Pojoaque Valley Schools

Mathematics CCSS Pacing Guide

7th Grade

**Skills adapted from*
Kentucky Department of Education
Math Deconstructed Standards
*** Evidence of attainment/assessment, Vocabulary, Knowledge, Skills and Essential Elements adapted from Wisconsin Department of Education and Standards Insights Computer-Based Program*

Version 3

2015-2016

Pojoaque Valley Schools
Math Common Core Pacing Guide Introduction

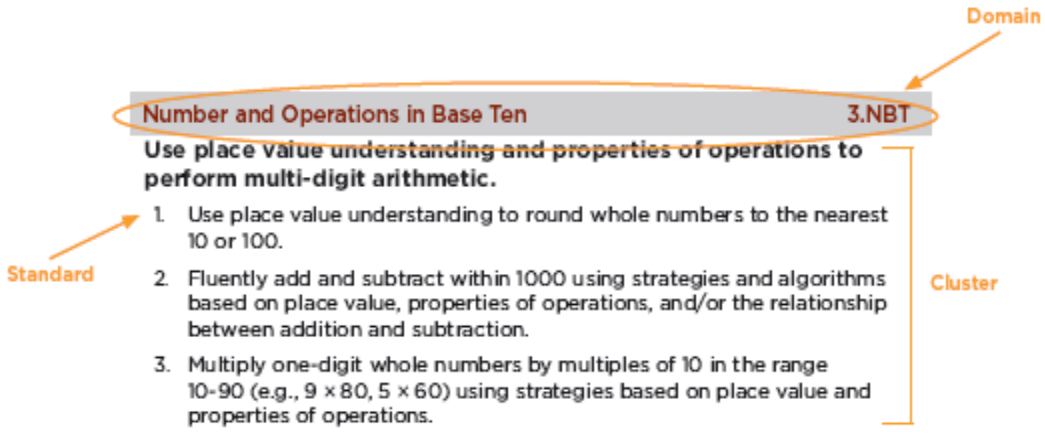
The New Mexico Public Education Department published the Assessment Blueprints for End-of-Course Exams with those standards clearly identified that are measured. While students in grades 3 through 11 who take PARCC for reading, math and science are not required to take an End-of-Course Exam (unless required for a graduation requirement), the blueprints outline those standards and provide released items for practice. In this pacing guide, standards that are identified as being measured are highlighted in bold text for easy reference.

The Pojoaque Valley Schools pacing guide documents are intended to guide teachers' use of Common Core State Standards (CCSS) over the course of an instructional school year. The guides identify the **focus standards by quarter.** Teachers should understand that the **focus standards** emphasize deep instruction for that timeframe. However, because a certain quarter does not address specific standards, it should be understood that previously taught standards should be reinforced while working on the focus standards for any designated quarter. Some standards will **recur** across all quarters due to their importance and need to be addressed on an ongoing basis.

The Math pacing guides are grounded in four key components: the key fluency expectations for each grade level, the critical areas designated in the CCSS Math Standards, the Common Core Standards for Mathematics and the integration of the Standards for Mathematical Practice. In planning instruction it is important that math teachers incorporate the 8 mathematical practices for mathematics to ensure that the Common Core standards are mastered by all students.

The Math CCSS pacing guides contain the following elements:

- **Grade Level:** Identify the grade level of the intended standard
- **Standard with code:** Defines the knowledge and skills for students. The code contains the grade level, domain and standard number.
- **Domain:** Larger groups of related standards**.** Standards from different domains may sometimes be closely related.
- **Cluster:** Summarize groups of related standards.
- **Skills and Knowledge:** Identified as subsets of the standard and appear in one or more quarters. Define the skills and knowledge embedded in the standard to meet the full intent of the standard itself.



Version 2 of the Pojoaque Valley School District Pacing guides for Reading Language Arts and Mathematics are based on the done by staff and teachers of the school district using the Kentucky model, and a synthesis of the excellent work done by Wisconsin Cooperative Educational Service Agency 7 (CESA 7) School Improvement Services, Green Bay, WI. (2010), *Standards Insight project.*

> *Standards Insight* was developed to give educators a tool for in depth investigation of the Common Core State Standards (CCSS). The CCSS are "unpacked" or dissected, identifying specific knowledge, skills, vocabulary, understandings, and evidence of student attainment for each standard. *Standards Insight* may be used by educators to gain a thorough grasp of the CCSS or as a powerful collaborative tool supporting educator teams through the essential conversations necessary for developing shared responsibility for student attainment of all CCSS. . . . serves as a high-powered vehicle to help educators examine the standards in a variety of ways.

The Version 2 Pojoaque Valley School District Pacing guides present the standard with levels of detail and then the necessary skills by quarter based on the Kentucky model. On the second page for each standard, the synthesis of the *Standards Insight* project is presented in a way that further defines and refines the standard such that teachers may use the information to refine their teaching practices.

Based on this synthesis of work and the purpose for the unpacking, the following fields were selected as most helpful to aid in understanding of the Common Core Standards that will lead to shifts in instruction:

1. Evidence of Student Attainment: "What could students do to show attainment of the standard?"

2. Vocabulary: "What are key terms in the standard that are essential for interpretation and understanding in order for students to learn the content?"

3. Knowledge: "What does the student need to know in order to aid in attainment of this standard?"

4. Skills and Understanding: "What procedural skill(s) does the student need to demonstrate for attainment of this standard?", and "What will students understand to attain the standard?"

The following fields are included in Version 2:

Evidence of Student Attainment: This field describes what the standard may look like in student work. Specific expectations are listed in performance terms showing what students will say or do to demonstrate attainment of the standard.

Standards Vocabulary: This field lists words and phrases specific to each standard. Shared interpretation and in depth understanding of standards vocabulary are essential for consistent instruction across and within grade levels and content areas.

Knowledge: The knowledge field lists what students will need to know in order to master each standard (facts, vocabulary, and definitions).

Skills and Understanding: The skills field identifies the procedural knowledge students apply in order to master each standard (actions, applications, strategies), as well as the overarching understanding that connects the standard, knowledge, and skills. Understandings included in *Standards Insight* synthesize ideas and have lasting value.

Instructional Achievement Level Descriptors: This field lists, by level what a teacher can expect to see in a student who achieves at a particular level. Additionally teachers can use this filed to differentiate instruction to provide further growth for student's in moving from one level to another. This field can be used to provide specific teaching approaches to the standard in question.

A Note About High School Standards: The high school standards are listed in conceptual categories. Conceptual categories portray a coherent view of high school instruction that crosses traditional course boundaries. We have done everything possible, with teacher input, to link individual standards to the appropriate pacing guides,

References to Tables: References to tables within the standards in the *Standards Insight* tool refer to Tables 1-5 found in the glossary of the Mathematics Common Core State Standards document found at www.corestandards.org.

PVMS 7th Grade
Math Year-at-a-Glance
Completed 1-14-14

Quarter 1	Quarter 2	Quarter 3	Quarter 4
7.RP.1 7.RP.2 7.SP.1 7.SP.2 7.SP.3 7.SP.4 7.SP.5 7.SP.6 7.SP.7 7.SP.8	7.NS.1 7.NS.2 7.SP.6 7.SP.7	7.EE.1 7.EE.2 7.EE.3 7.EE.4	7.G.1 7.G.2 7.G.3 7.G.4 7.G.5 7.G.6

Quarterly View of Standards **7th Grade Mathematics Pacing Guide** **Quarter**	**1**	**2**	**3**	**4**
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 ½ / ¼ miles per hour, equivalently 2 miles per hour.*	**X**			
7.RP.2abcde Recognize and represent proportional relationships between quantities. 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. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. d. 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.* e. 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.	**X**			
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.*	**X**			
7.NS.1abcd 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. 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.* b. Understand $p + q$ as the number located a distance |q| from *p,* in the positive or negative direction depending on whether *q* is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. c. Understand subtraction of rational numbers as adding the additive inverse, $p – q = p + (–q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts		**X**		
7.NS.1d 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. Apply properties of operations as strategies to add and subtract rational numbers.		**X**		
7.NS.2a Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. 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.		**X**		
7.NS.2b Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. 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.		**X**		
Quarter	**1**	**2**	**3**	**4**
7.NS.2c Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.		**X**		

7.NS.2d Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. 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.		**X**		
7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.		**X**		
7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.			**X**	
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."*			**X**	
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.*			**X**	
7.EE.4a 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. 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?*			**X**	
7.EE.4b 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. 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.*			**X**	
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.				**X**
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.				**X**
7.G.3 Describe the two-dimensional figures that result from slicing three- dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.				**X**
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.				**X**
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.				**X**
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.				**X**
Quarter	**1**	**2**	**3**	**4**
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	**X**			

support valid inferences.				
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.*	**X**			
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.*	**X**			
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.*	**X**			
7.SP.5 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.	**X**			
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.*	**X**	**X**		
7.SP.7ab 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. 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.* 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?*	**X**	**X**		
7.SP.8abc Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. 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. 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. 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 it will take at least 4 donors to find one with type A blood?*	**X**			

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<tr><td colspan="2">Domain: Ratios and Proportional Relationships</td><td colspan="6">Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.</td></tr>
<tr><td colspan="2">Quarter 1:
Compute unit rates associated with ratios of fractions in like or different units</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
</table>

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given ratios of fraction to fractions in contextual situations, Calculate the equivalent unit rate and justify the unit rate within the given context.	Unit rate Ratio	Students know: Techniques for producing ratios equivalent to given ratios, including finding unit rates.	Students understand that/are able to: Determine equivalent ratios (including unit rates) for ratios consisting of fractions. Unit rates are used to clearly communicate rates in contextual situations and allow for clearer comparisons	**EE7.RP.1-3.** Use a ratio to model or describe a relationship.	**Level IV Students will:** **EE7.RP.1-3.** Complete the ratio using numbers to show relationships. Ex. Given one component of a ratio in standard form (1:_) complete the ratio. Ex. Given a family picture, what is the ratio of people wearing hats compared to the total number of people in the picture? Ex. Describe the relationship between miles driven and the time taken by creating a ratio (e.g., Katie knows she can drive one mile in two minutes is 1:2.) **Level III Students will:** **EE7.RP.1-3.** Use a ratio to model or describe a relationship. Ex. Given a bag of green and red chips, identify the ratio of green chips compared to red chips. Ex. Use a pictorial representation to show part-whole relationship (e.g., What part of the picture is shaded? Three parts are shaded and one part is not.). **Level II Students will:** **EE7.RP.1-3.** Demonstrate a simple ratio relationship. Ex. Using a dry ease board demonstrate a ratio relationship of squares to circles. Ex. When playing a board game, move one space for every dot on the die. Ex. Complete a pattern given a simple ratio. **Level I Students will:** **EE7.RP.1-3.** Identify one item as it relates to another. Ex. When given two baskets with markers, count the number in each basket and compare. Ex. Given two cards with attendance cards, compare the number here and absent. Ex. Given a half an apple and a whole apple, identify “the whole” apple.

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Grade 7

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<tr><td colspan="4">Standard with code: 7.RP.2abcde Recognize and represent proportional relationships between quantities.

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.
b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
c. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
d. 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.
e. 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></tr>
<tr><td>Domain: Ratios and Proportional Relationships</td><td colspan="3">Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.</td></tr>
<tr><td>Quarter 1:
Know that a proportion is a statement of equality between two ratios.

Define constant of proportionality as a unit rate.

Recognize what(0, 0)represents on the graph of a proportional relationship.

Recognize what (1, r) on a graph represents, where r is the unit rate.

Analyze two ratios to determine if they are proportional to one another with a variety of strategies. (e.g. using tables, graphs, pictures, etc.)

Analyze tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships to identify the constant of proportionality.

Represent proportional relationships by writing equations.</td><td>Quarter 2:</td><td>Quarter 3:</td><td>Quarter 4:</td></tr>
</table>

Explain what the points on a graph of a proportional relationship means in terms of a specific situation.							
Make sense of problems and persevere in solving them.	**Reason abstractly and quantitatively.**	**Construct viable arguments and critique the reasoning of others.**	**Model with mathematics.**	**Use appropriate tools strategically.**	**Attend to precision.**	**Look for and make use of structure.**	**Look for and express regularity in repeated reasoning.**

Evidence of Student Attainment	**Vocabulary**	**Knowledge**	**Skills**	**Common Core Essential Elements**	**Instructional Achievement Level Descriptors**
Students: Justify relationships as proportional and identify the constant of proportionality using graphs, tables, equivalent ratios, and equations, Explain the relationships between representations of proportions and extend that relationship into a rule (equation). Given the graph of a proportional relationship in a contextual situation, (i.e. buying CDs of equal price), Explain the association between the unit rate and any point on the line, (i.e. "If I paid $3/CD, then point (5, 15) means that I can buy 5 CDs for $15").	Unit rate Proportional relationships	Students know: Characteristics of graphs, tables, and equations that define proportional situations, Relationships between graphs, tables, and equations in proportional situations, The role of unit rate in a graph of a proportional relationship.	Students understand that/are able to: Produce graphs, tables, and the related equations, Communicate the relationships between graphs, tables, and equations in order to justify relationships as proportional. The constant of proportionality (unit rate) in a relationship communicates the rate of change for one variable with respect to the other, regardless of how the proportional relationship is represented.	**EE7.RP.1-3.** Use a ratio to model or describe a relationship.	**Level IV Students will:** **EE7.RP.1-3.** Complete the ratio using numbers to show relationships. Ex. Given one component of a ratio in standard form (1:_) complete the ratio. Ex. Given a family picture, what is the ratio of people wearing hats compared to the total number of people in the picture? Ex. Describe the relationship between miles driven and the time taken by creating a ratio (e.g., Katie knows she can drive one mile in two minutes is 1:2.) **Level III Students will:** **EE7.RP.1-3.** Use a ratio to model or describe a relationship. Ex. Given a bag of green and red chips, identify the ratio of green chips compared to red chips. Ex. Use a pictorial representation to show part-whole relationship (e.g., What part of the picture is shaded? Three parts are shaded and one part is not.). **Level II Students will:** **EE7.RP.1-3.** Demonstrate a simple ratio relationship. Ex. Using a dry ease board demonstrate a ratio relationship of squares to circles. Ex. When playing a board game, move one space for every dot on the die. Ex. Complete a pattern given a simple ratio. **Level I Students will:** **EE7.RP.1-3.** Identify one item as it relates to another. Ex. When given two baskets with markers, count the number in each basket and compare. Ex. Given two cards with attendance cards, compare the number here and absent. Ex. Given a half an apple and a whole apple, identify “the whole” apple.

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Grade 7

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<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 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></tr>
<tr><td colspan="2">Domain: Ratios and Proportional Relationships</td><td colspan="6">Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.</td></tr>
<tr><td colspan="2">Quarter 1:
Recognize situations in which percentage proportional relationships apply

Apply proportional reasoning to solve multistep ratio and percent problems, e.g., simple interest, tax, markups, markdowns, gratuities, commissions, fees, percent increase and decrease, percent error, etc.</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given multi-step problems involving contexts with ratios and percent, Solve and justify solutions using a variety of representations and solution paths.		Students know: Techniques for representing mathematical contexts that include percent and ratios, Techniques for producing ratios equivalent to given ratios, including finding unit rates.	Students understand that/are able to: Strategically choose and apply representations that aid in solutions of percent and ratio problems, Solve and interpret the solutions. Patterns and relationships in mathematical contexts can be represented in a variety of ways in order to solve problems, including that a variety of representations of ratio and percent can be used to solve and interpret mathematical contexts	**EE7.RP.1-3.** Use a ratio to model or describe a relationship.	**Level IV Students will:** **EE7.RP.1-3.** Complete the ratio using numbers to show relationships. Ex. Given one component of a ratio in standard form (1:_) complete the ratio. Ex. Given a family picture, what is the ratio of people wearing hats compared to the total number of people in the picture? Ex. Describe the relationship between miles driven and the time taken by creating a ratio (e.g., Katie knows she can drive one mile in two minutes is 1:2.) **Level III Students will:** **EE7.RP.1-3.** Use a ratio to model or describe a relationship. Ex. Given a bag of green and red chips, identify the ratio of green chips compared to red chips. Ex. Use a pictorial representation to show part-whole relationship (e.g., What part of the picture is shaded? Three parts are shaded and one part is not.). **Level II Students will:** **EE7.RP.1-3.** Demonstrate a simple ratio relationship. Ex. Using a dry ease board demonstrate a ratio relationship of squares to circles. Ex. When playing a board game, move one space for every dot on the die. Ex. Complete a pattern given a simple ratio. **Level I Students will:** **EE7.RP.1-3.** Identify one item as it relates to another. Ex. When given two baskets with markers, count the number in each basket and compare. Ex. Given two cards with attendance cards, compare the number here and absent. Ex. Given a half an apple and a whole apple, identify “the whole” apple.

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Grade 7

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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.
b. Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
c. Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts</td></tr>
<tr><td>Domain: The Number System</td><td colspan="3">Cluster: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</td></tr>
<tr><td>Quarter 1:</td><td>Quarter 2:
Describe situations in which opposite quantities combine to make 0.

Represent and explain how a number and its opposite have a sum of 0 and are additive inverses.

Demonstrate and explain how adding two numbers, p+q, if q is positive, the sum of p and q will be |q| spaces to the right of p on the number line.

Demonstrate and explain
How adding two numbers, p+q if q is negative, the sum of p and q will be |q| spaces to the left of p on the number line.

Identify subtraction of rational numbers as adding the additive inverse property to subtract rational numbers, p-q = p +(-q).

Apply and extend previous understanding to represent addition and subtraction problems of</td><td>Quarter 3:</td><td>Quarter 4:</td></tr>
</table>

		rational numbers with a horizontal or vertical number line. Interpret sums of rational numbers by describing real-world contexts. Explain and justify why the sum of p+ q is located a distance of |q| in the positive or negative direction from p on a number line. Represent the distance between two rational numbers on a number line is the absolute value of their difference and apply this principle in real-world contexts. Apply the principle of subtracting rational numbers in real-world contexts. Apply properties of operations as strategies to add and subtract rational numbers				
Make sense of problems and persevere in solving them.	**Reason abstractly and quantitatively.**	**Construct viable arguments and critique the reasoning of others.**	**Model with mathematics.**	**Use appropriate tools strategically.**	**Attend to precision.**	**Look for and make use of structure.**	**Look for and express regularity in repeated reasoning.**

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Describe situations that illustrate the additive inverse property as adding opposites to equal zero. Given contextual or mathematical problems involving both positive and negative rational numbers, Find and justify sums and differences of rational numbers through connections to a variety of representations (including distance on a number line) used for addition and subtraction of whole numbers and fractions.	Absolute value Rational number Additive inverse Properties of operations (Table 3)	Students know: Strategies for modeling addition and subtraction of rational numbers (e.g. two-color chips and charge models for integers, distance on a number line), Characteristics of addition and subtraction problems (Table 1).	Students understand that/are able to: Strategically choose and apply appropriate representations for operations and rational numbers in contexts in order to solve problems, Use logical reasoning to communicate and interpret solutions and solution paths for problems involving rational numbers. Finding sums and differences of rational numbers (negative and positive) involves determining direction and distance on the number line, Visual and concrete models help make sense of abstract mathematical representations of numbers and computations.	**EE7.NS.1.** Add fractions with like denominators (halves, thirds, fourths, and tenths) so the solution is less than or equal to one.	**Level IV Students will:** **EE7.NS.1.** Same as Level III Students. **Level III Students will:** **EE7.NS.1.** Add fractions with like denominators (halves, thirds fourths, and tenths) so the solution is less than or equal to one. Ex. Use fraction bars or fraction circles to add so that answer is less than or equal to one. Match a numerical representation to the model. Ex. Given tenths, construct the whole and recognize that 10 tenths are needed to make a whole. (Connect to money -- 10 dimes = one whole dollar). **Level II Students will:** **EE7.NS.1.** Use models to add halves, thirds, and fourths. Ex. Given thirds, construct the whole and add the number of thirds needed to make a whole. Ex. Given fourths, construct the whole and add the number of fourths needed to make a whole. Ex. Given a recipe that calls for a 1/4 cup of sugar, shade a picture of a measuring cup marked into fourths to show how much sugar is needed to double the recipe (1/4 + 1/4 = 2/4 or 1/2). Ex. Demonstrate that a whole can be divided into equal parts, and when reassembled, recreates the whole using a model. **Level I Students will:** **EE7.NS.1.** Use models to identify the whole and find the missing pieces of a whole. Ex. Given three choices, identify which is more, a whole or a half. Ex. Presented with a whole object and the same object with a piece missing, identify the whole. Ex. Given 1/2 a pizza, identify the missing part (concrete model or touch board). Ex. Shown papers cut in halves, thirds, etc., choose the object cut in halves. Ex. Given boxes with one-third shaded, one-half shaded, and the whole shaded, choose the one with the whole shaded.

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Grade 7

<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 7.NS.1d 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.

d. Apply properties of operations as strategies to add and subtract rational numbers.</td></tr>
<tr><td colspan="2">Domain: The Number System</td><td colspan="6">Cluster: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:
Identifies properties of addition and subtraction when adding and subtracting rational numbers
Apply properties of operations as strategies to add and subtract rational numbers.</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
</table>

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Describe situations that illustrate the additive inverse property as adding opposites to equal zero. Given contextual or mathematical problems involving both positive and negative rational numbers, Find and justify sums and differences of rational numbers through connections to a variety of representations (including distance on a number line) used for addition and subtraction of whole numbers and fractions.	Absolute value Rational number Additive inverse Properties of operations (Table 3)	Students know: Strategies for modeling addition and subtraction of rational numbers (e.g. two-color chips and charge models for integers, distance on a number line), Characteristics of addition and subtraction problems (Table 1).	Students understand that/are able to: Strategically choose and apply appropriate representations for operations and rational numbers in contexts in order to solve problems, Use logical reasoning to communicate and interpret solutions and solution paths for problems involving rational numbers. Finding sums and differences of rational numbers (negative and positive) involves determining direction and distance on the number line, Visual and concrete models help make sense of abstract mathematical representations of numbers and computations.	**EE7.NS.1.** Add fractions with like denominators (halves, thirds, fourths, and tenths) so the solution is less than or equal to one.	**Level IV Students will:** **EE7.NS.1.** Same as Level III Students. **Level III Students will:** **EE7.NS.1.** Add fractions with like denominators (halves, thirds fourths, and tenths) so the solution is less than or equal to one. Ex. Use fraction bars or fraction circles to add so that answer is less than or equal to one. Match a numerical representation to the model. Ex. Given tenths, construct the whole and recognize that 10 tenths are needed to make a whole. (Connect to money -- 10 dimes = one whole dollar). **Level II Students will:** **EE7.NS.1.** Use models to add halves, thirds, and fourths. Ex. Given thirds, construct the whole and add the number of thirds needed to make a whole. Ex. Given fourths, construct the whole and add the number of fourths needed to make a whole. Ex. Given a recipe that calls for a 1/4 cup of sugar, shade a picture of a measuring cup marked into fourths to show how much sugar is needed to double the recipe (1/4 + 1/4 = 2/4 or 1/2). Ex. Demonstrate that a whole can be divided into equal parts, and when reassembled, recreates the whole using a model. **Level I Students will:** **EE7.NS.1.** Use models to identify the whole and find the missing pieces of a whole. Ex. Given three choices, identify which is more, a whole or a half. Ex. Presented with a whole object and the same object with a piece missing, identify the whole. Ex. Given 1/2 a pizza, identify the missing part (concrete model or touch board). Ex. Shown papers cut in halves, thirds, etc., choose the object cut in halves. Ex. Given boxes with one-third shaded, one-half shaded, and the whole shaded, choose the one with the whole shaded.

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 7.NS.2a Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

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.</td></tr>
<tr><td colspan="2">Domain: The Number System</td><td colspan="6">Cluster: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="3">Quarter 2:
Recognize that the process for multiplying fractions can be used to multiply rational numbers including integers.

Know and describe the rules when multiplying signed numbers

Apply the properties of operations, particularly distributive property, to multiply rational numbers.

Interpret the products of rational numbers by describing real-world contexts.</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
</table>

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Find and justify products and quotients of rational numbers (positive and negative) through connections to a variety of representations and properties of operations (including multiplicative identity and inverse) used for multiplication and division of whole numbers and fractions, Use long division to convert a rational number to a decimal and explain why it must end in a zero or repeat.	Rational number Properties of operations	Students know: Techniques for accurately performing multiplication and division of whole numbers and fractions, The properties of operations (Table 3) and their appropriate application, Characteristics of multiplication and division problems.	Students understand that/are able to: Accurately perform multiplication and division of whole numbers and fractions, Strategically choose and apply appropriate representations for operations with rational numbers in contexts in order to solve problems, Use logical reasoning to communicate and interpret solutions and solution paths, Use the division algorithm to convert fractions to decimals (terminating and repeating). Strategies for finding products and quotients of rational numbers (negative and positive) follow logically from patterns established with operations on whole numbers and fractions, The use of the standard algorithm for division helps makes sense of when the decimal form of a fraction repeats or	**EE7.NS.2.a.** Solve multiplication problems with products to 100. **EE7.NS.2.b.** Solve division problems with divisors up to five and also with a divisor of 10 without remainders. **EE7.NS.2.c-d.** Compare fractions to fractions and decimals to decimals using rational numbers less than one.	**Level IV Students will:** **EE7.NS.2.a.** Solve multiplication problems with products to 144. Ex. Given a multiplication problem, solve independently using a variety of methods. Ex. Given the product and three possible multiplication problems, identify the correct multiplication problem for the answer. **EE7.NS.2.b.** Solve division problems with divisors up to 10 using numbers. Ex. Given a real-world problem, find the solution using division (e.g., "If I have the area of a hall that is 50 feet and one side has a length of 5 feet, how long is the other side?). Ex. Given a problem involving money, find the solution using division (e.g., "If a friend and I find 20 dollars, how will we split it up so that we each get the same amount?"). Ex. If I have a large bowl with eight cups of beans, how many two-cup servings can I get out of that bowl? Ex. Given a computer program with division problems, find the quotient. Ex. When planting seeds for a science experiment, divide the seeds into 10 equal shares and represent the problem in numerals. **EE8.NS.2.c-d.** Compare and order fractions and decimals when all numbers are fractions or when all numbers are decimals or when fractions and decimals are mixed. Ex. Divide a whole pizza into different fractions (1/4 and 1/2). Ex. Order fractions or decimals from least to greatest (1/4, 1/2, and 3/4) on a number line. Ex. Sort fractions and decimals and match monetary amounts (1/4 of a dollar = 25¢, 1/2 of a dollar = $0.50). **Level III Students will:** **EE7.NS.2.a.** Solve multiplication problems with products to 100. Ex. Given the model of a multiplication problem, identify the multiplication problem and the corresponding answer. Ex. Given a multiplication problem (4 x 3) and three answer choices, use a calculator to solve the problem and choose the correct answer. Ex. Given an array of models, show which array depicts a problem (e.g., 5 x 7 = 35). Ex. Solve word problems using multiplication (e.g., I want bring 10 people to my party and I have two party hats for each person. How many party hats do I have?). **EE7.NS.2.b.** Solve division problems with divisors up to five and also with a divisor of 10 without remainders. Ex. Use money to solve division problems (e.g., If a friend and I find 10 dollars, how will we split it up so that we each get the same amount? Divide the paper money to find the answer.). Ex. Given 10 manipulatives, divide into two equal groups of five. Show that 10 / 2 = 5. Ex. Divide the classroom into four equal groups for a sports tournament.

			terminates.		Ex. Use the number line to show how many times you can subtract five out of 15. Ex. If you give each person two cups of soup and you have 10 cups of soup, how many people could come to your soup party? **EE8.NS.2.c-d.** Compare fractions to fractions and decimals to decimals using rationale numbers less than one. Ex. Compare two fractions and locate them on a number line. Ex. Use pictorial representations to compare fractions to fractions and decimals to decimals. Ex. Point to the measuring cup that shows 1/2. Ex. Given a quarter and a dime, show which has a smaller value. Ex. Given two clocks, one on the hour and one on the half hour, choose which shows a half hour. **Level II Students will:** **EE7.NS.2.a.** Solve multiplication problems using factors 1 – 10. Ex. Use repeated addition to solve multiplication problems. Ex. Using a multiplication chart, identify the answer to multiplication problems. Ex. Create arrays to model multiplication facts. Ex. Use 100s board or touch board to model skip counting (i.e., 2, 4, 6, 8 . . .). Ex. Group items to model multiplication (e.g., 3 x 5 could be modeled by three groups with five in each group). **EE7.NS.2.b.** Determine how many times a number can be subtracted from an equally divisible number. Ex. Given a number divisible by five or 10, subtract out five or 10, show the number of times this number can be subtracted (e.g., "Show me how many sets of five pipe cleaners you can divide 20 pipe cleaners into"). Ex. Given a number line, demonstrate how many times a number can be subtracted from an equally divisible number (e.g., "Show me how many times can you subtract five from 25 using the number line"). Ex. Given pictures of pairs of shoes, subtract pairs to determine how many people (e.g., "If there are 10 shoes in the room, how many people are there?"). **EE8.NS.2.c-d.** Identify the location of a fraction or decimal used in the real world and/or on a number line. Ex. Label the location of a fraction or decimal on a number line. Ex. Given a number 2 1/2, point to the number on a number line. Ex. Locate a decimal used in the real world on a number line to tell which is more (e.g., "If an item cost $0.58 and another item cost $0.59 cents, find both amounts on the number line and tell which costs more."). Ex. Locate a fraction used in the real world on a number line to tell which is more (e.g., If I have 3/4 of a pie and you have 1/2 of a pie using the number line, show who has more pie. Find the location of the number 0.5 on a number line.).

					Level I Students will: **EE7.NS.2.a.** Skip count by twos and tens. Ex. Model repeated addition. Ex. Use a 100s board or touch board to skip count (i.e., 2, 4, 6, 8, . . .). Ex. Given bundles of pipe cleaners (10 in each bundle), skip count to find the total. **EE7.NS.2.b.** Associate value with the number one by recognizing the group/set that has more than one. Ex. Given a stack of library books and a single book, identify which set has more than one. Ex. Compose a set with more than one manipulative. **EE8.NS.2.c-d.** Identify decimals or fractions. Ex. Given a whole number and a decimal, choose the decimal. Ex. Given a ball, a block, and a decimal, point to the decimal. Ex. Select 1/2 of an object when asked to show 1/2 (i.e., 1/2 of an apple).

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 7.NS.2b Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

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.</td></tr>
<tr><td colspan="2">Domain: The Number System</td><td colspan="6">Cluster: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:
Explain why integers can be divided except when the divisor is 0.

Describe why the quotient is always a rational number.

Know and describe the rules when dividing signed numbers, integers.

Recognize that –(p/q) = -p/q = p/-q

Interpret the quotient of rational numbers by describing real-world contexts.</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Find and justify products and quotients of rational numbers (positive and negative) through connections to a variety of representations and properties of operations (including multiplicative identity and inverse) used for multiplication and division of whole numbers and fractions, Use long division to convert a rational number to a decimal and explain why it must end in a zero or repeat.	Rational number Properties of operations	Students know: Techniques for accurately performing multiplication and division of whole numbers and fractions, The properties of operations (Table 3) and their appropriate application, Characteristics of multiplication and division problems.	Students understand that/are able to: Accurately perform multiplication and division of whole numbers and fractions, Strategically choose and apply appropriate representations for operations with rational numbers in contexts in order to solve problems, Use logical reasoning to communicate and interpret solutions and solution paths, Use the division algorithm to convert fractions to decimals (terminating and repeating). Strategies for finding products and quotients of rational numbers (negative and positive) follow logically from patterns established with operations on whole numbers and fractions, The use of the standard algorithm for division helps makes sense of when the decimal form of a fraction repeats or terminates.	**EE7.NS.2.a.** Solve multiplication problems with products to 100. **EE7.NS.2.b.** Solve division problems with divisors up to five and also with a divisor of 10 without remainders. **EE7.NS.2.c-d.** Compare fractions to fractions and decimals to decimals using rational numbers less than one.	**Level IV Students will:** **EE7.NS.2.a.** Solve multiplication problems with products to 144. Ex. Given a multiplication problem, solve independently using a variety of methods. Ex. Given the product and three possible multiplication problems, identify the correct multiplication problem for the answer. **EE7.NS.2.b.** Solve division problems with divisors up to 10 using numbers. Ex. Given a real-world problem, find the solution using division (e.g., "If I have the area of a hall that is 50 feet and one side has a length of 5 feet, how long is the other side?). Ex. Given a problem involving money, find the solution using division (e.g., "If a friend and I find 20 dollars, how will we split it up so that we each get the same amount?"). Ex. If I have a large bowl with eight cups of beans, how many two-cup servings can I get out of that bowl? Ex. Given a computer program with division problems, find the quotient. Ex. When planting seeds for a science experiment, divide the seeds into 10 equal shares and represent the problem in numerals. **EE8.NS.2.c-d.** Compare and order fractions and decimals when all numbers are fractions or when all numbers are decimals or when fractions and decimals are mixed. Ex. Divide a whole pizza into different fractions (1/4 and 1/2). Ex. Order fractions or decimals from least to greatest (1/4, 1/2, and 3/4) on a number line. Ex. Sort fractions and decimals and match monetary amounts (1/4 of a dollar = 25¢, 1/2 of a dollar = $0.50). **Level III Students will:** **EE7.NS.2.a.** Solve multiplication problems with products to 100. Ex. Given the model of a multiplication problem, identify the multiplication problem and the corresponding answer. Ex. Given a multiplication problem (4 x 3) and three answer choices, use a calculator to solve the problem and choose the correct answer. Ex. Given an array of models, show which array depicts a problem (e.g., 5 x 7 = 35). Ex. Solve word problems using multiplication (e.g., I want bring 10 people to my party and I have two party hats for each person. How many party hats do I have?). **EE7.NS.2.b.** Solve division problems with divisors up to five and also with a divisor of 10 without remainders. Ex. Use money to solve division problems (e.g., If a friend and I find 10 dollars, how will we split it up so that we each get the same amount? Divide the paper money to find the answer.). Ex. Given 10 manipulatives, divide into two equal groups of five. Show that 10 / 2 = 5. Ex. Divide the classroom into four equal groups for a sports tournament.

					Ex. Use the number line to show how many times you can subtract five out of 15. Ex. If you give each person two cups of soup and you have 10 cups of soup, how many people could come to your soup party? **EE8.NS.2.c-d.** Compare fractions to fractions and decimals to decimals using rationale numbers less than one. Ex. Compare two fractions and locate them on a number line. Ex. Use pictorial representations to compare fractions to fractions and decimals to decimals. Ex. Point to the measuring cup that shows 1/2. Ex. Given a quarter and a dime, show which has a smaller value. Ex. Given two clocks, one on the hour and one on the half hour, choose which shows a half hour. **Level II Students will:** **EE7.NS.2.a.** Solve multiplication problems using factors 1 – 10. Ex. Use repeated addition to solve multiplication problems. Ex. Using a multiplication chart, identify the answer to multiplication problems. Ex. Create arrays to model multiplication facts. Ex. Use 100s board or touch board to model skip counting (i.e., 2, 4, 6, 8 . . .). Ex. Group items to model multiplication (e.g., 3 x 5 could be modeled by three groups with five in each group). **EE7.NS.2.b.** Determine how many times a number can be subtracted from an equally divisible number. Ex. Given a number divisible by five or 10, subtract out five or 10, show the number of times this number can be subtracted (e.g., "Show me how many sets of five pipe cleaners you can divide 20 pipe cleaners into"). Ex. Given a number line, demonstrate how many times a number can be subtracted from an equally divisible number (e.g., "Show me how many times can you subtract five from 25 using the number line"). Ex. Given pictures of pairs of shoes, subtract pairs to determine how many people (e.g., "If there are 10 shoes in the room, how many people are there?"). **EE8.NS.2.c-d.** Identify the location of a fraction or decimal used in the real world and/or on a number line. Ex. Label the location of a fraction or decimal on a number line. Ex. Given a number 2 1/2, point to the number on a number line. Ex. Locate a decimal used in the real world on a number line to tell which is more (e.g., "If an item cost $0.58 and another item cost $0.59 cents, find both amounts on the number line and tell which costs more."). Ex. Locate a fraction used in the real world on a number line to tell which is more (e.g., If I have 3/4 of a pie and you have 1/2 of a pie using the number line, show who has more pie. Find the location of the number 0.5 on a number line.).

					Level I Students will: **EE7.NS.2.a.** Skip count by twos and tens. Ex. Model repeated addition. Ex. Use a 100s board or touch board to skip count (i.e., 2, 4, 6, 8, . . .). Ex. Given bundles of pipe cleaners (10 in each bundle), skip count to find the total. **EE7.NS.2.b.** Associate value with the number one by recognizing the group/set that has more than one. Ex. Given a stack of library books and a single book, identify which set has more than one. Ex. Compose a set with more than one manipulative. **EE8.NS.2.c-d.** Identify decimals or fractions. Ex. Given a whole number and a decimal, choose the decimal. Ex. Given a ball, a block, and a decimal, point to the decimal. Ex. Select 1/2 of an object when asked to show 1/2 (i.e., 1/2 of an apple).

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<tr><td colspan="8">Standard with code: 7.NS.2c Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

c. Apply properties of operations as strategies to multiply and divide rational numbers.</td></tr>
<tr><td colspan="2">Domain: The Number System</td><td colspan="6">Cluster: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:
Identify how properties of operations can be used to multiply
and divide rational numbers (such
as distributive property, multiplicative inverse property, multiplicative identity, commutative property for multiplication, associative property for multiplication, etc.)

Apply properties of operations as strategies to multiply
and divide rational numbers</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Find and justify products and quotients of rational numbers (positive and negative) through connections to a variety of representations and properties of operations (including multiplicative identity and inverse) used for multiplication and division of whole numbers and fractions, Use long division to convert a rational number to a decimal and explain why it must end in a zero or repeat.	Rational number Properties of operations	Students know: Techniques for accurately performing multiplication and division of whole numbers and fractions, The properties of operations (Table 3) and their appropriate application, Characteristics of multiplication and division problems.	Students understand that/are able to: Accurately perform multiplication and division of whole numbers and fractions, Strategically choose and apply appropriate representations for operations with rational numbers in contexts in order to solve problems, Use logical reasoning to communicate and interpret solutions and solution paths, Use the division algorithm to convert fractions to decimals (terminating and repeating). Strategies for finding products and quotients of rational numbers (negative and positive) follow logically from patterns established with operations on whole numbers and fractions, The use of the standard algorithm for division helps makes sense of when the decimal form of a fraction repeats or terminates.	**EE7.NS.2.a.** Solve multiplication problems with products to 100. **EE7.NS.2.b.** Solve division problems with divisors up to five and also with a divisor of 10 without remainders. **EE7.NS.2.c-d.** Compare fractions to fractions and decimals to decimals using rational numbers less than one.	**Level IV Students will:** **EE7.NS.2.a.** Solve multiplication problems with products to 144. Ex. Given a multiplication problem, solve independently using a variety of methods. Ex. Given the product and three possible multiplication problems, identify the correct multiplication problem for the answer. **EE7.NS.2.b.** Solve division problems with divisors up to 10 using numbers. Ex. Given a real-world problem, find the solution using division (e.g., "If I have the area of a hall that is 50 feet and one side has a length of 5 feet, how long is the other side?). Ex. Given a problem involving money, find the solution using division (e.g., "If a friend and I find 20 dollars, how will we split it up so that we each get the same amount?"). Ex. If I have a large bowl with eight cups of beans, how many two-cup servings can I get out of that bowl? Ex. Given a computer program with division problems, find the quotient. Ex. When planting seeds for a science experiment, divide the seeds into 10 equal shares and represent the problem in numerals. **EE8.NS.2.c-d.** Compare and order fractions and decimals when all numbers are fractions or when all numbers are decimals or when fractions and decimals are mixed. Ex. Divide a whole pizza into different fractions (1/4 and 1/2). Ex. Order fractions or decimals from least to greatest (1/4, 1/2, and 3/4) on a number line. Ex. Sort fractions and decimals and match monetary amounts (1/4 of a dollar = 25¢, 1/2 of a dollar = $0.50). **Level III Students will:** **EE7.NS.2.a.** Solve multiplication problems with products to 100. Ex. Given the model of a multiplication problem, identify the multiplication problem and the corresponding answer. Ex. Given a multiplication problem (4 x 3) and three answer choices, use a calculator to solve the problem and choose the correct answer. Ex. Given an array of models, show which array depicts a problem (e.g., 5 x 7 = 35). Ex. Solve word problems using multiplication (e.g., I want bring 10 people to my party and I have two party hats for each person. How many party hats do I have?). **EE7.NS.2.b.** Solve division problems with divisors up to five and also with a divisor of 10 without remainders. Ex. Use money to solve division problems (e.g., If a friend and I find 10 dollars, how will we split it up so that we each get the same amount? Divide the paper money to find the answer.). Ex. Given 10 manipulatives, divide into two equal groups of five. Show that 10 / 2 = 5. Ex. Divide the classroom into four equal groups for a sports tournament. Ex. Use the number line to show how many times you can subtract five out of 15.

					Ex. If you give each person two cups of soup and you have 10 cups of soup, how many people could come to your soup party? **EE8.NS.2.c-d.** Compare fractions to fractions and decimals to decimals using rationale numbers less than one. Ex. Compare two fractions and locate them on a number line. Ex. Use pictorial representations to compare fractions to fractions and decimals to decimals. Ex. Point to the measuring cup that shows 1/2. Ex. Given a quarter and a dime, show which has a smaller value. Ex. Given two clocks, one on the hour and one on the half hour, choose which shows a half hour. **Level II Students will:** **EE7.NS.2.a.** Solve multiplication problems using factors 1 – 10. Ex. Use repeated addition to solve multiplication problems. Ex. Using a multiplication chart, identify the answer to multiplication problems. Ex. Create arrays to model multiplication facts. Ex. Use 100s board or touch board to model skip counting (i.e., 2, 4, 6, 8 . . .). Ex. Group items to model multiplication (e.g., 3 x 5 could be modeled by three groups with five in each group). **EE7.NS.2.b.** Determine how many times a number can be subtracted from an equally divisible number. Ex. Given a number divisible by five or 10, subtract out five or 10, show the number of times this number can be subtracted (e.g., "Show me how many sets of five pipe cleaners you can divide 20 pipe cleaners into"). Ex. Given a number line, demonstrate how many times a number can be subtracted from an equally divisible number (e.g., "Show me how many times can you subtract five from 25 using the number line"). Ex. Given pictures of pairs of shoes, subtract pairs to determine how many people (e.g., "If there are 10 shoes in the room, how many people are there?"). **EE8.NS.2.c-d.** Identify the location of a fraction or decimal used in the real world and/or on a number line. Ex. Label the location of a fraction or decimal on a number line. Ex. Given a number 2 1/2, point to the number on a number line. Ex. Locate a decimal used in the real world on a number line to tell which is more (e.g., "If an item cost $0.58 and another item cost $0.59 cents, find both amounts on the number line and tell which costs more."). Ex. Locate a fraction used in the real world on a number line to tell which is more (e.g., If I have 3/4 of a pie and you have 1/2 of a pie using the number line, show who has more pie. Find the location of the number 0.5 on a number line.).

					Level I Students will: **EE7.NS.2.a.** Skip count by twos and tens. Ex. Model repeated addition. Ex. Use a 100s board or touch board to skip count (i.e., 2, 4, 6, 8, . . .). Ex. Given bundles of pipe cleaners (10 in each bundle), skip count to find the total. **EE7.NS.2.b.** Associate value with the number one by recognizing the group/set that has more than one. Ex. Given a stack of library books and a single book, identify which set has more than one. Ex. Compose a set with more than one manipulative. **EE8.NS.2.c-d.** Identify decimals or fractions. Ex. Given a whole number and a decimal, choose the decimal. Ex. Given a ball, a block, and a decimal, point to the decimal. Ex. Select 1/2 of an object when asked to show 1/2 (i.e., 1/2 of an apple).

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 7.NS.2d Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

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.</td></tr>
<tr><td colspan="2">Domain: The Number System</td><td colspan="6">Cluster: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:
Convert a rational number to a decimal using long division.

Explain that the decimal form of a rational number terminates (stops) in zeroes or repeats.</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
</table>

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Find and justify products and quotients of rational numbers (positive and negative) through connections to a variety of representations and properties of operations (including multiplicative identity and inverse) used for multiplication and division of whole numbers and fractions, Use long division to convert a rational number to a decimal and explain why it must end in a zero or repeat.	Rational number Properties of operations	Students know: Techniques for accurately performing multiplication and division of whole numbers and fractions, The properties of operations (Table 3) and their appropriate application, Characteristics of multiplication and division problems.	Students understand that/are able to: Accurately perform multiplication and division of whole numbers and fractions, Strategically choose and apply appropriate representations for operations with rational numbers in contexts in order to solve problems, Use logical reasoning to communicate and interpret solutions and solution paths, Use the division algorithm to convert fractions to decimals (terminating and repeating). Strategies for finding products and quotients of rational numbers (negative and positive) follow logically from patterns established with operations on whole numbers and fractions, The use of the standard algorithm for division helps makes sense of when the decimal form of a fraction repeats or terminates.	**EE7.NS.2.a.** Solve multiplication problems with products to 100. **EE7.NS.2.b.** Solve division problems with divisors up to five and also with a divisor of 10 without remainders. **EE7.NS.2.c-d.** Compare fractions to fractions and decimals to decimals using rational numbers less than one.	**Level IV Students will:** **EE7.NS.2.a.** Solve multiplication problems with products to 144. Ex. Given a multiplication problem, solve independently using a variety of methods. Ex. Given the product and three possible multiplication problems, identify the correct multiplication problem for the answer. **EE7.NS.2.b.** Solve division problems with divisors up to 10 using numbers. Ex. Given a real-world problem, find the solution using division (e.g., "If I have the area of a hall that is 50 feet and one side has a length of 5 feet, how long is the other side?). Ex. Given a problem involving money, find the solution using division (e.g., "If a friend and I find 20 dollars, how will we split it up so that we each get the same amount?"). Ex. If I have a large bowl with eight cups of beans, how many two-cup servings can I get out of that bowl? Ex. Given a computer program with division problems, find the quotient. Ex. When planting seeds for a science experiment, divide the seeds into 10 equal shares and represent the problem in numerals. **EE8.NS.2.c-d.** Compare and order fractions and decimals when all numbers are fractions or when all numbers are decimals or when fractions and decimals are mixed. Ex. Divide a whole pizza into different fractions (1/4 and 1/2). Ex. Order fractions or decimals from least to greatest (1/4, 1/2, and 3/4) on a number line. Ex. Sort fractions and decimals and match monetary amounts (1/4 of a dollar = 25¢, 1/2 of a dollar = $0.50). **Level III Students will:** **EE7.NS.2.a.** Solve multiplication problems with products to 100. Ex. Given the model of a multiplication problem, identify the multiplication problem and the corresponding answer. Ex. Given a multiplication problem (4 x 3) and three answer choices, use a calculator to solve the problem and choose the correct answer. Ex. Given an array of models, show which array depicts a problem (e.g., 5 x 7 = 35). Ex. Solve word problems using multiplication (e.g., I want bring 10 people to my party and I have two party hats for each person. How many party hats do I have?). **EE7.NS.2.b.** Solve division problems with divisors up to five and also with a divisor of 10 without remainders. Ex. Use money to solve division problems (e.g., If a friend and I find 10 dollars, how will we split it up so that we each get the same amount? Divide the paper money to find the answer.). Ex. Given 10 manipulatives, divide into two equal groups of five. Show that 10 / 2 = 5. Ex. Divide the classroom into four equal groups for a sports tournament. Ex. Use the number line to show how many times you can subtract five out of 15.

					Ex. If you give each person two cups of soup and you have 10 cups of soup, how many people could come to your soup party? **EE8.NS.2.c-d.** Compare fractions to fractions and decimals to decimals using rationale numbers less than one. Ex. Compare two fractions and locate them on a number line. Ex. Use pictorial representations to compare fractions to fractions and decimals to decimals. Ex. Point to the measuring cup that shows 1/2. Ex. Given a quarter and a dime, show which has a smaller value. Ex. Given two clocks, one on the hour and one on the half hour, choose which shows a half hour. **Level II Students will:** **EE7.NS.2.a.** Solve multiplication problems using factors 1 – 10. Ex. Use repeated addition to solve multiplication problems. Ex. Using a multiplication chart, identify the answer to multiplication problems. Ex. Create arrays to model multiplication facts. Ex. Use 100s board or touch board to model skip counting (i.e., 2, 4, 6, 8 . . .). Ex. Group items to model multiplication (e.g., 3 x 5 could be modeled by three groups with five in each group). **EE7.NS.2.b.** Determine how many times a number can be subtracted from an equally divisible number. Ex. Given a number divisible by five or 10, subtract out five or 10, show the number of times this number can be subtracted (e.g., "Show me how many sets of five pipe cleaners you can divide 20 pipe cleaners into"). Ex. Given a number line, demonstrate how many times a number can be subtracted from an equally divisible number (e.g., "Show me how many times can you subtract five from 25 using the number line"). Ex. Given pictures of pairs of shoes, subtract pairs to determine how many people (e.g., "If there are 10 shoes in the room, how many people are there?"). **EE8.NS.2.c-d.** Identify the location of a fraction or decimal used in the real world and/or on a number line. Ex. Label the location of a fraction or decimal on a number line. Ex. Given a number 2 1/2, point to the number on a number line. Ex. Locate a decimal used in the real world on a number line to tell which is more (e.g., "If an item cost $0.58 and another item cost $0.59 cents, find both amounts on the number line and tell which costs more."). Ex. Locate a fraction used in the real world on a number line to tell which is more (e.g., If I have 3/4 of a pie and you have 1/2 of a pie using the number line, show who has more pie. Find the location of the number 0.5 on a number line.). **Level I Students will:**

					EE7.NS.2.a. Skip count by twos and tens. Ex. Model repeated addition. Ex. Use a 100s board or touch board to skip count (i.e., 2, 4, 6, 8, . . .). Ex. Given bundles of pipe cleaners (10 in each bundle), skip count to find the total. **EE7.NS.2.b.** Associate value with the number one by recognizing the group/set that has more than one. Ex. Given a stack of library books and a single book, identify which set has more than one. Ex. Compose a set with more than one manipulative. **EE8.NS.2.c-d.** Identify decimals or fractions. Ex. Given a whole number and a decimal, choose the decimal. Ex. Given a ball, a block, and a decimal, point to the decimal. Ex. Select 1/2 of an object when asked to show 1/2 (i.e., 1/2 of an apple).

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.</td></tr>
<tr><td colspan="2">Domain: The Number System</td><td colspan="6">Cluster: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="3">Quarter 2:
Add rational numbers.

Subtract rational numbers.

Multiply rational numbers.

Divide rational numbers

Solve real-world mathematical problems by adding, subtracting, multiplying, and dividing rational numbers, including complex fractions.</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
</table>

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given a variety of word problems involving all four operations on rational numbers, involving a variety of complexities, (e.g.. mixed numbers, complex fractions, location of the unknown, etc.), Explain and justify solutions using a variety of representations including equations.	Complex fraction	Students know: Characteristics of multiplication, division, addition, and subtraction contexts, Techniques for performing all four operations on rational numbers.	Students understand that/are able to: Interpret mathematical contexts (involving addition, subtraction, multiplication, and division of rational numbers) and represent quantities and operations physically, pictorially, or symbolically, Strategically use a variety of representations to solve addition, subtraction, multiplication, and division word problems, Explain connections between physical/pictorial representations of mathematical contexts and the related equations. Finding sums, differences, products, and quotients of rational numbers (negative and positive) follow logically from patterns established with operations on whole numbers and fractions.	**EE7.NS.3.** Demonstrate the value of various money amounts using decimals.	**Level IV Students will:** **EE7.NS.3.** Determine the total value of money written as a decimal given real-world situations. Ex. Use a calculator to determine how much money they have total in decimal form. Ex. Count money using decimals/calculator to "shop" for items and determine how much money to pay the cashier when given the total of the purchase. **Level III Students will:** **EE7.NS.3.** Demonstrate the value of various money amounts using decimals. Ex. Given a variety of coins and bills, write the value of the given money using a decimal. Ex. Given a variety of coins, bills, and cards with amounts written with decimals, match the cards to the value of the coins. Ex. Use a calculator to show the value of coins in decimals (e.g., quarters ($0.25), dimes ($0.10) nickels ($0.05), and pennies ($0.01). **Level II Students will:** **EE7.NS.3.** Identify the decimal value of various coins. Ex. Given pictures of coins, identify the value of each coin in cents. Ex. Given cards with different coin amounts written in decimals ($0.05, $0.10, $0.20, etc.), match the amount with the correct coin. Ex. Given more than one of the same coin, identify the total value of the given coins. **Level I Students will:** **EE7.NS.3.** Identify money. Ex. Given a group of coins representing different values, sort coins by like amounts. Ex. Given a picture of a coin, match real coins to the picture. Ex. Differentiate between dollar money and change (coins). Ex. Choose money versus non-money (e.g., colored chips, etc.) to pay for purchases.

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">a. Standard with code: 7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</td></tr>
<tr><td colspan="2">Domain: Expressions and Equations</td><td colspan="6">Cluster: Use properties of operations to generate equivalent expressions.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:
Combine like terms with rational coefficients.

Factor and expand linear expressions with rational coefficients using the distributive property.

Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients
.</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given contextual or mathematical problems which may be modeled by linear algebraic expressions with rational coefficients, Use properties of the operations (Table 3) to produce combined and re-written forms of the expressions that are useful in resolving the problem.	Properties of operations Rational coefficients	Students know: The properties of operations (Table 3) and their appropriate application.	Students understand that/are able to: Accurately add, subtract, factor, and expand linear algebraic expressions with rational coefficients. The distributive property, factoring, and combining like terms, are used to justify the equivalence of alternate forms of expressions for use in problem solving situations.	**EE7.EE.1-2.** Use the relationship within addition and/or multiplication to illustrate that two expressions are equivalent.	**Level IV Students will:** **EE7.EE.1-2.** Apply the commutative property to complete an equation. Ex. Given 12 objects and an equation with three groups on one side of the equals sign and two groups on other side, create a balanced equation by recognizing that the side with three groups will have two objects in each group, and the side with two groups will have three objects in each group. Ex. 5 x 7 = ____ x _____ (7 x 5) Ex. ____ + ____ = 4 + 8 (8 + 4) **Level III Students will:** **EE7.EE.1-2.** Use the relationship within addition and/or multiplication to illustrate that two expressions are equivalent. Ex. 4 + 7 = 7 + ____ Ex. 2 x 4 = ____ x 2 Ex. 3 + ____ = 5 + 3 **Level II Students will:** **EE7.EE.1-2.** Use the relationship within addition to illustrate that two expressions are equivalent. Ex. Given a model showing five objects plus two objects on one side of an equals sign and two objects on the other side, recognize that five objects are needed to get the same amount. Ex. Is 2 + 3 = to 3 + 2? Answer yes/no. Ex. Is 2 + 3 = to 4 + 2? Answer yes/no. **Level I Students will:** **EE7.EE.1-2.** Understand that different displays of the same quantity are equal. Ex. Recognize that three discs and three squares are the same quantity. Ex. Recognize that different arrangements of the same amount are equal (e.g., different arrangements of 4 dots – connection to subitizing).

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 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.”</td></tr>
<tr><td colspan="2">Domain: Expressions and Equations</td><td colspan="6">Cluster: Use properties of operations to generate equivalent expressions.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:
Write equivalent expressions with fractions, decimals, percent, and integers.

Rewrite an expression in an equivalent form in order to provide insight about how quantities are related in a problem context</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Explain how combining or decomposing parts of algebraic expressions can reveal different aspects of the expression and be useful in interpreting a problem. (e.g., When determining the number of tiles needed for a border around a square pool of side n, the expression 4n + 4 shows counting 4 sides and then 4 corners. The expression 4(n+1) shows counting four sides which each include one corner. The expression 4(n+2) - 4 shows counting the outer border then subtracting the corners as they have been counted twice).		Students know: The properties of operations (Table 3) and their appropriate application.	Students understand that/are able to: Accurately add, subtract, factor, and expand linear algebraic expressions with rational coefficients. Rewriting expressions in multiple equivalent forms allows for thinking about problems in different ways, Different but equivalent forms of mathematical expressions reveal important features of the situation and aid in problem identification and solving.	**EE7.EE.1-2.** Use the relationship within addition and/or multiplication to illustrate that two expressions are equivalent.	**Level IV Students will:** **EE7.EE.1-2.** Apply the commutative property to complete an equation. Ex. Given 12 objects and an equation with three groups on one side of the equals sign and two groups on other side, create a balanced equation by recognizing that the side with three groups will have two objects in each group, and the side with two groups will have three objects in each group. Ex. 5 x 7 = ____ x _____ (7 x 5) Ex. ____ + ____ = 4 + 8 (8 + 4) **Level III Students will:** **EE7.EE.1-2.** Use the relationship within addition and/or multiplication to illustrate that two expressions are equivalent. Ex. 4 + 7 = 7 + ____ Ex. 2 x 4 = ____ x 2 Ex. 3 + ____ = 5 + 3 **Level II Students will:** **EE7.EE.1-2.** Use the relationship within addition to illustrate that two expressions are equivalent. Ex. Given a model showing five objects plus two objects on one side of an equals sign and two objects on the other side, recognize that five objects are needed to get the same amount. Ex. Is 2 + 3 = to 3 + 2? Answer yes/no. Ex. Is 2 + 3 = to 4 + 2? Answer yes/no. **Level I Students will:** **EE7.EE.1-2.** Understand that different displays of the same quantity are equal. Ex. Recognize that three discs and three squares are the same quantity. Ex. Recognize that different arrangements of the same amount are equal (e.g., different arrangements of 4 dots – connection to subitizing).

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">b. Standard with code: 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.</td></tr>
<tr><td colspan="2">Domain: Expressions and Equations</td><td colspan="6">Cluster: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:
Convert between numerical forms as appropriate.

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.

Assess the reasonableness of answers using mental computation and estimation strategies.</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given contextual problems involving any combination of numbers from the rational numbers, Model the problem with mathematical symbols, expressions, and equations that aid in solving the problem, Select strategies that are useful, choose the appropriate form of computation, reach a solution, and defend the solution in terms of the original context (including mental computation and estimation strategies).		Students know: Techniques for estimation, mental computation, and their appropriate application, The properties of operations and equality (Tables 3 and 4), and their appropriate application.	Students understand that/are able to: Translate verbal forms of a problem into mathematical symbols, expressions, and equations, Accurately use the properties of operations and equality to aid in solving the equation, Accurately compute with positive and negative rational numbers with and without technology, Use estimation and mental computation strategies to reach solutions and to judge reasonableness of answers found through paper/pencil or technology computation There are multiple ways to solve problems, Strategically using properties of operations and equality allows solutions to problems to be defended, Checking the reasonableness of answers leads to self-correcting of errors, Problem solving takes effort, time, and perseverance..	**EE7.EE.3-4.** Use the concept of equality with models to solve one-step addition and subtraction equations.	**Level IV Students will:** **EE7.EE.3-4.** Solve two-step addition and subtraction equations. Ex. After determining that 5 + 5 = 10, decompose 10 into three and seven. Ex. After determining that 9 - 6 = 3, determine that three is composed of 3 + 1). **Level III Students will:** **EE7.EE.3-4.** Use the concept of equality with models to solve one-step addition and subtraction equations. Ex. If there is a quantity of five on one side of the equation and a quantity of two on the other side, what quantity is added to make it equal? Ex. If I have three balls and I get some more balls – how many did I get if I now have seven? Ex. Given 4 + ___ = 12, identify the missing amount using models. Ex. Given 12 - ___ = 5, identify the missing amount using models. Ex. Given 10 = 2 + ____, identify the missing amount using models. **Level II Students will:** **EE7.EE.3-4.** Identify the amount needed to equal the value on the given side of an equation. Ex. Three objects + two objects will equal five objects. Ex. Given a number from 2 to 10, decompose the number to create a balanced equation (connection to decomposition of numbers). **Level I Students will:** **EE7.EE.3-4.** Recognize equal quantities on both sides of an equation. Ex. Match equal quantities: three triangles is the same quantity as three circles. Ex. Give the digit 5, count out five objects as an equal quantity.

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 7.EE.4a 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.

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?</td></tr>
<tr><td colspan="2">Domain: Expressions and Equations</td><td colspan="6">Cluster: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:</td><td colspan="3">Quarter 3:
Fluently solve equations of
the form px + q = r
and p(x + q) = r with speed and accuracy.

Identify the sequence of operations used to solve an algebraic equation of the form px + q = r and p(x + q) = r.

Use variables and construct equations to represent quantities of the form px + q = rand p(x + q) = r from real-world and mathematical problems.

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.

Compare an algebraic solution to an arithmetic solution by 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? This can be answered algebraically by using only the formula for perimeter (P=2l+2w) to isolate w or by finding an arithmetic solution by substituting values into the formula.</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
</table>

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given a real world or mathematical situation, Define the variables and constants in the situation, Relate them to one another, Write equations describing the relationship, Solve the equation (linear situations) using properties of the operations and equality. Given a contextual situation involving a linear inequality, Model the situation with an inequality, Solve the inequality, Graph the solution set of the inequality, Interpret and defend the solution in the context of the original problem.	Variable	Students know: The properties of operations, equality and inequality (Tables 3, 4 and 5), and their appropriate application, Techniques for solving linear equations and inequalities, Techniques for solving problems arithmetically (e.g., systematic guess, check, and revise) noting problem structure by examining smaller numbers or a simpler problem, or looking for a pattern and generalizing.	Students understand that/are able to: Accurately use the properties of operations, equality, and inequality (Tables 3, 4 and 5) to produce equivalent forms of an algebraic expression, equation, or inequality to aid in solving the equations or inequality, Graph inequalities and identify the solution set on the graph. Real world problems can be interpreted, modeled, and solved using equations and inequalities, Solving an equation or inequality means finding all values of the variable that makes the statement true, In solving an equation the properties of operations and equality must be used to maintain the equality through successive manipulations until the solution is revealed, Problems may be frequently solved arithmetically, or modeled and solved	**EE7.EE.3-4.** Use the concept of equality with models to solve one-step addition and subtraction equations.	**Level IV Students will:** **EE7.EE.3-4.** Solve two-step addition and subtraction equations. Ex. After determining that 5 + 5 = 10, decompose 10 into three and seven. Ex. After determining that 9 - 6 = 3, determine that three is composed of 3 + 1). **Level III Students will:** **EE7.EE.3-4.** Use the concept of equality with models to solve one-step addition and subtraction equations. Ex. If there is a quantity of five on one side of the equation and a quantity of two on the other side, what quantity is added to make it equal? Ex. If I have three balls and I get some more balls – how many did I get if I now have seven? Ex. Given 4 + ___ = 12, identify the missing amount using models. Ex. Given 12 - ___ = 5, identify the missing amount using models. Ex. Given 10 = 2 + ____, identify the missing amount using models. **Level II Students will:** **EE7.EE.3-4.** Identify the amount needed to equal the value on the given side of an equation. Ex. Three objects + two objects will equal five objects. Ex. Given a number from 2 to 10, decompose the number to create a balanced equation (connection to decomposition of numbers). **Level I Students will:** **EE7.EE.3-4.** Recognize equal quantities on both sides of an equation. Ex. Match equal quantities: three triangles is the same quantity as three circles. Ex. Give the digit 5, count out five objects as an equal quantity.

			algebraically, and that the structure of mathematics may be used to demonstrate that these strategies can and do lead to the same result.		

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 7.EE.4b 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.

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.</td></tr>
<tr><td colspan="2">Domain: Expressions and Equations</td><td colspan="6">Cluster: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:
Graph the solution set of the inequality of the form px + q > r or px + q < r, where p, q, and r are
specific rational numbers

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

Interpret the solution set of an inequality in the context of the problem.</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
</table>

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given a real world or mathematical situation, Define the variables and constants in the situation, Relate them to one another, Write equations describing the relationship, Solve the equation (linear situations) using properties of the operations and equality. Given a contextual situation involving a linear inequality, Model the situation with an inequality, Solve the inequality, Graph the solution set of the inequality, Interpret and defend the solution in the context of the original problem.	Variable	Students know: The properties of operations, equality and inequality (Tables 3, 4 and 5), and their appropriate application, Techniques for solving linear equations and inequalities, Techniques for solving problems arithmetically (e.g., systematic guess, check, and revise) noting problem structure by examining smaller numbers or a simpler problem, or looking for a pattern and generalizing.	Students understand that/are able to: Accurately use the properties of operations, equality, and inequality (Tables 3, 4 and 5) to produce equivalent forms of an algebraic expression, equation, or inequality to aid in solving the equations or inequality, Graph inequalities and identify the solution set on the graph. Real world problems can be interpreted, modeled, and solved using equations and inequalities, Solving an equation or inequality means finding all values of the variable that makes the statement true, In solving an equation the properties of operations and equality must be used to maintain the equality through successive manipulations until the solution is revealed, Problems may be frequently solved arithmetically, or modeled and solved algebraically, and that the structure of mathematics may be used to demonstrate that these strategies can and do lead to the same result.	**EE7.EE.3-4.** Use the concept of equality with models to solve one-step addition and subtraction equations.	**Level IV Students will:** **EE7.EE.3-4.** Solve two-step addition and subtraction equations. Ex. After determining that 5 + 5 = 10, decompose 10 into three and seven. Ex. After determining that 9 - 6 = 3, determine that three is composed of 3 + 1). **Level III Students will:** **EE7.EE.3-4.** Use the concept of equality with models to solve one-step addition and subtraction equations. Ex. If there is a quantity of five on one side of the equation and a quantity of two on the other side, what quantity is added to make it equal? Ex. If I have three balls and I get some more balls – how many did I get if I now have seven? Ex. Given 4 + ___ = 12, identify the missing amount using models. Ex. Given 12 - ___ = 5, identify the missing amount using models. Ex. Given 10 = 2 + ____, identify the missing amount using models. **Level II Students will:** **EE7.EE.3-4.** Identify the amount needed to equal the value on the given side of an equation. Ex. Three objects + two objects will equal five objects. Ex. Given a number from 2 to 10, decompose the number to create a balanced equation (connection to decomposition of numbers). **Level I Students will:** **EE7.EE.3-4.** Recognize equal quantities on both sides of an equation. Ex. Match equal quantities: three triangles is the same quantity as three circles. Ex. Give the digit 5, count out five objects as an equal quantity.

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 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></tr>
<tr><td colspan="2">Domain: Geometry</td><td colspan="6">Cluster: Draw, construct, and describe geometrical figures and describe the relationships between them.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:
Use ratios and proportions to create scale drawing

Identify corresponding sides of scaled geometric figures

Compute lengths and areas from scale drawings using strategies such as proportions

Solve problems involving scale drawings of geometric figures using scale factors

Reproduce a scale drawing that is proportional to a given geometric figure using a different scale.</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given contextual or mathematical problems involving scale drawings of geometric figures, Solve, then communicate and justify solution paths for computing actual lengths and areas. Given a scale drawing, Students will reproduce the drawing at a different scale.	Scale drawing	Students know: Strategies for computing actual lengths from scale drawings, Strategies for computing area, Units for measuring length and area, The interpretation of scale/ratio notation.	Students understand that/are able to: Select and strategically apply methods to accurately compute actual lengths and areas from scale drawings, Choose and apply appropriate tools in order to reproduce a scale drawing at a different scale. A scale drawing represents a real object with accurate measurements where each of the measurements has been increased or decreased by the same factor, In scale drawings of geometric figures lengths change by the scale factor while areas change by the square of the scale factor.	**EE7.G.1-2.** Draw or classify and recognize basic two-dimensional geometric shapes without a model (circle, triangle, rectangle/square).	**Level IV Students will:** **EE7.G.1-2.** Draw or model two-dimensional shapes including a trapezoid and rhombus without a model. Ex. Draw/create a trapezoid. Ex. Draw/create a rhombus. Ex. Replicate a geometric shape with given dimensions. Ex. Draw a shape that is twice as big in one dimension (length or width) as a given shape (e.g., given a coordinate grid, have the student draw a rectangle that is twice as long and twice as high as the one he/she is given). **Level III Students will:** **EE7.G.1-3.** Draw or classify and recognize basic two-dimensional geometric shapes without a model (circle, triangle, rectangle/square). Ex. Recognize and group together different types of rectangles and circles Ex. State the name of circle, triangle, rectangle, and square. Ex. Draw a rectangle and circle. **Level II Students will:** **EE7.G.1-2.** Demonstrate the ability to complete a two-dimensional shape (circle, triangle, rectangle, square). Ex. Compare shapes when given manipulatives/pictures and asked to tell what shapes are the same and what shapes are is different. Ex. Given an arc, complete the drawing of a circle. Ex. Given concrete pieces, complete a specified shape (i.e., four equal length popsicle sticks to create a square). **Level I Students will:** **EE7.G.1-2.** Demonstrate the ability to recognize a two-dimensional shape (circle, triangle, rectangle, square) when given a complete shape. Ex. Recognize a shape. Ex. When given a shape, find another shape like the one just given. Ex. Compare shapes when given manipulatives – to say two shapes are the same (congruent) after matching the sides on each. Ex. Use various media for students to form a simple geometric shape (i.e. sand, shaving cream) Ex. Given a sample shape, trace the shape (touch board, raised paper, wiki sticks, etc.)

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 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.</td></tr>
<tr><td colspan="2">Domain: Geometry</td><td colspan="6">Cluster: Draw, construct, and describe geometrical figures and describe the relationships between them.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="3">Quarter 2:</td><td colspan="2">Quarter 3:</td><td>Quarter 4:
Know which conditions create unique triangles, more than one triangles, or no triangle

Analyze given conditions based on the three measures of angles or sides of a triangle to determine when there is a unique triangle, more than one triangle, or no triangle

Construct triangles from three given angle measures to determine when there is a unique triangle, more than one triangle or no triangle using appropriate tools (freehand, rulers, protractors, and technology)

Construct triangles from three given side measures to determine when there is a unique triangle, more than one triangle or no triangle using appropriate tools (freehand, rulers, protractors, and technology)</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
</table>

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given sets of conditions for geometric shapes, Draw (freehand, with a ruler and protractor, and with technology) the corresponding shapes. Given three measures (a combination of side lengths and angle measures) of a triangle, Use observations from the drawing, reasoning, and mathematical language, to justify whether the conditions determine a unique figure, more than one figure, or no figure.		Students know: Techniques for using rulers, protractors, and technology to create geometric shapes, Descriptive language for attributes of triangles, (e.g. side opposite an angle, side adjacent to an angle, etc.).	Students understand that/are able to: Compose and decompose geometric figures, Draw (freehand, with a ruler and protractor, or using technology) geometric shapes from given conditions, Use logical reasoning and mathematical language to justify whether given conditions will produce a unique figure, more than one figure, or no figure (with special emphasis on triangles). Shapes are categorized based on the characteristics of their attributes [angle size, side length, side relationships, (parallel or perpendicular)].	**EE7.G.1-2.** Draw or classify and recognize basic two-dimensional geometric shapes without a model (circle, triangle, rectangle/square).	**Level IV Students will:** **EE7.G.1-2.** Draw or model two-dimensional shapes including a trapezoid and rhombus without a model. Ex. Draw/create a trapezoid. Ex. Draw/create a rhombus. Ex. Replicate a geometric shape with given dimensions. Ex. Draw a shape that is twice as big in one dimension (length or width) as a given shape (e.g., given a coordinate grid, have the student draw a rectangle that is twice as long and twice as high as the one he/she is given). **Level III Students will:** **EE7.G.1-3.** Draw or classify and recognize basic two-dimensional geometric shapes without a model (circle, triangle, rectangle/square). Ex. Recognize and group together different types of rectangles and circles Ex. State the name of circle, triangle, rectangle, and square. Ex. Draw a rectangle and circle. **Level II Students will:** **EE7.G.1-2.** Demonstrate the ability to complete a two-dimensional shape (circle, triangle, rectangle, square). Ex. Compare shapes when given manipulatives/pictures and asked to tell what shapes are the same and what shapes are is different. Ex. Given an arc, complete the drawing of a circle. Ex. Given concrete pieces, complete a specified shape (i.e., four equal length popsicle sticks to create a square). **Level I Students will:** **EE7.G.1-2.** Demonstrate the ability to recognize a two-dimensional shape (circle, triangle, rectangle, square) when given a complete shape. Ex. Recognize a shape. Ex. When given a shape, find another shape like the one just given. Ex. Compare shapes when given manipulatives – to say two shapes are the same (congruent) after matching the sides on each. Ex. Use various media for students to form a simple geometric shape (i.e. sand, shaving cream) Ex. Given a sample shape, trace the shape (touch board, raised paper, wiki sticks, etc.)

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 7.G.3 Describe the two-dimensional figures that result from slicing three- dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.</td></tr>
<tr><td colspan="2">Domain: Geometry</td><td colspan="6">Cluster: Draw, construct, and describe geometrical figures and describe the relationships between them.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:
Define slicing as the cross-section of a 3D figure.

Describe the two-dimensional figures that result from slicing a three-dimensional figure such as a right rectangular prism or pyramid.

Analyze three-dimensional shapes by examining two dimensional cross-sections</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
</table>

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given a 3-D figure, (e.g. right rectangular prism, right rectangular pyramid, cone, etc.), Describe the plane (2-D) section that results from slicing the 3-D figure.	Slicing Plane section	Students know: Strategies for visualizing and modeling geometric figures, Strategies for composing and decomposing geometric shapes, Descriptive language for attributes of 2-D and 3-D figures.	Students understand that/are able to: Model and visualize 3-D figures, Describe the geometric attributes of the plane section resulting from the "slicing" of a 3-D shape, such as a right rectangular prism or right rectangular pyramid. Modeling, composing, and decomposing geometric figures aids in visualizing, investigating, and describing geometric problems.	**EE7.G.3.** Match a two-dimensional shape with a three-dimensional shape that shares an attribute.	**Level IV Students will:** **EE7.G.3.** Pair two- and three-dimensional shapes to complete a real-world task. Ex. Given a three-dimensional shape and several different two-dimensional shapes (e.g., cube, cylinders), select the two-dimensional shape that represents one face of the three-dimensional shape (e.g., square, circle). Ex. Given a diagram to show the placement of different shaped objects in a storeroom, use the two-dimensional shape in the diagram to place three-dimensional objects appropriately on the shelf (e.g., square boxes on squares, rectangular boxes on rectangles, and bottles on circles). **Level III Students will:** **EE7.G.3.** Match a two-dimensional shape with a three- dimensional shape that shares an attribute. Ex. Given a circle, find objects that are three-dimensional counterparts (e.g., ball, globe, sphere). Ex. Given a square, find objects that are three-dimensional counterparts (e.g., box, locker). Ex. Given a square, find three-dimensional objects that share one attribute (e.g., square with cube, circle with cylinder). **Level II Students will:** **EE7.G.3.** Identify the attributes of a three-dimensional shape (color, number of sides, faces, size, textures, shape, etc.). Ex. Given a red ball and communication device, identify words that describe the attributes of the ball. Ex. Given a group of shapes, describe common attributes. Ex. Given a class of objects, identify common attributes and choose one to sort by. **Level I Students will:** **EE7.G.3.** Replicate the two-dimensional cross-section of a three-dimensional shape (cube, sphere, cylinder) when given a complete shape. Ex. Given a cube, outline the base to form a square. Ex. Given a soda can, outline the base to form a circle.

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Grade Level: 7th							
Standard with code: 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.							
Domain: Geometry		**Cluster: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.**					
Quarter 1:		**Quarter 2:**		**Quarter 3:**		**Quarter 4:** Know the parts of a circle including radius, diameter, area, circumference, center, and chord. Identify π Know the formulas for area and circumference of a circle Given the circumference of a circle, find its area. Given the area of a circle, find its circumference. Justify that can be derived from the circumference and diameter of a circle. Apply circumference or area formulas to solve mathematical and real-world problems Justify the formulas for area and circumference of a circle and how they relate to π Informally derive the relationship between circumference and area of a circle.	
Make sense of problems and persevere in solving them.	**Reason abstractly and quantitatively.**	**Construct viable arguments and critique the reasoning of others.**	**Model with mathematics.**	**Use appropriate tools strategically.**	**Attend to precision.**	**Look for and make use of structure.**	**Look for and express regularity in repeated reasoning.**

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Describe the relationship between the formulas for area and circumference of a circle and derive an equation relating the two formulas. Given real world and mathematical problems involving area and circumference of circular regions, Use a variety of representations including models, drawings, and equations based on area and circumference formulas to find and justify solutions and solution paths.	Area Circumference	Students know: Strategies for representing contexts involving area and circumference of circular regions, Strategies including standard formulas ($A = \pi r2$, $C = 2\pi r$ or $C = \pi d$) for computing the area and circumference of circular regions.	Students understand that/are able to: Discriminate between contexts asking for circumference and those asking for area measurements, Strategically choose and apply appropriate methods for representing and calculating area and circumference of circular regions, Use properties of operation and equality to relate variables in formulas, (i.e., area and circumference of a circle). Circumference is measured in length units and is the distance around a circle, The area of a plane figure is measured by the number of same-size squares that exactly cover the interior space of the figure, and when counting these squares is difficult such as in a circle, formulas allow for more accurate calculation of the area, The length of the radius of a circle is related to both the area and circumference of that region.	**EE7.G.4.** N/A	**EE7.G.4.** N/A

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 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></tr>
<tr><td colspan="2">Domain: Geometry</td><td colspan="6">Cluster: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:
Identify and recognize types of angles: supplementary, complementary, vertical, adjacent.

Determine complements and supplements of a given angle.

Determine unknown
Angle measures by writing and solving algebraic equations based on relationships between angles</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given multi-step problems involving angle measures, Use knowledge of supplementary, complementary, vertical, and adjacent angles to create and solve equations for unknown angles, and justify solutions and solution paths.	Supplementary angles Complementary angles Vertical angles Adjacent angles	Students know: Defining characteristics of, relationships among, and situations that produce, supplementary, complementary, vertical, and adjacent angles. Strategies for visually representing contexts involving angle measures.	Students understand that/are able to: Visually represent verbal contexts involving angles, Strategically choose and apply appropriate methods for representing and calculating angle measures, Use logical reasoning to apply knowledge of supplementary, complementary, vertical, and adjacent angles to create equations and solve multi-step problems. Angle measure is additive, Angles created by two intersecting lines have relationships that can be used to solve problems.	**EE7.G.5.** Find the perimeter of a rectangle given the length and width.	**Level IV Students will:** **EE7.G.5.** Solve simple perimeter problems with rectangles. Ex. Given a rectangle with identified dimensions, determine the perimeter. Ex. A bulletin board is 5' by 5'. How much border paper is needed for the perimeter? Ex. When given a picture of a garden with only the length and width identified, solve for perimeter.* **Level III Students will:** **EE7.G.5.** Find the perimeter of a rectangle given the length and width. Ex. Determine the perimeter of a rectangle given a visual model and a calculator. Ex. Given a rectangle with tic marks indicating a length of six and a width of four, determine the perimeter by counting (6 + 4 + 6 + 4). Ex. Shown a taped rectangle on the floor with tic marks or floor tiles denoting squares within the rectangle, walk around the rectangle, counting steps/tiles/tic marks, to determine the perimeter. Ex. Measure the length and width of a desk and other rectangular objects in the classroom (i.e., books, picture frames). **Level II Students will:** **EE7.G.5.** Identify the length and width of a rectangle. Ex. Cover a rectangle with squares (i.e., color tiles) and identify the sum of numbers of tiles of the top/bottom and the sides. Ex. Given a circle, measure the distance around the circle (circumference – perimeter of a circle). Ex. Place a string around the perimeter of an object and then measure the length of the string to tell the distance around the object. Ex. Given a gridded rectangle, identify the length of the top/bottom and the sides. **Level I Students will:** **EE7.G.5.** Outline the perimeter of an object. Ex. Use wiki sticks to outline the border of a square/rectangle. Ex. Outline the perimeter of a rectangular pan by tracing the edge with a finger. Ex. Outline the perimeter of a tablet by laying string around the edge. Ex. Count the number of squares around the outside of a gridded rectangle.* ***Refer to the Common Core Essential Elements document for diagram.**

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 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.</td></tr>
<tr><td colspan="2">Domain: Geometry</td><td colspan="6">Cluster: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.</td></tr>
<tr><td colspan="2">Quarter 1:</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:
Know the formulas for area and Volume and the procedure for finding surface area and when to use them in real-world and math problems for two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms

Solve real-world and math problems involving area, surface area and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
</table>

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given real world and mathematical problems involving area, volume, and surface area (problems include figures composed of triangles, quadrilaterals, polygons, cubes, and right prisms), Use a variety of strategies to solve problems, and justify solutions and solution paths.	Area Volume Surface area	Students know: Measureable attributes of objects, specifically area, volume, and surface area, Strategies for representing the surface area of a 3-D shape as a 2-D net, Strategies for determining area of polygons and volume of right prisms.	Students understand that/are able to: Model the surface area of a 3-D shape as a 2-D net, Strategically choose and apply methods for determining area, volume, and surface area of geometric shapes composed of triangles, quadrilaterals, polygons, cubes and right prisms, Accurately compute area and surface area of polygons, Accurately compute volume of right prisms. Formulas represent generalizations of relationships among measurements of geometric objects that can be used to solve problems, Area and volume are additive, Surface area of a shape composed of right prisms is represented by the sum of the areas of the faces of the object, Models can represent measurable attributes of objects and help to solve problems.	**EE7.G.6.** Find the area of a rectangle given the length and width using a model.	**Level IV Students will:** **EE7.G.6.** Solve simple area problems with rectangles. Ex. A rectangular rug is 4' by 5'. What is the area of the rug? Use a calculator to apply to the given model problem and find the answer. Ex. Given a rectangle with identified length and width dimensions, determine the area. **Level III Students will:** **EE7.G.6.** Find the area of a rectangle given the length and width using a model. Ex. Given rectangles (including squares) with grids, count squares to calculate the area.* Ex. Partition rectangular figures into rows and columns of the same-size squares without gaps and overlaps and count them to find the area. Ex. Given a picture of a rectangle, have students divide the interior of the figure into equally squared units and determine the number of squared units within the rectangle. **Level II Students will:** **EE7.G.6.** Identify the length and width (dimensions) of a rectangle. Ex. Cover a given rectangle with squares (i.e., color tiles) and identify the numerical value of the total number of square units. Ex. Given a gridded rectangular box place smaller boxes side-by-side (in one layer) to count how many small boxes the large box holds and identify the numerical value (sum) of the grids inside the rectangle. **Level I Students will:** **EE7.G.6.** Duplicate the area of a rectangle (square). Ex. Cover a square pan with pieces of toast, square crackers, etc. in a single layer. Ex. Use squares of colored paper to cover their desk or tray on a wheelchair. ***Refer to the Common Core Essential Elements document for diagram.**

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 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></tr>
<tr><td colspan="2">Domain: Statistics and Probability</td><td colspan="6">Cluster: Use random sampling to draw inferences about a population.</td></tr>
<tr><td colspan="2">Quarter 1:
Know statistics terms such as population, sample, sample size, random sampling, generalizations, valid, biased and unbiased.

Recognize sampling techniques such as convenience, random, systematic, and voluntary.

Know that generalizations about a population from a sample are valid only if the sample is representative of that population

Apply statistics to gain information about a population from a sample of the population.

Generalize that random sampling tends to produce representative samples and support valid inferences.</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given data collected on a sample from a population, Make, explain and justify inferences about the population, if any that could be made from the sample data. Given a statistical question about a population, Describe and justify a data collection process that would result in representative data from which inferences about the population can be drawn, Explain and justify their reasoning concerning data collection processes that do not allow generalizations, (i.e., non-representative samples) from the sample to the population.	Representative samples Population Sample Random sampling Inferences	Students know: Methods of determining mean, median, interquartile range, and mean absolute deviation (from 6th grade), Characteristics of random sampling and representative samples, The relationship between a sample and the population that the sample was drawn from.	Students understand that/are able to: Determine if a sampling procedure allows for inferences to be made about the population from which the sample was drawn, Use logical reasoning and statistical mathematical language to explain and justify examples of inferences, if any, that can be drawn about a population based on the analysis of the data and the data collection process, Draw valid conclusions from generated statistical models. 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, Random sampling tends to produce representative samples and support valid inferences.	**EE7.SP.1-2.** Answer a question related to the collected data from an experiment, given a model of data, or from data collected by the student.	**Level IV Students will:** **EE7.SP.1-2.** Answer a question about data collected from an experiment and explain or demonstrate the results. Ex. Poll classmates to determine where to go on a field trip and explain results. Ex. Given data on height of students in two classes, identify which class has the tallest students. **Level III Students will:** **EE7.SP.1-2.** Answer a question related to the collected data from an experiment, given a model of data, or from data collected by the student. Ex. Given data (i.e., a frequency table) of favorite pizza toppings, which type of pizza would be ordered most often. Ex. Asked what their favorite season is, place themselves in one of the four groups and answer a question about the results. (What is the group's favorite season? What is the group's least favorite season?) **Level II Students will:** **EE7.SP.1-2.** Collect data to answer a given question. Ex. Ask fellow classmates what their favorite activity subject is and keep tally marks of the responses. Ex. Use a grid to record the number of tennis shoes in the classroom. **Level I Students will:** **EE7.SP.1-2.** Answer a question for data collection. Ex. Answer a question about what they ate for breakfast. Ex. Answer a question about their favorite candy bar.

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<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 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></tr>
<tr><td colspan="2">Domain: Statistics and Probability</td><td colspan="6">Cluster: Use random sampling to draw inferences about a population.</td></tr>
<tr><td colspan="2">Quarter 1:
Define random sample.

Identify an appropriate sample size

Analyze & interpret 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 determine the variation in estimates or predictions by comparing and contrasting the samples.</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given data from a random sample, Analyze the data and explain inferences about the population that can be drawn from the sample data. Given a population, Ask statistical questions and generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.	Generate multiple samples Simulated samples Inferences Population	Students know: Strategies for generating random samples, Methods of determining mean, median, interquartile range, and mean absolute deviation (from 6th grade), Characteristics of random sampling and representative samples, The relationship between a sample and the population that the sample was drawn from.	Students understand that/are able to: Use statistical vocabulary to explain inferences about a population when analyzing data from random samples, Ask statistical questions about populations, Generate multiple random samples from populations in order to gauge the variation in estimates, Use variation in sample data to explain possible error in estimates and predictions. 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, Random sampling tends to produce representative samples and support valid inferences.	**EE7.SP.1-2.** Answer a question related to the collected data from an experiment, given a model of data, or from data collected by the student.	**Level IV Students will:** **EE7.SP.1-2.** Answer a question about data collected from an experiment and explain or demonstrate the results. Ex. Poll classmates to determine where to go on a field trip and explain results. Ex. Given data on height of students in two classes, identify which class has the tallest students. **Level III Students will:** **EE7.SP.1-2.** Answer a question related to the collected data from an experiment, given a model of data, or from data collected by the student. Ex. Given data (i.e., a frequency table) of favorite pizza toppings, which type of pizza would be ordered most often. Ex. Asked what their favorite season is, place themselves in one of the four groups and answer a question about the results. (What is the group's favorite season? What is the group's least favorite season?) **Level II Students will:** **EE7.SP.1-2.** Collect data to answer a given question. Ex. Ask fellow classmates what their favorite activity subject is and keep tally marks of the responses. Ex. Use a grid to record the number of tennis shoes in the classroom. **Level I Students will:** **EE7.SP.1-2.** Answer a question for data collection. Ex. Answer a question about what they ate for breakfast. Ex. Answer a question about their favorite candy bar.

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<tr><td colspan="8">Standard with code: 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.</td></tr>
<tr><td colspan="2">Domain: Statistics and Probability</td><td colspan="6">Cluster: Draw informal comparative inferences about two populations.</td></tr>
<tr><td colspan="2">Quarter 1:
Identify measures of central tendency (mean, median, and mode) in a data distribution.

Identify measures of variation including upper quartile, lower quartile, upper extreme-maximum, lower extreme-minimum, range, interquartile range, and mean absolute deviation(i.e. box-and-whisker plots, line plot, dot plots, etc.).</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given two sets of data with similar variability, Informally assess and describe the degree of visual overlap of the distributions by comparing visual representations of data sets, (e.g., line plots, coordinate plane graphs) and statistical measures of center and variability.	Numerical data distributions Variability Measures of center Measures of variability Mean absolute deviation	Students know: Methods of determining mean, median, interquartile range, and mean absolute deviation (from 6th grade), Methods for visually representing data, (e.g., line plots, coordinate graphs), Characteristics and definitions of mean, median, interquartile range, and mean absolute deviation.	Students understand that/are able to: Calculate the mean, median, interquartile range, and mean absolute deviation, Organize data in ways that aid in identifying significant features of the data, (e.g. putting data in order to find the median, displaying in a graph to see overall shape), Describe the distribution of a set of data by referring to measures of center, spread, and shape, Effectively communicate a comparison of data sets using visual representations, (e.g., line plots, coordinate graphs) and statistical measures, (e.g., mean, variability). A set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape, Using different representations and descriptors of a data set can be useful in seeing important features of the situation being investigated, Statistical measures of center and variability that describe data sets can be used to compare data sets and answer questions.	**EE7.SP.3-4.** Compare two sets of data within a single data display such as a picture graph, line plot, or bar graph.	**Level IV Students will:** **EE7.SP.3-4.** Compare data from two picture graphs, two line plots, or two bar graphs. Ex. Given two bar graphs showing the number of pets students from two different classrooms have, determine which classroom of students has the most pets. Ex. Given two bar graphs, showing the number of boys and the number of girls from two different classrooms, determine which classroom has the least number of girls (or the least number of boys, or the greatest number of boys, or the greatest number of girls). **Level III Students will:** **EE7.SP.3-4.** Compare two sets of data within a single data display such as a picture graph, line plot, or bar graph. Ex. Compare the change in the number of days of sunlight in summer and winter on a line plot on a given graph. Ex. Given a bar graph, compare the number of red M&Ms to blue M&Ms. **Level II Students will:** **EE7.SP.3-4.** Summarize data on a graph or table in one way. Ex. When looking at a graph of temperatures from the week, summarize the data in one way (i.e., three days were above 70 degrees). Ex. When looking at a table that contains data about what students like to eat or what students like to do, summarize the data in one way (i.e., “watch movies” has the most). **Level I Students will:** **EE7.SP.3-4.** Read data from one given source. Ex. Using a pictograph, identify the number of students who have a dog, are present, eat breakfast, etc. Ex. Using a bar graph, identify which is more or which is less.

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<table>
<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 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></tr>
<tr><td colspan="2">Domain: Statistics and Probability</td><td colspan="6">Cluster: Draw informal comparative inferences about two populations.</td></tr>
<tr><td colspan="2">Quarter 1:
Find measures of central tendency (mean, median, and mode) and measures of variability (range, quartile, etc.).

Analyze and interpret data using measures of central tendency and variability.

Draw informal comparative inferences about two populations from random samples.</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Generate statistical questions that compare two populations, Collect and organize data from random samples to address the questions, Describe the sample distributions using measures of center and variability, Justify answers to the questions by drawing informal comparative inferences about the two populations from the data sets and their descriptive statistics.	Numerical data distributions Random samples Informal comparative inferences	Students know: Methods of determining mean, median, interquartile range, and mean absolute deviation (from 6th grade), Methods for visually representing data, (e.g., line plots, coordinate graphs), Characteristics and definitions of mean, median, interquartile range, and mean absolute deviation.	Students understand that/are able to: Calculate the mean, median, interquartile range, and mean absolute deviation, Organize data in ways that aid in identifying significant features of the data, (e.g. putting data in order to find the median, displaying in a graph to see overall shape), Describe the distribution of a set of data by referring to measures of center, spread, and shape, Draw inferences about populations from sample data, Justify answers to statistical questions involving comparison of two populations by using a variety of representations of sample data. A set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape, Using different representations and descriptors of a data set can be useful in seeing important features of the situation being investigated, Statistical measures of center and variability that describe data sets can be used to compare data sets and answer questions.	**EE7.SP.3-4.** Compare two sets of data within a single data display such as a picture graph, line plot, or bar graph.	**Level IV Students will:** **EE7.SP.3-4.** Compare data from two picture graphs, two line plots, or two bar graphs. Ex. Given two bar graphs showing the number of pets students from two different classrooms have, determine which classroom of students has the most pets. Ex. Given two bar graphs, showing the number of boys and the number of girls from two different classrooms, determine which classroom has the least number of girls (or the least number of boys, or the greatest number of boys, or the greatest number of girls). **Level III Students will:** **EE7.SP.3-4.** Compare two sets of data within a single data display such as a picture graph, line plot, or bar graph. Ex. Compare the change in the number of days of sunlight in summer and winter on a line plot on a given graph. Ex. Given a bar graph, compare the number of red M&Ms to blue M&Ms. **Level II Students will:** **EE7.SP.3-4.** Summarize data on a graph or table in one way. Ex. When looking at a graph of temperatures from the week, summarize the data in one way (i.e., three days were above 70 degrees). Ex. When looking at a table that contains data about what students like to eat or what students like to do, summarize the data in one way (i.e., “watch movies” has the most). **Level I Students will:** **EE7.SP.3-4.** Read data from one given source. Ex. Using a pictograph, identify the number of students who have a dog, are present, eat breakfast, etc. Ex. Using a bar graph, identify which is more or which is less.

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<table>
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<tr><td colspan="8">Standard with code: 7.SP.5 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.</td></tr>
<tr><td colspan="2">Domain: Statistics and Probability</td><td colspan="6">Cluster: Investigate chance processes and develop, use, and evaluate probability models.</td></tr>
<tr><td colspan="2">Quarter 1:
Know that probability is expressed as a number between 0 and 1.

Know that a random event with a probability of ½ is equally likely to happen

Know that as probability moves closer to 1 it is increasingly likely to happen

Know that as probability moves closer to 0 it is decreasingly likely to happen

Draw conclusions to determine that a greater likelihood occurs as the number of favorable outcomes approaches the total number of outcomes</td><td colspan="2">Quarter 2:</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given a variety of chance events, Associate numbers close to zero with unlikely events, and numbers close to one with likely events, Compare likelihoods of given events by associating larger numbers with the more likely events.	Probability Chance event	Students know: Relationships between numerically represented probabilities and expressions of likelihood.	Students understand that/are able to: Describe the relationship of the likelihood of a chance event and its probability. The probability of a chance event is a number between 0 and 1 that expresses the likelihood that the event occurs.	**EE7.SP.5-7.** Describe the probability of events occurring as possible or impossible.	**Level IV Students will:** **EE7.SP.5-7.** Differentiate and describe examples of a situation that is possible, a situation that is likely, and a situation that is impossible. Ex. State a situation that is impossible. Ex. State a situation that is possible. **Level III Students will:** **EE7.SP.5-7.** Describe the probability of events occurring as possible or impossible. Ex. Answer, "Is it possible that a squirrel attends school with you?" Ex. Answer, "Is it possible that a cow will ever drive a car?" Ex. Answer, "If you only own only three shirts - a red one, a blue one, and a black one - is it possible to pull a white one from your drawer?" **Level II Students will:** **EE7.SP.5-7.** Identify possible events that could occur in the natural environment. Ex. Given the lunch menu of pizza and hamburgers, identify whether it is possible to get a hamburger for lunch. Ex. Given a weekly chart of classroom jobs (different jobs every day of the week), answer "What job is possible for Monday?" **Level I Students will:** **EE7.SP.5-7.** Identify outcomes based on a possible event. Ex. Given a picture of a person wearing a heavy coat, scarf, and hat, identify if the clothing is appropriate for a picture of some weather condition. Ex. "We are going on a field trip in town. In which of the following would it be possible to transport the entire class (show pictures of a rocket, bicycle, and a bus)?"

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<tr><td colspan="8">Grade Level: 7th</td></tr>
<tr><td colspan="8">Standard with code: 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></tr>
<tr><td colspan="2">Domain: Statistics and Probability</td><td colspan="6">Cluster: Investigate chance processes and develop, use, and evaluate probability models.</td></tr>
<tr><td colspan="2">Quarter 1:
Determine relative frequency (experimental probability) is the number of times an outcome occurs divided by the total number of times the experiment is completed

Determine the relationship between experimental and theoretical probabilities by using the law of large numbers

Predict the relative frequency (experimental probability) of an event based on the (theoretical) probability</td><td colspan="2">Quarter 2:
Determine relative frequency (experimental probability) is the number of times an outcome occurs divided by the total number of times the experiment is completed

Determine the relationship between experimental and theoretical probabilities by using the law of large numbers

Predict the relative frequency (experimental probability) of an event based on the (theoretical) probability</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
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Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given the description of a chance event, (e.g., rolling a certain number on a number cube, getting heads when flipping a coin, drawing a red card from a deck of playing cards, etc.), Plan a data collection process, collect and organize the relevant data and use the long-run relative frequency to justify an approximation of the probability of the event. Given the description of a chance event and its probability, Predict and justify the approximate relative frequency for a given number of occurrences, (e.g., if a number cube is rolled 600 times, predict that a 3 or a 6 would be rolled roughly 200 times, but probably not exactly 200 times).	Probability Chance event Long-run relative frequency	Students will know: Methods for collecting and organizing data collected from observing chance events, Methods for calculating and/or expressing relative frequency.	Students understand that/are able to: Plan a data collection process for chance event occurrences, Collect and organize data from repeated occurrences of a chance event, Calculate relative frequency of a specific outcome of a chance event, Justify approximations of the probability of a chance event occurrence based on relative frequency of observed outcomes. Predict and justify approximate relative frequency of occurrence of a specific outcome based on the probability of a chance event. The observed relative frequency of a particular outcome of a chance event may be used to approximate the theoretical probability of that outcome in any random occurrence of the event, As the number of observations of a chance event gets large, the relative frequency of occurrence of any particular outcome tends to more closely match the theoretical probability of that outcome.	**EE7.SP.5-7.** Describe the probability of events occurring as possible or impossible.	**Level IV Students will:** **EE7.SP.5-7.** Differentiate and describe examples of a situation that is possible, a situation that is likely, and a situation that is impossible. Ex. State a situation that is impossible. Ex. State a situation that is possible. **Level III Students will:** **EE7.SP.5-7.** Describe the probability of events occurring as possible or impossible. Ex. Answer, "Is it possible that a squirrel attends school with you?" Ex. Answer, "Is it possible that a cow will ever drive a car?" Ex. Answer, "If you only own only three shirts - a red one, a blue one, and a black one - is it possible to pull a white one from your drawer?" **Level II Students will:** **EE7.SP.5-7.** Identify possible events that could occur in the natural environment. Ex. Given the lunch menu of pizza and hamburgers, identify whether it is possible to get a hamburger for lunch. Ex. Given a weekly chart of classroom jobs (different jobs every day of the week), answer "What job is possible for Monday?" **Level I Students will:** **EE7.SP.5-7.** Identify outcomes based on a possible event. Ex. Given a picture of a person wearing a heavy coat, scarf, and hat, identify if the clothing is appropriate for a picture of some weather condition. Ex. "We are going on a field trip in town. In which of the following would it be possible to transport the entire class (show pictures of a rocket, bicycle, and a bus)?"

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<tr><td colspan="8">Standard with code: 7.SP.7ab 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.
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.
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?</td></tr>
<tr><td colspan="2">Domain: Statistics and Probability</td><td colspan="6">Cluster: Investigate chance processes and develop, use, and evaluate probability models.</td></tr>
<tr><td colspan="2">Quarter 1:
Recognize uniform (equally likely) probability.

Use models to determine the probability of events

Develop a uniform probability model and use it to determine the probability of each outcome/event.

Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.

Analyze a probability model and justify why it is uniform or explain the discrepancy if it is not.</td><td colspan="2">Quarter 2:
Recognize uniform (equally likely) probability.

Use models to determine the probability of events

Develop a uniform probability model and use it to determine the probability of each outcome/event.

Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.

Analyze a probability model and justify why it is uniform or explain the discrepancy if it is not.</td><td colspan="2">Quarter 3:</td><td colspan="2">Quarter 4:</td></tr>
<tr><td>Make sense of problems and persevere in solving them.</td><td>Reason abstractly and quantitatively.</td><td>Construct viable arguments and critique the reasoning of others.</td><td>Model with mathematics.</td><td>Use appropriate tools strategically.</td><td>Attend to precision.</td><td>Look for and make use of structure.</td><td>Look for and express regularity in repeated reasoning.</td></tr>
</table>

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given the description of a chance event, (e.g., rolling a certain number on a number cube, getting heads when flipping a coin, drawing a red card from a deck of playing cards, etc.), Find and describe the probability of the event by developing probability models based on assigning equal probabilities to each of the possible outcomes (uniform probability model) and test whether or not this model may or may not fit the observed situation when the chance event occurs, Explain possible sources of discrepancy between developed probability models, (e.g., uniform probability model or other models) and observed frequencies.	Probability model Uniform probability model Observed frequencies	Students know: Methods for collecting and organizing data collected from observing chance events, Methods for calculating and/or expressing relative frequency, Methods for modeling chance events by assigning equal probabilities to each outcome for the event.	Students understand that/are able to: Develop models that assign equal probabilities to each possible outcome of a chance event, Develop models to observe and record relative frequencies of a particular outcome of a chance event in order to approximate the probability of a specific outcome, Use logical reasoning to explain sources of discrepancy between the probability of a specific outcome of a chance event, as determined by a uniform probability model and an experimental observation. The observed relative frequency of a particular outcome of a chance event may be used to approximate the theoretical probability of that outcome in any random occurrence of the event, As the number of observations of a chance event gets large, the relative frequency of occurrence of any particular outcome tends to more closely match the theoretical probability of that outcome.	**EE7.SP.5-7.** Describe the probability of events occurring as possible or impossible.	**Level IV Students will:** **EE7.SP.5-7.** Differentiate and describe examples of a situation that is possible, a situation that is likely, and a situation that is impossible. Ex. State a situation that is impossible. Ex. State a situation that is possible. **Level III Students will:** **EE7.SP.5-7.** Describe the probability of events occurring as possible or impossible. Ex. Answer, "Is it possible that a squirrel attends school with you?" Ex. Answer, "Is it possible that a cow will ever drive a car?" Ex. Answer, "If you only own only three shirts - a red one, a blue one, and a black one - is it possible to pull a white one from your drawer?" **Level II Students will:** **EE7.SP.5-7.** Identify possible events that could occur in the natural environment. Ex. Given the lunch menu of pizza and hamburgers, identify whether it is possible to get a hamburger for lunch. Ex. Given a weekly chart of classroom jobs (different jobs every day of the week), answer "What job is possible for Monday?" **Level I Students will:** **EE7.SP.5-7.** Identify outcomes based on a possible event. Ex. Given a picture of a person wearing a heavy coat, scarf, and hat, identify if the clothing is appropriate for a picture of some weather condition. Ex. "We are going on a field trip in town. In which of the following would it be possible to transport the entire class (show pictures of a rocket, bicycle, and a bus)?"

CCSS Math Pacing Guide
Grade 7

Grade Level: 7th							
Standard with code: 7.SP.8abc Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. **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.** **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.** **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 it will take at least 4 donors to find one with type A blood?***							
Domain: Statistics and Probability		**Cluster: Investigate chance processes and develop, use, and evaluate probability models.**					
Quarter 1: Define and describe a compound event. Know that the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. Identify the outcomes in the sample space for an everyday event. Define simulation. Find probabilities of compound events using organized lists, tables, tree diagrams, etc. and analyze the outcomes. Choose the appropriate method such as organized lists, tables and tree diagrams to represent sample spaces for compound events. Design and use a simulation to generate frequencies for compound events.		**Quarter 2:**		**Quarter 3:**		**Quarter 4:**	
Make sense of	**Reason abstractly**	**Construct viable**	**Model with**	**Use appropriate**	**Attend to**	**Look for and make**	**Look for and**

problems and persevere in solving them.	and quantitatively.	arguments and critique the reasoning of others.	mathematics.	tools strategically.	precision.	use of structure.	express regularity in repeated reasoning.

Evidence of Student Attainment	Vocabulary	Knowledge	Skills	Common Core Essential Elements	Instructional Achievement Level Descriptors
Students: Given the description of a compound event, (e.g., rolling a sum of seven with two dice), Use models, (e.g., organized lists, tables, tree diagrams, and simulations) to find and explain the possible outcomes in the event and find the probability of each outcome. Given a contextual or mathematical situation involving probability related to a compound event, Develop a simulation and data collection process, collect and organize the relevant data, and use the long-run relative frequency to justify an approximation of the probability of the	Probability Compound event Tree diagram Sample space	Students know: Methods for modeling compound events, (e.g., organized lists, tables, tree diagrams, simulation), Methods for calculating and/or expressing relative frequency, Methods for calculating probability from models of probability for compound events.	Students understand that/are able to: Calculate probability of a specific outcome of a compound event, Strategically use models of compound events to determine the possible outcomes and their probabilities, Use mathematical vocabulary to justify solutions and solution paths for solving problems involving the probability of specific events in a compound event, Set up and conduct simulations that model particular chance events and use the data from the simulation to approximate probabilities associated with the chance event. The observed relative frequency of a particular outcome of a chance event, including compound events, approximates the theoretical probability of that outcome in any random occurrence of the event, As the number of observations of a chance event gets large, the relative frequency of occurrence of any particular outcome tends to more closely match the theoretical probability of that outcome.	**EE7.SP.8.** N/A	**EE7.SP.8.** N/A

event and an answer to the original question.					