

**Common Core Math Grade 6**

ESSENTIAL QUESTIONS	DOMAINS AND CLUSTERS	GRADE 6 SKILL	VOCABULARY	MATHEMATICAL PRACTICES	ASSESSMENT
<p>How is geometry part of the world?</p> <p>How do we solve geometric problems?</p> <p>How do we use formulas?</p> <p>How do we compute fractions?</p>	<p><b>Geometry</b> <b>6.G</b></p> <p>Solve real-world and mathematical problems involving area, surface area, and volume.</p> <p><b>The Number System</b> <b>6.NS</b></p> <p>Apply and extend previous understandings of multiplication and division to divide fractions by fractions.</p> <p>Compute fluently with multi-digit numbers and find common factors and multiples.</p>	<ul style="list-style-type: none"> <li>❑ Calculate the area of right triangles and other types of triangles. 6.G.1</li> <li>❑ Calculate the area of special quadrilaterals and polygons by composing them into rectangles or decomposing them into triangles. 6.G.1</li> <li>❑ Apply techniques of finding the area of polygons to solve real-world problems. 6.G.1</li> <li>❑ Calculate the volume of a right rectangular prism with fractional side lengths. 6.G.2</li> <li>❑ Compare finding the volume of a right rectangular prism by packing it with unit cubes to finding the volume by multiplying the side lengths. 6.G.2</li> <li>❑ Apply the formula of <math>V = l \times w \times h</math> and <math>V = B \times h</math> to find the volume of right rectangular prisms with fractional side lengths to solve real-world problems. 6.G.2</li> <li>❑ Graph polygons in the coordinate plane given the vertices. 6.G.3</li> <li>❑ Calculate the length of a side of a polygon graphed in the coordinate plane where the vertices have the same x-value or same y-value. 6.G.3</li> <li>❑ Calculate the surface area of a 3-dimensional figure by using nets made up of rectangles and triangles. 6.G.4</li> <li>❑ Solve real-world problems involving surface area of 3-dimensional figures. 6.G.4</li> <li>❑ Compute quotients of fractions. 6.NS.1</li> <li>❑ Solve word problems involving the division of fractions 6.NS.1</li> <li>❑ Draw a visual fraction model to illustrate the quotient of two fractions. 6.NS.1</li> <li>❑ Apply the relationship between multiplication and division to justify your answer. 6.NS.1</li> <li>❑ Fluently divide multi-digit numbers using the standard algorithm. 6.NS.2</li> <li>❑ Add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. 6.NS.3</li> <li>❑ Compute the greatest common factor of two whole numbers less than or equal to 100. 6.NS.4</li> <li>❑ Compute the least common multiple of two whole numbers less than or equal to 12. 6.NS.4</li> <li>❑ Compute the greatest common factor of two whole numbers written as a sum. 6.NS.4</li> <li>❑ Apply the distributive property to rewrite the sum with the GCF written</li> </ul>	<ul style="list-style-type: none"> <li>▪ right triangle</li> <li>▪ triangle</li> <li>▪ quadrilaterals</li> <li>▪ polygons</li> <li>▪ area</li> <li>▪ compose</li> <li>▪ decompose</li> <li>▪ volume</li> <li>▪ right rectangular prism</li> <li>▪ base</li> <li>▪ width, height</li> <li>▪ length</li> <li>▪ coordinate plane</li> <li>▪ vertices</li> <li>▪ ordered pairs</li> <li>▪ nets</li> <li>▪ 3-dimensional figures</li> <li>▪ surface area</li> <li>▪ quotient</li> <li>▪ fraction</li> <li>▪ visual fraction model</li> <li>▪ standard algorithm</li> <li>▪ dividend</li> <li>▪ divisor</li> <li>▪ remainder</li> <li>▪ quotient</li> <li>▪ decimal</li> <li>▪ place value</li> <li>▪ product</li> <li>▪ sum</li> <li>▪ difference</li> <li>▪ greatest common factor</li> <li>▪ least common multiple</li> <li>▪ distributive property</li> <li>▪ compute</li> <li>▪ whole numbers</li> <li>▪ express</li> </ul>	<p>Make sense of problems and persevere in solving them.</p> <p>Reason abstractly and quantitatively.</p> <p>Construct viable arguments and critique the reasoning of others.</p> <p>Model with mathematics.</p> <p>Use appropriate tools strategically.</p> <p>Attend to precision.</p> <p>Look for and make use of structure.</p> <p>Look for and express regularity in repeated reasoning.</p>	<p>Integrated Performance Tasks</p> <p><a href="http://palm.sri.com/">http://palm.sri.com/</a></p> <p><a href="http://www.nctm.org">http://www.nctm.org</a></p>

<p>How do we use patterns to understand fractions?</p> <p>How do we compute mixed numbers?</p>	<p>Apply and extend previous understandings of numbers to the system of rational numbers.</p> <p>Apply and extend previous understandings of numbers to the system of rational numbers.</p>	<p>outside parentheses and the two whole numbers with no common factor written inside the parentheses 6.NS.4</p> <ul style="list-style-type: none"> <li>❑ Define positive and negative numbers in terms of direction and value. 6.NS.5</li> <li>❑ Describe real-world situations where positive and negative numbers are used. 6.NS.5</li> <li>❑ Explain the meaning of 0 with positive and negative integers. 6.NS.5</li> <li>❑ Locate opposite signed numbers on opposite sides of zero on a number line. 6.NS.6a</li> <li>❑ Define the opposite of the opposite of a number is the number itself. 6.NS.6a</li> <li>❑ Define the opposite of 0 as itself. 6.NS.6a</li> <li>❑ Graph ordered pairs in a coordinate plane. 6.NS.6b</li> <li>❑ Locate positive and negative numbers in a coordinate plane 6.NS.6b</li> <li>❑ Describe that when two ordered pairs only differ by their signs, they are reflections across the x-axis, y-axis, or both axes. 6.NS.6b</li> <li>❑ Identify the four quadrants on a coordinate plane. 6.NS.6b</li> <li>❑ Plot and locate integers and rational numbers on vertical and horizontal number lines. 6.NS.6c</li> <li>❑ Plot and locate integer and rational number pairs on the coordinate plane. 6.NS.6c</li> <li>❑ Compare rational numbers on a number line. 6.NS.7a</li> <li>❑ Describe statements of inequality on a number line. 6.NS.7a</li> <li>❑ Plot two numbers on a number line to describe the relationship between them in terms of less than, greater than, or equal to. 6.NS.7a</li> <li>❑ Write statements of order for rational numbers in real-world contexts. 6.NS.7b</li> <li>❑ Explain statements of order for rational numbers in real-world contexts. 6.NS.7b</li> <li>❑ Explain how positive and negative rational numbers are used in real-world contexts. 6.NS.7b</li> <li>❑ Define the absolute value of a rational number as a distance from 0 on a number line. 6.NS.7c</li> <li>❑ Explain the absolute value of a positive or negative quantity in a real-world situation as magnitude/length. 6.NS.7c</li> <li>❑ Compare and contrast the absolute value of a rational number to ordering rational numbers. 6.NS.7d</li> <li>❑ Define a number less than a negative number as having a greater distance from zero. 6.NS.7d</li> </ul>	<ul style="list-style-type: none"> <li>▪ Positive</li> <li>▪ Negative</li> <li>▪ Opposite</li> <li>▪ Zero</li> <li>▪ Integer</li> <li>▪ Elevation</li> <li>▪ Sea level</li> <li>▪ Credits/debits</li> <li>▪ Deposits</li> <li>▪ withdrawals</li> <li>▪ Ascend/Descend</li> <li>▪ opposite sign</li> <li>▪ zero</li> <li>▪ number line</li> <li>▪ positive</li> <li>▪ negative</li> <li>▪ double negative</li> <li>▪ ordered pairs</li> <li>▪ coordinate plane</li> <li>▪ x-axis</li> <li>▪ y-axis</li> <li>▪ reflection</li> <li>▪ equidistant</li> <li>▪ horizontal number line</li> <li>▪ vertical number line</li> <li>▪ integers</li> <li>▪ rational numbers</li> <li>▪ plot</li> <li>▪ Inequality</li> <li>▪ greater than</li> <li>▪ less than</li> <li>▪ equal to</li> <li>▪ rational number</li> <li>▪ temperature</li> <li>▪ positive and negative charge</li> <li>▪ absolute value/distance</li> <li>▪ magnitude/length</li> <li>▪ positive/negative quantities</li> </ul>		
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<p>How do we organize data so that it is useful?</p> <p>How are graphs used?</p> <p>How do we identify mean, mode, median and range?</p>	<p><b>Statistics &amp; Probability</b> <b>6.SP</b></p> <p>Develop understanding of statistical variability.</p> <p>Summarize and describe distributions</p> <p><b>Ratios &amp; Proportional Relationships</b> <b>6.RP</b></p> <p>Understand ratio concepts and use ratio reasoning to solve problems</p>	<ul style="list-style-type: none"> <li>❑ Graph points in all four quadrants 6.NS.8</li> <li>❑ Calculate the distance between two points graphed on a coordinate plane (vertical or horizontal lines only). 6.NS.8</li> <li>❑ Calculate the distance between two points with the same x-value or the same y-value. 6.NS.8</li> <li>❑ Identify statistical questions. 6.SP.1</li> <li>❑ Contrast statistical and non-statistical questions 6.SP.1</li> <li>❑ Define a statistical question as a question that allows for the gathering of variable data 6.SP.1</li> <li>❑ Describe a set of data in terms of its center (mean, median), spread (range, interquartile range, mean absolute deviation), and overall shape. 6.SP.2</li> <li>❑ Define measure of center for a data set as the summary of all its values as one number. 6.SP.3</li> <li>❑ Define measure of variation for a data set as how the data varies as one number 6.SP.3</li> <li>❑ Display numerical data as plots on a number line. 6.SP.4</li> <li>❑ Display numerical data as plots in a dot plot. 6.SP.4</li> <li>❑ Display numerical data in a histogram. 6.SP.4</li> <li>❑ Display numerical data in a box plot (box-and-whisker plot). 6.SP.4</li> <li>❑ Record the number of observations within a numerical data set. 6.SP.5a</li> <li>❑ Describe how a data set was measured and its units of measurement. 6.SP.5b</li> <li>❑ Calculate measures of center: median and/or mean 6.SP.5c</li> <li>❑ Calculate measures of variability: interquartile range and/or mean absolute deviation 6.SP.5c</li> <li>❑ Describe any overall patterns or deviations from the overall pattern in relation to the context of the data collection. 6.SP.5c</li> <li>❑ Compare and contrast the measures of center to the data distribution in the context of the data collection 6.SP.5d</li> <li>❑ Compare and contrast the measures of variability to the data distribution in the context of the data collection 6.SP.5d</li> <li>❑ Describe relationships between two quantities using the concept of a ratio and vocabulary. 6.RP.1</li> <li>❑ Explain verbally the relationship between two quantities represented in a ratio. 6.RP.1</li> <li>❑ Convert a ratio to a unit rate written as a fraction. (denominator not equal to zero) 6.RP.2</li> <li>❑ Define a unit rate in terms of a ratio relationship. 6.RP.2</li> </ul>	<ul style="list-style-type: none"> <li>▪ ordered pairs</li> <li>▪ coordinate plane</li> <li>▪ quadrant</li> <li>▪ statistical question</li> <li>▪ non-statistical question</li> <li>▪ variability</li> <li>▪ data</li> <li>▪ Center</li> <li>▪ Mean</li> <li>▪ Median</li> <li>▪ Spread</li> <li>▪ Range</li> <li>▪ interquartile range</li> <li>▪ mean absolute deviation</li> <li>▪ overall shape</li> <li>▪ measure of center</li> <li>▪ dot plot</li> <li>▪ histogram</li> <li>▪ box plot</li> <li>▪ number line</li> <li>▪ Observations</li> <li>▪ data set</li> <li>▪ units of measurement</li> <li>▪ overall pattern</li> <li>▪ median</li> <li>▪ mean</li> <li>▪ measures of center</li> <li>▪ measures of variability</li> <li>▪ data distribution</li> <li>▪ context of data collection</li> <li>▪ ratio</li> <li>▪ relationship</li> <li>▪ quantities</li> <li>▪ unit rate</li> <li>▪ ratio relationship</li> </ul>		
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<p>What is an interquartile range and an absolute deviation?</p>	<p style="text-align: center;"><b>Expressions &amp; Equations</b> <b>6.EE</b></p> <p>Apply and extend previous understandings of arithmetic to algebraic expressions.</p> <p>Reason about and solve one-variable equations and inequalities.</p>	<ul style="list-style-type: none"> <li>❑ Construct a table of equivalent ratios relating to whole-number measurement quantities. 6.RP.3a</li> <li>❑ Compute the missing value in a table of equivalent ratios. 6.RP.3a</li> <li>❑ Graph pairs of equivalent ratios on a coordinate plane. 6.RP.3a</li> <li>❑ Compare two ratios using a table. 6.RP.3a</li> <li>❑ Solve unit rate problems involving unit pricing. 6.RP.3b</li> <li>❑ Solve unit rate problems involving constant speed. 6.RP.3b</li> <li>❑ Write a proportion and solve problems with unit rates 6.RP.3b</li> <li>❑ Write a percent as a fraction out of 100. 6.RP.3c</li> <li>❑ Solve percent word problems to find the whole, given the part and percent 6.RP.3c</li> <li>❑ Solve percent word problems by setting up a proportion. 6.RP.3c</li> <li>❑ Solve percent word problems to find the part, given the whole and percent. 6.RP.3c</li> <li>❑ Convert measurement units using ratios and proportions 6.RP.3d.</li> <li>❑ Convert measurement units appropriately when multiplying quantities 6.RP.3d</li> <li>❑ Convert measurement units appropriately when dividing quantities. 6.RP.3d</li> <li>❑ Evaluate numerical expressions with whole-number exponents. 6.EE.1</li> <li>❑ Write numerical expressions with whole-number exponents. 6.EE.1</li> <li>❑ Translate verbal expressions (word phrases) to algebraic expressions with letters standing for numbers. 6.EE.2a</li> <li>❑ Identify parts of an expression using mathematical vocabulary. 6.EE.2b</li> <li>❑ Evaluate expressions by substituting a numerical value for a variable. 6.EE.2c</li> <li>❑ Simplify expressions using order of operations. 6.EE.2c</li> <li>❑ Solve real-world problems with given a formula. 6.EE.2c</li> <li>❑ Apply properties of operations to rewrite expressions. 6.EE.3</li> <li>❑ Explain why an expression that is rewritten is equivalent to the original expression. 6.EE.3</li> <li>❑ Identify when two expressions are equivalent (one expression is the simplified version of the other one). 6.EE.4</li> <li>❑ Explain why two expressions are equivalent regardless of the number that is substituted for the variable. 6.EE.4</li> <li>❑ Solve an equation or inequality by determining for which values of a set make the equation or inequality true. 6.EE.5</li> <li>❑ Substitute a given number into an equation or inequality to see if it makes the equation/inequality true 6.EE.5</li> </ul>	<ul style="list-style-type: none"> <li>▪ table</li> <li>▪ coordinate plane</li> <li>▪ equivalent ratios</li> <li>▪ x-coordinate /x-axis</li> <li>▪ y-coordinate /y-axis</li> <li>▪ constant speed</li> <li>▪ unit pricing</li> <li>▪ proportion</li> <li>▪ part</li> <li>▪ whole</li> <li>▪ percent</li> <li>▪ quantity</li> <li>▪ fraction</li> <li>▪ standard units of measurement</li> <li>▪ customary units of measurement</li> <li>▪ numerical expressions</li> <li>▪ whole-number exponents</li> <li>▪ verbal expressions</li> <li>▪ algebraic expressions</li> <li>▪ term</li> <li>▪ product</li> <li>▪ factor</li> <li>▪ coefficient</li> <li>▪ Formula</li> <li>▪ order of operations</li> <li>▪ Equivalent</li> <li>▪ distributive property</li> <li>▪ variable</li> <li>▪ combine like terms</li> <li>▪ equivalent expressions</li> <li>▪ equation</li> <li>▪ Inequality</li> <li>▪ Substitution</li> <li>▪ Solution</li> <li>▪ Expression</li> <li>▪ Variable</li> </ul>		
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		<ul style="list-style-type: none"> <li>❑ Write expressions with variables to represent numbers in a real-world problem. 6.EE.6</li> <li>❑ Define a variable as a representation of an unknown number or numbers in a set. 6.EE.6</li> <li>❑ Write and solve one-step equations with nonnegative rational numbers from real-world problems. 6.EE.7</li> <li>❑ Write an inequality to represent a real-world condition or constraint. 6.EE.8</li> <li>❑ Define inequalities as having infinitely many solutions 6.EE.8</li> <li>❑ Graph solutions to inequalities on number lines. 6.EE.8</li> <li>❑ Write an equation to represent two variables, one dependent and one independent. 6.EE.9</li> <li>❑ Analyze the relationship between independent and dependent variables using graphs, tables, and equations 6.EE.9</li> <li>❑ List and graph ordered pairs and write the equation to represent the relationship. 6.EE.9</li> </ul>	<ul style="list-style-type: none"> <li>▪ set (of numbers)</li> <li>▪ nonnegative rational numbers</li> <li>▪ one-step equations</li> <li>▪ Constraint</li> <li>▪ Condition</li> <li>▪ Inequality</li> <li>▪ solutions</li> <li>▪ Table</li> <li>▪ Independent</li> <li>▪ Dependent</li> <li>▪ ordered pairs</li> <li>▪ constant</li> </ul>		
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