



**Mentoring
Mathematical
Minds**

**Correlation to the
Common Core State Standards
GRADE 6**

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Common Core State Standards

Project M³: Mentoring Mathematical Minds

Ratios & Proportional Relationships

Understand ratio concepts and use ratio reasoning to solve problems.

6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*

Level 5-6: Record Makers and Breakers Chapter 1, Lesson 4
Level 5-6: Record Makers and Breakers Chapter 2, Lessons 1, 3-4
Level 5-6: Fun at the Carnival Chapter 1, Lessons 1-3
Level 5-6: Our Environment Matters Chapter 1, Lessons 1-3
Level 5-6: Our Environment Matters Chapter 2, Lesson 1

6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."*

Level 5-6: Record Makers and Breakers Chapter 1, Lesson 4
Level 5-6: Record Makers and Breakers Chapter 2, Lessons 1-4
Level 5-6: Fun at the Carnival Chapter 1, Lessons 1-3

6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

Level 5-6: Fun at the Carnival Chapter 1, Lessons 1-3
Level 5-6: Fun at the Carnival Chapter 2, Lessons 1-3

6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

A. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

B. Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?

D. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Level 5-6: Record Makers and Breakers Chapter 1, Lesson 4
Level 5-6: Record Makers and Breakers Chapter 2, Lessons 1-4
Level 5-6: Our Environment Matters Chapter 1, Lessons 2-3

Common Core State Standards	Project M ³ : Mentoring Mathematical Minds
<p>6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.</p> <p>C. 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.</p>	<p>Level 5-6: Our Environment Matters Chapter 1, Lessons 1-3 Level 5-6: Our Environment Matters Chapter 2, Lesson 1</p>
The Number System	
<i>Apply and extend previous understandings of multiplication and division to divide fractions by fractions.</i>	
<p>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. <i>For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.)</i> How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $3/4$-cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?</p>	<p>Level 4-5: Treasures From the Attic Chapter 2, Lesson 3 Level 5-6: Our Environment Matters Chapter 1, Lessons 1, 3</p>
<i>Compute fluently with multi-digit numbers and find common factors and multiples.</i>	
<p>6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</p>	<p>Level 4-5: The Tenth Street Pet Sanctuary Chapter 1, Lesson 3 Level 4-5: The Tenth Street Pet Sanctuary Chapter 2, Lessons 1-3 Level 5-6: Our Environment Matters Chapter 2, Lesson 3</p>
<p>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. <i>For example, express $36 + 8$ as $4(9 + 2)$.</i></p>	<p>Level 3-4: Factors, Multiples and Leftovers Chapter 1, Lesson 3</p>
<i>Apply and extend previous understandings of numbers to the system of rational numbers.</i>	
<p>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.</p>	<p>Level 5-6: Our Environment Matters Chapter 2, Lesson 1</p>

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<p>6.NS.C.6.B Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.</p>	<p>Level 4-5: Getting Into Shapes Chapter 2, Lessons 2 -3</p>
<p>6.NS.C.6.C 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.</p>	<p>Level 4-5: Getting Into Shapes Chapter 2, Lessons 2-3</p>
<p>6.NS.C.7 Understand ordering and absolute value of rational numbers.</p>	<p>Level 5-6: Our Environment Matters Chapter 2, Lesson 1</p>
<p>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.</p>	<p>Level 4-5: Getting Into Shapes Chapter 2, Lessons 2-3</p>
<h2 style="background-color: #0056b3; color: white; padding: 5px;">Expressions & Equations</h2>	
<p><i>Apply and extend previous understandings of arithmetic to algebraic expressions.</i></p>	
<p>6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers.</p>	<p>Level 4-5: At the Mall With Albegra Chapter 1, Lessons 1-4</p>
<p>6.EE.A.2.A Write expressions that record operations with numbers and with letters standing for numbers. <i>For example, express the calculation "Subtract y from 5" as $5 - y$.</i></p>	<p>Level 4-5: At the Mall With Albegra Chapter 1, Lessons 1-2</p>
<p>6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers.</p> <p>A. Write expressions that record operations with numbers and with letters standing for numbers. <i>For example, express the calculation "Subtract y from 5" as $5 - y$.</i></p> <p>B. 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. <i>For example, describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms.</i></p> <p>C. 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). <i>For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.</i></p>	<p>Level 5-6: Record Makers and Breakers Chapter 2, Lessons 1-4</p> <p>Level 5-6: Our Environment Matters Chapter 1, Lessons 2-3</p>

Reason about and solve one-variable equations and inequalities.

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.

Level 5-6: Record Makers and Breakers Chapter 2, Lessons 1-4
Level 5-6: Our Environment Matters Chapter 1, Lessons 2-3
Level 5-6: Our Environment Matters Chapter 2, Lesson 1

6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

Level 4-5: At the Mall With Albegra Chapter 1, Lessons 2-3
Level 5-6: Record Makers and Breakers Chapter 2, Lessons 1-4
Level 5-6: Our Environment Matters Chapter 1, Lessons 2-3
Level 5-6: Our Environment Matters Chapter 2, Lesson 1

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

Level 4-5: At the Mall With Albegra Chapter 1, Lesson 3
Level 5-6: Record Makers and Breakers Chapter 2, Lessons 1-4
Level 5-6: Our Environment Matters Chapter 1, Lessons 2-3
Level 5-6: Our Environment Matters Chapter 2, Lesson 1

Represent and analyze quantitative relationships between dependent and independent variables

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

Level 5-6: Record Makers and Breakers Chapter 1, Lessons 2-4
Level 5-6: Record Makers and Breakers Chapter 2, Lessons 1-4

Geometry

Solve real-world and mathematical problems involving area, surface area, and volume.

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

Level 5-6: Designer Boxes Chapter 2, Lessons 1-3

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.

Level 4-5: Getting Into Shapes Chapter 2, Lessons 2-3

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<p>6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.</p>	<p>Level 5-6: Designer Boxes Chapter 2, Lessons 1-3</p>
<h2 style="background-color: #0056b3; color: white; padding: 5px;">Statistics & Probability</h2>	
<p><i>Summarize and describe distributions.</i></p>	
<p>6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.</p>	<p>Level 4-5: The Tenth Street Pet Sanctuary Chapter 1, Lesson 3</p>