## APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

**SUBJECT:** Mathematics  
**GRADE:** 7

<table>
<thead>
<tr>
<th>Strand/Concept</th>
<th>Student Expectation</th>
<th>Student Friendly Learning Objective</th>
<th>Level of Thinking</th>
<th>Academic Vocabulary</th>
</tr>
</thead>
</table>
| **Strand:** Expressions and Equations  
**Concept:** Solve real-life and mathematical problems using numerical and algebraic expressions and equations. | 7.EE.4. Use variables to represent quantities in a real world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. I a. Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? I | I can write equations to represent situations and solve for them. I can use equations, tables, and graphs to answer questions. | Knowledge  
Comprehension  
Application  
Evaluation | Coefficients  
Coordinate graph  
Coordinate pair  
Dependent variable  
Distributive property  
Equations  
Factor  
Formula  
Like terms  
Range  
Relationship  
Rule  
Scale  
Table  
Variable  
X-axis  
Y-axis |

**TIMELINE:** Quarter 1

**Colorado SS:**
- i-Ready Lessons: Using Equations to Solve Problems; Problem Solving with Equations
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Strand: Geometry</strong></td>
<td><strong>Concept: Draw, construct, and describe geometrical figures and describe the relationships between them.</strong></td>
<td>I can create similar polygons.</td>
<td>Application</td>
<td>Congruent</td>
</tr>
<tr>
<td></td>
<td>7.G.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</td>
<td>I can use scale factors and ratios to describe side lengths and area of similar figures.</td>
<td>Synthesis</td>
<td>Corresponding</td>
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<tr>
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<td>Image</td>
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<td>Parallel</td>
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<td>Polygon</td>
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<td>Scale factor</td>
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<td></td>
<td></td>
<td>Similar</td>
</tr>
<tr>
<td><strong>Colorado SS:</strong></td>
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</tr>
<tr>
<td></td>
<td>i-Ready lesson: Scale Drawings</td>
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</tr>
<tr>
<td><strong>Strand: Geometry</strong></td>
<td><strong>Concept: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.</strong></td>
<td>I can use geometry facts to solve for an unknown angle.</td>
<td>Application</td>
<td>Adjacent angles</td>
</tr>
<tr>
<td></td>
<td>7.G.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.</td>
<td></td>
<td>Synthesis</td>
<td>Complementary angles</td>
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<td></td>
<td>Corresponding angles</td>
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<td>Corresponding angles</td>
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<tr>
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<td>Corresponding sides</td>
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<td>Cross section</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Supplementary angles</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vertical angles</td>
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<tr>
<td><strong>Colorado SS:</strong></td>
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</tr>
<tr>
<td></td>
<td>i-Ready lesson: Problem Solving with Angles</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
### Strand/Concept
- **Strand:** Ratios and Proportional Relationships
- **Concept:** Analyze proportional relationships and use them to solve real-world and mathematical problems.

### Student Expectation
- 7.RP.2.c
  Represent proportional relationships by equations. For example, if total cost $t$ is proportional to the number $n$ of items purchased at a constant price $p$, the relationship between the total cost and the number of items can be expressed as $t = pn$.
  
  c. Explain what a point $(x, y)$ on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where $r$ is the unit rate.

### Student Friendly Learning Objective
- I can apply proportional reasoning to solve for an unknown in an equation.
- I can describe the information on a graph of a proportional relationship.

### Level of Thinking
- Comprehension
- Synthesis

### Academic Vocabulary
- Proportion
- Proportional relationship
- Proportional relationship
- Ratio

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**Colorado SS:**
- i-Ready lesson: Equations for Proportional Relationships
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</thead>
<tbody>
<tr>
<td><strong>Strand:</strong> Ratios and Proportional Relationships</td>
<td>7.RP.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</td>
<td>I can write number sentences to solve ratio and percent problems. I can apply ratios, rates, proportions, and percents to solving problems.</td>
<td>Application</td>
<td>Commissions, Discount, Fees, Gratuities, Mark-up, Percent, Principal, Rate, Simple interest, Tax</td>
</tr>
<tr>
<td><strong>Concept:</strong> Analyze proportional relationships and use them to solve real-world and mathematical problems.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Colorado SS:** Estimate and compute unit cost of consumables (to include unit conversions if necessary sold in quantity to make purchase decisions based on cost and practicality. PFL Solve problems involving percent of a number, discounts, taxes, simple interest, percent increase, and percent decrease. PFL

i-Ready lesson: Problem Solving with Proportional Relationships
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RESOURCES AND NOTES FOR QUARTER 1:
## APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

### SUBJECT: Mathematics

**GRADE: 7**

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<tr>
<th>Strand/Concept</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Strand:</strong> Ratios and Proportional Relationships</td>
<td>7.RP.2 Recognize and represent proportional relationships between quantities.</td>
<td>I can find equivalent ratios.</td>
<td><strong>Knowledge</strong></td>
<td>Average</td>
</tr>
<tr>
<td><strong>Concept:</strong> Analyze proportional relationships and use them to solve real-world and mathematical problems.</td>
<td>a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.</td>
<td>I can develop strategies for comparing ratios proportionally.</td>
<td><strong>Comprehension</strong></td>
<td>Compare</td>
</tr>
<tr>
<td></td>
<td>b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</td>
<td>I can compute and interpret unit rates.</td>
<td><strong>Analysis</strong></td>
<td>Coordinate graph</td>
</tr>
<tr>
<td></td>
<td>c. Represent proportional relationships by equations. For example, if total cost ( t ) is proportional to the number ( n ) of items purchased at a constant price ( p ), the relationship between the total cost and the number of items can be expressed as ( t = pn ).</td>
<td>I can apply proportional reasoning to solve or an unknown part in an equation.</td>
<td><strong>Evaluation</strong></td>
<td>Data</td>
</tr>
<tr>
<td></td>
<td>d. Explain what a point ((x, y)) on the graph of a proportional relationship means in terms of the situation, with special attention to the points ((0, 0)) and ((1, r)) where ( r ) is the unit rate.</td>
<td>I can describe a point ((x, y)) on a coordinate graph.</td>
<td></td>
<td>Decimal</td>
</tr>
</tbody>
</table>

**Colorado SS:**
- i-Ready lessons (2a, 2b): Recognizing Proportional Relationships; Representing Proportional Relationships
- i-Ready lesson (2c, 2d): Equations for Proportional Relationships

**TIMELINE:** Quarter 2
<table>
<thead>
<tr>
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</table>
| **Strand:** Ratios and Proportional Relationships  
**Concept:** Analyze proportional relationships and use them to solve real-world and mathematical problems. | 7.RP.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. C M | I can write number sentences to solve ratio and percent problems. I can apply rate, ratios, proportions, and percents to solve problems. | Application | Percent  
Simple interest |

**Colorado SS:** Estimate and compute unit cost of consumables (to include unit conversions if necessary sold in quantity to make purchase decisions based on cost and practicality.  
Solve problems involving percent of a number, discounts, taxes, simple interest, percent increase, and percent decrease.  
i-Ready lesson: Problem Solving with Proportional Relationships

| Strand: Geometry  
**Concept:** Draw, construct, and describe geometrical figures and describe the relationships between them. | 7.G.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. C M | I can draw similar polygons. I can use scale factors and ratios to describe side lengths and area of similar figures. | Application Synthesis | Scale factor |

**Colorado SS:**  
i-Ready lesson: Scale Drawings
## APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

### SUBJECT: Mathematics  GRADE: 7

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<tr>
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<th>Academic Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strand:</strong> The Number System</td>
<td><strong>Student Friendly Learning Objective:</strong> I can add and subtract rational numbers. I can interpret and write math sentences involving positive and negative numbers. I can use a number line model to add and subtract rational numbers. I can describe examples of opposites. I understand the definition of absolute value. I can use order of operations and parenthesis to add and subtract numbers.</td>
<td><strong>Level of Thinking:</strong> Comprehension Application</td>
<td><strong>Academic Vocabulary:</strong> Absolute value Additive inverse Additive inverse property Commutative Property Commutative Property Distributive Property Integers Inverse Negative numbers Opposites Order of Operations Positive numbers Rational numbers Reciprocal</td>
<td></td>
</tr>
<tr>
<td><strong>Concept:</strong> Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</td>
<td>7 NS 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. I M a. Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged. I M b. Understand p + q as the number located a distance</td>
<td></td>
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</tr>
</tbody>
</table>

| **Colorado SS:** |

i-Ready lessons (1a): Rational Numbers and Absolute Value; Addition and Subtraction of Positive and Negative Integers

i-Ready lessons (1b): Coordinate Plane and Absolute Value; Addition and Subtraction of Positive and Negative Integers; Addition and Subtraction of Rational Numbers

i-Ready lessons (1c): Coordinate Plane and Absolute Value; Addition and Subtraction of Positive and Negative Integers

i-Ready lesson (1d): Addition and Subtraction of Rational Numbers
<table>
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<tr>
<td><strong>Strand:</strong> The Number System</td>
<td><strong>7 NS.2</strong> Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. <strong>IM</strong>&lt;br&gt;a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as ((-1)(-1) = 1) and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. <strong>IM</strong>&lt;br&gt;b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If ( p ) and ( q ) are integers, then (-p/q = (-p)/q = p/(-q)). Interpret quotients of rational numbers by describing real-world contexts. <strong>IM</strong>&lt;br&gt;c. Apply properties of operations as strategies to multiply and divide rational numbers. <strong>IM</strong>&lt;br&gt;d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats. <strong>IM</strong></td>
<td>I can multiply and divide whole numbers and fractions. <strong>IM</strong>&lt;br&gt;I can use the distributive property with positive and negative number to simplify expressions and equations. <strong>IM</strong>&lt;br&gt;I can represent any rational number as the division of two rational numbers where 0 is not the divisor. <strong>IM</strong>&lt;br&gt;I can use parenthesis and order of operations to multiply and divide rational numbers. <strong>IM</strong>&lt;br&gt;I can convert any rational number to a terminating or repeating decimal. <strong>IM</strong></td>
<td>Knowledge&lt;br&gt;Comprehension&lt;br&gt;Application</td>
<td>Additive Inverse&lt;br&gt;Additive inverse&lt;br&gt;Convert&lt;br&gt;Distributive Property&lt;br&gt;Divisor&lt;br&gt;Integers&lt;br&gt;Integers&lt;br&gt;Order of Operations&lt;br&gt;Order of operations&lt;br&gt;Quotient&lt;br&gt;Rational numbers&lt;br&gt;Rational numbers&lt;br&gt;Terminates</td>
</tr>
</tbody>
</table>

**Colorado SS:**  
i-Ready lessons (2a, 2b, 2c): Multiplication and Division of Positive and Negative Integers; Multiplication and Division of Rational Numbers  
i-Ready lesson (2d): Expressing Fractions as Decimals
<table>
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<th>Academic Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strand: The Number System</td>
<td>7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.</td>
<td>I can add, subtract, multiply, and divide rational numbers to solve problems.</td>
<td>Application</td>
<td>Rational numbers</td>
</tr>
<tr>
<td>Concept: Apply and extend previous understanding of operations with fractions</td>
<td></td>
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<td></td>
<td>Integers</td>
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<td>Additive inverse</td>
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<td></td>
<td>Order of operations</td>
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**Colorado SS:**
- i-Ready lessons: Problem Solving with Rational Numbers; Addition and Subtraction of Rational Numbers; Multiplication and Division of Rational Numbers
### APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

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</table>
| **Strand:** Expressions and Equations  
**Concept:** Solve real-life and mathematical problems using numerical and algebraic expressions and equations. | 7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation. | I can solve problems with rational numbers. | Comprehension Application Evaluation | Coefficients Distributive Property Factor Like terms Negative numbers Positive numbers Properties of Operations Rational numbers |

**Colorado SS:**  
i-Ready lesson: Problem Solving with Rational Numbers
## RESOURCES AND NOTES FOR QUARTER 2:
### APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

**SUBJECT:** Mathematics  
**GRADE:** 7

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</thead>
</table>
| **Strand:** Expressions and Equations  
**Concept:** Use properties of operations to generate equivalent expressions. | 7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.  
IM | I can apply properties to add, subtract, factor, and expand linear expressions with rational coefficients. | Application | Algebraic expression, Associative property, Commutative property, Distributive property, Properties of equality, Solution to an equation |

### TIMELINE: Quarter 3

**Colorado SS:**  
- i-Ready lessons: Linear Expressions; Equivalent Expressions

### Strand: Expressions and Equations  
**Concept:** Use properties of operations to generate equivalent expressions.  
- 7.EE.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.” IM

### Colorado SS:

| Strand: Expressions and Equations  
**Concept:** Use properties of operations to generate equivalent expressions. | 7.EE.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.” IM | I can rewrite an expression to show how quantities in a problem are related. | Comprehension | Algebraic expression, Associative property, Commutative property, Distributive property |

[6/16/15]
# APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

**SUBJECT:** Mathematics  
**GRADE:** 7

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</table>
| **Strand:** Expressions and Equations  
**Concept:** Solve real-life and mathematical problems using numerical and algebraic expressions and equations. | 7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation. | I can solve multi-step real world mathematical problems with positive and negative rational numbers. 
I can apply properties of operations to calculate with numbers in any form. 
I can assess the reasonableness of answers using mental computation and estimation. | Comprehension 
Application 
Evaluation | Coefficient 
Dependent variable 
Independent variable 
Linear functions 
Linear relationships 
Point of intersection 
Properties of equality 
Slope 
Solution 
Solving an equation 
X-intercept 
Y-intercept |

**Colorado SS:**  
i-Ready lesson: Problem Solving with Rational Numbers
## APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

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</table>
| **Strand:** Expressions and Equations  
**Concept:** Solve real-life and mathematical problems using numerical and algebraic expressions and equations. | 7.EE.4  
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. C M  
  
a. Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? C M  
b. Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions. I M | I can use a variable to represent an unknown quantity.  
I can construct simple equations and inequalities to solve problems by reasoning about the quantities.  
I can solve a one variable equation with a single solution and check the answer.  
I can accurately solve linear equations.  
I can compare the algebraic solution to a problem to the arithmetic solution.  
I can solve one variable inequality with a solution.  
I can represent problems in real-world context with an inequality.  
I can explain the solution of the inequality as it relates to the context of the problem  
I can graph the solution set of an inequality | Knowledge  
Comprehension  
Application  
Evaluation | Coefficient  
Dependent variable  
Independent variable  
Inequality  
Linear functions  
Linear relationships  
Point of intersection  
Properties of equality  
Slope  
Solution  
Solving an equation  
X-intercept  
Y-intercept |

**Colorado SS:**  
i-Ready lessons (4a): Using Equations to Solve Problems; Problem Solving with Equations  
i-Ready lesson (4b): Problem Solving with Inequalities
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<tr>
<td>Stand: Ratio and Proportional Relationships</td>
<td>7.RP.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour. In Mathematics.</td>
<td>I can recognize proportion and ratios. I can explain what a unit rate is in my own words. I can identify a unit rate from fractions and compute unit rates from ratio with fractions I can calculate and compare unit rates for real life situations. I can simplify a rate, unit rate, ratio by dividing. I can solve problems by finding the relationship between two numbers and give the answer in a part whole format.</td>
<td>Knowledge Comprehension Application Analysis</td>
<td>Proportional relationship Rate Unit rate</td>
</tr>
<tr>
<td>Concept: Analyze proportional relationships and use them to solve real-world and mathematical problems.</td>
<td></td>
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</table>

**Colorado SS:**

i-Ready lessons: Concept of Rate; Ratios involving Complex Fractions

6/16/15
## Strand/Concept
- **Stand:** Ratio and Proportional Relationships
- **Concept:** Analyze proportional relationships and use them to solve real-world and mathematical problems.

## Student Expectation
- **7.RP.2**
  - b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.  
    - C M
  - c. Represent proportional relationships by equations. For example, if total cost \( t \) is proportional to the number \( n \) of items purchased at a constant price \( p \), the relationship between the total cost and the number of items can be expressed as \( t = pn \).  
    - M
  - d. Explain what a point \((x, y)\) on the graph of a proportional relationship means in terms of the situation, with special attention to the points \((0, 0)\) and \((1, r)\) where \( r \) is the unit rate.  
    - M

## Student Friendly Learning Objective
- I can identify a constant relationship in tables, graphs, equations, diagrams, and verbal descriptions.
- I can identify a proportional relationship from an equation.
- I can analyze a proportional equation and explain what each value means.
- I can use a graph to determine unit rate.
- I can explain in my own words a proportional situation using points on a graph.
- I can interpret a graph using real-world proportional relationships.
- I can apply real-world situations in graphical form.
- I can compare coordinates of a graph to the origin or a unit rate.

## Level of Thinking
- Knowledge
- Comprehension

## Academic Vocabulary
- Ratio
- Unit rate

## Colorado SS:
- i-Ready lessons (2b): Recognizing Proportional Relationships; Representing Proportional Relationships
- i-Ready lesson (2c, 2d): Equations for Proportional Relationships
## APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

**SUBJECT:** Mathematics  
**GRADE:** 7

<table>
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<tr>
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</thead>
</table>
| Concept: Draw, construct, and describe, geometrical figures and describe the relationships between them. | 7.G.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. | I can construct geometric shapes using appropriate tools (freehand, ruler, protractor, or technology).  
I can categorize the different types of triangles.  
I can determine if three given measurements construct a triangle.  
I can explain with given measures, why certain conditions form a unique triangle, or no triangle. | Knowledge Application | Unique triangle |

**Colorado SS:**  
i-Ready lessons: Polygons in the Coordinate Plane; Construction of Triangles
## APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

**SUBJECT:** Mathematics  
**GRADE:** 7

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</table>
| **Strand:** Geometry  
**Concept:** Solve real-life and mathematical involving angle measure, area, surface area, and volume | 7.G.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. I M | I can identify the parts of a circle such as the diameter, radius, chord, center, and circumference.  
I can identify pi in decimal and fraction form.  
I can recall the formula for circumference and area of a circle.  
I can use formulas to solve the area and circumference of the circle.  
I can compute the circumference of a circle using the given area.  
I can identify that pi can be found from the diameter and circumference of a circle.  
I can identify and analyze the relationship between radius and diameter. | Knowledge Comprehension Application | Circumference  
Cross section  
Diameter  
Radius |

**Colorado SS:**  
i-Ready lesson: Area and Circumference of a Circle
<table>
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</table>
| Strand: Geometry | 7.G.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. | I can identify types of triangles, quadrilaterals, and polygons. I can determine the dimensions of a 2D and 3D figure given the volume and or area. I can solve real world problems involving area of triangles, quadrilaterals, and other polygons. I can solve real-world problems involving the volume and surface area of cubes and right prisms. | Application | Base
Cone
Cylinder
Dimensions
Edge
Face
Net
Prism
Pyramid
Rectangular Prism
Surface Area
Unit Cube
Volume |

Colorado SS:
- i-Ready lessons: Surface Area of Composed Figures; Volume of Composed Figures; Area of Composed Figures
## APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

**SUBJECT:** Mathematics  
**GRADE:** 7

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</table>

**RESOURCES AND NOTES FOR QUARTER 3:**
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<tr>
<th>Strand/Concept</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Strand: Statistics and Probability</td>
<td>7.SP.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.</td>
<td>I can use information to draw inferences from data. I can explain how statistics about a sample can be used to describe a population. I can identify statistical terms such as sample, population, sample size, generalizations, random sampling, biased, unbiased, and valid. I can explain what conditions need to be met for a sample to be a good representation of a population. I can distinguish between a representative sample and a random sample. I can explain the reasons why a random sample is the most desirable type of sample.</td>
<td>Knowledge Analysis</td>
<td>Knowledge Analysis</td>
</tr>
<tr>
<td>Concept: Use random sampling to draw inferences about a population.</td>
<td></td>
<td></td>
<td></td>
<td>Interquartile range Mean absolute deviation Representative sample</td>
</tr>
</tbody>
</table>

Colorado SS:
- i-Ready lessons: Random Samples; Making Statistical Inferences

TIMELINE: Quarter 4
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Strand: Statistics and Probability</td>
<td>7.SP.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.</td>
<td>I can explain in my own words random sample. I can collect and use multiple samples of data to make generalizations about population. I can determine an appropriate sample size. I can list what conditions you must have for a sample to be a good representation of population. I can justify why a random sample is the most desirable type of sample. I can use multiple samples from a population to explain the possible variation in predictions about the population. I can determine if my estimations are reasonable.</td>
<td>Application Evaluation</td>
<td>Interquartile range Mean absolute deviation Representative sample</td>
</tr>
</tbody>
</table>

**Colorado SS:**

i-Ready lesson: Making Statistical Inferences
### APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

**SUBJECT:** Mathematics  
**GRADE:** 7

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</table>
| **Strand:** Statistics and Probability  
**Concept:** Draw informal comparative inferences about two populations. | 7.SP.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable. | I can identify measures of central tendency in a data distribution (mean, median, mode, range, etc.). I can observe the overlap and differences of two data sets with similar variability. | Comprehension Analysis | Attribute  
Distribution  
Interquartile range  
Mean absolute deviation  
Measure of variability  
Measures of center  
Range  
Representative sample  
Variability |

**Colorado SS:**  
i-Ready lessons: Using Mean and Mean Absolute Deviation to Compare Data; Using Measures of Center and Variability to Compare Data
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<tbody>
<tr>
<td>Strand: Statistics and Probability</td>
<td>7.SP.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.</td>
<td>I can identify upper quartile, lower quartile, upper extreme maximum, lower extreme minimum, interquartile range, and mean absolute deviation as measures of variation. I can make informal comparisons of data about two populations. I can compare two sets of data using measures of center (mean/median) and measures of variability (range and IQR). I can create random samples from two different populations and determine whether their mean is significantly different. I can generate random samples from two different populations and determine whether their variance is significantly different.</td>
<td>Comprehension Application</td>
<td>Extrema Interquartile range (IQR) Mean Mean absolute derivation Measures of center Measures of variability Median Random sample Range</td>
</tr>
<tr>
<td>Concept: Draw informal comparative inferences about two populations.</td>
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</table>

**Colorado SS:**
i-Ready lessons: Measure of Center and Spread; Using Mean and Mean Absolute Deviation to Compare Data; Using Measures of Center and Variability to Compare Data
### Strand/Concept: Statistics and Probability

**Concept:** Investigate chance processes and develop, use, and evaluate probability models.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>7.SP.5</td>
<td>Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. I M</td>
<td></td>
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</tr>
<tr>
<td>I can identify the probability of a single event. I can classify the outcome of any single event as impossible, unlikely, likely, or certain. I can understand that probability is expressed as a number between zero and one. I can explain that numbers closer to one mean that the event has greater probability of happening. I can explain that numbers closer to zero mean that the event is less likely to happen. I can explain that numbers closer to 0.5 mean that the event has an equal likelihood of happening. I can infer that a greater likelihood happens as the number of favorable outcomes approaches the total number of outcomes.</td>
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<tr>
<td>Knowledge Comprehension</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equally likely Experimental probability Fair game Outcome Random Theoretical probability</td>
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</tr>
</tbody>
</table>

**Colorado SS:**

- i-Ready lesson: Probability Concepts
## Strand/Concept

**Strand:** Statistics and Probability  
**Concept:** Investigate chance processes and develop, use, and evaluate probability models.

## Student Expectation

7.SP.6
Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times. IM

## Student Friendly Learning Objective

I can distinguish the difference between relative frequency and probability.  
I can predict the relative frequency given the probability.  
I can estimate the likelihood of an event by collecting data on the event over numerous trials.  
I can use the law of large numbers to determine the relationship between the experimental and theoretical probabilities.  
Tell in my own words the difference between the probability observed on many trials (experiments) and the theoretical probability of the event.  
I can use tools to compare and explore outcomes of theoretical probability.

## Level of Thinking

Application  
Synthesis

## Academic Vocabulary

Area model  
Binomial situation  
Equally likely  
Expected value  
Experimental probability  
Fair game  
Outcome  
Random  
Theoretical probability

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**Colorado SS:**  
i-Ready lesson: Experimental Probability
## APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

### SUBJECT: Mathematics

### GRADE: 7

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<tr>
<td>Strand: Statistics and Probability</td>
<td>7.SP.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times but probably not exactly 200 times.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concept: Investigate chance processes and develop, use, and evaluate probability models.</td>
<td>I can distinguish the difference between relative frequency and probability. I can predict the relative frequency given the probability. I can estimate the likelihood of an event by collecting data on the event over numerous trials. I can use the law of large numbers to determine the relationship between the experimental and theoretical probabilities. Tell in my own words the difference between the probability observed on many trials (experiments) and the theoretical probability of the event. I can use tools to compare and explore outcomes of theoretical probability.</td>
<td>Application Synthesis</td>
<td>Area model Binomial situation Equally likely Expected value Experimental probability Fair game Outcome Random Theoretical probability</td>
<td></td>
</tr>
</tbody>
</table>

### Colorado SS:
## APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

### SUBJECT: Mathematics  
**GRADE:** 7

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</thead>
</table>
| **Strand:** Statistics and Probability  
**Concept:** Investigate chance processes and develop, use, and evaluate probability models  
7.SP.7 | Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.  
I M  
a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.  
I M  
b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies? I M | I can recognize uniform (equally likely) probability of events.  
I can use models to determine the probability of events.  
I can create a uniform probability model and use it to decide the probability of each outcome or event.  
I can use theoretical probability to predict frequency of outcomes.  
I can perform probability experiments and compare to theoretical probability.  
I can conduct experiments using manipulatives (dice, spinners, coins, etc.)  
I can create a probability model that may not be uniform by comparing frequencies in data generated from a chance process. | Application | Area model  
Binomial situation  
Equally likely  
Expected value  
Experimental probability  
Fair game  
Outcome  
Random  
Theoretical probability |

### Colorado SS:
- i-Ready lesson (7a): Probability Models
- i-Ready lesson (7b): Experimental Probability

6/16/15
### APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

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</table>
| **Strand:** Statistics and Probability  
**Concept:** Investigate chance processes and develop, use, and evaluate probability models.  
7.SP.8  
Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.  
IM  
a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. IM  
b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space, which compose the event. IM  
c. Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that donors to find one with type A blood? It will take at least 4. IM | I can find probabilities of events by using lists tables, diagrams, and simulations.  
I can explain in my own words that probability of a compound event is the fractions of desirable outcomes over all possible outcomes. (just like simple probability)  
I can find the probability or fraction of each possible outcome of compound events.  
I can use tree diagrams, frequency tables, and organized lists to determine the probability of a compound event.  
I can represent probability outcomes as fractions, decimals, or percents.  
I can use technology and tools to simulate a situation, graph results, and interpret data. | Knowledge  
Comprehension  
Application  
Synthesis | Compound events  
Probability  
Simulation  
Tree diagram |

**Colorado SS:**  
i-Ready lesson (8a, 8b): Probability of Compound Events  
i-Ready lesson (8c): Simulations of Compound Events
## RESOURCES AND NOTES FOR QUARTER 4:

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