Diamond Lake School District 76

Embrace Empower Excel Each Child Each Day

Grade: 7	Subject: Math	Trimester: 1

Common Core State Standards	Specific Standards based targets: What do you want students to learn?	Assessment: How do you know they learned it?
<u>Unit 1: Ratios and Proportionality</u> **7.RP.1:** Analyze proportional relationships and use them to solve real-world and mathematical problems. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction (1/2)/(1/4) miles per hour, equivalently 2 miles per hour. **7.RP.2:** Analyze proportional relationships and use them to solve real-world and mathematical problems. Recognize and represent proportional relationships between quantities.	➔ Students will find unit rates. ➔ Students will simplify complex fractions. ➔ Students will convert using unit rates and dimensional analysis. ➔ Students will identify proportional and nonproportional relationships. ➔ Students will identify proportional relationships by graphing on the coordinate plane. ➔ Students will use proportions to solve problems. ➔ Students will represent and identify constant rates of change. ➔ Students will be able to identify slope using tables and graphs.	★ Unit 1 Summative Assessment ○ Individual lessons formatively assessed in a variety of formats (Exit Tickets, Socrative, Quizzes, Kahoot, Quizizz

7.RP.3: Analyze proportional relationships and use them to solve real-world and mathematical problems. 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. **7.NS.3:** Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.) **7.EE.2:** Use properties of operations to generate equivalent expressions. 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." **7.EE.3:** Solve real-life and mathematical problems using numerical and algebraic expressions and equations. Solve multi-step real-life and mathematical problems posed with positive and	➔ Students will use direct variation to solve problems. ➔ Students will find the percent of a number. ➔ Students will estimate the percent of a number. ➔ Students will solve problems involving percents by using the percent equation. ➔ Students will solve problems involving percent increase and percent decrease. ➔ Students will solve problems involving financial literacy, such as sales tax, tips, and markup. ➔ Students will solve problems using discount. ➔ Students will solve problems involving simple interest.		

negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations as strategies 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.			
Unit 2: Rational Number Operations **7.NS.1**: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. 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. **7.NS.2**: Apply and extend previous understandings of operations with	➔ Students will add and subtract rational numbers. ➔ Students will represent addition and subtraction on a horizontal or vertical number line diagram. ➔ Students will use words, visuals, and symbols to describe situations in which opposite quantities combine to make 0. ➔ Students will represent addition of quantities with symbols, visuals, and words by showing positive and negative direction from		★ Unit 2 Summative Assessment ○ Individual lessons formatively assessed in a variety of formats (Exit Tickets, Socrative, Quizzes, Kahoot, Quizizz

fractions to add, subtract, multiply, and divide rational numbers. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. **7.NS.3**: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.) **7.EE.3**: Solve real-life and mathematical problems using numerical and algebraic expressions and equations. 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 as strategies 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	one quantity to the other. ➔ Students will show that a number and its opposite have a sum of 0 using visuals, symbols, words, and real-world contexts. ➔ Students will use the term “additive inverse” to describe 2 numbers whose sum is zero. ➔ Students will use commutative, distributive, associative, identity, and inverse properties to add and subtract rational numbers. ➔ Students will use the term “absolute value” to describe the distance from zero on a number line diagram and with symbols. ➔ Students will multiply and divide rational numbers. ➔ Students will use the distributive property to multiply positive and negative rational numbers using symbols, visuals, words, and real-life contexts. ➔ Students will interpret products of rational numbers by describing real-world contexts. ➔ Students will identify situations when integers can and cannot be divided. ➔ Students will use words and real-world contexts to explain why the quotient of two integers is a rational number. ➔ Students will identify and apply properties used when multiplying and dividing rational numbers.		

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. **7.RP.3**: Analyze proportional relationships and use them to solve real-world and mathematical problems. 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	➔ Students will convert a rational number to a decimal using long division. ➔ Students will identify terminating or repeating decimal representations of rational numbers. ➔ Students will solve real-world and mathematical problems involving the four operations with rational numbers.		

Grade: 7	Subject: Math	Trimester: 2

Common Core State Standards	Specific Standards based targets: What do you want students to learn?		Assessment: How do you know they learned it?
<u>Unit 3: Expressions, Equations, & Inequalities</u> **7.EE.1:** Use properties of operations to generate equivalent expressions. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	➔ Students will evaluate simple algebraic expressions. ➔ Students will describe the relationships and extend terms in arithmetic sequences. ➔ Students will identify and use		★ Unit 3 Summative Assessment ○ Individual lessons formatively assessed in a variety of formats (Exit Tickets, Socrative, Quizzes, Kahoot, Quizizz

7.EE.2: Use properties of operations to generate equivalent expressions. 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." **7.EE.3:** Solve real-life and mathematical problems using numerical and algebraic expressions and equations. 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 as strategies 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	mathematical properties to simplify. ➔ Students will apply the Distributive Property to rewrite algebraic expressions. ➔ Students will simplify algebraic expressions. ➔ Students will add linear expressions. ➔ Students will subtract linear expressions. ➔ Students will read and write integers, and find the absolute value of an integer. ➔ Students will solve addition and subtraction equations. ➔ Students will solve one-step multiplication and division equations. ➔ Students will solve one-step equations with rational coefficients. ➔ Students will solve two-step equations. ➔ Students will solve two-step equations of the form $p(x + q) = r$.		

used as a check on the exact computation. **7.EE.4:** Solve real-life and mathematical problems using numerical and algebraic expressions and equations. 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.	➔ Students will solve inequalities by using the Addition and Subtraction Properties of Inequality. ➔ Students will solve inequalities by using the Multiplication and Division Properties of Inequality. ➔ Students will model and solve two-steps inequalities and represent the solution on the number line.		

Grade: 7	Subject: Math	Trimester: 3

Common Core State Standards	Specific Standards based targets: What do you want students to learn?	Assessment: How do you know they learned it?
<u>Unit 4: Geometry</u> **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. **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. **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.	➔ Students will draw construct, and describe geometrical figures and describe the relationships between them. ➔ Students will draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. ➔ Students will 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. ➔ Students will describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. ➔ Students will 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. ➔ Students will solve real-world and mathematical problems involving area, volume and surface area of two- and	★ Unit 4 Summative Assessment ○ Individual lessons formatively assessed in a variety of formats (Exit Tickets, Socrative, Quizzes, Kahoot, Quizizz

	three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	
<u>Unit 5: Statistics and Probability</u> **7.SP.5** Investigate chance processes and develop, use, and evaluate probability models. 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 or likely, and a probability near 1 indicates a likely event. **7.SP.6** Investigate chance processes and develop, use, and evaluate probability models. 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. **7.SP.7** Investigate chance processes and develop, use, and evaluate probability models. 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	➔ Students will recognize and identify that different sampling techniques must be used in real life situations, because it is very difficult to survey an entire population. ➔ Students will select appropriate sample sizes based on a population in real-life situations and explain why generalizations about a population from a sample are valid only if the sample is random and representative of that population. ➔ Students will collect data from a sample population in order to predict information about a population. ➔ Students will interpret data from a random sample to draw inferences about a population with an unknown characteristic of interest. ➔ Students will generate multiple samples (or simulated samples) of the same size to determine the variation in estimates or predictions by comparing the samples. ➔ Students will identify the degree of overlap between two numerical sets of data. ➔ Students will usually compare two numerical data distributions with like ranges. ➔ Students will measure the difference between the centers of two different data distributions and express this difference as a multiple of a	★ Unit 5 Summative Assessment ○ Individual lessons formatively assessed in a variety of formats (Exit Tickets, Socrative, Quizzes, Kahoot, Quizizz

good, explain possible sources of the discrepancy. **7.SP.7a** 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. **7.SP.7b** 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? **7.SP.8** Investigate chance processes and develop, use, and evaluate probability models. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. **7.SP.8a** 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. **7.SP.8b** 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	measure of variability. ➔ Students will use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. ➔ Students will represent the probability of a chance event as a number between 0 and 1. ➔ Students will use the terms “likely”, “unlikely,” to describe the probability represented by the fractions used. ➔ Students will approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency. ➔ Students will predict the approximate relative frequency of a chance event given the probability. ➔ Students will develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. ➔ Students will develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. ➔ Students will compare probabilities from a model to observed frequencies. ➔ Students will determine if the agreement between a model and observed frequencies		

sample space which compose the event. **7.SP.8c** 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?	is not good, explain possible sources of the discrepancy. ➔ Students will find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. ➔ Students will represent the probability of a compound event as the fraction of outcomes in the sample space for which the compound event occurs. ➔ Students will represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. ➔ Students will, for an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event. ➔ Students will design and use a simulation to generate frequencies for compound events.		