a part and the percent. <br> 6.NS.B. 2 I can easily divide multi-digit numbers. <br> 6.NS.B. 3 I can easily add, subtract, | developing algorithms <br> for decimal <br> computations <br> inverse operations <br> operations with <br> decimals <br> percent computations <br> repeating and <br> terminating decimals | 5 weeks Trimester 2 |


|  | given a part and the percent. <br> 6. NS.B.2. Fluently divide multi-digit numbers using the standard algorithm. <br> 6. NS.B.3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. | multiply and divide multi-digit numbers involving decimals. |  |  |
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| Unit 7: Introduction to Algebraic Thinking | 6.EE.A.1. Write and evaluate numerical expressions involving whole-number exponents. <br> 6.EE.A.2. Write, read, and evaluate expressions in which letters stand for numbers. <br> 6.EE.A.2a. Write expressions that record operations with numbers and with letters standing for numbers. <br> 6.EE.A.2b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. <br> 6.EE.A.2c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). <br> 6.EE.A.3. Apply the properties of operations to generate equivalent expressions. <br> 6.EE.A.4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). <br> 6.EE.B.5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. <br> 6.EE.B.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable | 6.EE.A. I I can write and figure out numerical expressions that have whole-number exponents. <br> 6.EE.A. 2 I can write, read and figure out expressions in which letters stand for numbers. <br> 6.EE.A.2.A I can write expressions with numbers and with letters standing for numbers. <br> 6.EE.A.2.B I can name the parts of an expression using mathematical words (sum, term, product, factor, quotient, coefficient.) <br> 6.EE.A.2.B I can look at one or more parts of an expression in different ways. (Ex: 8+7 can be seen as the addition sentence or as the number 15.) | change <br> constant <br> constant change <br> coordinate graph <br> coordinate pair <br> equation <br> expression <br> independent variable <br> inequalities <br> narrative <br> pattern <br> relationship <br> rule <br> scale <br> table <br> variable <br> x-axis <br> $y$-axis <br> $x$-coordinate <br> $y$-coordinate | 8 weeks Trimester 3 |



|  |  | 6.EE.B. 5 I can try different numbers in place of a variable to figure out which makes the equation or inequality true. <br> 6.EE.B. 6 I can use variables to represent numbers and write expressions to solve real-world problems. 6.EE.B.6 I can understand that a variable can stand for an unknown number or any number in a given set of numbers. <br> 6.EE.B. 7 I can solve realworld and mathematical problems by writing and solving equations of the form $x$ $+p=q$ and $p x=q$ (where $p, q$ and $x$ are all nonnegative rational numbers). <br> 6.EE.C. 9 I can use variables that change in relationship to one another to represent two quantities in a real world problem. <br> 6.EE.C. 9 I can write an equation to show one quantity (the dependent variable) in terms of the |  |  |
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|  |  | other quantity (the independent variable). 6.EE.C. 9 I can use graphs and tables to show the relationship between dependent and independent variables. |  |  |
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| Unit 8: | 6.EE.2. Write, read, and evaluate expressions in which letters stand for numbers. <br> 6.EE.2c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). <br> 6.EE.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. <br> 6.EE.7. Solve real-world and mathematical problems by writing and solving equations of the form $x+p=$ $q$ and $p x=q$ for cases in which $p, q$ and $x$ are all nonnegative rational numbers. <br> 6.EE.9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving | 6.G.A. I I can put together and take apart shapes to help me find the area of right triangles, other triangles, special quadrilaterals and polygons. <br> 6.G.A. 1 I can apply what I know about taking apart and putting together shapes to find the area of objects or places in real world situations. <br> 6.G.A. 2 I can use unit cubes to find the volume of any right rectangular prism. 6.G.A. 2 I can understand that the mathematical formula | compose <br> decompose <br> formula <br> equation <br> measurable attributes , <br> length, volume, area <br> parallelogram <br> prism <br> surface area <br> volume | 4 weeks Trimester 3 |


|  | motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d=65 t$ to represent the relationship between distance and time. <br> 6.G.A.1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. <br> 6.G.A.2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $\mathrm{V}=\mathrm{I} w \mathrm{~h}$ and $\mathrm{V}=\mathrm{b} h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. <br> 6.G.A.3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems. <br> 6.G.A.4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving realworld and mathematical problems. | (V = l whor V = b h) will give me the same result as using unit cubes to figure out the volume. <br> 6.G.A. 2 I can use the mathematical formulas $V=1$ wh or $\mathrm{V}=\mathrm{b} h$ to determine the volume of real world objects. <br> 6.G.A. 3 I can draw polygons in the coordinate plane when I am given the coordinates for the vertices. <br> 6.G.A. 3 I can use coordinates to find the length of a side of a polygon joining points with the same first coordinate or the same second coordinate. <br> 6.G.A. 3 I can apply what I have learned about polygons on coordinate planes to real-world and mathematical situations. |  |  |
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|  |  | 6.G.A.4 I can <br> represent and figure <br> out the surface area <br> of a three <br> dimensional shape by <br> using nets made up of <br> rectangles and <br> triangles. <br> 6.G.A.4 I can apply <br> my skills involving <br> finding surface area <br> with nets in real- <br> world and <br> mathematical <br> problems |  |
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