

GLE 0806.3.3 (EE.8.8, EE.8.8.b, F.8.1) Solve systems of linear equations in two variables. 8.F Define, evaluate, and compare functions.

| Knowledge and Skills   | Checks for Understanding & Guiding Question(s)   | Resources & Instructional Practices  | Assessments                | Differentiated Instruction | Technology & Additional Web-based Resources |        |    |     |        |     |     |        |     |     |   |   |  |
|--|--|--|----------------------------|----------------------------|---|--------|----|-----|--------|-----|-----|--------|-----|-----|---|---|--|
| <p><b>Weeks 1-5</b><br/> <b>SPI 0806.3.1 (EE.8.8.b)</b><br/>                     Find solutions to systems of two linear equations in two variables.<br/> <a href="#">NCTM Illuminations: Systems of Equations</a><br/> <a href="#">Systems of Linear Equations</a><br/>                     Definitions and examples<br/> <a href="#">Systems of Equations</a> Video tutorial, worksheets and word problems<br/> <a href="#">Buying Chips and Candy CCSS Task</a> This problem gives you the chance to form and solve a pair of linear equations in a practical situation</p> <p><b>8.F.1</b><br/>                     Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.</p> <p><b>SPI 0806.3.2 (EE.8.8.a)</b> Solve the linear equation <math>f(x) = g(x)</math>.</p> <p><b>Vocabulary</b><br/> <a href="#">System of equations, substitution</a></p> | <p><b>0806.3.3 (EE.8.8, EE.8.8.a)</b> Solve systems of linear equations in two variables and relate the systems to pairs of lines that intersect, are parallel, or are the same line.<br/> <a href="#">Systems of Linear Equations</a> Lesson with interactive graph<br/> <a href="#">Solve Systems of Linear Equations in Two Variables</a> ppt lesson</p> <p><b>0806.3.4</b> Understand the relationship between the graph of a linear inequality and its solutions.<br/> <a href="#">Graph Linear Inequalities</a> ppt lesson<br/> <a href="#">SMART Exchange Lesson</a></p> <p><b>0806.3.5</b> Solve linear inequalities in two variables (including those whose solutions require multiplication or division by a negative number).</p> <p><b>0806.3.6 (F.8.4)</b> Identify x- and y-intercepts and slope of linear equations from an equation, graph or table.</p> <p><b>Guiding Question(s):</b><br/>                     Why are exponents and exponential functions important to simplifying many real world problems involving math and science?<br/>                     How are graphing equations similar as well as different from graphing inequalities?<br/>                     What are the algebraic skills used to rewrite linear equations/inequalities in various forms?</p> | <p><b>Glencoe TN Math Connects Course 3</b></p> <p>Ch 6 Lessons 3A p. 370, 3B p. 372, 3C p. 373, 3D p. 378</p> <ul style="list-style-type: none"> <li>5-Minute Check; Foldables; Chapter Resource Masters</li> <li>Spiral Review p. 377</li> <li>H.O.T. Problems pp. 377, 381</li> <li>Test Practice pp. 377, 381</li> <li>PSI Problem Solving Investigation p. 370</li> <li>Chapter Study Guide &amp; Review pp.384-387</li> <li><b>Hands-On Activity Tools &amp; Resources, p. 20</b></li> <li>Quick Review Math Handbook, pp. 309-312</li> </ul> <p>Give students problems such as the one outlined below to solve using graphical and algebraic methods.</p> <p>Joan King is marketing director for the BurgerRama restaurant chain. BurgerRama has decided to have a cartoon-character doll made to sell at a premium price at participating BurgerRama locations. The company can choose from several different versions of the doll that sell at different prices. King's problem is to decide which selling price will best suit the needs of BurgerRama's customers and store managers. King has data from previous similar promotions to help her make a decision.</p> <table border="1"> <thead> <tr> <th>Selling Price of Each Doll</th> <th># Supplied week/store</th> <th># Requested week/store</th> </tr> </thead> <tbody> <tr> <td>\$1.00</td> <td>35</td> <td>530</td> </tr> <tr> <td>\$2.00</td> <td>130</td> <td>400</td> </tr> <tr> <td>\$4.00</td> <td>320</td> <td>140</td> </tr> </tbody> </table> <p><b>8.F.1</b><br/>                     For example, the rule that takes <math>x</math> as input and gives <math>x^2+5x+4</math> as output is a function. Using <math>y</math> to stand for the output we can represent this function with the equation <math>y = x^2+5x+4</math>, and the graph of the equation is the graph of the function. Students are not yet expected use function notation such as <math>f(x) = x^2+5x+4</math>.</p> | Selling Price of Each Doll | # Supplied week/store      | # Requested week/store                      | \$1.00 | 35 | 530 | \$2.00 | 130 | 400 | \$4.00 | 320 | 140 | <ul style="list-style-type: none"> <li>Are You Ready for the Chapter? P. 336</li> <li>Stop and Reflect pp. 356, 368, 379</li> <li>Self Check Quiz</li> <li>Mid-Chapter Check p. 369</li> <li>Lesson Quizzes (CRM)</li> <li>Practice Chapter Test p. 388</li> <li>Preparing for Standardized Tests p. 389</li> <li>Test Practice p. 390</li> <li>Chapter Test CRM</li> <li>Mastering TCAP Workbook practice by SPI</li> </ul> <p><b>Sample TCAP Question(s)</b><br/>                     What is the solution for <math>x</math> in the equation <math>f(x)=g(x)</math>, where <math>f(x)=30-0.5x</math> and <math>g(x)=2x-15</math>?</p> <ol style="list-style-type: none"> <li><math>X=6</math></li> <li><math>X=10</math></li> <li><math>X=18</math></li> <li><math>X=30</math></li> <li></li> </ol> <p><a href="#">Sample TCAP Questions SPI 0806.3.1</a></p> <p>What is the solution for <math>a</math> in this inequality? <math>4+4a+3b \geq 5b+a+1</math></p> <ol style="list-style-type: none"> <li><math>a \geq (2/3)b - 1</math></li> <li><math>a \geq (8/5)b - 1</math></li> <li><math>a \geq (2/5)b - 3</math></li> <li><math>a \geq (8/3)b - 3</math></li> </ol> | <p><b>Intervention:</b></p> <ul style="list-style-type: none"> <li>Stanford Math (90 minutes/week)</li> <li>Reteach Masters (Chapter Resource Masters)</li> <li>Response to Intervention(TE) p. 336A</li> <li>Differentiated Instruction Options (TE) p.337c, 357c, 370c</li> <li>Quick Checks (TE) pp.342, 349, 356, 362, 366, 371, 377, 381</li> <li>Destination Math</li> </ul> <p><b>Enrichment:</b></p> <ul style="list-style-type: none"> <li>Stanford Math (90 minutes/week)</li> <li>Enrichment Masters (Chapter Resource Masters)</li> <li>Differentiated Instruction Options (TE) p.337c, 357c, 370c</li> <li>Quick Checks (TE) pp.342, 349, 356, 362, 366, 371, 377, 381</li> <li>.Destination Math</li> </ul> | <p>Teachers Edition CD<br/>                     Graphing Calculators<br/>                     Destination Math<br/>                     Examview Pro<br/>                     Stanford Math Browser<br/>                     Publishers Website:<br/> <a href="http://connectED.mcgraw-hill.com">http://connectED.mcgraw-hill.com</a><br/>                     NCTM Website:<br/> <a href="http://illuminations.nctm.org">http://illuminations.nctm.org</a><br/> <a href="http://www.internet4classrooms.com">www.internet4classrooms.com</a><br/> <a href="http://www.tnelc.org">www.tnelc.org</a><br/> <a href="http://www.education.ti.com">www.education.ti.com</a><br/>                     Interactive Manipulatives:<br/> <a href="http://nlvm.usu.edu/">http://nlvm.usu.edu/</a><br/>                     STEM Resources:<br/> <a href="http://www.stemsources.com">http://www.stemsources.com</a><br/>                     Informational Math Site (Power Points/Games) <a href="http://jcschools.net/index.html">http://jcschools.net/index.html</a><br/> <a href="http://softschools.com">http://softschools.com</a><br/> <a href="http://www.brightstorm.com">www.brightstorm.com</a><br/> <a href="http://exchange.smarttech.com">http://exchange.smarttech.com</a><br/> <a href="http://www.discoveryeducation.com">www.discoveryeducation.com</a><br/> <a href="http://www.insidemathematics.org">www.insidemathematics.org</a></p> |
| Selling Price of Each Doll   | # Supplied week/store  | # Requested week/store   |                            |                            |   |        |    |     |        |     |     |        |     |     |   |   |  |
| \$1.00   | 35   | 530  |                            |                            |   |        |    |     |        |     |     |        |     |     |   |   |  |
| \$2.00   | 130  | 400  |                            |                            |   |        |    |     |        |     |     |        |     |     |   |   |  |
| \$4.00   | 320  | 140  |                            |                            |   |        |    |     |        |     |     |        |     |     |   |   |  |

# Second Nine Weeks Instructional Map

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# Subject Pre-algebra Grade 8

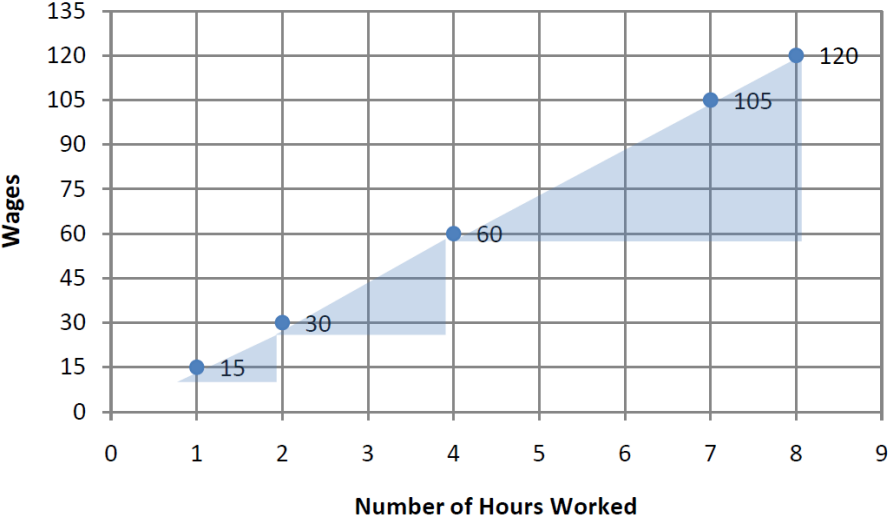
GLE 0806.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.

| Knowledge and Skills  | Guiding Question(s)  | Resources & Instructional Practices  | Assessments  | Differentiated Instruction   | Technology & Additional Web-based Resources   |
|---|--|--|--|--|---|
| <p><b>Weeks 1-5, con't</b></p> <p><b>SPI 0806.1.1</b> Solve problems involving rate/time/distance (i.e. <math>d=rt</math>)</p> <p><a href="#">Distance, Rate and Time Word Problems w/Answers</a></p> | <p>How is proportional reasoning used to solve real-world problems involving rate/distance/time?</p> | <p><b>Glencoe TN Math Connects Course 3 Additional Lesson 13, pp. 824-826 SE</b></p> <p>You will need a measuring tape, a stopwatch, a pencil, a calculator and the table you have created for recording data. To conduct the experiment, your group will need a walker, a timer and a recorder. Take turns performing these tasks. Make sure that each person in your group travels the 20 yards 4 times using different rates of speed (walking, skipping, jogging, and running) and that each person's data is recorded. Time should be recorded to the nearest second. Before going to the site of the experiment, you should create a table for recording your data. Remember that each person in your group will have four sets of data. You should record distance, rate and time (to the nearest second) for each person. Think about the equation, <math>d = rt</math> (distance = rate x time). Solve the equation for <math>r</math> (rate). Show your work. How will you determine each person's rate? What units should you use for rate?</p> | <ul style="list-style-type: none"> <li>• Are You Ready for the Chapter? P. 336</li> <li>• Stop and Reflect pp. 356, 368, 379</li> <li>• Self Check Quiz</li> <li>• Mid-Chapter Check p. 369</li> <li>• Lesson Quizzes (CRM)</li> <li>• Practice Chapter Test p. 388</li> <li>• Preparing for Standardized Tests p. 389</li> <li>• Test Practice p. 390</li> <li>• Chapter Test CRM</li> <li>• Mastering TCAP Workbook practice by SPI</li> </ul> | <p><b>Intervention</b></p> <p>If students have had little experience with rates, do some simple exercises in class to help them understand the idea of a constant rate. For instance, ask students to try such exercises as turning the pages of a book or tapping a pencil at a steady rate that they can recreate over several trials. This can work well in partners, with one student doing the motion and the other student timing and recording the motion. <a href="#">Distance Word Problems (with worked solutions &amp; videos)</a> Use in small groups</p> <p><b>Enrichment</b></p> <p><a href="#">Word Problems: Distance I (d = rt)</a></p> | <p>Teachers Edition CD<br/>Graphing Calculators<br/>Destination Math<br/>Examview Pro<br/>Stanford Math Browser<br/>Publishers Website:<br/><a href="http://connectED.mcgraw-hill.com">http://connectED.mcgraw-hill.com</a><br/>NCTM Website:<br/><a href="http://illuminations.nctm.org">http://illuminations.nctm.org</a><br/><a href="http://www.internet4classrooms.com">www.internet4classrooms.com</a><br/><a href="http://www.tnelc.org">www.tnelc.org</a><br/><a href="http://www.education.ti.com">www.education.ti.com</a><br/>Interactive Manipulatives:<br/><a href="http://nlvm.usu.edu/">http://nlvm.usu.edu/</a><br/>STEM Resources:<br/><a href="http://www.stemsources.com">http://www.stemsources.com</a><br/>Informational Math Site (Power Points/Games) <a href="http://jc-schools.net/index.html">http://jc-schools.net/index.html</a><br/><a href="http://softschools.com">http://softschools.com</a><br/><a href="http://www.brightstorm.com">www.brightstorm.com</a><br/><a href="http://exchange.smarttech.com">http://exchange.smarttech.com</a><br/><a href="http://www.discoveryeducation.com">www.discoveryeducation.com</a><br/><a href="http://www.insidemathematics.org">www.insidemathematics.org</a></p> |

Expressions and Equations (8.EE) Understand the connections between proportional relationships, lines and linear equations.  
Functions (8.F) Define, evaluate and compare functions.

| Standard  | Mathematical Practices  | Resources & Instructional Practices   | Essential Question  |
|---|---|---|---|
| <p><b>Weeks 1-5, con't</b></p> <p><b>8.EE.5</b> Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. <i>For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.</i></p> <p><b>8.F.2</b> Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.</i></p> <p>Vocabulary<br/>Linear relationship, constant rate of change, slope, rise, run, qualitative graph, standard form, x-intercept</p> | <p>8.MP.1 Make sense of problems and persevere in solving them.</p> <p>8.MP.2 Reason abstractly and quantitatively.</p> <p>8.MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>8.MP.4 Model with mathematics.</p> <p>8.MP.5 Use appropriate tools strategically.</p> <p>8.MP.6 Attend to precision.</p> <p>8.MP.7 Look for and make use of structure.</p> <p>8.MP.8 Look for and express regularity in repeated reasoning.</p> | <p>Glencoe TN Math Connects Course 3<br/>Ch 6 Lessons 1A pp. 337-342, <b>Explore 1B p. 343</b>, 1C pp. 344-349, <b>Explore 1D p. 350</b>; 2B pp. 363-366</p> <p><b>Additional Lesson 5</b>, <u>Compare Properties of Functions</u>, pp. 785-790 SE<br/><b>Additional Lesson 13</b>, <u>Distance, Rate and Time</u>, pp. 824-826</p> <p><b>CCSS Practice Tasks</b><br/><a href="#">Coffee by the Pound: Task</a><br/><a href="#">Comparing Speeds in Graphs and Equations: Task</a></p> <p><a href="#">Linear Graphs</a></p> <p><b>Example:</b><br/>Emily runs at a rate 3 feet per second. John runs at a rate of 2 feet per second. Emily and John decide to race. John gets a 50 feet head start. If the race is 200 feet long, who will win the race?<br/>Teacher Note: Students can solve algebraically (writing both equations), graphically (looking for when the y value is 200 feet), numerically (creating tables).</p> <ol style="list-style-type: none"> <li>Who runs faster?</li> <li>At what point in the race, will John and Emily be in the same place?</li> <li>In order for Emily and John to tie, how much of a head start does John need?</li> </ol> | <p>How can patterns, relations, and functions be used as tools to best describe and help explain real-life relationships?</p> |

Expressions and Equations (8.EE) Understand the connections between proportional relationships, lines and linear equations.

| Standard   | Mathematical Practices  | Resources & Instructional Practices   | Essential Question  |
|--|---|---|---|
| <p><b>Weeks 1-5, con't</b></p> <p><b>8.EE.6</b> Use similar triangles to explain why the slope <math>m</math> is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation <math>y = mx + b</math> for a line through the origin and the equation <math>y = mx + b</math> for a line intercepting the vertical axis at <math>b</math>.</p> <p><b>8.F.3</b> Interpret the equation <math>y = mx + b</math> as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. <i>For example, the function <math>A = s^2</math> giving the area of a square as a function of its side length is not linear because its graph contains the points <math>(1, 1)</math>, <math>(2, 4)</math> and <math>(3, 9)</math>, which are not on a straight line.</i></p> <p><b>Vocabulary</b><br/>                     Direct variation<br/>                     Constant of variation<br/>                     Slope-intercept form<br/>                     y-intercept, boundary,<br/>                     half-plane</p> | <p>8.MP.1 Make sense of problems and persevere in solving them.</p> <p>8.MP.2 Reason abstractly and quantitatively.</p> <p>8.MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>8.MP.4 Model with mathematics.</p> <p>8.MP.5 Use appropriate tools strategically.</p> <p>8.MP.6 Attend to precision.</p> <p>8.MP.7 Look for and make use of structure.</p> <p>8.MP.8 Look for and express regularity in repeated reasoning.</p> | <p>Glencoe TN Math Connects Course 3 Ch 6 Lessons 1E pp. 351-256; 2A pp. 357-362</p> <p><a href="#">Write an Equation in Slope-Intercept Form Given Two Points Video</a><br/> <a href="#">Interpret the Rate of Change Within the Context of Everyday Life Video</a></p> <p><b>CCSS Practice Tasks: Triangles Task</b></p> <p>For complete lesson guide to the Triangles Task see pp. 50-58 <a href="#">Triangles Task</a></p> <p>The data shown in the graph below reflects average wages earned by machinists across the nation.</p>  <p>a. What hourly rate is indicated by the graph? Explain how you determined your answer.</p> <p>b. What is the ratio of the height to the base of the small, medium and large triangles? What patterns do you observe? What might account for those patterns?</p> <p>c. The slope of a line is found by forming the ratio of the change in <math>y</math> to the change in <math>x</math> between any two points on the line. What is the slope of the line formed by the data points in the above graph? Explain how you know.</p> <p>d. According to the graph, in a 40-hour week, how much will the average machinist earn? How do you know?</p> | <p>How can you use graphs to analyze the nature of changes in quantities in linear relationships?</p> |

# Second Nine Weeks Instructional Map

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# Subject Pre-algebra Grade 8

GLE 0806.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving and to create accurate and reliable models of mathematical concepts.

| Knowledge and Skills  | Guiding Question(s)  | Resources & Instructional Practices  | Assessments   | Intervention/Enrichment   | Technology & Additional Web-based Resources  |
|---|--|--|---|---|--|
| <p><b>Week 6</b></p> <p><b>SPI 0806.1.3</b> Calculates rates involving cost per unit to determine the best buy.</p> <p><u>CCSS Task: Picking Apples</u><br/>This problem gives the chance to work out costs for different rules.</p> <p><b>Vocabulary</b><br/>Literal equation, degree, Celsius (°C), Fahrenheit (°F), Kelvin (K), unit ratio, accuracy, precision, unit rate, derived unit</p> | <p><i>How can you calculate rates involving cost per unit to determine the best buy?</i></p> | <p>Glencoe Math TN Connects Course 3 <b>Chapter 9 Lesson 2C</b>- p. 561-564</p> <ul style="list-style-type: none"> <li>Test Practice (TN Icon) - 564</li> <li>Chapter Resources Masters</li> </ul> <p><u>Ratios, Unit Rates and Proportions</u> Correlates to SPI 0806.1.3<br/>Students will compare quantities using ratios, rates, and proportions</p> | <ul style="list-style-type: none"> <li>Chapter Study Guide pp. 572-575</li> <li>Chapter Test p. 576</li> <li>Preparing for Standardized Tests pp.577</li> <li>Chapter 9 Test (Chapter Resource Masters)</li> <li>Chapter Quizzes (Chapter Resource Masters)</li> <li>Test Practice p. 578-579</li> <li>Self Checks</li> <li>Mastering TCAP Workbooks (Practice Specific by SPI</li> </ul> | <p><b>Intervention:</b></p> <ul style="list-style-type: none"> <li>Stanford Math Browser</li> <li>Stanford Math (90 min/wk)</li> <li>Destination Math</li> <li>Response to Intervention p. 540A (TE)</li> <li>Quick Checks (TE) p. 564</li> <li>Are You Ready? P. 540</li> <li>Re-teach (Chapter Resource Masters)</li> <li>Differentiated Instruction Options (TE p.541 &amp;553c and d)</li> </ul> <p><b>Enrichment:</b></p> <ul style="list-style-type: none"> <li>Stanford Math</li> <li>Enrichment Masters (Chapter Resource Masters)</li> <li>Career Connection (TE p. 570-571)</li> <li>Destination Math</li> <li>Differentiated Instruction Options (TE p.541c and 553c &amp;d)</li> <li>Are You Ready? p. 540</li> </ul> | <p>Graphing Calculator<br/>Destinations Math<br/>Teacher's Edition CD<br/>Exam View Pro<br/>Stanford Math Browser<br/><a href="http://www.connected.mcgraw-hill.com">www.connected.mcgraw-hill.com</a> (Publisher's Website)<br/><a href="http://illuminations.nctm.org">http://illuminations.nctm.org</a> (NCTM Website)<br/><a href="http://www.tnelc.org/math">www.tnelc.org/math</a><br/><a href="http://education.ti.com">http://education.ti.com</a><br/><a href="http://www.brightstorm.com">www.brightstorm.com</a><br/><a href="http://nlvm.usu.edu">http://nlvm.usu.edu</a> (Virtual Manipulatives)<br/><a href="http://www.internet4classrooms.com">www.internet4classrooms.com</a><br/><a href="http://www.stemresources.com">www.stemresources.com</a><br/><a href="http://jc-schools.net/index.html">http://jc-schools.net/index.html</a><br/><a href="http://www.softschools.com">www.softschools.com</a><br/><a href="http://www.exchange.smarttech.com">www.exchange.smarttech.com</a><br/><a href="http://www.discoveryeducation.com">www.discoveryeducation.com</a><br/>Are You Ready Online Readiness Quiz<br/><a href="http://www.americanbookcompany.com/TN/pdfs/TN8Math.pdf">http://www.americanbookcompany.com/TN/pdfs/TN8Math.pdf</a><br/><a href="http://education.jlab.org/solquiz/">http://education.jlab.org/solquiz/</a><br/><a href="http://www.mystfx.ca/special/mathproblems/">http://www.mystfx.ca/special/mathproblems/</a><br/><a href="http://www.studyzone.org/mtestprep/">http://www.studyzone.org/mtestprep/</a></p> |



Expressions and Equations (8.EE) Understand the connections between proportional relationships, lines and linear equations.

| CCSS Math Standards   | Common Core Task Activity  |
|---|--|
| <p>Week 6, con't</p> <p><b>8.EE.5</b> Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. <i>For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.</i></p> <p><b>8.EE.6.</b> Use similar triangles to explain why the slope <math>m</math> is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation <math>y = mx</math> for a line through the origin and the equation <math>y = mx + b</math> for a line intercepting the vertical axis at <math>b</math>.</p> | <p>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.</p> <p><a href="#">Grade 8 Math: Expressions and Equations</a> 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.</p> <p><b>Using the information in the link above:</b></p> <ol style="list-style-type: none"> <li><b>1. Have students complete assessment item #1 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.</b></li> <li><b>2. Review with students the Benchmark papers (pp. 14-16) and the Annotated Student Work (pp. 36-39). Discuss why each student received their score and the processes and proficiencies that each student demonstrated as they relate to the mathematical practice standards.</b></li> <li><b>3. Based on this discussion allow students to analyze and score their own work or each other's work.</b></li> <li><b>4. Please give special attention to the information about the mathematical practices that each student demonstrated and how that factored into the overall score. Allow students to identify the mathematical practices that they think they demonstrated in solving the problem.</b></li> <li><b>5. Use the 'Next Instructional Steps' (pp. 33-35) information as a tool for discussion, as well as for enrichment.</b></li> </ol> |

# Second Nine Weeks Instructional Map

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# Subject Pre-algebra Grade 8

GLE 0806.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution. GLE 0806.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies. GLE 0806.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning. GLE 0806.2.2 (EE.8.4) Solve problems involving exponents and scientific notation using technology appropriately

| Knowledge and Skills  | Checks for Understanding & Guiding Question(s)   | Resources & Instructional Practices  | Assessments  | Intervention/Enrichment  | Technology & Additional Web-based Resources  |
|---|--|--|--|--|--|
| <p><b>Weeks 7-9</b></p> <p><b>SPI 0806.2.3</b> Use scientific notation to compute products and quotients. (EE.8.3)<br/><a href="#">Scientific Notation   Khan Academy</a></p> <p><b>SPI 0806.2.4</b> Solve real-world problems requiring scientific notation. (EE.8.4)<br/><a href="#">Scientific Notation Problems</a><br/><a href="#">Scientific Notation Word Problem video</a></p> <p><b>Vocabulary</b><br/>Scientific notation</p> | <p><b>0806.2.6</b> Simplify expressions using laws of exponents. (EE.8.1)<br/><a href="#">Exponents Worksheets</a> scroll to Laws of Exponents<br/><a href="#">Laws of Exponents: Simplifying Expressions - All Operations 1</a><br/><a href="#">Scientific Notation Calculator</a></p> <p><b>0806.2.1</b> (EE.8.1) Recognize and use exponential, scientific, and calculator notation</p> <p><b>0806.2.7</b> Add, subtract, multiply, and divide numbers expressed in scientific notation. (EE.8.4)<br/><a href="#">Scientific Notation: Four Operations</a></p> <p><b>Guiding Questions</b></p> <p>How is scientific notation an example of an exponential relationship?</p> <p>How is scientific notation similar to numeric representations for place value?</p> | <p><b>Glencoe Math TN Connects Course 3 Chapter 2 Lessons-</b> 1A p. 91, 1B p. 97, 1C p.102, 1D p. 106, 2A p. 108, 2B p. 113, 2C p. 118</p> <ul style="list-style-type: none"> <li>5 minute checks</li> <li>H.O. T. problems- pp. 96, 101, 105, 112, 116, 121, 128, 134, 139, 160, 165, 169, 176, 180, 186, 190, 195, 201, &amp; 206.</li> <li>Spiral Reviews pp. 105, 112, 117, 122, 128, 134, 139, 165, 170, 176, 181, 186, 190, 195, 201, and 206</li> <li>Problem Solving pp. 106, 141, 154, 196</li> <li>Chapter 2 &amp; 3 Study Guide and Review p.142-145 &amp; 207 – 211</li> <li>Test Practice (TN Icon) - pp.96, 101, 105, 112, 117, 122, 128, 134, 139,160, 165, 170, 176, 181, 186, 190, 195, 201, &amp; 206.</li> <li>Hands on Activity Tools (See TE)</li> <li>Quick Review Math Handbook</li> <li>Foldable</li> <li>Chapter Resources Masters</li> <li>Studying Math p.153</li> </ul> | <ul style="list-style-type: none"> <li>Are You Ready? Pp.90 &amp; 152</li> <li>Ticket out the Door pp. 112, 181, &amp; 195</li> <li>Stop and Reflect Ch 2 &amp; 3 p. 105, 121, 139, 170, 181, 195, and 206</li> <li>Mid-Chapter 2 &amp; 3 Check p. 123 &amp; 182</li> <li>Problem Solving pp. 106, 141, 154, 196</li> <li>Chapter 2 &amp; 3 Study Guide and Review p.142-145 &amp; 207 - 211</li> <li>Practice Chapter 2 &amp; 3 Test p. 146 &amp; 212</li> <li>Chapter Test (Chapter Resource Masters)</li> <li>Preparing for Standardized Tests p. 147 &amp; 213</li> <li>Mastering TCAP Workbook (Practice by Specific SPI)</li> <li>Chapter Quizzes (Chapter Resources Masters)</li> <li>Test Practice p. 148-149 &amp; 214 - 215</li> <li>Self Check s</li> </ul> | <p><b>Intervention:</b></p> <ul style="list-style-type: none"> <li>Stanford Math Browser</li> <li>Stanford Math (90 min/wk)</li> <li>Destination Math</li> <li>Response to Intervention p. 90 A &amp; 152 A (TE)</li> <li>Quick Checks (TE) p. 96, 105, 112, 117, 128, 134, 139, 160, 165, 170, 176, 181, 186, 190, 195, 201, and 206.</li> <li>Are You Ready? P. 90 &amp; 152</li> <li>Re-teach (Chapter Resource Masters)</li> <li>Differentiated Instruction Options (TE p.27c, 50c, and 64c)</li> </ul> <p><b>Enrichment:</b></p> <ul style="list-style-type: none"> <li>Stanford Math</li> <li>Enrichment Masters (Chapter Resource Masters)</li> <li>Career Connection (TE p. 140 &amp; 196)</li> <li>Destination Math</li> <li>Differentiated Instruction Options (TE p.27c, 50c, and 64c)</li> <li>Are You Ready? P. 90 &amp; 152</li> <li>Chapter Projects pp. 88 &amp; 150 (TE)</li> </ul> | <p>Graphing Calculator<br/>Destinations Math<br/>Teacher's Edition CD<br/>Exam View Pro<br/>Stanford Math Browser<br/><a href="http://www.connected.mcgraw-hill.com">www.connected.mcgraw-hill.com</a> (Publisher's Website)<br/><a href="http://illuminations.nctm.org">http://illuminations.nctm.org</a> (NCTM Website)<br/><a href="http://www.tnelc.org/math">www.tnelc.org/math</a><br/><a href="http://education.ti.com">http://education.ti.com</a><br/><a href="http://www.brightstorm.com">www.brightstorm.com</a><br/><a href="http://nlvm.usu.edu">http://nlvm.usu.edu</a> (Virtual Manipulatives)<br/><a href="http://www.internet4classrooms.com">www.internet4classrooms.com</a><br/><a href="http://www.stemresources.com">www.stemresources.com</a><br/><a href="http://jc-schools.net/index.html">http://jc-schools.net/index.html</a><br/><a href="http://www.softschools.com">www.softschools.com</a><br/><a href="http://www.exchange.smarttech.com">www.exchange.smarttech.com</a><br/><a href="http://www.discoveryeducation.com">www.discoveryeducation.com</a><br/>Are You Ready Online Readiness Quiz<br/><a href="http://www.americanbookcompany.com/TN/pdfs/TN8Math.pdf">http://www.americanbookcompany.com/TN/pdfs/TN8Math.pdf</a><br/><a href="http://education.jlab.org/solquiz/">http://education.jlab.org/solquiz/</a><br/><a href="http://www.mystfx.ca/special/mathproblems/">http://www.mystfx.ca/special/mathproblems/</a><br/><a href="http://www.studyzone.org/mtestprep/">http://www.studyzone.org/mtestprep/</a></p> |

# Second Nine Weeks Instructional Map

**DRAFT**

# Subject Pre-algebra Grade 8

GLE 0806.1.2 Apply and adapt a variety of appropriate strategies to problem solving including estimation, and reasonableness of the solution. GLE 0806.2.3 Solve real-world problems using rational and irrational numbers.  
GLE 0806.2.1 (NS.8.1) Extend understanding of the real number system to include irrational numbers.

| Knowledge and Skills  | Checks for Understanding & Guiding Question(s)  | Resources & Instructional Practices  | Assessments  | Intervention/Enrichment  | Technology & Additional Web-based Resources  |
|---|---|--|--|--|--|
| <p><b>Weeks 7-9</b></p> <p>SPI 0806.2.1 Order and compare rational and irrational numbers and locate on the number line. (NS.8.2) <a href="#">Basic Properties of Real Number line</a><br/><a href="#">Real Numbers &amp; Number Lines</a><br/>Slide share ppt</p> <p><a href="#">Rational and Irrational Numbers Activity</a></p> <p><a href="#">Rational Numbers ppt</a></p> <p><a href="#">Irrational Numbers</a> Lesson</p> <p><b>Vocabulary</b><br/>Rational number, terminating decimal, repeating decimal, dimensional analysis, like fractions, unlike fractions, multiplicative inverse, reciprocals</p> | <p>0806.2.4 Use a Venn diagram to represent the subsets of the real number system.<br/><a href="#">The number system Subset of Real Number System Interactive Quiz</a></p> <p><u>Guiding Question(s)</u><br/>How can the number line assist in finding the precise location of square roots?<br/>How do different forms of rational numbers help compare and order them?<br/>How do you construct a Venn Diagram that illustrates the real number system?</p> | <p>Glencoe Math TN Connects Course 3</p> <ul style="list-style-type: none"> <li>Ch 1 Lessons 1A p.28, 1B p.33, 1C p. 39,1D p.44, 2A p.50, 2B p. 52, 2C p. 58, 3A p. 64, 3B p.69, 3C p. 73, &amp; 3D p. 74</li> <li>Ch 2 Lessons 3C-3D, pp. 130-139</li> <li>5 minute checks</li> <li>H.O.T. problems- pp. 32, 37, 43, 48, 56, 63, 68, 72, and 77</li> <li>Spiral Reviews pp. 38, 43, 48, 57,63, 68, 72, and 77</li> <li>Test Practices (TN icon) pp. 32, 38, 43, 48, 57, 63, 68, 72, and 77</li> <li>Problem Solving p. 50-51, 78-79</li> <li>Study Guide and Review p. 80-83</li> <li>Hands on Activity Tools (See TE)</li> <li>Quick Review Math Handbook</li> <li>Foldable</li> <li>Chapter Resources Masters</li> <li>Writing Math p.27</li> </ul> | <ul style="list-style-type: none"> <li>Are You Ready? P. 26</li> <li>Ticket out the door pp. 43 &amp; 72</li> <li>Stop and Reflect Ch 2 p. 48, 63, and 77</li> <li>Mid-Chapter 1 Check p. 49</li> <li>Problem Solving p. 78</li> <li>Chapter 1 Study Guide and Review p.80 - 83</li> <li>Practice Chapter 1 Test p. 84</li> <li>Chapter 1 Test (Chapter Resource Masters)</li> <li>Preparing for Standardized Tests p. 85</li> <li>Test Practice Ch. 1 p. 86</li> <li>Chapter Quizzes (Chapter Resource Masters)</li> <li>Mastering TCAP Workbook (Practice by Specific SPI)</li> <li>Self Checks</li> </ul> | <p>Intervention:</p> <ul style="list-style-type: none"> <li>Stanford Math Browser</li> <li>Destination Math</li> <li>Response to Intervention p. 26 A (TE)</li> <li>Quick Checks (TE) p. 32, 38, 43,48, 50c, 51, 57, 63, 64c, 68, 72, 77, and 84</li> <li>Are You Ready? P. 26</li> <li>Re-teach (Chapter Resource Masters)</li> <li>Differentiated Instruction Options (TE p.27c, 50c, and 64c)</li> <li>Stanford Math (90 min/wk)</li> </ul> <p>Enrichment:</p> <ul style="list-style-type: none"> <li>Stanford Math Browser</li> <li>Enrichment Masters (Chapter Resource Masters)</li> <li>Career Connection (TE p. 78)</li> <li>Destination Math</li> <li>Differentiated Instruction Options (TE p.27c, 50c, and 64c)</li> <li>Chapter Project p. 24 TE</li> <li>Are You Ready p. 26</li> </ul> | <p>Graphing Calculator<br/>Destinations Math<br/>Teacher's Edition CD<br/>Exam View Pro<br/>Stanford Math Browser<br/><a href="http://www.connected.mcgraw-hill.com">www.connected.mcgraw-hill.com</a> (Publisher's Website)<br/><a href="http://illuminations.nctm.org">http://illuminations.nctm.org</a> (NCTM Website)<br/><a href="http://www.tnelc.org/math">www.tnelc.org/math</a><br/><a href="http://education.ti.com">http://education.ti.com</a><br/><a href="http://www.brightstorm.com">www.brightstorm.com</a><br/><a href="http://nlvm.usu.edu">http://nlvm.usu.edu</a> (Virtual Manipulatives)<br/><a href="http://www.internet4classrooms.com">www.internet4classrooms.com</a><br/><a href="http://www.stemresources.com">www.stemresources.com</a><br/><a href="http://jc-schools.net/index.html">http://jc-schools.net/index.html</a><br/><a href="http://www.softschools.com">www.softschools.com</a><br/><a href="http://www.exchange.smarttech.com">www.exchange.smarttech.com</a><br/><a href="http://www.discoveryeducation.com">www.discoveryeducation.com</a><br/>Are You Ready Online Readiness Quiz<br/><a href="http://www.americanbookcompany.com/TN/pdfs/TN8Math.pdf">http://www.americanbookcompany.com/TN/pdfs/TN8Math.pdf</a><br/><a href="http://education.ilab.org/solquiz/">http://education.ilab.org/solquiz/</a><br/><a href="http://www.mystfx.ca/special/mathproblems/">http://www.mystfx.ca/special/mathproblems/</a><br/><a href="http://www.studyzone.org/mtestprep/">http://www.studyzone.org/mtestprep/</a></p> |



**Common Core State Standards Crosswalk Correlations**

8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g.,  $\pi^2$ ). *For example, by truncating the decimal expansion of  $\sqrt{2}$ , show that  $\sqrt{2}$  is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*

8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,  $32 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$ .*

8.EE.2 Use square root and cube root symbols to represent solutions to equations of the form  $x^2 = p$  and  $x^3 = p$ , where  $p$  is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that  $\sqrt{2}$  is irrational.

8.EE.3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as  $3 \times 10^8$  and the population of the world as  $7 \times 10^9$ , and determine that the world population is more than 20 times larger.*

8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*

8.EE.6 Use similar triangles to explain why the slope  $m$  is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation  $y = mx$  for a line through the origin and the equation  $y = mx + b$  for a line intercepting the vertical axis at  $b$ .

8.EE.8.a Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

8.EE.8.b Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example,  $3x + 2y = 5$  and  $3x + 2y = 6$  have no solution because  $3x + 2y$  cannot simultaneously be 5 and 6.*

8.F.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.

8.F.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*

8.F.3 Interpret the equation  $y = mx + b$  as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function  $A = s^2$  giving the area of a square as a function of its side length is not linear because its graph contains the points  $(1,1)$ ,  $(2,4)$  and  $(3,9)$ , which are not on a straight line.*

8.F.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two  $(x, y)$  values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.