



Medford Lakes School District

Math Curriculum Guide – Algebra Survey Grade 8

Written by: Kathy O’Brien

Text/Program: “Big Ideas”

EIGHTH GRADE MATHEMATICS - “Algebra Survey”				
Chapter	Lessons	Chapter Content:	Domain/ Common Core State Standards	Suggested days for topic:
1	4	Equations	Expressions and Equations/8.EE.7a,b,	12 days, Chapter Opener, 4 Activities, 4 Lessons, Quiz, Review, Test
Lessons: Essential Questions		Resources, Materials, & Games		Assessments
<ol style="list-style-type: none"> <i>Solving Simple Equations:</i> How can you use inductive reasoning to discover rules in mathematics? How can you test a rule? <i>Solving Multi-step Equations:</i> How can you solve a multi-step equation? How can you check the reasonableness of your solution? <i>Solving Equations with Variables on Both Sides:</i> How can you solve an equation that has variables on both sides? <i>Rewriting Equations and Formulas:</i> How can you use a formula for one measurement to write a formula for a different measurement? 		<p><i>Resources</i></p> <ul style="list-style-type: none"> Big Ideas Student Text Big Ideas Record & Practice Journal Big Ideas Resources by Chapter and Performance Tasks Online Account <p><i>Materials & Manipulatives</i></p> <ul style="list-style-type: none"> Protractor Ruler Device to play music Index cards Pictures of Palm Shaped Islands in Dubai Questions from Chapter Soft Object to be Tossed Around <p><i>Differentiation Opportunities</i></p> <ul style="list-style-type: none"> Skills Review and Basic Skills Handbook Lesson Tutorials (online) Intensive Intervention Activities (online) Differentiating the Lesson (online) Enrichment and Extension <p><i>Online Resources</i></p> <ul style="list-style-type: none"> Dynamic Classroom (technology) Game Closet 		<p><i>Summative</i></p> <p>What You Learned Before</p> <p>Chapter Test</p> <p>Quizzes</p> <p>Standards Assessment</p> <p><i>Formative</i></p> <p>Discovery Activity</p> <p>Observation and “What’s Your Answer?” Responses</p> <p>Guided Practice Observation</p> <p>Lesson Summary Responses</p> <p>Homework</p>



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	<ul style="list-style-type: none"> • Check It Out: Lesson Tutorials at www.bigideasmath.com 	
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EIGHTH GRADE MATHEMATICS - “Algebra Survey”				
Chapter 1	Lessons 4	Chapter Content: Equations	Domain/ Common Core State Standards Expressions and Equations/8.EE.7a,b,	Suggested days for topic: 12 days, Chapter Opener, 4 Activities, 4 Lessons, Quiz, Review, Test
Lessons: Objectives		Key Vocabulary		Additional Online Resources



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<ol style="list-style-type: none">1. <i>Solving Simple Equations:</i> Students will use properties of equality to solve one-step equations.2. <i>Solving Multi-step Equations:</i> Students will solve multi-step equations by using inverse operations to isolate the variable. Students will use the distributive property to solve multi-step equations.3. <i>Solving Equations with Variables on Both Sides:</i> Students will solve equations with variables on both sides by using properties of equality and collecting variable terms to one side. Students will determine if an equation has one solution, no solution or infinitely many solutions.4. <i>Rewriting Equations and Formulas:</i> Students will rewrite equations to solve for one variable in terms of the other variable(s).	literal equation	<p>Online math skill practice at: https://www.ixl.com/standards/new-jersey/math/grade-8</p> <p>A library of interactive, web-based virtual manipulatives at: http://nlvm.usu.edu/en/nav/vlibrary.html</p>
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Chapter 2	Lessons 7	Chapter Content: Transformations	Domain/ Common Core State Standards Geometry/8.G.1, 8.G.2, 8.G.3, 8.G.4	Suggested days for topic: 19 days, Chapter Opener, 7 Activities, 7 Lessons, Quiz, Review, Test
<i>Lessons: Essential Questions</i>		<i>Resources, Materials, & Games</i>		<i>Assessments</i>
<ol style="list-style-type: none"> 1. <i>Congruent Figures:</i> How can you identify congruent triangles? 2. <i>Translations:</i> How can you arrange tiles to make a tessellation? 3. <i>Reflections:</i> How can you use reflections to classify a frieze pattern? 4. <i>Rotations:</i> What are the three basic ways to move an object in a plane? 5. <i>Similar Figures:</i> How can you use proportions to help make decisions in art design, and magazine layouts? 6. <i>Perimeters and Areas of Similar Figures:</i> How do changes in dimensions of similar geometric figures affect the perimeters and areas of the figures? 	<p><i>Resources</i></p> <ul style="list-style-type: none"> • Big Ideas Student Text • Big Ideas Record & Practice Journal • Big Ideas Resources by Chapter and Performance Tasks • Online Account <p><i>Materials & Manipulatives</i></p> <ul style="list-style-type: none"> • Geoboard, Geoboard Dot Paper • Pattern Blocks, Rubber Bands • Tracing Paper, Cookie Cutters • Flip Book • Masking Tape • Stencils • The Sierpinski Triangle • Uncooked Spaghetti <p><i>Differentiation Opportunities</i></p> <ul style="list-style-type: none"> • Skills Review and Basic Skills Handbook • Lesson Tutorials (online) • Intensive Intervention Activities (online) • Differentiating the Lesson (online) • Enrichment and Extension <p><i>Online Resources</i></p> <ul style="list-style-type: none"> • Dynamic Classroom (technology) • Game Closet • Check It Out: Lesson Tutorials at www.bigideasmath.com 	<p><i>Summative</i></p> <p>What You Learned Before</p> <p>Chapter Test</p> <p>Quizzes</p> <p>Standards Assessment</p> <p><i>Formative</i></p> <p>Discovery Activity</p> <p>Observation and "What's Your Answer?" Responses</p> <p>Guided Practice Observation</p> <p>Lesson Summary Responses</p> <p>Homework</p>		



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<p>7. <i>Dilations:</i> How can you enlarge or reduce a figure in the coordinate plane?</p>		
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Chapter 2	Lessons 7	Chapter Content: Transformations	Domain/ Common Core State Standards Geometry/8.G.1, 8.G.2, 8.G.3, 8.G.4	Suggested days for topic: 19 days, Chapter Opener, 7 Activities, 7 Lessons, Quiz, Review, Test
Lessons: Objectives		Key Vocabulary		Additional Online Resources



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<ol style="list-style-type: none"> 1. <i>Congruent Figures:</i> Students will name corresponding sides and corresponding angles of congruent figures. Students will identify congruent figures. 2. <i>Translations:</i> Students will identify translations and translate figures in the coordinate plane. 3. <i>Reflections:</i> Students will identify reflections. Students will reflect figures in the x-axis and y-axis of the coordinate plane. 4. <i>Rotations:</i> Students will identify rotations and rotate figures in the coordinate plane. Students will describe a sequence of transformations. 5. <i>Similar Figures:</i> Students will name corresponding angles and corresponding sides of similar figures. Students will identify similar figures. Students will find unknown measures of similar figures. 6. <i>Perimeters and Areas of Similar Figures:</i> Students will understand the relationship between perimeters of similar figures. Students will understand the relationship between areas of similar figures. Students will find the ratios of perimeters and areas for similar figures. 7. <i>Dilations:</i> Students will identify dilations and use scale factors to enlarge and reduce polygons in the coordinate plane. Students will describe a sequence of transformations. 	<p>congruent figures corresponding angles corresponding sides transformation image translation reflection line of reflection rotation center of rotation angle of rotation similar figures dilation center of dilation scale factor</p>	<p>Flip-N-Slide at: http://illuminations.nctm.org/</p> <p>Online math skill practice at: https://www.ixl.com/standards/new-jersey/math/grade-8</p> <p>A library of interactive, web-based virtual manipulatives at: http://nlvm.usu.edu/en/nav/vlibrary.html</p>
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Chapter 3	Lessons 4	Chapter Content: Angles and Triangles	Domain/ Common Core State Standards Geometry/8.G.5	Suggested days for topic: 13 days, Chapter Opener, 4



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			Activities, 4 Lessons, Quiz, Review, Test
<i>Lessons: Essential Questions</i>	<i>Resources, Materials, & Games</i>		<i>Assessments</i>
<ol style="list-style-type: none"> <i>Parallel Lines and Transversals:</i> How can you describe angles formed by parallel lines and transversals? <i>Angles of Triangles:</i> How can you describe the relationship among the angles of a triangle? <i>Angles of Polygons:</i> How can you find the sum of interior angle measures and the sum of the exterior angle measures of a polygon? <i>Using Similar Triangles:</i> How can you use angles to tell whether triangles are similar? 	<p><i>Resources</i></p> <ul style="list-style-type: none"> • Big Ideas Student Text • Big Ideas Record & Practice Journal • Big Ideas Resources by Chapter and Performance Tasks • Online Account <p><i>Materials & Manipulatives</i></p> <ul style="list-style-type: none"> • Paper, Protractor, Ruler • Scissors • Tracing Paper • Brass Fasteners • Card Stock • Deck of Cards • Dictionaries • Hole Punch • Stopwatch <p><i>Differentiation Opportunities</i></p> <ul style="list-style-type: none"> • Skills Review and Basic Skills Handbook • Lesson Tutorials (online) • Intensive Intervention Activities (online) • Differentiating the Lesson (online) • Enrichment and Extension <p><i>Online Resources</i></p> <ul style="list-style-type: none"> • Dynamic Classroom (technology) • Game Closet • Check It Out: Lesson Tutorials at www.bigideasmath.com 		<p><i>Summative</i></p> <p>What You Learned Before</p> <p>Chapter Test</p> <p>Quizzes</p> <p>Standards Assessment</p> <p><i>Formative</i></p> <p>Discovery Activity</p> <p>Observation and “What’s Your Answer?” Responses</p> <p>Guided Practice Observation</p> <p>Lesson Summary Responses</p> <p>Homework</p>



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Chapter	Lessons	Chapter Content:	Domain/ Common Core State Standards	Suggested days for topic:
3	4	Angles and Triangles	Geometry/8.G.5	13 days, Chapter Opener, 4 Activities, 4 Lessons, Quiz, Review, Test
Lessons: Objectives		Key Vocabulary		Additional Online Resources
<p>1. <i>Parallel Lines and Transversals:</i> Students will find the measures of many types of angles, all formed when parallel lines are cut by a transversal.</p> <p>2. <i>Angles of Triangles:</i> Students will find the missing angle measure of a triangle and classify the triangle.</p> <p>3. <i>Angles of Polygons:</i> Students will find the measures of interior and exterior angles of polygons. Student will find the sum of the interior angle measures of a polygon.</p> <p>4. <i>Using Similar Triangles:</i> Students will identify similar triangles. Students will use indirect measurement to find missing measures.</p>		<p>transversal interior angles exterior angles interior angles of polygons exterior angles of polygons convex polygon concave polygon regular polygon indirect measurement</p>		<p>Online math skill practice at: https://www.ixl.com/standards/new-jersey/math/grade-8</p> <p>A library of interactive, web-based virtual manipulatives at: http://nlvm.usu.edu/en/nav/vlibrary.html</p>



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Chapter	Lessons	Chapter Content:	Domain/ Common Core State Standards	Suggested days for topic:
4	7	Graphing and Writing Linear Equations	Expressions and Equations/8.EE.5, 8.EE.6 Functions/8.F.4	19 days, Chapter Opener, 7 Activities, 7 Lessons, 1 Extension, Quiz, Review, Test
Lessons: Essential Questions		Resources, Materials, & Games		Assessments
1. <i>Graphing Linear Equations:</i> How can you recognize a linear equation? How can you draw its graph? 2. <i>Slope of a Line:</i> How can you use the slope of a line to describe the line? 3. <i>Graphing Proportional Relationships:</i> How can you describe the graph of the equation $y = mx + b$? 4. <i>Graphing Linear Equations in Slope-Intercept Form:</i> How can you describe the graph of the equation $y = mx + b$? 5. <i>Graphing Linear Equations in Standard Form:</i> How can you describe the graph of the equation $ax + by = c$? 6. <i>Writing Equations in Slope-Intercept Form:</i> How can you write an equation of a line when you are given the slope and the y-intercept of the line?		<i>Resources</i> <ul style="list-style-type: none"> • Big Ideas Student Text • Big Ideas Record & Practice Journal • Big Ideas Resources by Chapter and Performance Tasks • Online Account <i>Materials & Manipulatives</i> <ul style="list-style-type: none"> • Calculator, Coordinate Grids • Map of the United States • Marker • Masking Tape • Paper Towel Tube • Ribbon • Scissors • Strips of Paper <i>Differentiation Opportunities</i> <ul style="list-style-type: none"> • Skills Review and Basic Skills Handbook • Lesson Tutorials (online) • Intensive Intervention Activities (online) • Differentiating the Lesson (online) • Enrichment and Extension 		<i>Summative</i> What You Learned Before Chapter Test Quizzes Standards Assessment <i>Formative</i> Discovery Activity Observation and “What’s Your Answer?” Responses Guided Practice Observation



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<p>7. <i>Writing Equations in Point-Slope Form:</i> How can you write an equation of a line when you are given the slope and a point on the line?</p>	<p><i>Online Resources</i></p> <ul style="list-style-type: none"> • Dynamic Classroom (technology) • Game Closet • Check It Out: Lesson Tutorials at www.bigideasmath.com 	<p>Lesson Summary Responses</p> <p>Homework</p>
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Chapter 4	Lessons 7	Chapter Content: Graphing and Writing Linear Equations	Domain/ Common Core State Standards Expressions and Equations/8.EE.5, 8.EE.6 Functions/8.F.4	Suggested days for topic: 19 days, Chapter Opener, 7 Activities, 7 Lessons, 1 Extension, Quiz, Review, Test
Lessons: Objectives		Key Vocabulary		Additional Online Resources



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<ol style="list-style-type: none"> 1. <i>Graphing Linear Equations:</i> Students will understand that lines represent solutions of linear equations. Students will graph linear equations using a table of values. 2. <i>Slope of a Line:</i> Students will find slopes of lines from graphs and tables. Students will identify parallel and perpendicular lines using slope. 3. <i>Graphing Proportional Relationships:</i> Students will write and graph proportional relationships. 4. <i>Graphing Linear</i> Students will find slopes and y-intercepts of graphs of linear equations. Students will graph linear equations written in slope-intercept form. 5. <i>Graphing Linear Equations in Standard Form:</i> Students will graph equations written in standard form. 6. <i>Writing Equations in Slope-Intercept Form:</i> Students will write an equation of a line using the slope and y-intercept. 7. <i>Writing Equations in Point-Slope Form:</i> Students will write an equation of a line using the slope and a point, Students will write an equation of a line using two points. 	<p>linear equation solution of a linear equation slope rise run x-intercept y-intercept slope-intercept form standard form point-slope form</p>	<p>House Prices and Vincent’s Graphs at: http://www.insidemathematics.org/performance-assessment-tasks</p> <p>Online math skill practice at: https://www.ixl.com/standards/new-jersey/math/grade-8</p> <p>A library of interactive, web-based virtual manipulatives at: http://nlvm.usu.edu/en/nav/vlibrary.html</p>
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Chapter	Lessons	Chapter Content:	Domain/ Common Core State Standards	Suggested days for topic:
5	4	Systems of Linear Equations		13 days, Chapter Opener, 4



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		Expressions and Equations/8.EE.7a, b, 8.EE.8a - c	Activities, 4 Lessons, 1 Extension, Quiz, Review, Test
Lessons: Essential Questions		Resources, Materials, & Games	Assessments
1. <i>Solving Systems of Linear Equations by Graphing:</i> How can you solve a system of linear equations? 2. <i>Solving Systems of Linear Equations by Substitution:</i> How can you use substitution to solve a system of linear equations? 3. <i>Solving Systems of Linear Equations by Elimination:</i> How can you use elimination to solve a system of linear equations? 4. <i>Solving Special Systems of Linear Equations:</i> Can a system of linear equations have no solution? Can a system of linear equations have many solutions?		<p><i>Resources</i></p> <ul style="list-style-type: none"> • Big Ideas Student Text • Big Ideas Record & Practice Journal • Big Ideas Resources by Chapter and Performance Tasks • Online Account <p><i>Materials & Manipulatives</i></p> <ul style="list-style-type: none"> • Calculators • Number Cubes • Graph Paper • Index Cards • Uncooked Spaghetti <p><i>Differentiation Opportunities</i></p> <ul style="list-style-type: none"> • Skills Review and Basic Skills Handbook • Lesson Tutorials (online) • Intensive Intervention Activities (online) • Differentiating the Lesson (online) • Enrichment and Extension <p><i>Online Resources</i></p> <ul style="list-style-type: none"> • Dynamic Classroom (technology) • Game Closet • Check It Out: Lesson Tutorials at www.bigideasmath.com 	<p><i>Summative</i></p> <p>What You Learned Before</p> <p>Chapter Test</p> <p>Quizzes</p> <p>Standards Assessment</p> <p><i>Formative</i></p> <p>Discovery Activity</p> <p>Observation and “What’s Your Answer?” Responses</p> <p>Guided Practice Observation</p> <p>Lesson Summary Responses</p> <p>Homework</p>
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Chapter 5	Lessons 4	Chapter Content: Systems of Linear Equations	Domain/ Common Core State Standards Expressions and Equations/8.EE.7a, b, 8.EE.8a - c	Suggested days for topic: 13 days, Chapter Opener, 4 Activities, 4 Lessons, 1 Extension, Quiz, Review, Test
Lessons: Objectives		Key Vocabulary		Additional Online Resources
<ol style="list-style-type: none"> 1. <i>Solving Systems of Linear Equations by Graphing:</i> Students will write and solve systems of linear equations by graphing. 2. <i>Solving Systems of Linear Equations by Substitution:</i> Students will write and solve systems of linear equations by substitution. 3. <i>Solving Systems of Linear Equations by Elimination:</i> Students will write and solve systems of linear equations by elimination. 4. <i>Solving Special Systems of Linear Equations:</i> Students will solve systems of linear equations with no solution or infinitely many solutions. Students will solve linear equations by graphing a system of linear equations. 		<p>system of linear equations solution of a system of linear equations</p>		<p>Picking Apples at: http://www.insidemathematics.org/performance-assessment-tasks</p> <p>Online math skill practice at: https://www.ixl.com/standards/new-jersey/math/grade-8</p> <p>A library of interactive, web-based virtual manipulatives at: http://nlvm.usu.edu/en/nav/vlibrary.html</p>



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Chapter 6	Lessons 5	Chapter Content: Functions	Domain/ Common Core State Standards Functions/8.F.1, 8.F.2, 8.F.3, 8.F.4, 8.F.5	Suggested days for topic: 14 days, Chapter Opener, 5 Activities, 5 Lessons, Quiz, Review, Test
Lessons: Essential Questions		Resources, Materials, & Games		Assessments



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<ol style="list-style-type: none"> 1. <i>Relations and Functions</i>: How can you use a mapping diagram to show the relationship between two data sets? 2. <i>Representations of Functions</i>: How can you represent a function in different ways? 3. <i>Linear Functions</i>: How can you use a function to describe a linear pattern? 4. <i>Comparing Linear and Nonlinear Functions</i>: How can you recognize when a pattern in real life is linear or nonlinear? 5. <i>Analyzing and Sketching Graphs</i>: How can you use a graph to represent relationships between quantities without using numbers? 	<p><i>Resources</i></p> <ul style="list-style-type: none"> • Big Ideas Student Text • Big Ideas Record & Practice Journal • Big Ideas Resources by Chapter and Performance Tasks • Online Account <p><i>Materials & Manipulatives</i></p> <ul style="list-style-type: none"> • Square Tiles • Index Cards • Yard Sticks <p><i>Differentiation Opportunities</i></p> <ul style="list-style-type: none"> • Skills Review and Basic Skills Handbook • Lesson Tutorials (online) • Intensive Intervention Activities (online) • Differentiating the Lesson (online) • Enrichment and Extension <p><i>Online Resources</i></p> <ul style="list-style-type: none"> • Dynamic Classroom (technology) • Game Closet • Check It Out: Lesson Tutorials at www.bigideasmath.com 	<p><i>Summative</i></p> <p>What You Learned Before</p> <p>Chapter Test</p> <p>Quizzes</p> <p>Standards Assessment</p> <p><i>Formative</i></p> <p>Discovery Activity</p> <p>Observation and “What’s Your Answer?” Responses</p> <p>Guided Practice Observation</p> <p>Lesson Summary Responses</p> <p>Homework</p>
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Chapter 6	Lessons 5	Chapter Content: Functions	Domain/ Common Core State Standards Functions/8.F.1, 8.F.2, 8.F.3, 8.F.4, 8.F.5	Suggested days for topic: 14 days, Chapter Opener, 5



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			Activities, 5 Lessons, Quiz, Review, Test
Lessons: Objectives	Key Vocabulary	Additional Online Resources	
<p>1. <i>Relations and Functions</i>: Students will use ordered pairs and mapping diagrams to display functions. Students will determine whether relations are functions.</p> <p>2. <i>Representations of Functions</i>: Students will represent functions by writing equations in two variables, using input-output tables and using graphs.</p> <p>3. <i>Linear Functions</i>: Students will write linear functions by recognizing patterns in graphical and tabular information.</p> <p>4. <i>Comparing Linear and Nonlinear Functions</i>: Students will compare linear and non-linear functions from tables and graphs.</p> <p>5. <i>Analyzing and Sketching Graphs</i>: Students will analyze the relationship between two quantities using graphs. Students will sketch graphs to represent the relationship between two quantities.</p>	<p>input output relation mapping diagram function function rule linear function nonlinear function</p>	<p>Talk or Text and Roller Coasting Through Functions at: http://illuminations.nctm.org/</p> <p>House Prices and Vincent's Graphs at: http://www.insidemathematics.org/performance-assessment-tasks</p> <p>Online math skill practice at: https://www.ixl.com/standards/new-jersey/math/grade-8</p> <p>A library of interactive, web-based virtual manipulatives at: http://nlvm.usu.edu/en/nav/vlibrary.html</p>	



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Chapter	Lessons	Chapter Content:	Domain/ Common Core State Standards	Suggested days for topic:
7	5	Real Numbers and The Pythagorean Theorem	Number System/8.NS.1, 8.NS.2 Expressions and Equations/8.EE.2 Geometry/8.G.6, 8.G.7, 8.G.8	15 days, Chapter Opener, 5 Activities, 5 Lessons, 1 Extension, Quiz, Review, Test
Lessons: Essential Questions		Resources, Materials, & Games		Assessments
<ol style="list-style-type: none"> <i>Finding Square Roots:</i> How can you find the dimensions of a square or a circle when you are given its area? <i>Finding Cube Roots:</i> How is the cube root of a number different from the square root of a number? <i>The Pythagorean Theorem:</i> How are the lengths of the sides of a right triangle related? <i>Approximating Square Roots:</i> How can you find decimal approximations of square roots that are not rational? <i>Using the Pythagorean Theorem:</i> In what other ways can you use the Pythagorean Theorem? 		<p><i>Resources</i></p> <ul style="list-style-type: none"> Big Ideas Student Text Big Ideas Record & Practice Journal Big Ideas Resources by Chapter and Performance Tasks Online Account <p><i>Materials & Manipulatives</i></p> <ul style="list-style-type: none"> Centimeter Grid Paper, Ruler Cube-Shaped Tissue Box Index cards, Pendulums Tracing Paper Uncooked Spaghetti Unit Cubes, Yarn <p><i>Differentiation Opportunities</i></p> <ul style="list-style-type: none"> Skills Review and Basic Skills Handbook Lesson Tutorials (online) Intensive Intervention Activities (online) Differentiating the Lesson (online) Enrichment and Extension <p><i>Online Resources</i></p> <ul style="list-style-type: none"> Dynamic Classroom (technology) 		<p><i>Summative</i></p> <p>What You Learned Before</p> <p>Chapter Test</p> <p>Quizzes</p> <p>Standards Assessment</p> <p><i>Formative</i></p> <p>Discovery Activity</p> <p>Observation and “What’s Your Answer?” Responses</p> <p>Guided Practice Observation</p> <p>Lesson Summary Responses</p>



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Chapter 7	Lessons 5	Chapter Content: Real Numbers and The Pythagorean Theorem	Domain/ Common Core State Standards Number System/8.NS.1, 8.NS.2 Expressions and Equations/8.EE.2 Geometry/8.G.6, 8.G.7, 8.G.8	Suggested days for topic: 15 days, Chapter Opener, 5 Activities, 5 Lessons, 1 Extension, Quiz, Review, Test
Lessons: Objectives		Key Vocabulary		Additional Online Resources



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<ol style="list-style-type: none"> 1. <i>Finding Square Roots</i>: Students will find square roots and evaluate expressions involving square roots. 2. <i>Finding Cube Roots</i>: Students will find cube roots and evaluate expressions involving cube roots. 3. <i>The Pythagorean Theorem</i>: Students will use the Pythagorean Theorem to find missing side lengths of right triangles. 4. <i>Approximating Square Roots</i>: Students will approximate square roots. Students will classify real numbers. Students will write a repeating decimal as a fraction. 5. <i>Using the Pythagorean Theorem</i>: Students will use the converse of the Pythagorean Theorem to identify right triangles. Students will use the distance formula and the Pythagorean Theorem to find distances in the coordinate plane. 	<p>square roots perfect square radical sign radicand cube root perfect cube theorem legs hypotenuse Pythagorean Theorem irrational number real numbers distance formula</p>	<p>Square Roots Go Rational and Squares, Diagonals and Square Roots at: http://illuminations.nctm.org/</p> <p>Patterns in Prague at: http://www.insidemathematics.org/performance-assessment-tasks</p> <p>Online math skill practice at: https://www.ixl.com/standards/new-jersey/math/grade-8</p> <p>A library of interactive, web-based virtual manipulatives at: http://nlvm.usu.edu/en/nav/vlibrary.html</p>
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EIGHTH GRADE MATHEMATICS - “Algebra Survey”				
Chapter 8	Lessons 4	Chapter Content: Volume and Similar Solids	Domain/ Common Core State Standards Geometry/8.G.9	Suggested days for topic: 13 days, Chapter Opener, 4



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		Activities, 4 Lessons, Quiz, Review, Test
Lessons: Essential Questions	Resources, Materials, & Games	Assessments
<ol style="list-style-type: none"> 1. <i>Volumes of Cylinders</i>: How can you find the volume of a cylinder? 2. <i>Volume of Cones</i>: How can you find the volume of a cone? 3. <i>Volume of Spheres</i>: How can you find the volume of a sphere? 4. <i>Surface Areas and Volumes of Similar Solids</i>: When the dimensions of a solid increase by a factor of k, how does the surface area change? How does the volume change? 	<p><i>Resources</i></p> <ul style="list-style-type: none"> • Big Ideas Student Text • Big Ideas Record & Practice Journal • Big Ideas Resources by Chapter and Performance Tasks • Online Account <p><i>Materials & Manipulatives</i></p> <ul style="list-style-type: none"> • Heavy weight paper, Paper cup, • Plastic ball with hole • Ruler, Scissors, Tape , Uncooked Rice • Cans, Coins, Hourglass-shaped timer • Ice cream cone, Ice cream scoop • Liquid measuring devices • Miniature object, Spherical objects • Variety of containers <p><i>Differentiation Opportunities</i></p> <ul style="list-style-type: none"> • Skills Review and Basic Skills Handbook • Lesson Tutorials (online) • Intensive Intervention Activities (online) • Differentiating the Lesson (online) • Enrichment and Extension <p><i>Online Resources</i></p> <ul style="list-style-type: none"> • Dynamic Classroom (technology) • Game Closet • Check It Out: Lesson Tutorials at www.bigideasmath.com 	<p><i>Summative</i></p> <p>What You Learned Before</p> <p>Chapter Test</p> <p>Quizzes</p> <p>Standards Assessment</p> <p><i>Formative</i></p> <p>Discovery Activity</p> <p>Observation and “What’s Your Answer?” Responses</p> <p>Guided Practice Observation</p> <p>Lesson Summary Responses</p> <p>Homework</p>



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Chapter	Lessons	Chapter Content:	Domain/ Common Core State Standards	Suggested days for topic:
8	4	Volume and Similar Solids	Geometry/8.G.9	13 days, Chapter Opener, 4 Activities, 4 Lessons, Quiz, Review, Test
Lessons: Objectives		Key Vocabulary		Additional Online Resources
<p>1. <i>Volumes of Cylinders:</i> Students will find the volume of cylinders. Students will find the height of a cylinder given the volume.</p> <p>2. <i>Volume of Cones:</i> Students will find the volume of cones. Students will find the height of a cone given the volume.</p> <p>3. <i>Volume of Spheres:</i> Students will find the volume of a sphere. Students will find the radius of a sphere given the volume.</p> <p>4. <i>Surface Areas and Volumes of Similar Solids:</i> Students will understand the relationship between surface areas of similar solids. Students will understand the relationship between volumes of similar solids. Students will use properties of similar solids to find missing measures.</p>		<p>sphere hemisphere similar solids</p>		<p>Scaling Away at: http://illuminations.nctm.org/</p> <p>Online math skill practice at: https://www.ixl.com/standards/new-jersey/math/grade-8</p> <p>A library of interactive, web-based virtual manipulatives at: http://nlvm.usu.edu/en/nav/vlibrary.html</p>



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Chapter 9	Lessons 4	Chapter Content: Data Analysis and Displays	Domain/ Common Core State Standards Statistics and Probability/8.SP.1, 8.SP.2, 8.SP.3, 8.SP.4	Suggested days for topic: 12 days, Chapter Opener, 4 Activities, 4 Lessons, Quiz, Review, Test
<i>Lessons: Essential Questions</i>		Resources, Materials, & Games		Assessments



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<ol style="list-style-type: none"> 1. <i>Scatter Plots</i>: How can you construct and interpret a scatter plot? 2. <i>Lines of Fit</i>: How can you use data to predict an event? 3. <i>Two-way tables</i>: How can you read and make a two-way table? 4. <i>Choosing a Data Display</i>: How can you display data in a way that helps you make decisions? 	<p><i>Resources</i></p> <ul style="list-style-type: none"> • Big Ideas Student Text • Big Ideas Record & Practice Journal • Big Ideas Resources by Chapter and Performance Tasks • Online Account <p><i>Materials & Manipulatives</i></p> <ul style="list-style-type: none"> • Calculators • Ruler • Number cubes • Nutritional Information • Uncooked Spaghetti <p><i>Differentiation Opportunities</i></p> <ul style="list-style-type: none"> • Skills Review and Basic Skills Handbook • Lesson Tutorials (online) • Intensive Intervention Activities (online) • Differentiating the Lesson (online) • Enrichment and Extension <p><i>Online Resources</i></p> <ul style="list-style-type: none"> • Dynamic Classroom (technology) • Game Closet • Check It Out: Lesson Tutorials at www.bigideasmath.com 	<p><i>Summative</i></p> <p>What You Learned Before</p> <p>Chapter Test</p> <p>Quizzes</p> <p>Standards Assessment</p> <p><i>Formative</i></p> <p>Discovery Activity</p> <p>Observation and “What’s Your Answer?” Responses</p> <p>Guided Practice Observation</p> <p>Lesson Summary Responses</p> <p>Homework</p>
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EIGHTH GRADE MATHEMATICS - “Algebra Survey”				
Chapter 9	Lessons 4	Chapter Content: Data Analysis and Displays	Domain/ Common Core State Standards	Suggested days for topic: 12 days, Chapter Opener, 4



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		Statistics and Probability/8.SP.1, 8.SP.2, 8.SP.3, 8.SP.4	Activities, 4 Lessons, Quiz, Review, Test
Lessons: Objectives		Key Vocabulary	Additional Online Resources
<ol style="list-style-type: none"> <i>Scatter Plots:</i> Students will construct scatter plots and identify relationships between the two data sets. <i>Lines of Fit:</i> Students will draw the line of fit for a scatter plot and analyze the equation of the line. <i>Two-way tables:</i> Students will construct two-way tables and identify relationships between categories of a two-way table. <i>Choosing a Data Display:</i> Students will choose appropriate data displays. Students will identify and analyze misleading data displays. 		scatter plot line of fit line of best fit two-way table joint frequency marginal frequency	Exploring Linear Data at: http://illuminations.nctm.org/ Scatter Diagram at: http://www.insidemathematics.org/performance-assessment-tasks Online math skill practice at: https://www.ixl.com/standards/new-jersey/math/grade-8 A library of interactive, web-based virtual manipulatives at: http://nlvm.usu.edu/en/nav/vlibrary.html



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EIGHTH GRADE MATHEMATICS - “Algebra Survey”				
Chapter	Lessons	Chapter Content:	Domain/ Common Core State Standards	Suggested days for topic:
10	7	Exponents and Scientific Notation	Expressions and Equations/8.EE.1, 8.EE.3, 8.EE.4	18 days, Chapter Opener, 7 Activities, 7 Lessons, Quiz, Review, Test
Lessons: Essential Questions		Resources, Materials, & Games		Assessments
<ol style="list-style-type: none"> <i>Exponents:</i> How can you use exponents to write numbers? <i>Product of Powers Property:</i> How can you use deductive reasoning to observe patterns and write general rules involving properties of exponents? <i>Quotient of Powers Property:</i> How can you divide two powers that have the same base? <i>Zero and Negative Exponents:</i> How can you evaluate a nonzero number with an exponent of zero? How can you evaluate a nonzero number with a negative integer exponent? <i>Reading Scientific Notation:</i> How can you read numbers that are written in scientific notation? <i>Writing Scientific Notation:</i> How can you write a number in scientific notation? 		<p><i>Resources</i></p> <ul style="list-style-type: none"> Big Ideas Student Text Big Ideas Record & Practice Journal Big Ideas Resources by Chapter and Performance Tasks Online Account <p><i>Materials & Manipulatives</i></p> <ul style="list-style-type: none"> Calculators Strips of paper Unit Cubes Containers containing different liquids (3) Meter sticks (3) Metric Ruler pH Meter <i>Powers of Ten</i> video <p><i>Differentiation Opportunities</i></p> <ul style="list-style-type: none"> Skills Review and Basic Skills Handbook Lesson Tutorials (online) Intensive Intervention Activities (online) Differentiating the Lesson (online) Enrichment and Extension <p><i>Online Resources</i></p>		<p><i>Summative</i></p> <p>What You Learned Before</p> <p>Chapter Test</p> <p>Quizzes</p> <p>Standards Assessment</p> <p><i>Formative</i></p> <p>Discovery Activity</p> <p>Observation and “What’s Your Answer?” Responses</p> <p>Guided Practice Observation</p> <p>Lesson Summary Responses</p>



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<p>7. <i>Operations in Scientific Notation:</i> How can you perform operations with numbers written in scientific notation?</p>	<ul style="list-style-type: none"> • Dynamic Classroom (technology) • Game Closet • Check It Out: Lesson Tutorials at www.bigideasmath.com 	<p>Homework</p>
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EIGHTH GRADE MATHEMATICS - “Algebra Survey”				
Chapter 10	Lessons 7	Chapter Content: Exponents and Scientific Notation	Domain/ Common Core State Standards Expressions and Equations/8.EE.1, 8.EE.3, 8.EE.4	Suggested days for topic: 18 days, Chapter Opener, 7 Activities, 7 Lessons, Quiz, Review, Test
Lessons: Objectives		Key Vocabulary		Additional Online Resources



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<ol style="list-style-type: none">1. <i>Exponents:</i> Students will write expressions involving integer exponents and evaluate powers.2. <i>Product of Powers Property:</i> Students will use the Product of Powers Property, the Power of a Power Property, and the Power of a Product Property to simplify expressions.3. <i>Quotient of Powers Property:</i> Students will use the Quotient of Powers Property to simplify expressions.4. <i>Zero and Negative Exponents:</i> Students will use the definitions of zero and negative exponents to evaluate and simplify expressions.5. <i>Reading Scientific Notation:</i> Students will read numbers in scientific notation and write them in standard form. Students will compare numbers in scientific notation.6. <i>Writing Scientific Notation:</i> Students will convert numbers in standard form to scientific notation.7. <i>Operations in Scientific Notation:</i> Students will add, subtract, multiply and divide numbers written in scientific notation.	<p>power base exponent scientific notation</p>	<p>Online math skill practice at: https://www.ixl.com/standards/new-jersey/math/grade-8</p> <p>A library of interactive, web-based virtual manipulatives at: http://nlvm.usu.edu/en/nav/vlibrary.html</p>
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