

**Mathematics Pacing Guide Alignment with Common Core Standards**

**Time Frame: 3 Weeks – September**

**Grade 7**

**Unit 1: Rational Numbers – Addition and Subtraction**

Common Core	GLCE	Essential Questions	Assessment	Vocabulary	Resources
<p><b>CRITICAL AREA:</b>  <b>Developing understanding of operations with rational numbers and working with expressions and linear equations</b></p> <p><b>Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers</b></p> <p>7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</p> <p>a. Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.</p> <p>b. Understand <math>p + q</math> as the number located a distance <math> q </math> from <math>p</math>, in the positive or negative direction depending on whether <math>q</math> is positive or negative. Show that a number and its opposite</p>	<p><b>FOCAL POINT:</b>  <b>Analyzing and representing linear functions and solving linear equations and systems of linear equations</b></p> <p><b>Compute with rational numbers</b></p> <p>N.FL.07.07 Solve problems involving operations with integers.</p> <p>N.FL.07.08 Add, subtract, multiply, and divide positive and negative rational numbers fluently.</p> <p>N.FL.07.09 Estimate results of computations with rational numbers.</p>	<p>What are rational numbers?</p>	<p><b>Before</b></p> <p>KWL</p> <p>Brainstorming</p> <p>Graphic Organizers</p> <p>Pretest</p> <p><b>During</b></p> <p>KWL</p> <p>Quizzes</p> <p>Daily Assignments</p> <p>Exit Card</p> <p>Pictures and Drawings</p> <ul style="list-style-type: none"> <li>Using number lines to demonstrate absolute value and opposites</li> </ul> <p>Model</p> <ul style="list-style-type: none"> <li>Students model using a human number line</li> <li>Students can use chips (counters)</li> </ul> <p><b>After</b></p> <p>KWL</p> <p>Unit Test</p> <p>Real World Problems</p>	<p>Rational number</p> <p>Irrational number</p> <p>Integers</p> <p>Whole numbers</p> <p>Real numbers</p> <p>Natural numbers</p> <p>Negative</p> <p>Positive</p> <p>Absolute value</p> <p>Number Line</p> <p>Decimals</p> <p>Repeating decimal</p>	<p><a href="http://www.svsu.edu/supo/curriculum-instruction-assessment.html">http://www.svsu.edu/supo/curriculum-instruction-assessment.html</a></p> <p>Glencoe Mathematics: Pre-Algebra</p> <p>McDougal and Littell: Math Course 2</p> <p>Prentice Hall Mathematics: Pre-Algebra</p> <p>Glencoe Mathematics: Course 2</p> <p>Glencoe Mathematics: Applications and Concepts/Course 2</p> <p>Numerous Skills Practice, Algebra and Pre-Algebra Workbooks</p> <p>Curriculum Crafter</p>

<p>have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.</p> <p>c. Understand subtraction of rational numbers as adding the additive inverse, <math>p - q = p + (-q)</math>. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.</p> <p>d. Apply properties of operations as strategies to add and subtract rational numbers.</p>					
<p><b>Content moving into 7th</b>  <b>Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers</b>  7.NS.2 Apply and extend previous understandings of multiplication and division of fractions to multiply and divide rational numbers.  d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p>	<p><b>Content moving into 7th</b>  <b>Understand real number concepts</b>  N.ME.08.03 Understand that in decimal form, rational numbers either terminate or eventually repeat, and that calculators truncate or round repeating decimals; locate rational number on the number line; know fraction forms of common repeating decimals, e.g., <math>0.1</math> (repeating) = <math>1/9</math> ; <math>0.3</math> (repeating) = <math>1/3</math> .</p>				



**Mathematics Pacing Guide Alignment with Common Core Standards**

**Time Frame: 3 Weeks – September/October**

**Grade 7**

**Unit 2: Rational Numbers – Multiplication and Division**

Common Core	GLCE	Essential Questions	Assessment	Vocabulary	Resources
<p><b>CRITICAL AREA:</b>  <b>Developing understanding of operations with rational numbers and working with expressions and linear equations</b></p> <p><b>Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers</b></p> <p>7. NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <p>a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as <math>(-1)(-1) = 1</math> and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</p> <p>b. Understand that integers can</p>	<p><b>FOCAL POINT:</b>  <b>Analyzing and representing linear functions and solving linear equations and systems of linear equations</b></p> <p><b>Compute with rational numbers</b></p> <p>N.FL.07.07 Solve problems involving operations with integers.</p> <p>N.FL.07.08 Add, subtract, multiply, and divide positive and negative rational numbers fluently.</p> <p>N.FL.07.09 Estimate results of computations with rational numbers.</p>	<p>What are rational numbers?</p>	<p><b>Before</b>                      KWL                      Brainstorming                      Graphic Organizers                      Pretest</p> <p><b>During</b>                      KWL                      Quizzes                      Daily Assignments                      Exit Card                      Models</p> <ul style="list-style-type: none"> <li>Using colored overlays to obtain results from multiplying fractions</li> </ul> <p>Portfolio</p> <ul style="list-style-type: none"> <li>Students will create a portfolio using real world examples</li> </ul> <p><b>After</b>                      KWL                      Unit Test                      Real World Problems</p>		<p><a href="http://www.svsu.edu/supo/curriculum-instruction-assessment.html">http://www.svsu.edu/supo/curriculum-instruction-assessment.html</a></p> <p>Glenco Mathematics: Pre-Algebra</p> <p>McDougal and Littell: Math Course 2</p> <p>Prentice Hall Mathematics: Pre-Algebra</p> <p>Glenco Mathematics: Course 2</p> <p>Glenco Mathematics: Applications and Concepts/Course 2</p> <p>Numerous Skills Practice, Algebra and Pre-Algebra Workbooks</p> <p>Curriculum Crafter</p>

<p>be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If <math>p</math> and <math>q</math> are integers then <math>-(p/q) = (-p)/q = p/(-q)</math>. Interpret quotients of rational numbers by describing real-world contexts.</p> <p>c. Apply properties of operations as strategies to multiply and divide rational numbers.</p>					
<p><b>Content moving into 7th</b>  <b>Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers</b>  7. NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.  d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p>	<p><b>Content moving into 7th</b>  <b>Understand real number concepts</b>  N.ME.08.03 Understand that in decimal form, rational numbers either terminate or eventually repeat, and that calculators truncate or round repeating decimals; locate rational number on the number line; know fraction forms of common repeating decimals, e.g., <math>0.1(\text{repeating}) = 1/9</math>; <math>0.3(\text{repeating}) = 1/3</math>.</p>				
<p>7. NS.3 Solve real-world and mathematical problems involving</p>					

the four operations with rational numbers. <sup>1</sup>					
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<sup>1</sup> Computations with rational numbers extend the rules for manipulating fractions to complex fractions

**Mathematics Pacing Guide Alignment with Common Core Standards**

Time Frame: 3 Weeks – October

Grade 7

**Unit 3: Work With Radicals and Integer Exponents**

Common Core	GLCE	Essential Questions	Assessment	Vocabulary	Resources
<p><b>CRITICAL AREA:</b>  <b>Developing understanding of operations with rational numbers and working with expressions and linear equations</b></p> <p><b>Content moving out of 7th Grade into 8th Grade</b>  <b>Work with radicals and integer exponents</b></p> <p>8. EE.2 Use square root and cube root symbols to represent solutions to equations of the form <math>x^2 = p</math> and <math>x^3 = p</math>, where <math>p</math> is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that <math>\sqrt{2}</math> is irrational.</p>	<p><b>FOCAL POINT:</b>  <b>Analyzing and representing linear functions and solving linear equations and systems of linear equations</b></p> <p><b>Content moving out of 7th Grade into 8th Grade</b>  <b>Recognize irrational numbers</b>                      N.MR.07.06 Understand the concept of square root and cube root, and estimate using calculators.</p>	<p>What are radicals exponents?                      What are integer exponents?                      What is a square root? What is a cube root?</p>	<p><b>Before</b>                      KWL                      Brainstorming                      Graphic Organizers                      Pretest</p> <p><b>During</b>                      KWL                      Quizzes                      Daily Assignments                      Exit Card                      Models</p> <ul style="list-style-type: none"> <li>Build perfect squares and cubes using tiles and cubes</li> </ul> <p>Projects</p> <ul style="list-style-type: none"> <li>Students will create a story on how to estimate square and cube roots</li> </ul> <p><b>After</b>                      KWL                      Unit Test                      Real World Problems</p>	<p>Rational number                      Irrational number                      Cube root                      Square root                      Exponent</p>	<p><a href="http://www.svsu.edu/supo/curriculum-instruction-assessment.html">http://www.svsu.edu/supo/curriculum-instruction-assessment.html</a></p> <p>Glenco Mathematics: Pre-Algebra</p>

**Mathematics Pacing Guide Alignment with Common Core Standards**

**Time Frame: 3 Weeks – November**

**Grade 7**

**Unit 4: Proportional and Linear Relationships**

Common Core	GLCE	Essential Questions	Assessment	Vocabulary	Resources
<p><b>CRITICAL AREA:</b>  <b>Developing understanding of and applying proportional relationships</b></p> <p><b>Analyze proportional relationships and use them to solve real-world and mathematical problems</b>                      7. RP.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction (1/2)/(1/4) mile per hour, equivalently 2 miles per hour.</p> <p>7. RP.2 Recognize and represent proportional relationships between quantities.                      a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line</p>	<p><b>FOCAL POINT:</b>  <b>Developing an understanding of and applying proportionality, including similarity</b></p> <p><b>Understand and solve problems involving rates, ratios, and proportions</b>                      N.FL.07.03 Calculate rates of change including speed.                      N.MR.07.04 Convert ratio quantities between different systems of units, such as feet per second to miles per hour.                      N.FL.07.05 Solve proportion problems using such methods as unit rate, scaling, finding equivalent fractions, and solving the proportion equation <math>a/b = c/d</math>; know how to see patterns about proportional situations in tables.</p> <p><b>Understand and apply directly proportional relationships and relate to linear relationships</b>                      A.PA.07.01 Recognize when information given in a table, graph or formula suggests a directly proportional or linear relationship.</p>	<p>What are proportional relationships?</p> <p>What are linear relationships?</p> <p>How do proportional relationships relate to linear relationships?</p>	<p><b>Before</b>                      KWL                      Brainstorming                      Graphic Organizers                      Pretest</p> <p><b>During</b>                      KWL                      Quizzes                      Daily Assignments                      Exit Card                      Project</p> <ul style="list-style-type: none"> <li>Picking the better buy</li> <li>Debate the better car for gas millage</li> </ul> <p>Pictures</p> <ul style="list-style-type: none"> <li>Students will graph relationships</li> </ul> <p><b>After</b>                      KWL                      Unit Test                      Real World Problems</p>	<p>Derived quantities                      Density                      Velocity                      Weighted average                      Rate                      Rate of change                      Ratio                      Proportion                      Proportion equation                      Speed                      Unit rate</p>	<p><a href="http://www.svsu.edu/supo/curriculum-instruction-assessment.html">http://www.svsu.edu/supo/curriculum-instruction-assessment.html</a></p> <p>Glenco Mathematics: Pre-Algebra</p> <p>McDougal and Littell: Math Course 2</p> <p>Prentice Hall Mathematics: Pre-Algebra</p> <p>Glenco Mathematics: Course 2</p> <p>Glenco Mathematics: Applications and Concepts/Course 2</p> <p>Numerous Skills Practice, Algebra and Pre-Algebra Workbooks</p> <p>Curriculum Crafter</p>



<p>through the origin.</p> <p>b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p> <p>c. Represent proportional relationships by equations. For example, if total cost <math>t</math> is proportional to the number <math>n</math> of items purchased at a constant price <math>p</math>, the relationship between the total cost and the number of items can be expressed as <math>t = pn</math>.</p> <p>d. Explain what a point <math>(x, y)</math> on the graph of a proportional relationship means in terms of the situation, with special attention to the points <math>(0, 0)</math> and <math>(1, r)</math> where <math>r</math> is the unit rate.</p> <p>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.</p>	<p>A.RP.07.02 Represent directly proportional and linear relationships using verbal descriptions, tables, graphs, and formulas, and translate among these representations.</p> <p>A.PA.07.04 For directly proportional or linear situations, solve applied problems using graphs and equations, e.g., the heights and volume of a container with uniform cross-section; height of water in a tank being filled at a constant rate; degrees Celsius and degrees Fahrenheit; distance and time under constant speed.</p> <p>A.PA.07.05 Recognize and use directly proportional relationships of the form <math>y = mx</math>, and distinguish from linear relationships of the form <math>y = mx + b</math>, <math>b</math> non-zero; understand that in a directly proportional relationship between two quantities one quantity is a constant multiple of the other quantity.</p>				
<p><b>Content moving out of 7th Grade into High School</b> <b>Apply geometric concepts in</b></p>	<p><b>Content moving out of 7th Grade into High School</b> <b>Understand derived quantities</b></p>			<p>Derived quantities Density Velocity</p>	

<p><b>modeling situations</b>  G.MG.2 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).*</p>	<p>N.MR.07.02 Solve problems involving derived quantities such as density, velocity, and weighted averages.</p>			<p>Weighted average  Rate  Rate of change  Ratio  Proportion  Proportion equation  Speed  Unit rate  Equivalent fraction</p>	
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**Mathematics Pacing Guide Alignment with Common Core Standards**

**Time Frame: 3 Weeks – November/December**

**Grade 7**

**Unit 5: Geometric Constructions**

Common Core	GLCE	Essential Questions	Assessment	Vocabulary	Resources
<p><b>CRITICAL AREA:</b>  <b>Solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume</b></p> <p><b>Draw, construct, and describe geometrical figures and describe the relationships between them</b></p> <p>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.</p> <p>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.</p>	<p><b>Draw and construct geometric objects</b>                      G.SR.07.01 Use a ruler and other tools to draw squares, rectangles, triangles, and parallelograms with specified dimensions.</p> <p><b>Understand the concept of similar polygons, and solve related problems</b>                      G.TR.07.03 Understand that in similar polygons, corresponding angles are congruent and the ratios of corresponding sides are equal; understand the concepts of similar figures and scale factor.</p> <p>G.TR.07.04 Solve problems about similar figures and scale drawings</p> <p><b>Understand the concept of similar polygons, and solve related problems</b>                      G.TR.07.05 Show that two triangles are similar using the criteria: corresponding angles are congruent (AAA similarity); the ratios of two pairs of corresponding sides are equal and the included angles are congruent (SAS similarity); ratios of all pairs of corresponding sides are equal</p>	<p>What is the relationship between different geometric figures?</p>	<p><b>Before</b>                      KWL                      Brainstorming                      Graphic Organizers                      Pretest</p> <p><b>During</b>                      KWL                      Quizzes                      Daily Assignments                      Exit Card                      Project</p> <ul style="list-style-type: none"> <li>Students determine 5 routes to LA and discover the better route to take for shortest distance and cost</li> <li>Map Centers</li> <li>Students will complete a journal of the different types of similarity of triangles</li> </ul> <p><b>After</b>                      KWL                      Unit Test                      Real World Problems</p>	<p>Protractor                      Ruler                      Straight edge                      Compass                      Angle                      Bisector                      Geometric construction                      Angle bisector                      Congruent                      Parallel                      Perpendicular                      Corresponding angle                      Corresponding sides (parts)                      Equilateral                      Right angle                      Acute angle                      Obtuse angle</p>	<p><a href="http://www.svsu.edu/supo/curriculum-instruction-assessment.html">http://www.svsu.edu/supo/curriculum-instruction-assessment.html</a></p> <p>Glenco Mathematics: Pre-Algebra</p> <p>McDougal and Littell: Math Course 2</p> <p>Prentice Hall Mathematics: Pre-Algebra</p> <p>Glenco Mathematics: Course 2</p> <p>Glenco Mathematics: Applications and Concepts/Course 2</p> <p>Numerous Skills Practice, Algebra and Pre-Algebra Workbooks</p> <p>Curriculum Crafter</p>

	<p>(SSS similarity); use these criteria to solve problems and to justify arguments.</p> <p>G.TR.07.06 Understand and use the fact that when two triangles are similar with scale factor of <math>r</math>, their areas are related by a factor of <math>r^2</math>.</p>				
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**Mathematics Pacing Guide Alignment with Common Core Standards  
Grade 7**

**Time Frame: 3 Weeks – December  
Unit 6: Geometric Constructions**

Common Core	GLCE	Essential Questions	Assessment	Vocabulary	Resources
<p><b>CRITICAL AREAS:</b> Solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume</p> <p><b>Content moving into 7th</b> Draw, construct, and describe geometrical figures and describe the relationships between them 7. G.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.</p>	<p><b>Content moving into 7th</b> <b>Relationships Between Two-dimensional and Three-dimensional Representations</b> G2.2.2 Identify or sketch cross sections of three-dimensional figures. Identify or sketch solids formed by revolving two-dimensional figures around lines.</p>	<p>What is the difference between two and three dimensional figures?</p>	<p><b>Before</b> KWL Brainstorming Graphic Organizers Pretest</p> <p><b>During</b> KWL Quizzes Daily Assignments Exit Card Drawing</p> <ul style="list-style-type: none"> <li>Students will create a drawing of planar cross sections</li> </ul> <p><b>After</b> KWL Unit Test Real World Problems</p>	<p>cone cross section cube cylinder hemisphere lateral area prism pyramid rectangular prism solid of revolution sphere surface area volume</p>	<p><a href="http://www.svsu.edu/supo/curriculum-instruction-assessment.html">http://www.svsu.edu/supo/curriculum-instruction-assessment.html</a>  Glenco Mathematics: Pre-Algebra</p>
<p><b>Content moving into 7th</b> Solve real-life and mathematical problems involving angle measure, area, surface area, and volume 7. G.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and</p>	<p><b>Content moving into 7th</b> <b>Solve problems about geometric figures</b> G.SR.08.03 Understand the definition of a circle; know and use the formulas for circumference and area of a circle to solve problems.</p>			<p>area circumference perimeter radius surface area volume</p>	

area of a circle.					
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**Mathematics Pacing Guide Alignment with Common Core Standards**

**Grade 7**

**Time Frame: 3 Weeks – January**

**Unit 7: Geometric Constructions**

Common Core	GLCE	Essential Questions	Assessment	Vocabulary	Resources
<p><b>CRITICAL AREAS:</b> Solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume</p> <p><b>Content moving into 7th</b> Solve real-life and mathematical problems involving angle measure, area, surface area, and volume</p> <p>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.</p> <p>7. G.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.</p>	<p><b>Content moving into 7th</b> <b>Understand and apply basic properties</b> G.GS.06.01 Understand and apply basic properties of lines, angles, and triangles, including: -- triangle inequality, -- relationships of vertical angles, complementary angles, supplementary angles, -- congruence of corresponding and alternate interior angles when parallel lines are cut by a transversal, and that such congruencies imply parallel lines, -- locate interior and exterior angles of any triangle, and use the property that an exterior angle of a triangle is equal to the sum of the remote (opposite) interior angles, -- know that the sum of the exterior angles of a convex polygon is <math>360^\circ</math>.</p> <p><b>Find volume and surface area</b> M.TE.06.03 Compute the volume and surface area of cubes and rectangular prisms given the lengths of their sides, using formulas.</p>		<p><b>Before</b> KWL Brainstorming Graphic Organizers Pretest</p> <p><b>During</b> KWL Quizzes Daily Assignments Exit Card Project</p> <ul style="list-style-type: none"> <li>Students use pipe cleaners to model different angles.</li> </ul> <p><b>After</b> KWL Unit Test Real World Problems</p>	<p>Protractor Ruler Straight edge Compass Angle Bisector Geometric construction Angle bisector Congruent Parallel Perpendicular Corresponding angle Corresponding sides (parts) Equilateral Right angle Acute angle Obtuse angle AAA similarity SSS similarity SAS similarity Unit Unit squared Scale factor</p>	<p><a href="http://www.svsu.edu/supo/curriculum-instruction-assessment.html">http://www.svsu.edu/supo/curriculum-instruction-assessment.html</a></p> <p>Glencoe Mathematics: Pre-Algebra</p> <p>McDougal and Littell: Math Course 2</p> <p>Prentice Hall Mathematics: Pre-Algebra</p> <p>Glencoe Mathematics: Course 2</p> <p>Glencoe Mathematics: Applications and Concepts/Course 2</p> <p>Numerous Skills Practice, Algebra and Pre-Algebra Workbooks</p> <p>Curriculum Crafter</p> <p>Promethean Planet</p>

<p><b>Content moving out of 7th Grade into High School</b>  <b>Make geometric constructions</b>  G.CO.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.)  Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.</p> <p>G.CO.13 Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.</p>	<p><b>Content moving out of 7th Grade into High School</b>  <b>Draw and construct geometric objects</b>  G.SR.07.02 Use compass and straightedge to perform basic geometric constructions: the perpendicular bisector of a segment, an equilateral triangle, and the bisector of an angle; understand informal justifications</p>			Protractor Ruler Straight edge Compass Angle Bisector Geometric construction Angle bisector Congruent Parallel Perpendicular Corresponding angle Corresponding sides (parts) Equilateral Right angle Acute angle Obtuse angle	
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**Mathematics Pacing Guide Alignment with Common Core Standards**

**Time Frame: 3 Weeks – January/February**

**Grade 7**

**Unit 8: Linear Equations**

Common Core	GLCE	Essential Questions	Assessment	Vocabulary	Resources
<p><b>CRITICAL AREAS:</b>  <b>Developing understanding of operations with rational numbers and working with expressions and linear equations</b></p> <p>Use properties of operations to generate equivalent expressions</p> <p>7. EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> <p><b>Solve real-life and mathematical problems using numerical and algebraic expressions and equations</b></p> <p>7. EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations as strategies to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using</p>	<p><b>FOCAL POINT:</b>  <b>Analyzing and representing linear functions and solving linear equations and systems of linear equations</b></p> <p>Apply basic properties of real numbers in algebraic contexts</p> <p>A.PA.07.11 Understand and use basic properties of real numbers: additive and multiplicative identities, additive and multiplicative inverses, commutativity, associativity, and the distributive property of multiplication over addition.</p> <p><b>Combine algebraic expressions and solve equations</b></p> <p>A.FO.07.12 Add, subtract, and multiply simple algebraic expressions of the first degree, e.g., <math>(92x + 8y) - 5x + y</math>, or <math>x(x+2)</math> and justify using properties of real numbers.</p> <p>A.FO.07.13 From applied situations, generate and solve linear equations of the form <math>ax + b = c</math> and <math>ax + b = cx + d</math>, and interpret solutions.</p>	<p>How do you use properties of operations to generate equivalent expressions?</p> <p>How do you apply algebraic expressions and equations to real life situations?</p>	<p><b>Before</b></p> <p>KWL</p> <p>Brainstorming</p> <p>Graphic Organizers</p> <p>Pretest</p> <p><b>During</b></p> <p>KWL</p> <p>Quizzes</p> <p>Daily Assignments</p> <p>Exit Card</p> <p><b>After</b></p> <p>KWL</p> <p>Unit Test</p> <p>Real World Problems</p>	<p>Additive identity</p> <p>Additive inverse</p> <p>Algebraic equation</p> <p>Algebraic expressions</p> <p>Associative property of addition</p> <p>Associative property of multiplication</p> <p>Commutative property of addition</p> <p>Commutative property of multiplication</p> <p>Distributive property</p> <p>Equation</p> <p>Expression</p> <p>Formula</p> <p>Graph</p> <p>Multiplicative identity</p> <p>Multiplicative inverse</p> <p>Solution</p> <p>Term</p> <p>Composite</p> <p>Exponent</p>	<p><a href="http://www.svsu.edu/supo/curriculum-instruction-assessment.html">http://www.svsu.edu/supo/curriculum-instruction-assessment.html</a></p> <p>Glenco Mathematics: Pre-Algebra</p> <p>McDougal and Littell: Math Course 2</p> <p>Prentice Hall Mathematics: Pre-Algebra</p> <p>Glenco Mathematics: Course 2</p> <p>Glenco Mathematics: Applications and Concepts/Course 2</p> <p>Numerous Skills Practice, Algebra and Pre-Algebra Workbooks</p> <p>Curriculum Crafter</p>

<p>mental computation and estimation strategies. For example: If a woman making \$24 an hour gets a 10% raise, she will make an additional <math>\frac{1}{10}</math> of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar <math>9\frac{3}{4}</math> inches long in the center of a door that is <math>27\frac{1}{2}</math> 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>				Reciprocal	
<p><b>Content moving into 7th</b>  <b>7. EE.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.</b>  <b>a. Solve word problems leading to equations of the form <math>px + q = r</math> and <math>p(x + q) = r</math>, 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?</b></p>	<p><b>Content moving into 7th</b>  <b>Understand solutions and solve equations, simultaneous equations, and linear inequalities</b>  <b>A.FO.08.12 Solve linear inequalities in one and two variables, and graph the solution sets.</b></p>				

<p><b>Content moving into 7th</b>  <b>Use properties of operations to generate equivalent expressions</b>  7. EE.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, <math>a + 0.05a = 1.05a</math> means that “increase by 5%” is the same as “multiply by 1.05.”</p>	<p><b>Content moving into 7th</b>  <b>Solve problems</b>  N.MR.08.07 Understand percent increase and percent decrease in both sum and product form, e.g., 3% increase of a quantity <math>x</math> is <math>x + .03x = 1.03x</math>.  N.MR.08.08 Solve problems involving percent increases and decreases.  N.FL.08.09 Solve problems involving compounded interest or multiple discounts.</p>			Percent Compound Interest Discount	

**Mathematics Pacing Guide Alignment with Common Core Standards**

**Time Frame: 3 Weeks – March**

**Grade 7**

**Unit 9: Connections between Proportional Relationships, Lines, and Linear Equations**

Common Core	GLCE	Essential Questions	Assessment	Vocabulary	Resources
<p><b>CRITICAL AREA:</b>  <b>Developing understanding of and applying proportional relationships</b></p> <p><b>Content moving out of 7th Grade into 8th Grade</b>  <b>Understand the connections between proportional relationships, lines, and linear equations.</b>                      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.</p> <p>8. EE.6 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><b>FOCAL POINT:</b>  <b>Developing an understanding of and applying proportionality including similarity</b></p> <p><b>Content moving out of 7th Grade into 8th Grade</b>  <b>Understand and apply directly proportional relationships and relate to linear relationships</b>                      A.PA.07.03 Given a directly proportional or other linear situation, graph and interpret the slope and intercept(s) in terms of the original situation; evaluate <math>y = mx + b</math> for specific <math>x</math> values, e.g., weight vs. volume of water, base cost plus cost per unit.</p>	<p>What is the connections between proportional relationships, lines, and linear equations?</p>	<p><b>Before</b>                      KWL                      Brainstorming                      Graphic Organizers                      Pretest</p> <p><b>During</b>                      KWL                      Quizzes                      Daily Assignments                      Exit Card</p> <p><b>After</b>                      KWL                      Unit Test                      Real World Problems</p>	<p>Intercept                      x-intercept                      y-intercept                      formula                      graphing                      domain                      ordered pairs                      range                      relation                      Constant                      constant rate of change                      directly                      inversely                      proportional                      linear equation                      linear relation                      proportional                      proportional                      relation                      rise/ run                      slope  <math>y = k/x</math>  <math>y = mx</math>  <math>y = mx + b</math>                      direct variation  <math>f(x)</math>                      function                      indirect variation                      indirectly                      proportional</p>	<p><a href="http://www.svsu.edu/supo/curriculum-instruction-assessment.html">http://www.svsu.edu/supo/curriculum-instruction-assessment.html</a></p> <p>Glenco Mathematics: Pre-Algebra</p> <p>McDougal and Littell: Math Course 2</p> <p>Prentice Hall Mathematics: Pre-Algebra</p> <p>Glenco Mathematics: Course 2</p> <p>Numerous Skills Practice, Algebra and Pre-Algebra Workbooks</p> <p>Curriculum Crafter</p>

				varying rates of change	
[Not explicit in the Common Core State Standards]	<p><b>Understand and solve problems about inversely proportional relationships</b></p> <p>A.PA.07.09 Recognize inversely proportional relationships in contextual situations; know that quantities are inversely proportional if their product is constant, e.g., the length and width of a rectangle with fixed area, and that an inversely proportional relationship is of the form <math>y = k/x</math> where <math>k</math> is some non-zero number</p> <p>A.RP.07.10 Know that the graph of <math>y = k/x</math> is not a line, know its shape, and know that it crosses neither the <math>x</math> nor the <math>y</math>-axis.</p>			<p>directly proportional</p> <p>inversely proportional</p> <p>linear equation</p> <p>linear relation</p> <p>proportional relation</p> <p>rise/ run</p> <p>slope</p> <p><math>y = k/x</math></p> <p><math>y = mx</math></p> <p><math>y = mx + b</math></p> <p>direct variation</p> <p><math>f(x)</math></p> <p>function</p> <p>indirect variation</p> <p>indirectly proportional</p> <p>varying rates of change</p>	
<p><b>Content moving out of 7th Grade into 8th Grade</b></p> <p><b>Define, evaluate, and compare functions</b></p> <p>8. F.3 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. For example, the function <math>A = s^2</math> giving the area of a square as a function of its side length is not</p>	<p><b>Content moving out of 7th Grade into 8th Grade</b></p> <p><b>Understand and represent linear functions</b></p> <p>A.PA.07.06 Calculate the slope from the graph of a linear function as the ratio of "rise/run" for a pair of points on the graph, and express the answer as a fraction and a decimal; understand that linear functions have slope that is a constant rate of change.</p>			<p>Intercept</p> <p>x-intercept</p> <p>y-intercept</p> <p>formula</p> <p>graphing</p> <p>domain</p> <p>ordered pairs</p> <p>range</p> <p>relation</p> <p>speed</p> <p>Constant</p> <p>constant rate of</p>	

<p>linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.</p> <p><b>Use functions to model relationships between quantities</b></p> <p>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.</p>	<p>A.PA.07.07 Represent linear functions in the form <math>y = x + b</math>, <math>y = mx</math>, and <math>y = mx + b</math>, and graph, interpreting slope and y-intercept.</p> <p>A.FO.07.08 Find and interpret the x and/or y intercepts of a linear equation or function. Know that the solution to a linear equation of the form <math>ax+b=0</math> corresponds to the point at which the graph of <math>y=ax+b</math> crosses the x axis.</p>			<p>change directly proportional inversely proportional linear equation linear relation proportional proportional relation rise/ run slope <math>y= k/x</math> <math>y= mx</math> <math>y = mx + b</math> direct variation <math>f(x)</math> function indirect variation indirectly proportional varying rates of change</p>	
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**Mathematics Pacing Guide Alignment with Common Core Standards  
Grade 7**

**Time Frame: 3 Weeks – April  
Unit 10: Inferences and Probability**

Common Core	GLCE	Essential Questions	Assessment	Vocabulary	Resources
<p><b>CRITICAL AREAS:</b>  <b>Drawing inferences about populations based on samples</b></p> <p><b>Content moving into 7th</b>  <b>Use random sampling to draw inferences about a population</b>            7. SP.1 Understand that statistics can be used to gain information about a population by examining sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.</p> <p>7. SP.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly</p>	[Not explicit in the GLCE]	How do you draw inferences from random samples?	<p><b>Before</b>            KWL            Brainstorming            Graphic Organizers            Pretest</p> <p><b>During</b>            KWL            Quizzes            Daily Assignments            Exit Card</p> <p><b>After</b>            KWL            Unit Test            Real World Problems</p>	double bar graph histogram interval line plot mean median mode range ratio tables	<p><a href="http://www.svsu.edu/supo/curriculum-instruction-assessment.html">http://www.svsu.edu/supo/curriculum-instruction-assessment.html</a></p> <p>Glenco Mathematics: Pre-Algebra</p> <p>McDougal and Littell: Math Course 2</p> <p>Prentice Hall Mathematics: Pre-Algebra</p> <p>Glenco Mathematics: Course 2</p> <p>Glenco Mathematics: Applications and Concepts/Course 2</p> <p>Numerous Skills Practice, Algebra and Pre-Algebra Workbooks</p> <p>Curriculum Crafter</p>

<p>sampled survey data. Gauge how far off the estimate or prediction might be.</p> <p><b>Draw informal comparative inferences about two populations</b></p> <p>7. SP.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.</p> <p>7. SP.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.</p>					
<b>Content moving into 7th</b>	<b>Content moving into 7th</b>			combinations	



<p><b>Investigate chance processes and develop, use, and evaluate probability models</b></p> <p>7. SP.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.</p> <p>7. SP.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.</p> <p>a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.</p>	<p><b>Understand the concept of probability and solve problems</b></p> <p>D.PR.06.01 Express probabilities as fractions, decimals, or percentages between 0 and 1; know that 0 probability means an event will not occur and that probability 1 means an event will occur.</p> <p>D.PR.06.02 Compute probabilities of events from simple experiments with equally likely outcomes, e.g. tossing dice, flipping coins, spinning spinners, by listing all possibilities and finding the fraction that meets given conditions.</p>			<p>dependent events empirical equally likely events independent events iterations likely measure of certainty networks permutations probability recurrence sets simple event theoretical unlikely events</p>	
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Mathematics Pacing Guide Alignment with Common Core Standards

Grade 7

Time Frame: 3 Weeks – April/May

Unit 11: Probability Models

Common Core	GLCE	Essential Questions	Assessment	Vocabulary	Resources
<p><b>CRITICAL AREAS:</b>  <b>Drawing inferences about populations based on samples</b></p> <p><b>Content moving into 7th</b>  <b>Investigate chance processes and develop, use, and evaluate probability models</b>                      7. SP.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.</p> <p>7. SP.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.</p> <p>b. Develop a probability model (which may not be uniform)</p>	<p><b>Content moving into 7th</b>  <b>Understand probability concepts for simple compound events</b>                      D.PR.08.03 Compute relative frequencies from a table of experimental results for a repeated event. Interpret the results using relationship of probability to relative frequency.                      D.PR.08.04 Apply the Basic Counting Principle to find total number of outcomes possible for independent and dependent events, and calculate the probabilities using organized lists or tree diagrams.                      D.PR.08.05 Find and/or compare the theoretical probability, the experimental probability, and/or the relative frequency of a given event.                      D.PR.08.06 Understand the difference between independent and dependent events, and recognize common misconceptions involving probability, e.g., Alice rolls a 6 on a die three times in a row; she is</p>	<p>What are probability models?                      How are they used?</p>	<p><u>Before</u>                      KWL                      Brainstorming                      Graphic Organizers                      Pretest</p> <p><u>During</u>                      KWL                      Quizzes                      Daily Assignments                      Exit Card</p> <p><u>After</u>                      KWL                      Unit Test                      Real World Problems</p>	<p>basic counting                      principal                      biased sample                      box plots                      coordinate graph                      counting tree                      cumulative                      frequency                      dependent event                      experimental                      probability                      extrapolations                      five number                      summary                      frequency table                      histogram                      independent event                      interpolations                      intersection                      IQR                      (inter-quartile)                      range                      line graph                      line of best fit                      line plot                      lower quartile                      mean                      measures of                      central tendency                      median                      mode                      organized list</p>	<p><a href="http://www.svsu.edu/supo/curriculum-instruction-assessment.html">http://www.svsu.edu/supo/curriculum-instruction-assessment.html</a>                      Glenco Mathematics: Pre-Algebra                      McDougal and Littell: Math Course 2                      Prentice Hall Mathematics: Pre-Algebra                      Glenco Mathematics: Course 2                      Glenco Mathematics: Applications and Concepts/Course 2                      Numerous Skills Practice, Algebra and Pre-Algebra Workbooks                      Curriculum Crafter</p>

<p>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?</p> <p>7. SP.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p>a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.</p> <p>b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.</p> <p>c. Design and use a simulation to generate frequencies for</p>	<p>just as likely to roll a 6 on the fourth roll as she was on any previous roll.</p>			<p>outcomes population probability proportion quartile random range relative frequency repeated events sample sampling scatter plot stem-and-leaf plot theoretical probability trend union upper quartile Venn Diagram</p>	
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<p>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?</p>					
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Mathematics Pacing Guide Alignment with Common Core Standards

Grade 7

Time Frame: 3 Weeks – May/June

Unit 12: Data Distribution

Common Core	GLCE	Essential Questions	Assessment	Vocabulary	Resources
<p><b>CRITICAL AREA:</b>  <b>Developing understanding of operations with rational numbers and working with expressions and linear equations</b></p> <p><b>Content moving out of 7th Grade into 6th Grade</b>  <b>Summarize and describe distributions</b>                      6. SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.</p>	<p><b>FOCAL POINT:</b>  <b>Analyzing and representing linear functions and solving linear equations and systems of linear equations of linear equations</b></p> <p><b>Content moving out of 7th Grade into 6th Grade</b>  <b>Represent and interpret data</b>                      D.RE.07.01 Represent and interpret data using circle graphs, stem and leaf plots, histograms, and box-and-whisker plots, and select appropriate representation to address specific questions.</p>	<p>What are the ways to illustrate data?                      What are the patterns in the data?</p>	<p><b>Before</b>                      KWL                      Brainstorming                      Graphic Organizers                      Pretest</p> <p><b>During</b>                      KWL                      Quizzes                      Daily Assignments                      Exit Card</p> <p><b>After</b>                      Unit Test                      Quizzes                      Real World Problems</p>	<p>x-axis                      y-axis                      circle graph                      ordered pairs                      quadrant</p>	
<p><b>Content moving out of 7th Grade into 8th Grade</b>  <b>Investigate patterns of association in bivariate data</b>                      8. SP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.</p> <p>8. SP.2 Know that straight lines</p>	<p><b>Content moving out of 7th Grade into 8th Grade</b>  <b>Represent and interpret data</b>                      D.AN.07.02 Create and interpret scatter plots and find line of best fit; use an estimated line of best fit to answer questions about the data.</p>			<p>double bar graph                      histogram                      interval                      line plot                      mean                      median                      mode                      range                      ratio                      tables</p>	<p><a href="http://www.svsu.edu/supo/curriculum-instruction-assessment.html">http://www.svsu.edu/supo/curriculum-instruction-assessment.html</a></p> <p>Glenco Mathematics: Pre-Algebra</p> <p>McDougal and Littell: Math Course 2</p> <p>Prentice Hall Mathematics: Pre-Algebra</p> <p>Glenco Mathematics: Course 2</p>

<p>are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.</p>					
<p><b>Content moving out of 7th Grade into 6th Grade</b>  <b>Summarize and describe distributions</b>          6.SP.5 Summarize numerical data sets in relation to their context, such as by:</p> <ol style="list-style-type: none"> <li>Reporting the number of observations.</li> <li>Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.</li> <li>Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data was gathered.</li> <li>Relating the choice of measures of center and variability to the shape of</li> </ol>	<p><b>Content moving out of 7th Grade into 6th Grade</b>  <b>Compute statistics about data sets</b>          D.AN.07.03 Calculate and interpret relative frequencies and cumulative frequencies for given data sets.          D.AN.07.04 Find and interpret the median, quartiles, and interquartile range of a given set of data.</p>			<p>Box and whisker plots          circle graph          cumulative frequency          data set          histograms          interquartile range          line of best fit          median          quartiles          relative frequency          scatter plots          stem and leaf plots          formula          histogram          internet          mean          median          mode          table          window          zoom          1st and 3rd quartile          five number summary          lower extreme          lower quartile          maximum</p>	<p>Glenco Mathematics: Applications and Concepts/Course 2          Numerous Skills Practice, Algebra and Pre-Algebra Workbooks          Curriculum Crafter</p>

<p>the data distribution and the context in which the data was gathered.</p> <p><b>Content moving out of 7th Grade into 8th Grade</b></p> <p><b>Investigate patterns of association in bivariate data.</b></p> <p>8. SP.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. <i>For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?</i></p>				<p>measure of central tendency  minimum  outlier  probability  range  sample  upper extreme  upper quartile  double bar graph</p>	
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