

**6th Grade / Content Area: Mathematics (Math 6 Course)**

**Length of Course: September - June**

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**Curriculum**

**Course Description:**

Emphasis on the development of problem solving and thinking skills, in compliance with the New Jersey Student Learning Standards. Instruction focuses on strengthening verbal and written communication, reasoning, and application of terminology and symbolism. The use of calculators and computers is encouraged within appropriate units of study.

Math 6 builds upon students' understanding of whole numbers, fractions, and decimals. Students expand their knowledge of geometry, percent, and probability. Hands-on experiences provide a foundation for the understanding of abstract mathematical concepts. Problem-solving strategies, mental mathematics, and applications of data are practiced.

Accelerated Math 6 is intended for highly motivated students who demonstrate mastery of basic computational skills and display problem-solving ability. In addition to extending whole number, fraction, and decimal skills, students work with positive and negative numbers, ratio and proportion, percent, algebraic equations, and geometry.

**Duration: 16 Days**

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| <p><b>Unit Name:</b> Number System (Decimals, Exponents, Order of Operations)</p>   | <p><b>Big Ideas for Unit:</b> Apply and relate place value of decimals and connect them to decimal operations. Emphasis on estimation to confirm decimal placement is correct.</p>   |
| <p><b>Course Objectives for Unit:</b> Fluently add, subtract, multiply and divide with decimals. Apply algorithm for solving using order of operations with exponents.</p>  |  |
| <p><b>Essential Questions</b><br/><i>What provocative questions will foster inquiry, understanding, and transfer of learning?</i></p> <ul style="list-style-type: none"><li>• Why is place value important when performing decimal operations.</li></ul>  | <p><b>Enduring Understandings</b><br/><i>What will students understand about the big ideas?</i></p> <p>Students will understand that...</p> <ul style="list-style-type: none"><li>• Numbers can be represented in various ways including decimal form.</li><li>• Operations with decimals can facilitate solving real life problems.</li><li>• Place value is important when establishing the algorithms for each decimal operation.</li></ul>   |
| <p><b>Areas of Focus: Proficiencies (Cumulative Progress Indicators)</b><br/>Students will:<br/><i>(Enter Standards here )</i></p> <p>6.NS.B.3 - Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</p> <p>6.NS.B.2 - Fluently divide multi-digit numbers using the standard algorithm.</p> <p>6.EE.A.2.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).</p> | <p><b>Examples, Outcomes, Assessments</b><br/><i>(see <u>note</u> below about the content of this section)</i></p> <p>Instructional Focus:</p> <p><b>Decimals</b></p> <ul style="list-style-type: none"><li>• <u>Activity List</u></li><li>• Student created word problems with money</li><li>• Journal Entry “How do I multiply with zeros?”</li><li>• Make 4 Placemats</li><li>• Scavenger Hunt (<a href="#"><b>Link</b></a>)</li></ul> <p><b>Exponents &amp; Order of Operations</b></p> <ul style="list-style-type: none"><li>• Leveled task cards &amp; activities (<a href="#"><b>Link</b></a>)</li><li>• Group activity (<a href="#"><b>Link</b></a>)</li></ul> <p>Sample Assessments:</p> <ul style="list-style-type: none"><li>• Quizzes</li><li>• Unit Test</li><li>• Activity List Results</li><li>• Checkpoint/Exit Quizzes</li><li>• Type I and II writing assignments</li></ul> <p>Instructional Strategies:</p> |

- Self paced activity list
- Exit quizzes for each sub topic

Interdisciplinary Connections:

- Science - in class connections and references to the metric system.

Technology Integration

- IXL assignments 6.F, 6.G and 6.H (decimals), 6.D.1 - 5 (exponents), and 6.O.6 and O.11 (order of operations)
- TenMarks 6.NS.3 (decimals), 6.EE.1 (exponents)
- Khan Academy Videos - Dividing Decimals
- BrainPop - Multiplying and Dividing Decimals, Exponents, order of Operations

Global Perspectives

**Duration: 20 Days**

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| <p><b>Unit Name:</b> Numerical Expressions &amp; Factors</p>  | <p><b>Big Ideas for Unit:</b> Represent numbers with their factors, identify greatest common factors and least common multiples. Variables can represent an unknown quantity in an expression and expressions can be written in various ways and still be equivalent.</p>  |
| <p><b>Course Objectives for Unit:</b> (1) identify the greatest common factor and least common multiple (2) write equivalent expressions using GCF and distributive property, (3) identify parts of an expression, combining like terms and equivalent expressions, (4) evaluate expressions (including whole number exponents) and (5) translate mathematical sentences into algebraic expression.</p>   |  |
| <p><b>Essential Questions</b><br/><i>What provocative questions will foster inquiry, understanding, and transfer of learning?</i></p> <ul style="list-style-type: none"><li>● How can we use factors to represent a number?</li><li>● Why is it helpful to represent a number/term in a different way?</li><li>● Why would we write a variable expression to represent a scenario and then substitute possible numbers?</li><li>● What does it mean for two expressions to be equivalent?</li></ul> | <p><b>Enduring Understandings</b><br/><i>What will students understand about the big ideas?</i><br/>Students will understand that...</p> <ul style="list-style-type: none"><li>● A number/term can be represented with factors and the distributive property.</li><li>● Key terms that identify parts of a variable expression - constant, coefficient, variable.</li><li>● How to write an expression from a scenario and then represent it in equivalent ways.</li></ul>                               |
| <p><b>Areas of Focus: Proficiencies (Cumulative Progress Indicators)</b><br/>Students will:<br/><i>(Enter Standards here )</i></p> <p>(1st) &amp; (2nd) 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</p>  | <p><b>Examples, Outcomes, Assessments</b><br/><i>(see note below about the content of this section)</i><br/>Instructional Focus:</p> <ul style="list-style-type: none"><li>● (1) &amp; (2) - Benchmark lesson reviewing terms and demonstrating “upside down” division method. Apply method to word problems (first determine if problem is asking for LCM or GCF) <b><u>Website Link for resources</u></b></li><li>● (2) - demonstrate how to write a number using factors &amp; distributive</li></ul> |

of two whole numbers with no common factor. For example, express  $36 + 8$  as  $4(9 + 2)$ .

(4th) 6.EE.A.1 - Write and evaluate numerical expressions involving whole-number exponents.

(3rd) & (5th) 6.EE.A.2 - Write, read, and evaluate expressions in which letters stand for numbers.

.A - Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract  $y$  from 5" as  $5 - y$ .

.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. 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.

.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). 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  $s = \frac{1}{2}$ .

(2nd) 6.EE.A.3 - Apply the properties of operations to generate equivalent expressions. For example, apply the

property. **Website Link for resources**

- (3) - Introduce parts of a variable expression (terms, coefficient, constant and variable) **Website Link for resources**
- (3) - Introduce combining like terms - hands on activity with labeled blocks/chips
- (3) - Writing equivalent expression using the greatest common factor (distributive property) **Website Link for resources**
- (3) - Factoring using the greatest common factor.
- (4) Evaluate whole number expressions.
- (5) Write, read and evaluate variable expressions. **Website Link for resources**

Sample Assessments:

- Collins Writing Prompts
- MP 3, 5, 6, 7 & 8/Type II writing assignment (GoFormative) - ***"Describe the differences between LCM & GCF. Use the numbers 6 & 8 in your explanation."***
- TenMark & IXL results
- Quizzes & Unit Assessments

Instructional Strategies:

- Anchor charts connecting MP2, 3 & 7
- Type I & II writing assignments
- Hands on activity with colored/labeled tiles
- Benchmark lessons
- Reinforcing activities

Interdisciplinary Connections:

- Instructional connections through working with authentic scenarios, teachers should help students see how expressions can represent situations in life and will reflect their

distributive property to the expression  $3(2 + x)$  to produce the equivalent expression  $6 + 3x$ ; apply the distributive property to the expression  $24x + 18y$  to produce the equivalent expression  $6(4x + 3y)$ ; apply properties of operations to  $y + y + y$  to produce the equivalent expression  $3y$ .

(3rd) 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). For example, the expressions  $y + y + y$  and  $3y$  are equivalent because they name the same number regardless of which number  $y$  stands for.

specific grade-level coursework in other content areas, such as English language arts, reading, science, social studies, world languages, physical education, and fine arts, among others.

#### Technology Integration

IXL: 6.o.3, 6.o.6, 6.y... (all strands)

TenMarks: 6.NS.4 (GCF & LCM) 6.EE.2a (translating expressions), 6.EE.2b (parts of expression), 6.EE.2c (evaluating with order of operations), 6.EE.3 & 4 (equivalent expressions)

How to video links available on websites

BrainPop Movies & Quizzes - [Distributive Property](#), [Factoring](#), [D=RT](#)

#### Global Perspectives

Connect travel experiences and maps with the distance, rate and time formula - using substitution and evaluating.

**Duration: 10 Days**

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| <p><b>Unit Name:</b> Fractions</p>  | <p><b>Big Ideas for Unit:</b></p> <ul style="list-style-type: none"><li>● Apply multiple strategies to divide fractions and mixed numbers.</li><li>● The inverse relationship between division and multiplication helps to understand how to divide fractions.</li><li>● Strategies will include algorithms and models.</li></ul>  |
| <p><b>Course Objectives for Unit:</b> Apply and extend previous understandings of multiplication and division to divide fractions by fractions (including mixed numbers).</p>   |  |
| <p><b>Essential Questions</b><br/><i>What provocative questions will foster inquiry, understanding, and transfer of learning?</i></p> <ul style="list-style-type: none"><li>● How do you use patterns to understand fractions?</li><li>● How do we compute mixed numbers?</li><li>● How does fraction division compare to whole number division?</li><li>● How do you apply strategies to real world application fraction problems?</li></ul>                                   | <p><b>Enduring Understandings</b><br/><i>What will students understand about the big ideas?</i><br/>Students will understand that...</p> <ul style="list-style-type: none"><li>● Dividing fractions - rule is to multiply by the reciprocal.</li><li>● When dividing mixed numbers, rename first and then divide as with fractions.</li></ul>  |
| <p><b>Areas of Focus: Proficiencies (Cumulative Progress Indicators)</b><br/>Students will:<br/><i>(Enter Standards here )</i></p> <p>6.NS.A- Apply and extend previous understandings of multiplication and division to divide fractions by fractions.</p> <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.</p> | <p><b>Examples, Outcomes, Assessments</b><br/><i>(see <u>note</u> below about the content of this section)</i><br/>Instructional Focus:</p> <ul style="list-style-type: none"><li>● Make sense of problems and persevere in solving them.</li><li>● Model with mathematics.</li><li>● Reason abstractly and quantitatively.</li><li>● Math Practices 1, 2, 3, 4, 7 &amp; 8</li><li>● Fraction Phobia PBL- including Menu Board/Tic Tac Toe Activities - Adding &amp; Subtracting Review - mini/benchmark lesson on regrouping</li><li>● Benchmark lesson on multiplying with mixed numbers.</li><li>● Lesson on dividing fractions, whole numbers and mixed numbers -<ul style="list-style-type: none"><li>○ Models</li><li>○ Algorithms</li></ul></li></ul> |

○ Word Problems

- Menu Board/Tic Tac Toe Activities - Multiplying & Dividing

(accelerated - menu board includes add, subtract & multiply)

- See constructed website for resources and activities. **[Website Link for Resources](#)**

Sample Assessments:

- Collins Writing Prompts
- IXL results - 6.J, 6.K. and 6.L sections
- TenMarks - 6.NS.1 (dividing fractions with whole numbers, mixed numbers and other fractions - 3 assignments available)
- [Fraction PBL](#)

Instructional Strategies:

- Choice Menus
- Benchmark Lessons
- Small Group Lessons
- Collins Type I and II Writing prompts
- BrainPop video - with model - ([Link](#))

Interdisciplinary Connections:

- Instructional connections through working with authentic scenarios, teachers should help students see how fractions can represent situations in life and will reflect their specific grade-level coursework in other content areas, such as English language arts, reading, science, social studies, world languages, physical education, and fine arts, among others.

Technology Integration

- Use of select videos to pre teach and post teach fraction concepts and skills

Global Perspectives

- What is the relationship between

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|  | <p>fractions and decimals? Is the use of one better than another in certain situations?</p> <ul style="list-style-type: none"> <li>Fractions in real-world settings such as distance referenced on street signs, stock prices and ingredients.</li> </ul> |
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**Duration: 26 Days**

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| <p><b>Unit Name:</b> Ratios, Rates, Proportions and Percents</p> | <p><b>Big Ideas for Unit:</b></p> <ul style="list-style-type: none"> <li>Understand ratios, rates proportions and percents.</li> <li>Compare ratios using tables.</li> <li>Find percent as a rate per 100.</li> <li>Solve problems given part and whole.</li> </ul> |
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**Course Objectives for Unit:** Write ratios, compare ratios & determine equivalent ratios. Identify unit rates and the mean of unit rates. Apply rules for fractions, decimals and percents to real life problem solving.

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| <p><b>Essential Questions</b><br/><i>What provocative questions will foster inquiry, understanding, and transfer of learning?</i></p> <ul style="list-style-type: none"> <li>How can ratios help show relationships between two quantities?</li> <li>How can unit rates help compare and solve real life problems?</li> <li>What are percents and how are they related to ratios?</li> </ul> | <p><b>Enduring Understandings</b><br/><i>What will students understand about the big ideas?</i></p> <p>Students will understand that...</p> <ul style="list-style-type: none"> <li>A ratio is a comparison of two quantities.</li> <li>Ratios are used to make equivalent fractions and can be displayed in tables and graphs.</li> <li>Fractions and decimals have equivalent percents</li> </ul> |
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| <p><b>Areas of Focus: Proficiencies (Cumulative Progress Indicators)</b><br/>Students will:<br/><i>(Enter Standards here )</i><br/>6.RP.A.1</p> <p>Understand the concept of a ratio and use ratio language to describe a ratio</p> | <p><b>Examples, Outcomes, Assessments</b><br/><i>(see note below about the content of this section)</i></p> <p>Instructional Focus:</p> <ul style="list-style-type: none"> <li>Ratio Activity -<br/>FILE:///HOME/CHRONOS/U-D8116D8F945E1BBF087FAC570DCEF983A3116BE7/DOWNLOADS/FREERATI05TASKCARDS6TH7THGRADECOMMONCOREMATHGAMESACTIVITIES.PDF</li> <li>Ratio, Rate, Proportion Activity:</li> </ul> |
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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."

#### 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."<sup>1</sup>

#### 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.

6.RP.A.3.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.

6.RP.A.3.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?

6.RP.A.3.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

Classwork Assignments - [Website Link](#)

- Fraction, Decimal Percent: Classwork and Assignments - [Website Link](#)
- Unit Rate Activity - Grocery Store Curricular - Comparison
- 100 Cube Activity - representing fractions percents and decimals

Sample Assessments:

- Quizzes
- Unit Test
- Real Life Problem Solving
- Checkpoint/Formative Assessment

Instructional Strategies:

- IXL - 6.R & 6.S
- BrainPop - Videos, Quizzes and Newsela activities (ratios & percents)
- TenMarks
- Activities - listed above

Interdisciplinary Connections:

- Science - How much water do you use? (connect ratios & percents)

Technology Integration

- IXL assignments
- BrainPop - Ratios & Proportions

Global Perspectives

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| <p>involving finding the whole, given a part and the percent.</p> <p>6.RP.A.3.D Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.</p> |  |
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**Duration: 10 Days**

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| <p><b>Unit Name: One and Two Step Equations</b></p>  | <p><b>Big Ideas for Unit:</b></p> <ul style="list-style-type: none"> <li>● For a given set of numbers there are relationships that are always true, called properties, and these are the rules that govern arithmetic and algebra.</li> <li>● To solve one- step equations using substitution, mental math, estimation, and inverse operations</li> </ul>   |
| <p><b>Course Objectives for Unit:</b> Represent and solve one and two step equations using concrete and informal models, as well as appropriate pencil and paper techniques.</p>   |   |
| <p><b>Essential Questions</b></p> <p><i>What provocative questions will foster inquiry, understanding, and transfer of learning?</i></p> <ul style="list-style-type: none"> <li>● How is an equation different from an expression?</li> <li>● How does adding and subtracting the same number from both sides of the equation not change the equality?</li> <li>● How does multiplying and dividing both sides of the equation by a non zero number not change the equality?</li> <li>● How does the inverse operation help me solve equations with one and two</li> </ul> | <p><b>Enduring Understandings</b></p> <p><i>What will students understand about the big ideas?</i></p> <p>Students will understand that...</p> <ul style="list-style-type: none"> <li>● The use of variables represents the unknown in equations.</li> <li>● The solutions to an equation are the values of the variables that make the equation true. An equation is true when both sides of the equation are equal.</li> <li>● Writing equations directly corresponds to given/real life situations and the use of formulas to</li> </ul> |

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| <p>steps?</p> <ul style="list-style-type: none"> <li>● How writing an equation with a variable will help with real life situations?</li> </ul>   | <p>solve problems.</p> <ul style="list-style-type: none"> <li>● Using properties of operations and the idea of maintaining equality of both sides of an equation to solve.</li> <li>● Constructing and analyzing tables, such as tables of quantities that are equivalent ratios, use equations to describe relationships between quantities.</li> </ul>   |
| <p><b>Areas of Focus: Proficiencies (Cumulative Progress Indicators)</b><br/>Students will:</p> <p>6.EE.5 Understand solving an equation as a process of answering a question. Use substitution to determine whether a given number in a specified set makes an equation true.</p> <p>6.EE.6 Use variables to represent numbers and write expressions when solving 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.</p> <p>6.EE.7 Solve real world and mathematical problems by writing and solving equations of the form <math>x + y = q</math> and <math>px = q</math> for cases in which <math>p, q</math> and <math>x</math> are all nonnegative rational numbers.</p> <p>6.EE.9 Use variables to represent two quantities in a real-world problem that change in a relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, that of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.</p> | <p><b>Examples, Outcomes, Assessments</b><br/><i>(see note below about the content of this section)</i></p> <p>Instructional Focus:</p> <ul style="list-style-type: none"> <li>● Solving One-Step Equations (Add, Subtract, Multiply, Divide) Classwork and Assignments - Unit Sites (<a href="#">Site 1</a>/<a href="#">Site 2</a>)</li> <li>● Solving Two-Step and Multi-Step Equations Classwork and Assignment - Unit Sites (<a href="#">Two-Step</a>/<a href="#">Multi-Step</a>)</li> </ul> <p>Sample Assessments:</p> <ul style="list-style-type: none"> <li>● Collins Writing Prompts</li> <li>● Exit Tickets</li> <li>● Station Activities</li> <li>● Small Group lessons</li> <li>● Quizzes</li> <li>● Tests</li> </ul> <p>Instructional Strategies:</p> <ul style="list-style-type: none"> <li>● Brainstorm with students a list of “Buzz” words that indicate each of the four operations.</li> <li>● Model equations using an index card with = written on it. Use counters/chips to demonstrate the use of the inverse operation showing students that if you perform the same operation on both sides, the equation remains balanced/equal.</li> </ul> <p>Interdisciplinary Connections:</p> <ul style="list-style-type: none"> <li>● Develop Reading Comprehension</li> </ul> |

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|  | <p>Strategies when solving word problems</p> <ul style="list-style-type: none"> <li>● Write an equation on the board, such as <math>3n=18</math>. Have students write real world word problems that would use the equation to solve.</li> <li>● Connect life events to equations by creating word problems that reflect real world situations.</li> </ul> <p>Technology Integration</p> <ul style="list-style-type: none"> <li>● IXL's 6.Z. strand</li> <li>● TenMarks</li> <li>● Teacher website links</li> </ul> <p>Global Perspectives</p> <ul style="list-style-type: none"> <li>● Develop various career scenarios that demonstrate the use of equations in everyday life.</li> </ul> |
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**Duration: 16 Days**

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| <b>Unit Name: Integers &amp; Inequalities</b>  | <p><b>Big Ideas for Unit:</b></p> <ul style="list-style-type: none"> <li>● Describe quantities with positive and negative numbers.</li> <li>● Compare and order integers and absolute value numbers.</li> <li>● Solve and graph one step inequalities</li> </ul>                  |
| <p><b>Course Objectives for Unit:</b><br/>         Extend students knowledge of equations to equations with rational numbers and solving inequalities.</p>   |   |
| <p><b>Essential Questions</b><br/> <i>What provocative questions will foster inquiry, understanding, and transfer of learning?</i></p> <ul style="list-style-type: none"> <li>● What does it mean to have less than zero?</li> <li>● What does absolute value mean?</li> </ul> | <p><b>Enduring Understandings</b><br/> <i>What will students understand about the big ideas?</i><br/>         Students will understand that...</p> <ul style="list-style-type: none"> <li>● A number less than zero is negative and is the opposite of a whole number.</li> </ul> |

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| <ul style="list-style-type: none"> <li>• What do negative integers mean?</li> </ul>   | <ul style="list-style-type: none"> <li>• Negative numbers are used to represent situations with debt and measuring.</li> <li>• Absolute value is the distance from zero.</li> </ul>  |
| <p><b>Areas of Focus: Proficiencies (Cumulative Progress Indicators)</b><br/>Students will:</p> <p>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 real-world contexts, explaining the meaning of 0 in each situation.</p> <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>6.NS.C.6.A 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., <math>-(-3) = 3</math>, and that 0 is its own opposite.</p> <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>6.NS.C.6.C Find and position integers and other rational numbers on a horizontal or</p> | <p><b>Examples, Outcomes, Assessments</b><br/><i>(see <u>note</u> below about the content of this section)</i></p> <p>Instructional Focus:</p> <ul style="list-style-type: none"> <li>• Classwork &amp; Activities - Teacher site <a href="#">Link</a></li> <li>• Balance scale activities</li> </ul> <p>Sample Assessments:</p> <ul style="list-style-type: none"> <li>• Go Formatives</li> <li>• Quizzes &amp; Tests</li> <li>• TenMarks results</li> </ul> <p>Instructional Strategies:</p> <ul style="list-style-type: none"> <li>• Algebra Tiles</li> <li>• Enrichment activities</li> </ul> <p>Interdisciplinary Connections:</p> <p>Technology Integration</p> <ul style="list-style-type: none"> <li>• IXL's</li> <li>• TenMarks</li> </ul> <p>Global Perspectives</p> |

vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

6.NS.C.7 Understand ordering and absolute value of rational numbers.

6.NS.C.7.A Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret  $-3 > -7$  as a statement that  $-3$  is located to the right of  $-7$  on a number line oriented from left to right.

6.NS.C.7.B Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write  $-3^{\circ}\text{C} > -7^{\circ}\text{C}$  to express the fact that  $-3^{\circ}\text{C}$  is warmer than  $-7^{\circ}\text{C}$ .

6.NS.C.7.C 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. For example, for an account balance of  $-30$  dollars, write  $|-30| = 30$  to describe the size of the debt in dollars.

6.NS.C.7.D Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than  $-30$  dollars represents a debt greater than 30 dollars.

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.

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| <p>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.</p> <p>6.EE.B.8 Write an inequality of the form <math>x &gt; c</math> or <math>x &lt; c</math> to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form <math>x &gt; c</math> or <math>x &lt; c</math> have infinitely many solutions; represent solutions of such inequalities on number line diagrams.</p> <p>7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</p> <p>7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <p>7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.</p> |  |
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**Duration: 27 Days**

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| <p><b>Unit Name: Geometry (2 dimensional and 3-dimensional)</b></p>   | <p><b>Big Ideas for Unit:</b></p> <ul style="list-style-type: none"> <li>● Finding areas of polygons.</li> <li>● Use nets to find surface areas.</li> <li>● Find volume of prisms with fractional sides.</li> </ul> |
| <p><b>Course Objectives for Unit:</b></p> <ul style="list-style-type: none"> <li>● Find areas of triangles &amp; quadrilaterals</li> <li>● Find the distance between points with same x or y coordinates</li> </ul> |   |

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| <ul style="list-style-type: none"> <li>● Draw polygons on coordinate plane</li> <li>● Surface area &amp; volume of prisms and pyramids</li> </ul>   |  |
| <p><b>Essential Questions</b><br/> <i>What provocative questions will foster inquiry, understanding, and transfer of learning?</i></p> <ul style="list-style-type: none"> <li>● How can we decompose shapes into familiar ones?</li> <li>● How can we represent the surfaces of a 3D shape into 2-dimensions?</li> <li>● What is surface area?</li> <li>● What is volume?</li> </ul>  | <p><b>Enduring Understandings</b><br/> <i>What will students understand about the big ideas?</i><br/> Students will understand that...</p> <ul style="list-style-type: none"> <li>● Composite figures can be broken down into familiar figures. Then you can find the area of each and combine.</li> <li>● A net is a two dimensional representation of a 3D figure.</li> <li>● Volume is represented by the number of cubes.</li> </ul>   |
| <p><b>Areas of Focus: Proficiencies (Cumulative Progress Indicators)</b><br/> Students will:</p> <p>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.</p> <p>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 <math>V = l w h</math> and <math>V = b h</math> to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.</p> <p>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</p> | <p><b>Examples, Outcomes, Assessments</b><br/> <i>(see <u>note</u> below about the content of this section)</i><br/> Instructional Focus:</p> <ul style="list-style-type: none"> <li>● <a href="#">Interactive models</a></li> <li>● Brain Pop</li> <li>● <a href="#">Interactive modeling</a></li> </ul> <p>Sample Assessments:</p> <ul style="list-style-type: none"> <li>● Go Formatives</li> <li>● Culminating Activity - Pool Landscaping</li> <li>● Quizzes &amp; Tests</li> <li>● TenMarks results</li> </ul> <p>Instructional Strategies:</p> <ul style="list-style-type: none"> <li>● Solid &amp; Net manipulatives</li> <li>● Deconstructing real life objects - cereal boxes, tissue boxes, etc.</li> </ul> <p>Interdisciplinary Connections:</p> <ul style="list-style-type: none"> <li>● Recap earlier science unit on volume of rectangular prisms.</li> </ul> <p>Technology Integration</p> <ul style="list-style-type: none"> <li>● TenMarks</li> <li>● IXL's</li> <li>● Go Formative</li> </ul> |

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| <p>coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.</p> <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> | <ul style="list-style-type: none"> <li>● Free trial on Gizmos</li> </ul> <p>Global Perspectives</p> |
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**Duration: 20 Days**

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| <p><b>Unit Name: Data &amp; Statistics</b></p>   | <p><b>Big Ideas for Unit:</b></p> <ul style="list-style-type: none"> <li>● How graphs, frequency and data tables show the statistical variability and range of data. (histograms, box plots, stem and leaf and line plots)</li> <li>● Measures of center summarize data with one number.</li> <li>● How to generate statistical questions that have reasonable variability</li> </ul> |
| <p><b>Course Objectives for Unit:</b></p> <ul style="list-style-type: none"> <li>● Find and analyze the mean, median, and mode of a data set using models and calculations</li> <li>● Analyze a set of data by finding the range and by making frequency tables; creating line plots; creating box and whisker plots</li> <li>● Construct and interpret a histogram</li> <li>● Find and use measures of variability to describe and compare data sets</li> <li>● Relate the shape of a data display to how the data is distributed</li> <li>● Identify a statistical question; recognize and remove bias from statistical questions</li> </ul> |   |
| <p><b>Essential Questions</b></p> <p><i>What provocative questions will foster inquiry, understanding, and transfer of learning?</i></p> <ul style="list-style-type: none"> <li>● Which data displays are most useful in</li> </ul>  | <p><b>Enduring Understandings</b></p> <p><i>What will students understand about the big ideas?</i></p> <p>Students will understand that...</p> <ul style="list-style-type: none"> <li>● Summarize and describe data and distributions by using measures of</li> </ul>   |

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| <p>various situations.</p> <ul style="list-style-type: none"> <li>● Why are measures of central tendency useful?</li> <li>● What is a statistical question.</li> </ul>  | <p>center and mean absolute deviation.</p> <ul style="list-style-type: none"> <li>● How to interpret graphs and see the effects of outliers.</li> </ul>  |
| <p><b>Areas of Focus: Proficiencies (Cumulative Progress Indicators)</b><br/>Students will:</p> <p>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. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.</p> <p>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.</p> <p>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.</p> <p>6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.</p> <p>6.SP.B.5 Summarize numerical data sets in relation to their context, such as by:</p> <p>6.SP.B.5.A Reporting the number of observations.</p> <p>6.SP.B.5.B Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.</p> <p>6.SP.B.5.C Giving quantitative measures of</p> | <p><b>Examples, Outcomes, Assessments</b><br/><i>(see <u>note</u> below about the content of this section)</i></p> <p>Instructional Focus:</p> <ul style="list-style-type: none"> <li>● Khan Academy Videos</li> <li>● Data Statistics Project</li> </ul> <p>Sample Assessments:</p> <ul style="list-style-type: none"> <li>● Go Formatives</li> <li>● Data Displays - student created</li> <li>● Quizzes &amp; Tests</li> <li>● TenMarks results</li> </ul> <p>Instructional Strategies:</p> <ul style="list-style-type: none"> <li>● Hands on graphing</li> </ul> <p>Interdisciplinary Connections:</p> <p>Technology Integration</p> <ul style="list-style-type: none"> <li>● TenMarks</li> <li>● IXL's - 6.GG &amp; 6.HH</li> <li>● Go Formative</li> </ul> <p>Global Perspectives</p> |

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.

6.SP.B.5.D 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.