

Second Nine Weeks Instructional Map

DRAFT

Subject Pre-algebra Grade 7

GLE 0706.3.8 (EE.7.4) Use a variety of strategies to efficiently solve linear equations and inequalities.

Knowledge and Skills	Guiding Question(s)	Resources & Instructional Practices	Assessments	Differentiated Instruction	Technology & Additional Web-based Resources
<p>WEEKS 1-2</p> <p>SPI 0706.3.8 (EE.7.4.a) Solve contextual problems involving two-step linear equations.</p> <p>COMMON CORE FOCUS STANDARD:</p> <p>7EE.4.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.</p> <p>7EE.4.b: Solve word problems leading to inequalities of the form $px + q > r$ and $px + q < r$, 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.</p> <p>Solve Contextual Problems – Linear Equations Review Applications of Linear Equations</p> <p>Vocabulary Equations, Inequalities, solution set, greater than, less than, greater than or equal to, less than or equal to</p>	<p>Guiding Question(s):</p> <p>How can you use the problem solving process to solve real world problems using equations or inequalities?</p> <p>Differentiate between an algebraic solution and an arithmetic solution.</p> <p>Explain the correct usage of all four inequality symbols and related terminology (<i>at least, no more than</i>, etc.).</p> <p>Explain how to solve inequalities to determine the solution set.</p>	<p>Glencoe Tennessee Math Connects Course 2:Chapter 4 Lessons: 4-3A (Pg. 228-229) 4-3B (Pg. 230-234) 4-3C (Pg. 235) 4-3D (Pg. 236-239)</p> <p>Additional Lessons 7-9 (pp. 781-790 SE)</p> <ul style="list-style-type: none"> Quick Review Math Handbook Foldables Chapter Resource Masters (Leveled Worksheets, Explore Worksheets, Reading/Writing Math) <p>Common Core Sample Lessons:</p> <ul style="list-style-type: none"> Steps to Solving Equations Equations for Model Real-World Problems Expressions, Equations and Inequalities Creating and Solving Equations 	<p>Glencoe Tennessee Math Connects Course 2:</p> <ul style="list-style-type: none"> Problem Solving Projects p.676-677 <p>Common Core State Standard Task(s)</p> <ul style="list-style-type: none"> Baseball Jerseys How old are they? Fishing Adventures 2 	<p>Intervention/Enrichment:</p> <ul style="list-style-type: none"> Stanford Math Enrichment Master (Chapter Resource Masters) Are You Ready for the Chapter? Apply Section (Chapter Resource Masters) Destination Math Differentiated Instruction Options (See Teacher's ED) Chapter Project <p>Have students complete double inequality problems (e.g., $-2 \leq 6x - 1 \leq 10$)</p>	<ul style="list-style-type: none"> Teacher's Edition CD Rom Graphing Calculators Destination Math Publisher's Website: connectED.mcgraw-hill.com NCTM Website: http://illuminations.nctm.org www.internet4classrooms.com www.tnelc.org www.education.ti.com Interactive Manipulatives: http://nlvm.usu.edu/ STEM Resources: http://www.stemresources.com/ Informational Math Site (PowerPoints/Games) http://jc-schools.net/index.html www.softschools.com Examview Pro www.brightstorm.com www.discoveryeducation.com http://exchange.smarttech.com

Second Nine Weeks Instructional Map

DRAFT

Subject Pre-algebra Grade 7

GLE 0706.2.2 (NS.7.1, NS.7.1.d, NS.7.2.a, NS.7.2.c) Understand and work with the properties of and operations on the system of rational numbers.

Knowledge and Skills	Checks for Understanding & Guiding Question(s)	Resources & Instructional Practices	Assessments	Differentiated Instruction	Technology & Additional Web-based Resources
<p>WEEKS 3-4</p> <p>SPI 0706.2.6 (RP.7.3) Express the ratio between two quantities as a percent, and a percent as a ratio or fraction. Ratios and Proportions Video Lesson</p> <p>Glencoe Handouts SPI 0706.2.7 (RP.7.2.c) Use ratios and proportions to solve problems.</p> <p>Illuminations: Understanding Rational Numbers and Proportions Activity Lesson</p> <p>Arcademic Skill Builders - Dirt Bike Proportions Reinforcement Activity</p> <p>Vocabulary Proportional, non-proportional, equivalent ratios, proportion, cross products, percent proportion, percent of change, percent of increase/decrease</p>	<p>0706.2.7 (RP.7.3) Write number sentences to solve contextual problems involving ratio and percent. Using Ratios and Proportions Percent word problems Percent word problems Solving Ratio Word Problems</p> <p>0706.2.8 (RP.7.3) Apply ratios, rates, proportions and percents (such as discounts, interest, taxes, tips, distance/rate/time, and percent increase or decrease). Percent Problems Percent of Change Power Point Distance/Rate/Time Problems Worksheet Discount and Sales Tax Worksheet</p> <p>Guiding Question(s) What are some possible meanings of the words <i>per</i> and <i>cent</i>? How are ratio and proportion related?</p>	<p>Glencoe TN Math Connects Course 2</p> <p>Chapter 5 Lessons: 5-1A (p. 265) ;5-1B (p. 266-271) ;5-1C (p. 272-275) ; 5-1E (p. 281) ; 5-1D (p. 276-280) IMPACT Math Unit D., Inv. 1 (pp.53-55)</p> <p>Chapter 6 Lessons: 6-1B (p. 320-324); 6-1C; (p. 325-330) ; 6-2B (p. 332-336) ;6-2C (p. 337 – 341) ; 6-3B (p. 346-350) 6-3C (p.351 – 354); 6-3D (p.355-358) ; 6-3E (p.359-362) IMPACT Math Unit F, Inv. 1 (pp. 96-99)</p> <ul style="list-style-type: none"> 5 minute check Spiral Reviews (Pg. 336, 350, 341, 350, 354, 358, 362) H.O.T. Problems (Pg. 271, 275, 324, 330, 336, 341, 349, 354, 358, 362) Problem Solving Investigation p.282 Hands on Activity Tools (See TE) Quick Review Math Handbook Foldables Chapter Resource Master (Leveled Worksheets, Explore Worksheets, Reading/Writing Math) <p>Play the "Concentration Game." Students work with a partner. Each group is given a stack of 24 cards. Eight of the cards will have a ratio written on them, eight will have the decimal form, and the remaining eight will have the percent form, i.e., $\frac{3}{4}$, 0.75, 75%. Shuffle the cards and place face down in rows of four. Play "Concentration" with three cards to match a ratio with its decimal and percent. The student with the most matches at the end of the game is the winner.</p>	<ul style="list-style-type: none"> Are You Ready for the Chapter? Chapter 5 pg. 264 Chapter 6 pg. 316 Ticket out the door pg. 280, 330, 341 Mid-Chapter Check, p. 292, 344 Problem Solving Investigation pg. 282, 342 Chapter Study Guide/Review, pg. 306-309, 366-369 Stop and Reflect p. 343, 363 Practice Chapter Test, pg.310, 370 Chapter Test (Chapter Resource Masters) Mastering TCAP Workbook Preparing for Standardized Test pg. 311, 371 Test Practice pg.312-313, 372-373 Self Check Quiz <p>TCAP Test Practice Item(s)</p> <p>1. Sofia made 35% of her shots in a basketball game. What is the ratio of the number of shots Sofia made to the number of shots she did <u>not</u> make in the game? A. 7:13 B. 13:7 C. 7:20 D. 20:7</p> <p>2. The price for 8 rolls of paper towels is \$5.36. Which of the following represents the same price per roll? A. 3 rolls for \$2.01 B. 2 rolls for \$2.68 C. 7 rolls for \$4.36 D. 12 rolls for \$10.72</p>	<p>Intervention:</p> <ul style="list-style-type: none"> Stanford Math: 90 min./wk Destination Math Response to Intervention, pg. 264a and 316a (Teacher's Edition) Are You Ready for the Chapter? Chapter 5 pg. 264 Chapter 6 pg. 316 Differentiated Instruction Options pg.265c, 282c-283c,293c, 293d, 317c, 331c, 331d, 345d (Teacher's ED) Reteach Masters (Chapter Resource Masters) <p>Using graph paper, have students shade in appropriate numbers of squares to represent different fractions, decimals, and percentages of a given amount of squares. Have the students provide answers in all three forms.</p> <p>Enrichment:</p> <ul style="list-style-type: none"> Stanford Math Enrichment Master (Chapter Resource Masters) Are You Ready for the Chapter? Apply Section (Chapter Resource Masters) Destination Math Differentiated Instruction Options pg.265c, 282c-283c,293c, 293d, 317c, 331c, 331d, 345d (TE) Chapter Project 	<ul style="list-style-type: none"> Teacher's Edition CD Rom Graphing Calculators Destination Math Publisher's Website: connectED.mcgraw-hill.com NCTM Website: http://illuminations.nctm.org www.internet4classrooms.com www.tnelc.org www.education.ti.com Interactive Manipulatives: http://nlvm.usu.edu/ STEM Resources: http://www.stemresources.com/ Informational Math Site (PowerPoints/Games http://jc-schools.net/index.html) www.softschools.com Examview Pro www.brightstorm.com http://exchange.smarttech.com www.discoveryeducation.com

Second Nine Weeks Instructional Map

DRAFT

Subject Pre-algebra Grade 7

7.RP Analyze proportional relationships and use them to solve real-world and mathematical problems.

Knowledge and Skills	Checks for Understanding & Guiding Question(s)	Resources & Instructional Practices	Assessments	Differentiated Instruction	Technology & Additional Web-based Resources
<p>WEEK 5</p> <p>COMMON CORE FOCUS STANDARD:</p> <p>7RP.1 <i>Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.</i></p> <p>7RP.3 <i>Use proportional relationships to solve multistep ratio and percent problems.</i></p> <p>Vocabulary Ratio, percent, unit rates, area</p>	<p>Guiding Question(s):</p> <p>What makes a relationship “proportional”? How can I tell if a proportional relationship exists?</p> <p>Describe how to recognize the difference(s) between a unit rate and a ratio</p> <p>Explain how your prior experience with equivalent fractions can help you solve multi-step problems with ratio and percent</p> <p>Relate “between” ratios and “within” ratios to the cross-product and factor of change algorithms.</p>	<p>Math Connects Course 2 CCSS Additional Lesson 1 pp. 759-764</p> <p>IXL Ratios and Proportional Relationships</p> <p>Common Core Sample Lessons:</p> <p>Increasing and Decreasing Quantities by a Percent http://www.map.mathshell.org/materials/lessons.php?taskid=210&subpage=concept</p>	<p>Common Core State Standard Task(s)</p> <ul style="list-style-type: none"> Cooking with the Whole Cup http://www.illustrativemathematics.org/illustrations/470 Track Practice http://www.illustrativemathematics.org/illustrations/470 25% Sale (p.4) 7.RP.3 http://www.map.mathshell.org/materials/tests/ms_2_test.pdf Ice Cream: Expert Level Task 7.RP.3 http://www.map.mathshell.org/materials/download.php?fileid=1157 Sale! 7.RP.3 http://www.insidemathematics.org/pdfs/seventh-grade/sale/task.pdf 	<p>Intervention/Enrichment:</p> <ul style="list-style-type: none"> Stanford Math Enrichment Master (Chapter Resource Masters) Are You Ready for the Chapter? Apply Section (Chapter Resource Masters) Destination Math Differentiated Instruction Options (See Teacher’s ED) Chapter Project 	<ul style="list-style-type: none"> Teacher’s Edition CD Rom Graphing Calculators Destination Math Publisher’s Website: connectED.mcgraw-hill.com NCTM Website: http://illuminations.nctm.org www.internet4classrooms.com www.tnelc.org www.education.ti.com Interactive Manipulatives: http://nlvm.usu.edu/ STEM Resources: http://www.stemresources.com/ Informational Math Site (PowerPoints/Games) http://jc-schools.net/index.html www.softschools.com Examview Pro www.brightstorm.com http://exchange.smarttech.com www.discoveryeducation.com

Second Nine Weeks Instructional Map

DRAFT

Subject Pre-algebra Grade 7

GLE 0706.1.5 (G.7.1) Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.

Knowledge and Skills	Checks for Understanding & Guiding Question(s)	Resources & Instructional Practices	Assessments	Differentiated Instruction	Technology & Additional Web-based Resources										
<p>Week 6</p> <p>SPI 0706.1.3 (RP.7.2, RP.7.2.a, RP.7.2.b, RP.7.2.d) Recognize whether information given in a table, graph, or formula suggests a directly proportional, linear, inversely proportional, or other nonlinear relationship. Proportion Word Problems (with worked solutions) Lesson</p> <p>Cat and Mouse: Direct and inverse proportion Lesson</p> <p>CASIO: Inversely Proportional</p> <p>Direct and Indirect Variation</p> <p>How to Determine Whether Two Variables Are Directly Proportional</p> <p>Vocabulary Direct variation, constant of variation, slope-intercept form, y-intercept, inverse variation, proportional, non-proportional</p>	<p>Guiding Question(s):</p> <p><i>How does rate of change in linear relationships connect to proportional and non-proportional relationships?</i></p> <p><i>How can you use tables, graphs or equations to determine whether a relationship is proportional?</i></p> <p>0706.1.4 (RP.7.2.a) Recognize quantities that are inversely proportional (such as the relationship between the lengths of the base and the side of a rectangle with fixed area). CASIO: Inversely Proportional Activity</p> <p>0706.1.5 (RP.7.2.c) Understand that a linear function in which $f(0) = 0$ is called a directly proportional relationship. Direct and Inverse Variation Lesson</p>	<p>Glencoe Tennessee Math Connects Course 2 Chapter 5 Lesson 1C pgs. 272-275;</p> <p>Chapter 7 Lessons 3B pg. 404; 3C pgs. 405-410; 3D pg. 411; 3E pgs 412-415</p> <p>Additional Lesson 2, pp. 765-770 SE</p> <p>IMPACT Math Unit E, Inv. 1-2 pp. 80-86</p> <ul style="list-style-type: none"> 5 Minute Check Spiral Reviews (Pg. 226, 234, 239) H.O.T. Problems (Pg. 213, 219, 225, 234,239) Test Practice (Pg. 213, 219, 226, 234, 239) Hands on Activity Tools (See TE) Quick Review Math Handbook Foldables Chapter Resource Masters (Leveled Worksheets, Explore Worksheets, Reading/Writing Math) <p>Common Core State Task(s)</p> <p>Problem Solving Task(s)</p>	<ul style="list-style-type: none"> Are You Ready For The Chapter? Pg. 376 Mid Chapter Check 401 Problem Solving Investigation Pg 402-403 Chapter Study Guide and Review Pg. 418-421 Chapter Quiz – Chapter Resource Masters Practice Chapter Test Pg. 422 Chapter Test – Chapter Resource Masters Mastering TCAP Workbook Test Practice Pg. 424-425 Preparing for Standardized Tests Pg. 423 Self Check Quiz <p>TCAP Practice Item(s): Which best describes the relationship between the input values and the output values shown in the table below?</p> <table border="1" data-bbox="1435 894 1669 1065"> <thead> <tr> <th>Input</th> <th>Output</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>$\frac{1}{6}$</td> </tr> <tr> <td>5</td> <td>$\frac{1}{10}$</td> </tr> <tr> <td>7</td> <td>$\frac{1}{14}$</td> </tr> <tr> <td>9</td> <td>$\frac{1}{18}$</td> </tr> </tbody> </table> <p>F inversely proportional G directly proportional H exponential J linear</p>	Input	Output	3	$\frac{1}{6}$	5	$\frac{1}{10}$	7	$\frac{1}{14}$	9	$\frac{1}{18}$	<p>Intervention:</p> <ul style="list-style-type: none"> Stanford Math: 90 min/wk Destination Math Are You Ready For The Chapter? Pg. 376 Response To Intervention Pg. 407 Differentiated Instruction Options Pgs. 380,387,388,394,398,407,408,414, (Teacher's Ed) Reteach Master (Chapter Resource Masters) <p>Enrichment:</p> <ul style="list-style-type: none"> Stanford Math Destination Math Are You Ready For The Chapter? Pg. 200 Enrichment Masters (Chapter Resource Masters) Differentiated Instruction Options Pg. 245b, 247b, 252c 380,387,388,394,398,407,408,414, (Teacher's Ed) Chapter Projects 	<ul style="list-style-type: none"> Teacher's Edition CD Rom Graphing Calculators Destination Math Publisher's Website: connectED.mcgraw-hill.com NCTM Website: http://illuminations.nctm.org www.internet4classrooms.com www.tnelc.org www.education.ti.com Interactive Manipulatives: http://nlvm.usu.edu/ STEM Resources: http://www.stemresources.com/ Informational Math Site (PowerPoints/Games http://jc-schools.net/index.html) www.softschools.com Examview Pro www.brightstorm.com www.discoveryeducation.com http://exchange.smarttech.com
Input	Output														
3	$\frac{1}{6}$														
5	$\frac{1}{10}$														
7	$\frac{1}{14}$														
9	$\frac{1}{18}$														

Second Nine Weeks Instructional Map

DRAFT

Subject Pre-algebra Grade 7

GLE 0706.3.6 (EE.7.4) Conceptualize the meanings of slope using various interpretations, representations, and contexts.
GLE.0706.3.5 (RP.7.2.a, RP.7.2.d) Understand and graph proportional relationships.

Knowledge and Skills	Checks for Understanding & Guiding Question(s)	Resources & Instructional Practices	Assessments	Differentiated Instruction	Technology & Additional Web-based Resources										
<p>WEEKS 7</p> <p>SPI 0706.3.4 Interpret the slope of a line as a unit rate given the graph of a proportional relationship. Slope and y-intercept Problems with explanations of how to interpret the slope and y-int.</p> <p>NCTM Illuminations Lesson Interpret the slope and y-int. lessons. Choose Lesson 1 or 2</p> <p>Meaning of Slope and y-Intercept In the context of word problems</p> <p>SPI 0706.3.5 (RP.7.2.b) Represent proportional relationships with equations, tables and graphs.</p> <p>Vocabulary Rate of change, constant rate of change, nonlinear function, direct variation, constant of variation, slope-intercept form, y-intercept, rate, unit rate</p>	<p>0706.3.8 (RP.7.2.c) Understand slope as the ratio of vertical change to horizontal change. Lesson: Slope as a ratio includes handouts</p> <p>0706.3.9 (EE.7.4.a) Identify a function exhibiting a constant rate of change as a linear function and identify the slope as a unit rate. Slope as a Unit Rate Activities</p> <p>0706.3.10 (RP.7.1) Solve problems involving unit rates (e.g., miles per hour, words per minute). PROPORTIONAL RELATIONSHIPS AND UNIT RATES Excellent intro lesson with handouts</p> <p>0706.3.12 (EE.7.2, EE.7.4) Use linear equations to solve problems and interpret the meaning of slope, m, and the y-intercept, b, in $f(x) = mx + b$ in terms of the context.</p> <p>0706.3.13 Given a graph that exhibits the intersection of a line and the y-axis, write a linear function in slope-intercept form: $y = mx + b$.</p> <p>0706.3.7 (RP.7.2.c) Distinguish proportional relationships ($y/x = k$, or $y = kx$) from other relationships, including inverse proportionality ($xy = k$, or $y = k/x$)</p> <p>Sorting Functions Find relationships between graphs, equations, tables and rules and explain your reasons.</p> <p>Guiding Question(s)? How are unit rates, rates of change and slopes similar?</p>	<p>Glencoe Tennessee Math Connects Course 2: Chapter 5 Lessons: 1A (Pg. 265); 1B (Pg. 268)</p> <p>Chapter 7 Lessons: 1A (Pg. 377), 1B (Pg. 378 -384), 1C (Pg. 385-389), 1D (Pg. 390); 2A (Pg. 391); 2B (Pg. 392-395); 2C (Pg. 396-399); 2D(Pg.400); 3C (Pg. 405-410)</p> <ul style="list-style-type: none"> 5 Minute Check Spiral Reviews (Pg. 399, 415) H.O.T. Problems (Pg. 382,389,395,409,415) Test Practice (Pg.382,389,395,399,410) Hands on Activity Tools (See TE) Quick Review Math Handbook Foldables Chapter Resource Masters (Leveled Worksheets, Explore Worksheets, Reading/Writing Math) 	<ul style="list-style-type: none"> Are You Ready For The Chapter? Pg. 376 Mid Chapter Check 401 Problem Solving Investigation Pg 402-403 Chapter Study Guide and Review Pg. 418-421 Chapter Quiz – Chapter Resource Masters Practice Chapter Test Pg. 422 Chapter Test – Chapter Resource Masters Mastering TCAP Workbook Test Practice Pg. 424-425 Preparing for Standardized Tests Pg. 423 Self Check Quiz <p>TCAP Practice Item(s):</p> <p>1. Which best describes the relationship between the input values and the output values shown in the table below?</p> <table border="1" data-bbox="1311 1060 1526 1255"> <thead> <tr> <th>Input</th> <th>Output</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>$\frac{1}{6}$</td> </tr> <tr> <td>5</td> <td>$\frac{1}{10}$</td> </tr> <tr> <td>7</td> <td>$\frac{1}{14}$</td> </tr> <tr> <td>9</td> <td>$\frac{1}{18}$</td> </tr> </tbody> </table> <p>a. Inversely proportional b. Directly proportional c. Exponential d. linear</p> <p>2. Ms. Lewis baked chocolate chip cookies for a bake sale. The graph shows the relationship between the number of cookie batches baked and the number of cups of chocolate chips used.</p>	Input	Output	3	$\frac{1}{6}$	5	$\frac{1}{10}$	7	$\frac{1}{14}$	9	$\frac{1}{18}$	<p>Intervention:</p> <ul style="list-style-type: none"> Stanford Math: 90 min/wk Destination Math Are You Ready For The Chapter? Pg. 376 Response To Intervention Pg. 407 Differentiated Instruction Options Pgs. 380,387,388,394,398,407,408,414, (Teacher's Ed) Reteach Master (Chapter Resource Masters) <p>Enrichment:</p> <ul style="list-style-type: none"> Stanford Math Destination Math Are You Ready For The Chapter? Pg. 200 Enrichment Masters (Chapter Resource Masters) Differentiated Instruction Options Pg. 245b, 247b, 252c 380,387,388,394,398,407,408,414, (Teacher's Ed) Chapter Projects <p>Give students graphs of four lines (one with positive slope, one with negative slope, one with zero slope, and one with undefined slope) and five pairs of points (one for each line and one extra pair). Have students use the slope formula to determine the slope between each pair of points and to match the points with the Have students describe a line represented by a given equation. For ex. $Y = -5x + 3$</p>	<ul style="list-style-type: none"> Teacher's Edition CD Rom Graphing Calculators Destination Math Publisher's Website: connectED.mcgraw-hill.com NCTM Website: http://illuminations.nctm.org www.internet4classrooms.com www.tnelc.org www.education.ti.com Interactive Manipulatives: http://nlvm.usu.edu/ STEM Resources: http://www.stemresources.com/ Informational Math Site (PowerPoints/Games http://jcschools.net/index.html) www.softschools.com Examview Pro www.brightstorm.com www.discoveryeducation.com http://exchange.smarttech.com
Input	Output														
3	$\frac{1}{6}$														
5	$\frac{1}{10}$														
7	$\frac{1}{14}$														
9	$\frac{1}{18}$														

Knowledge and Skills	Checks for Understanding & Guiding Question(s)	Resources & Instructional Practices	Assessments	Differentiated Instruction	Technology & Additional Web-based Resources
			<p>Baking Chocolate Chip Cookies</p> <p>What does the slope of the line represent?</p> <ul style="list-style-type: none"> A. The total number of cookie batches baked B. The total number of cups of chocolate chips used C. The number of cookie batches per cup of chocolate chips used D. The number of cups of chocolate chips used per cookie batch 		

Second Nine Weeks Instructional Map

DRAFT

Subject Pre-algebra Grade 7

7. RP Analyze proportional relationships and use them to solve real-world and mathematical problems.

Knowledge and Skills	Essential Understandings	Resources & Instructional Practices	Assessments	Differentiated Instruction	Technology & Additional Web-based Resources
<p>WEEKS 8-9</p> <p>COMMON CORE FOCUS STANDARD:</p> <p>7RP.2.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.</p> <p>7RP.2.b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional reasoning.</p> <p>7RP.2.c Represent proportional relationships by equations.</p> <p>7RP.2.d Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0,0)$ and $(1, r)$ where r is the unit rate.</p> <p>Vocabulary Proportionality, equivalent ratios, coordinate plane, table, graph, equations, unit rate</p>	<p>Explain how to recognize in a given proportional situation that the two “between ratios” and the two “within ratios” are the same</p> <p>Explain how to distinguish between additive and multiplicative situations</p> <p>Recognize that two equal ratios represent a proportion</p> <p>Recognize and represent the connection between equivalent ratios, values in a table, and graphed ordered pairs</p> <p>Explain how to express unit rates using a variety of representations, given a contextual situation</p> <p>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.</p>	<p>Common Core Sample Lessons:</p> <p>Estimating: Counting Trees http://www.map.mathshell.org/materials/lessons.php?taskid=422&subpage=problem</p> <p>Checking Proportionality: http://www.purplemath.com/modules/ratio3.htm</p> <p>Linear Graphs Using Proportions and Rates Graph proportional relationships. Identify the unit rate as the slope of the related line</p> <p>Finding Slope of a Line from Graphs, Tables, Ordered Pairs Define slope as the ratio of the vertical change to the horizontal change. Recognize slope from tables, ordered pairs, or graphs. Show that slope is constant using similarity of right triangles</p>	<p>Common Core State Standard Task(s)</p> <ul style="list-style-type: none"> Ratios and Proportional Relationships (this link contains 7 short tasks) http://www.map.mathshell.org/materials/tasks.php?subpage=novice&taskid=397 Buses: Apprentice Level Task: http://www.map.mathshell.org/materials/tasks.php?taskid=365&subpage=apprentice Counting Trees: Expert Level Task http://www.map.mathshell.org/materials/tasks.php?taskid=386&subpage=expert Art Class Variation 1 http://www.illustrativemathematics.org/illustrations/100 Art Class Variation 2 http://www.illustrativemathematics.org/illustrations/101 Buying Coffee http://www.illustrativemathematics.org/illustrations/101 Robot Races http://www.illustrativemathematics.org/illustrations/181 	<p>Intervention/Enrichment:</p> <ul style="list-style-type: none"> Stanford Math Enrichment Master (Chapter Resource Masters) Are You Ready for the Chapter? Apply Section (Chapter Resource Masters) Destination Math Differentiated Instruction Options (See Teacher’s ED) Chapter Project Small/Whole Group instruction Collaborative grouping for tasks completion 	<ul style="list-style-type: none"> Teacher’s Edition CD Rom Graphing Calculators Destination Math Publisher’s Website: connectED.mcgraw-hill.com NCTM Website: http://illuminations.nctm.org www.internet4classrooms.com www.tnelc.org www.education.ti.com Interactive Manipulatives: http://nlvm.usu.edu/ STEM Resources: http://www.stemresources.com/ Informational Math Site (PowerPoints/Games) http://jc-schools.net/index.html www.softschools.com Examview Pro www.brightstorm.com http://exchange.smarttech.com www.discoveryeducation.com

CCSS Math Standards

Week 8-9, con't

7.RP.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams and verbal descriptions.

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.

Common Core Task Activity

The purpose of this exercise is to help students become accustomed to using the CCSS mathematical practices that must be employed to become mathematically proficient. It is imperative that the use of the mathematical practices become routine and embedded within students' thinking. Therefore, this activity promotes self actualization of the practices within a task as well as knowledge of the content standards. Teachers are strongly encouraged to do this activity with their students as it contains benchmark papers and annotated student work. The students have an opportunity to look closely at what the task requires in regards to content, to demonstrate mastery and discover why the math practices are important. In addition, this activity will help teachers understand the expectations of the PBA and provide guidance for planning future lessons.

[Grade 7 Math: Proportional Reasoning](#) This link contains a NYC Depart of Education document that has a sequence of tasks that ask students to demonstrate their understanding of ratios and proportional relationships, with a focus on expressions and equations.

Using the information in the link above:

1. Have students complete assessment item #1 (Amy's Vacation) on p. 5. Allow 10-15 minutes of Private Think Time for students to work independently on the question. Then allow groups of four to discuss the problem and how each person solved it.
2. Review with students the Benchmark papers (pp. 14-16) and the Annotated Student Work (pp. 32-35). Discuss why each student received their score and the processes and proficiencies that each student demonstrated as they relate to the mathematical practice standards.
3. Based on this discussion allow students to analyze and score their own work or each other's work.
4. Please give special attention to the information about the mathematical practices that each student demonstrated and how that factored into the overall score.
5. Allow students to identify the mathematical practices that they think they demonstrated in solving the problem.
6. Use the 'Next Instructional Steps' (pp. 36-39) information as a tool for discussion, as well as for enrichment.

Knowledge and Skills	Essential Understandings	Resources & Instructional Practices	Assessments	Differentiated Instruction	Technology & Additional Web-based Resources
<p>Common Core State Standards Crosswalk Correlations</p>					
<p>EE.7.1 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.</p>					
<p>EE.7.2 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.”</p>					
<p>EE.7.3 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 $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$250. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ 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.</p>					
<p>EE.7.4 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.</p>					
<p>EE.7.4.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?</p>					
<p>EE.7.4.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.</p>					
<p>RP.7.2.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.</p>					
<p>RP.7.2.b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p>					
<p>RP.7.2.c Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.</p>					
<p>RP.7.2.d Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.</p>					