

HILLSBOROUGH TOWNSHIP SCHOOL DISTRICT

MATHEMATICS CURRICULUM

Grade 8

July, 2020

Course Overview

Grade 8 Mathematics

The grade eight mathematics program emphasizes the following content strands as they align with the grade seven New Jersey Student Learning Standards (NJSLS) in mathematics: The Number System, Expressions and Equations, Functions, Geometry, and Statistics and Probability. The New Jersey Student Learning Standards for Mathematical Practice: make sense of problems and persevere in solving them; reason abstractly and quantitatively; construct viable arguments and critique the reasoning of others; model with mathematics, use appropriate tools strategically; attend to precision; look for and make use of structure; and look for and express regularity in repeated reasoning are embedded in the daily teaching and learning. The content is presented using a problem solving approach designed to develop critical thinking skills while embedding the mathematical processes into the daily teaching and learning. Practice of basic skills is ongoing through a variety of routines and activities. Topics are revisited regularly and practice is distributed over time to facilitate full concept development. Activities explore a wide variety of content with opportunities to make connections between mathematical concepts. Program implementation and assessment offers enrichment and reinforcement based on individual student needs. The grade eight mathematics program prepares students to take the New Jersey Student Learning Assessment 8 or any new generation assessment developed. Successful completion of the eighth grade mathematics program prepares students for entry into algebra 1.

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Unit Title: Unit 1 Equations	Time Frame/Pacing: 16 days
Essential Questions <ul style="list-style-type: none"> ● How are patterns of change related to the behavior of functions? ● How can you solve a multi-step equation? 	
Enduring Understandings <ul style="list-style-type: none"> ● Patterns and relationships can be represented graphically, numerically, symbolically, or verbally. 	
Standards Taught and Assessed <p>■ Major Clusters</p> <ul style="list-style-type: none"> ● 8.EE.C.7 Solve linear equations in one variable. ● 8.EE.C.7a Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers). ● 8.EE.C.7b Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. 	
Highlighted Interdisciplinary Connections Science <ul style="list-style-type: none"> ● MS-14.8.2.CC-1 -Models can be used to represent systems and their interactions-such as inputs, processes and outputs-and energy, matter, and information flows within systems 	
Highlighted Career Ready Practices and 21st Century Themes and Skill - <ul style="list-style-type: none"> ● 9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving 	
Social Emotional Learning Competencies <ul style="list-style-type: none"> ● 2.1.8.PGD.1: Explain how appropriate health care can promote personal health. 	

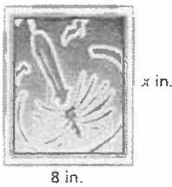

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Pre-Assessment <ul style="list-style-type: none"> ● 8.EE.C.7 ● 8.EE.C.7a ● 8.EE.C.7b 		Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504) <ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
■ 8.EE.C.7a and 8.EE.C.7b. Write and solve one-step equations	SMP 4 Model with mathematics	Solve the equation. Check your solution. 1. $t + 17 = 3$ 2. $-2\pi + d = -3\pi$ 3. $-13.5 = 2.7s$ 4. $2 - 3j = 8$ 5. You earn \$9.65 per hour. This week, you earned \$308.80 before taxes. Write and solve an equation to find the number of hours you worked this week.	Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension <u>Student journal</u> <u>Balance Scale</u> <u>Media</u> <u>Graphic Organizer-Information Frame</u> <u>Unit 1 Resources</u>	Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan
■ 8.EE.C.7a, 8.EE.C.7b Write and solve multi-step equations	SMP 1 Make sense of problems and persevere in solving them SMP 4 Model with mathematics	Solve the equation. Check your solution. 1. $18 = 5a - 2a + 3$ 2. $2(4 - 2w) - 8 = -4$ 3. $2.3y + 4.4y - 3.7 = 16.4$ 4. $3 - 4z + 1 - 4z + 6 = 5$ 5. The perimeter of the picture is 36 inches. What is the height of	Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension <u>Student journal</u>	Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other

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		<p>the picture?</p> 	<p>Balance Scale Media Graphic Organizer- Information Frame Unit 1 Resources</p>	<p>accommodations/ modifications per a student's IEP or 504 plan</p>
<p>■ 8.EE.C.7a and 8.EE.C.7b Write and solve equations with variables on both sides</p>	<p>SMP 1 Make sense of problems and persevere in solving them</p> <p>SMP 4 Model with mathematics</p>	<p>Solve the equation. Check your solution, if possible.</p> <ol style="list-style-type: none"> $n - 4 = 3n + 6$ $0.3(w + 10) = 1.8w$ $-3x + 15 = 3(5 - x)$ $1 - 2(4x + 14) = 2(x - 7)$ The perimeter of the rectangle is equal to the perimeter of the square. What are the side lengths of each figure? 	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p>Student journal Balance Scale Media Graphic Organizer- Information Frame Unit 1 Resources</p>	<p>Vocabulary usage, one on one instruction, differentiated lessons, enrichment activities, Graphic Organizers manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ 8.EE.C.7 Solve literal equations for given variables and convert temperatures.</p>	<p>SMP 2 Reason abstractly and quantitatively</p>	<p>Solve the equation for y.</p> <ol style="list-style-type: none"> $2x - y = 4$ $5 = 1 - 4x + 2y$ <p>For each formula, solve for the bold variable.</p> <ol style="list-style-type: none"> $d = rt$ $A = 1 - 2bh$ The temperature in Portland, Oregon is 37°F. The temperature in Mobile, 	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p>Student journal Balance Scale Media</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a</p>

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		Alabama, is 22°C. In which city is the temperature higher?	<u>Graphic Organizer- Information Frame</u> <u>Unit 1 Resources</u>	student's IEP or 504 plan
Benchmark Assessment <ul style="list-style-type: none"> ● Benchmark 1 Assessment 		Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504) <ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
Summative Assessment(s) <ul style="list-style-type: none"> ● Unit 1 <u>Performance Task</u> ● Unit 1 Check In 1 (8.EE.C.7a, 8.EE.C.7b) ● Unit 1 Check In 2 (Applying 8.EE.C.7) 		Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504) <ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		

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Unit Title: Unit 2 Transformations	Time Frame/Pacing: 21 days
Essential Questions <ul style="list-style-type: none"> ● What situations can be analyzed using transformations and symmetries? ● How do transformations affect coordinates? 	
Enduring Understandings <ul style="list-style-type: none"> ● Shape and area can be conserved during mathematical transformations. 	
Standards Taught and Assessed <p>■ Major Clusters</p> <ul style="list-style-type: none"> ● 8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations: lines are taken to lines, and line segments to line segments of the same length; angles are taken to angles of the same measure; and parallel lines are taken to parallel lines. ● 8.G.A.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. ● 8.G.A.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. ● 8.G.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. 	
Highlighted Interdisciplinary Connections Visual & Performing Arts <ul style="list-style-type: none"> ● 1.3.8.D.1 Incorporate various art elements and the principles of balance, harmony, unity, emphasis, proportion, and rhythm/movement in the creation of two- and three- dimensional artworks, using a broad array of art media and art mediums to enhance the expression of creative ideas (e.g., perspective, implied space, illusionary depth, value, and pattern). 	
Highlighted Career Ready Practices and 21st Century Themes and Skill <ul style="list-style-type: none"> ● 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b). 	
Social Emotional Learning Competencies <ul style="list-style-type: none"> ● 2.2.8.MSC.2: Demonstrate control of motion in relationship between force, flow, time, and space in interactive dynamic environments. • 	

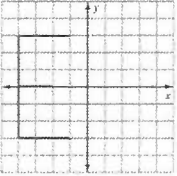
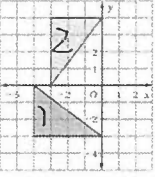
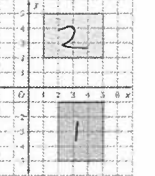
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2.2.8.MSC.3: Create and demonstrate planned movement sequences, individually and with others, based on tempo, beat, rhythm, music, and physical activities (e.g., creative, cultural, social, fitness aerobics, dance, yoga).				
Pre-Assessment <ul style="list-style-type: none"> ● 8.G.A.1 ● 8.G.A.2 ● 8.G.A.3 ● 8.G.A.4 		Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504) <ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
<p>■ 8.G.A.1a; 8.G.A.1b; 8.G.A.1c; 8.G.A.3</p> <p>Translate figures on a coordinate plane</p>	<p>SMP 2 Reason abstractly and quantitatively</p>	<p>The vertices of a triangle are A(1, 3), B(4, 3), and C (3, 0). Draw the figure and its image after the translation.</p> <ol style="list-style-type: none"> 1. 2 units left and 3 units down 2. $(x + 1, y + 2)$ 3. Describe a translation of the helicopter from point A to point B. 	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Unit 2 Resources</u> <u>Desmos Geometry Tool</u> <u>Media</u> <u>Student Journal</u> <u>Graphic Organizer - Summary Triangle</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>

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<p>■ 8.G.A.1a; 8.G.A.1b; 8.G.A.1c; 8.G.A.3 Reflect figures on the coordinate plane.</p>	<p>SMP 2 Reason abstractly and quantitatively</p>	<p>1. The vertices of a triangle are $A(-4, -2)$, $B(4, -1)$, and $C(1, -6)$. Draw the figure and its reflection in the x-axis. Identify the coordinates of the image. 2. The vertices of a triangle are $A(-2, 4)$, $B(-4, 2)$, and $C(-1, -1)$. Draw the figure and its reflection in the y-axis. Identify the coordinates of the image. 3. Will the letter E look the same when reflected in the y-axis?</p> 	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension <u>Unit 2 Resources</u> <u>Desmos Geometry Tool</u> <u>Media</u> <u>Student Journal</u> <u>Graphic Organizer - Summary Triangle</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ 8.G.A.1a; 8.G.A.1b; 8.G.A.1c; 8.G.A.3 Rotate figures on the coordinate plane.</p>	<p>SMP 2 Reason abstractly and quantitatively</p>	<p>Tell whether figure 1 is a rotation of figure 2 about the origin. If so, give the angle and direction of the rotation.</p> <p>1.</p>  <p>2.</p> 	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension <u>Unit 2 Resources</u> <u>Desmos Geometry Tool</u> <u>Media</u> <u>Student Journal</u> <u>Graphic Organizer - Summary Triangle</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>

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		<p>The vertices of a figure are given. Rotate the figure as described. Find the coordinates of the image.</p> <p>3. L(3, 2), M(1, 1), N(1, 5) 90° counterclockwise about the origin</p> <p>4. T (2, 5), U(5, 4), V (6, 1), W (2, 1) 180° about the origin</p>		
<p>■ 8.G.A.2 Identify and describe congruent figures</p>	<p>SMP 6 Attend to precision</p> <p>SMP 7 Look for and make use of structure</p>	<p>1. Identify any congruent figures in the coordinate plane.</p> <p>2. Figure 1 is congruent to figure 2. Describe a sequence of rigid motions between the figures.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p>Unit 2 Resources Desmos Geometry Tool Media Student Journal Graphic Organizer - Summary Triangle</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ 8.G.A.3 Dilate figures on the coordinate plane</p>	<p>SMP 2 Reason abstractly and quantitatively</p>	<p>1. Tell whether figure 2 is a dilation of figure 1.</p> <p>2. The vertices of a triangle are A(1, 2), B(2, 4), and C (3, 1). Draw the triangle and its image after a dilation with a scale factor</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p>Unit 2 Resources Desmos Geometry Tool</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/</p>

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		<p>of 2. Identify the type of dilation.</p> <p>3. The vertices of a quadrilateral are A(-2, -2), B(0, 1), C (4, 2), and D (2, -1). Dilate the quadrilateral using a scale factor of 0.5. Then translate it 3 units left and 4 units up. What are the coordinates of the image?</p>	<p><u>Media</u> <u>Student Journal</u> <u>Graphic Organizer -</u> <u>Summary Triangle</u></p>	<p>modifications per a student's IEP or 504 plan</p>
<p>■ 8.G.A.4 Identify and describe similar figures</p>	<p>SMP 3 Construct viable arguments and critique the reasoning of others.</p>	<p>1. Determine whether the figures are similar. Explain your reasoning.</p> <p>2. Figure 1 is similar to figure 2. Describe a similarity transformation between the figures.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Unit 2 Resources</u> <u>Desmos Geometry Tool</u> <u>Media</u> <u>Student Journal</u> <u>Graphic Organizer -</u> <u>Summary Triangle</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plan</p>
<p>■ 8.G.A.4 Find perimeters and areas of similar figures</p>	<p>SMP 1 Make sense of problems and persevere in solving them.</p>	<p>Find the values of the ratios (1 to 2) of the perimeters and areas of the similar figures.</p> <p>1. </p> <p>2. </p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Unit 2 Resources</u> <u>Desmos Geometry Tool</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/</p>

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			<u>Media</u> <u>Student Journal</u> <u>Graphic Organizer -</u> <u>Summary Triangle</u>	modifications per a student's IEP or 504 plan
Benchmark Assessment <ul style="list-style-type: none"> • Not applicable 		Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504) <ul style="list-style-type: none"> • extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
Summative Assessment(s) <ul style="list-style-type: none"> • Unit 2 <u>Performance Task</u> • Unit 2 Check In 1 (8.G.A.1, 8.G.A.3) • Unit 2 Check In 2 (8.G.A.2) • Unit 2 Check In 3 (8.G.A.4) 				

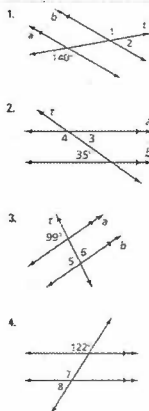
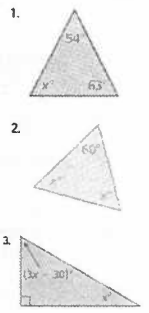
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Unit Title: Unit 3 Angles and Triangles		Timeframe/Pacing: 15 days
Essential Questions		
<ul style="list-style-type: none"> ● How can you describe angle relationships? ● How do geometric relationships help to solve problems and/or make sense of phenomena? 		
Enduring Understandings		
<ul style="list-style-type: none"> ● Geometric relationships provide a means to make sense of a variety of phenomena. 		
Standards Taught and Assessed		
<p>■ 8.G.A.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.</p>		
Highlighted Interdisciplinary Connections		
Computer Science & Design Thinking and Visual & Performing Arts		
<ul style="list-style-type: none"> ● 8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose. ● 1.2.8.Pr5a: Develop and demonstrate a variety of artistic, design, technical, and soft skills (e.g., self initiative, problem solving, collaborative communication) through performing various roles in producing media artworks. 		
Highlighted Career Ready Practices and 21st Century Themes and Skill		
<ul style="list-style-type: none"> ● 9.4.5.IML.2: Create a visual representation to organize information about a problem or issue (e.g., 4.MD.B.4, 8.1.5.DA.3). 		
Social Emotional Learning Competencies		
<ul style="list-style-type: none"> ● 2.2.8.MSC.3: Create and demonstrate planned movement sequences, individually and with others, based on tempo, beat, rhythm, music, and physical activities (e.g., creative, cultural, social, fitness aerobics, dance, yoga). 		
Pre-Assessment	Modifications/Accommodations (ELL, Special Education, Gifted-Risk of Failure, 504)	
<ul style="list-style-type: none"> ● 8.G.A.5 	<ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 	

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Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
<p>■ 8.G.A.5 Find missing angle measures created by the intersections of lines</p>	<p>SMP 2 Reason abstractly and quantitatively</p> <p>SMP 5 Use appropriate tools strategically</p>	<p>Use the figure to find the measures of the numbered angles.</p> 	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p>Unit 3 Resources Math Tool Paper Desmos Geometry Tool Media Student Journal Graphic Organizer - Example/Non-example chart</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ 8.G.A.5 Understand properties of interior and exterior angles of triangles</p>	<p>SMP 2 Reason abstractly and quantitatively</p>	<p>Find the measures of the interior angles.</p>  <p>Find the measure of the exterior angle.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p>Unit 3 Resources Math Tool Paper Desmos Geometry Tool Media Student Journal Graphic Organizer -</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>

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			<u>Example/Non-example chart</u>	
<p>■ 8.G.A.5 Find interior angle measures of polygons</p>	<p>SMP 2 Reason abstractly and quantitatively</p> <p>SMP 3 Construct viable arguments and critique the reasoning of others</p>	<p>Find the sum of the interior angle measures of the polygon.</p> <p>1. </p> <p>2. </p> <p>3. Find the value of x.</p> <p>4. Find the measure of each interior angle of a 16-gon.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Unit 3 Resources</u> <u>Math Tool Paper</u> <u>Desmos Geometry Tool</u> <u>Media</u> <u>Student Journal</u> <u>Graphic Organizer - Example/Non-example chart</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ 8.G.A.5 Use similar triangles to find missing measures</p>	<p>SMP 2 Reason abstractly and quantitatively</p> <p>SMP 6 Attend to precision</p>	<p>Tell whether the triangles are similar. Explain.</p> <p>1. </p> <p>2. </p> <p>3. </p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Unit 3 Resources</u> <u>Math Tool Paper</u> <u>Desmos Geometry Tool</u> <u>Media</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>

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		<p>4. A person that is 5 feet tall casts a 3-foot-long shadow. A nearby telephone pole casts a 12-foot-long shadow. What is the height h of the telephone pole?</p>	<p><u>Student Journal</u> <u>Graphic Organizer - Example/Non-example chart</u></p>	
<p>Benchmark Assessment</p> <ul style="list-style-type: none"> ● Quarterly Assessment 1 		<p>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</p> <ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student’s IEP or 504 plan, student resources in multiple languages. 		
<p>Summative Assessment(s)</p> <ul style="list-style-type: none"> ● Unit 3 <u>Performance Task</u> ● Unit 3 Check In 1 (8.G.A.5) ● Unit 3 Check In 2 (8.G.A.5) 		<p>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</p> <ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student’s IEP or 504 plan, student resources in multiple languages. 		

Key: ■ Major Cluster □ Supporting Cluster ⊙ Additional Cluster

**Hillsborough Township Public Schools
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Unit Title: Unit 4 Graphing and Writing Linear Equations	Time Frame/Pacing: 21 days
Essential Questions <ul style="list-style-type: none"> ● How are patterns of change related to the behavior of functions? ● How can patterns, relations, and functions be used as tools to best describe and help explain real-life situations? 	
Enduring Understandings <ul style="list-style-type: none"> ● Patterns and relationships can be represented graphically, numerically, symbolically, or verbally. ● Algebraic representation can be used to generalize patterns and relationships 	
Standards Taught and Assessed ■ Major Clusters <ul style="list-style-type: none"> ● 8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. ● 8.EE.B.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b. ● 8.F.B.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. 	
Highlighted Interdisciplinary Connections Science <ul style="list-style-type: none"> ● MS-PS3-1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object. ● MS-PS3-5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. 	
Highlighted Career Ready Practices and 21st Century Themes and Skill <ul style="list-style-type: none"> ● 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global 	

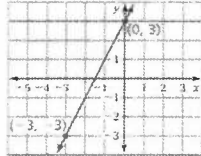
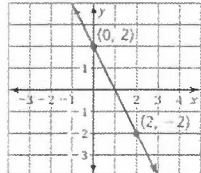
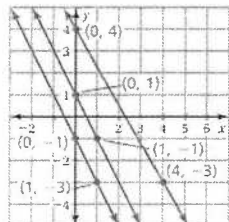
Key: ■ Major Cluster □ Supporting Cluster ⊙ Additional Cluster

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Social Emotional Learning Competencies				
<ul style="list-style-type: none"> 2.2.8.MSC.2: Demonstrate control of motion in relationship between force, flow, time, and space in interactive dynamic environments 				
Pre-Assessment <ul style="list-style-type: none"> 8.EE.B.5 8.EE.B.6 8.F.B.4 		Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504) <ul style="list-style-type: none"> extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
<ul style="list-style-type: none"> 8.EE.B.5 Graph linear equations 	SMP 3 Construct a viable argument and critique the reasoning of others	1. Graph $y = 1/2x - 2$ 2. The amount y (in dollars) of money in your savings account after x months is represented by the equation $y = 20x + 100$. a. Graph the linear equation. b. How many months will it take you to save a total of \$200?	Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension Graphic Organizer - Definitions & Examples Math Tool - Desmos Graphing Calculator Media Unit 4 Resources Student Journal	Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan
<ul style="list-style-type: none"> 8.EE.B.6 Find and interpret the slope of a line 	SMP 7 Look for and make use of structure	Find the slope of the line.	Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills	Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction,

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		<p>1. </p> <p>2. </p> <p>3. Which two lines are parallel? How do you know?</p> 	<p>review handbook, skills trainer, enrichment and extension</p> <p>Graphic Organizer - Definitions & Examples</p> <p>Math Tool - Desmos Graphing Calculator</p> <p>Media</p> <p>Unit 4 Resources</p> <p>Student Journal</p>	<p>differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>										
<p>■ 8.EE.B.5 and 8.EE.B.6 Graph proportional relationships</p>	<p>SMP 4 Model with mathematics</p>	<p>A maple tree grows 1.5 feet each year. The table shows the yearly growth for a pine tree.</p> <table border="1" data-bbox="925 1073 1234 1139"> <tbody> <tr> <td>Time (years)</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>Growth (inches)</td> <td>12</td> <td>24</td> <td>36</td> <td>48</td> </tr> </tbody> </table> <p>1. Which tree grows faster? 2. Write and graph equations that represent the growth rates of each tree. Compare and interpret the steepness of each graph.</p>	Time (years)	1	2	3	4	Growth (inches)	12	24	36	48	<p>Extra Practice, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p>Graphic Organizer - Definitions & Examples</p> <p>Math Tool - Desmos Graphing Calculator</p> <p>Media</p> <p>Unit 4 Resources</p> <p>Student Journal</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one one one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
Time (years)	1	2	3	4										
Growth (inches)	12	24	36	48										

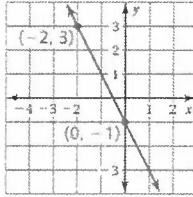
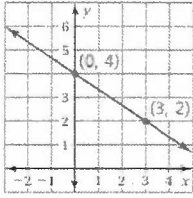
Key: ■ Major Cluster □ Supporting Cluster ⊙ Additional Cluster

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<p>■ 8.EE.B.6 Graph linear equations in slope intercept form</p>	<p>SMP 8 Look for and express regularity in repeated reasoning</p>	<p>Find the slope and the y-intercept of the graph of the linear equation. 1. $y = 5x - 8$ 2. $y - 2 = -3 - 4x$ 3. Graph $y = -2x + 4$. Identify the x-intercept.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension Graphic Organizer - Definitions & Examples Math Tool - Desmos Graphing Calculator Media Unit 4 Resources Student Journal</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ 8.EE.B.6 Graph linear equations in standard form</p>	<p>SMP 1 Make sense of problems and persevere in solving them</p>	<p>1. Write $4x + 3y = 9$ in slope-intercept form. 2. Graph $-2x + 4y = 16$ using intercepts. 3. You have \$12 to spend on pears and oranges. The equation $1.2x + 0.8y = 12$ represents this situation, where x is the number of pounds of pears and y is the number of pounds of oranges. Graph the equation. Interpret the intercepts.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension Graphic Organizer - Definitions & Examples Math Tool - Desmos Graphing Calculator Media Unit 4 Resources Student Journal</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ 8.F.B.4 Write equations of lines in slope intercept form</p>	<p>SMP 7 Look for and make use of structure</p>	<p>Write an equation in slope-intercept form of the line that passes through the given points.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction,</p>

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		<p>1. </p> <p>2. </p> <p>3. $(-2, 7), (0, 1)$ 4. $(-6, 4), (3, 4)$</p> <p>5. <table border="1" data-bbox="946 801 1074 999"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-4</td> <td>-7</td> </tr> <tr> <td>-2</td> <td>-6</td> </tr> <tr> <td>0</td> <td>-5</td> </tr> <tr> <td>2</td> <td>-4</td> </tr> </tbody> </table></p>	x	y	-4	-7	-2	-6	0	-5	2	-4	<p>review handbook, skills trainer, enrichment and extension <u>Graphic Organizer - Definitions & Examples</u> <u>Math Tool - Desmos</u> <u>Graphing Calculator</u> <u>Media</u> <u>Unit 4 Resources</u> <u>Student Journal</u></p>	<p>differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
x	y													
-4	-7													
-2	-6													
0	-5													
2	-4													
<p>■ 8.F.B.4 Write equations in point slope form</p>	<p>SMP 2 Reason abstractly and quantitatively</p>	<p>Write an equation in point-slope form of the line that passes through the given point and has the given slope.</p> <p>1. $(1, 4); m = 3$ 2. $(2, -1); m = 1/2$</p> <p>Write an equation in slope-intercept form of the line that passes through the given points.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension <u>Graphic Organizer - Definitions & Examples</u> <u>Math Tool - Desmos</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a</p>										

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		<p>3. $(-1, 5)$, $(1, 1)$ 4. $(-2, -6)$, $(4, 3)$ 5. You rent a floor sander for \$24 per day. You pay \$82 for 3 days. a. Write an equation that represents your total cost y (in dollars) after x days. b. How much is the initial fee to rent the sander?</p>	<p><u>Graphing Calculator</u> <u>Media</u> <u>Unit 4 Resources</u> <u>Student Journal</u></p>	<p>student's IEP or 504 plan</p>
<p>Benchmark Assessment</p> <ul style="list-style-type: none"> ● Not applicable 		<p>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</p> <ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
<p>Summative Assessment(s)</p> <ul style="list-style-type: none"> ● Unit 4 <u>Performance Task</u> ● Unit 4 Check In 1 (8.EE.B.5, 8.EE.B.6) ● Unit 4 Check In 2 (8.F.B.4) 				

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**Hillsborough Township Public Schools
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Unit Title: Unit 5 Systems of Linear Equations	Time Frame/Pacing: 17 days
<p>Essential Questions</p> <ul style="list-style-type: none"> ● How are patterns of change related to the behavior of functions? ● How can patterns, relations, and functions be used as tools to best describe and help explain real-life situations? 	
<p>Enduring Understandings</p> <ul style="list-style-type: none"> ● Patterns and relationships can be represented graphically, numerically, symbolically, or verbally. ● Algebraic representation can be used to generalize patterns and relationships. 	
<p>Standards Taught and Assessed</p> <p>■ Major Clusters</p> <ul style="list-style-type: none"> ● 8.EE.C.8a Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. ● ■ 8.EE.C.8b Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. ● ■ 8.EE.C.8c Solve real-world and mathematical problems leading to two linear equations in two variables. 	
<p>Highlighted Interdisciplinary Connections</p> <p>Science</p> <ul style="list-style-type: none"> ● MS-PS1-2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. 	
<p>Highlighted Career Ready Practices and 21st Century Themes and Skill</p> <ul style="list-style-type: none"> ● 9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem. ● 9.4.8.TL.3: Select appropriate tools to organize and present information digitally. 	
<p>Social Emotional Learning Competencies</p> <ul style="list-style-type: none"> ● • 2.1.8.EH.2: Analyze how personal attributes, resiliency, and protective factors support mental and emotional health. 	
<p>Pre-Assessment</p> <ul style="list-style-type: none"> ● 8.EE.C.8a ● 8.EE.C.8b 	<p>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</p> <ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other

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<ul style="list-style-type: none"> 8.EE.C.8c 		accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages.		
Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
<ul style="list-style-type: none"> 8.EE.C.8a; 8.EE.C.8b; 8.EE.C.8c Understand how to solve systems of linear equations by graphing 	SMP 1 Make sense of problems and persevere in solving them SMP 6 Attend to precision	Solve the system by graphing. <ol style="list-style-type: none"> $y = 2x + 6$ $y = -2x - 2$ $y = 3x + 9$ $y = -1/4x - 4$ $2x + y = 4$ $y = x - 5$ A wallet contains 23 bills. All the bills are \$1 bills and \$5 bills. There are 7 more \$1 bills than \$5 bills. How much money does the wallet contain? 	Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension Graphic Organizer- Four Square Student Journal Media Unit 5 Resources Math Tool - Desmos Graphing Calculator	Visual diagrams, clarify directions, vocabulary usage, small group work, one one one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan
<ul style="list-style-type: none"> 8.EE.C.8b and 8.EE.C.8c Understand how to solve systems of linear equations by substitution 	SMP 4 Model with mathematics SMP 2 Reason abstractly and quantitatively	Solve the system of linear equations by substitution. Check your solution. <ol style="list-style-type: none"> $y = 3x - 2$ $y = -x + 6$ $2y + 8 = x$ $8x + y = -21$ $4x + 3y = 26$ $2x - 3y = -14$ 	Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension Graphic Organizer- FourSquare	Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/

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		<p>4. You spend \$56 on food and clothes. You spend \$18 more on clothes than on food.</p> <p>a. Write a system of linear equations that represents this situation.</p> <p>b. How much do you spend on each?</p>	<p>Student Journal Media Unit 5 Resources Math Tool - Desmos Graphing Calculator</p>	<p>modifications per a student's IEP or 504 plan</p>
<p>■ 8.EE.C.8b and 8.EE.C.8c Understand how to solve systems of linear equations by elimination</p>	<p>SMP 2 Reason abstractly and quantitatively</p> <p>SMP 4 Model with mathematics</p>	<p>Solve the system of linear equations by elimination. Check your solution.</p> <p>1. $5x - 2y = 18$ $-5x + 3y = -22$</p> <p>2. $2x + 4y = 20$ $-3x + 4y = 30$</p> <p>3. $4x - 2y = 2$ $7x - 3y = 6$</p> <p>4. You have 33 coins consisting of dimes and quarters in a jar. The jar contains a total of \$4.95.</p> <p>a. Write and solve a system of linear equations that represents this situation.</p> <p>b. How many of each coin do you have?</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p>Graphic Organizer- Four Square Student Journal Media Unit 5 Resources Math Tool - Desmos Graphing Calculator</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ 8.EE.C.8a; 8.EE.C.8b; 8.EE.C.8c Solve systems with different numbers of solutions</p>	<p>SMP 4 Model with mathematics</p> <p>SMP 7 Look for and make use of structure</p>	<p>Solve the system. Explain your choice of method.</p> <p>1. $2x + 3y = 5$ $2x + 3y = 7$</p> <p>2. $x + 2y = 12$ $y = -1/2 x + 6$</p> <p>3. $-3x + 2y = 2$</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling,</p>

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		$4x + 3y = 20$ 4. You and your friend buy fruit. You pay \$4 for 5 apples and 6 bananas. Your friend pays \$12 for 15 apples and 18 bananas. How much does each piece of fruit cost?	Graphic Organizer- Four Square Student Journal Media Unit 5 Resources Math Tool - Desmos Graphing Calculator	and specific other accommodations/modifications per a student's IEP or 504 plan
Benchmark Assessment <ul style="list-style-type: none"> ● Benchmark Assessment 2 ● Quarterly Assessment 2 		Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504) <ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
Summative Assessment(s) <ul style="list-style-type: none"> ● Unit 5 Performance Task ● Unit 5 Check-In 1 (8.EE.C.8a, 8.EE.C.8b, 8.EE.C.8c) ● Unit 5 Check-In 2 (8.EE.C.8a, 8.EE.C.8b, 8.EE.C.8c) 		Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504) <ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		

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Unit Title: Unit 6 Data Analysis and Displays	Timeframe/Pacing: 16 days
Essential Questions <ul style="list-style-type: none"> ● How can experimental and theoretical probabilities be used to make predictions or draw conclusions? ● How can you display data in a way that helps you make decisions? 	
Enduring Understandings <ul style="list-style-type: none"> ● The message conveyed by the data depends on how the data is collected, represented, and summarized. The results of a statistical investigation can be used to support or refute an argument. 	
Standards Taught and Assessed <input type="checkbox"/> Supporting Clusters <ul style="list-style-type: none"> ● 8.SP.A.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. ● 8.SP.A.2 Know that straight lines 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. ● 8.SP.A.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. ● 8.SP.A.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. 	
Highlighted Interdisciplinary Connections Computer Science & Design Thinking and English Language Arts <ul style="list-style-type: none"> ● 8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose ● SL.8.2. Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation. 	
Highlighted Career Ready Practices and 21st Century Themes and Skill <ul style="list-style-type: none"> ● 9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations. ● 9.4.8.IML.5: Analyze and interpret local or public data sets to summarize and effectively communicate the data. 	

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<p>Social Emotional Learning Competencies</p> <ul style="list-style-type: none"> • 2.1.8.EH.1: Compare and contrast stress management strategies that are used to address various types of stress-induced situations (e.g., academics, family, personal relationships, finances, celebrations, violence) • 2.1.8.PGD.4: Analyze the relationship between healthy behaviors and personal health. 																								
<p>Pre-Assessment</p> <ul style="list-style-type: none"> • 8.SP.A.1 • 8.SP.A.2 • 8.SP.A.3 • 8.SP.A.4 		<p>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</p> <ul style="list-style-type: none"> • extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 																						
<p>Student Learning Objectives: We are learning to/that...</p>	<p>Student Strategies (Mathematical Practices)</p>	<p>Formative Assessment</p>	<p>Activities and Resources</p>	<p>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</p>																				
<p><input type="checkbox"/> 8.SP.A.1 Use scatter plots to describe patterns and relationships between two quantities</p>	<p>SMP 3 Construct viable arguments and critique the reasoning of others</p>	<p>1. The table shows the average price (in dollars) of scooters sold at different stores and the number of scooters sold at each store in one month</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Average Price (dollars)</td> <td>110</td> <td>25</td> <td>165</td> <td>75</td> <td>46</td> <td>40</td> <td>95</td> <td>56</td> <td>82</td> </tr> <tr> <td>Number Sold</td> <td>38</td> <td>29</td> <td>8</td> <td>56</td> <td>98</td> <td>75</td> <td>45</td> <td>57</td> <td>50</td> </tr> </table> <p>a. Make a scatter plot of the data. b. Describe the relationship between the data. c. Identify any outliers, gaps, or clusters in the data.</p>	Average Price (dollars)	110	25	165	75	46	40	95	56	82	Number Sold	38	29	8	56	98	75	45	57	50	<p>EExtra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension <u>Graphic Organizer - Information Frame</u> <u>Student Journal</u> <u>Media</u> <u>Unit 6 Resources</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
Average Price (dollars)	110	25	165	75	46	40	95	56	82															
Number Sold	38	29	8	56	98	75	45	57	50															
<p><input type="checkbox"/> 8.SP.A.1; 8.SP.A.2 8.SP.A.3 Use lines of fit to model data</p>	<p>SMP 6 Attend to precision</p>	<p>The table shows the distance you travel over a six-hour period.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons,</p>																				

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		<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #cccccc;">Hours, x</th> <th style="background-color: #cccccc;">Distance (miles), y</th> </tr> </thead> <tbody> <tr><td>1</td><td>50</td></tr> <tr><td>2</td><td>102</td></tr> <tr><td>3</td><td>153</td></tr> <tr><td>4</td><td>204</td></tr> <tr><td>5</td><td>254</td></tr> <tr><td>6</td><td>305</td></tr> </tbody> </table> <p>a. Make a scatter plot of the data and draw a line of fit. b. Write an equation of the line of fit. c. Interpret the slope and the y-intercept of the line of fit. d. Find an equation of the line of best fit. Identify and interpret the correlation coefficient.</p>	Hours, x	Distance (miles), y	1	50	2	102	3	153	4	204	5	254	6	305	<p>trainer, enrichment and extension Graphic Organizer - Information Frame Student Journal Media Unit 6 Resources</p>	<p>enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
Hours, x	Distance (miles), y																	
1	50																	
2	102																	
3	153																	
4	204																	
5	254																	
6	305																	
<p><input type="checkbox"/> 8.SP.A.4 Use two-way tables to represent data</p>	<p>SMP 3 Construct viable arguments and critique the reasoning of others</p> <p>SMP 4 Model with mathematics</p>	<p>1. You randomly survey students about whether they are involved in school sports. Grade 5: 12 involved, 26 not involved Grade 8: 23 involved, 19 not involved. a. Make a two-way table that includes the marginal frequencies. b. For each grade level, what percent of the students are involved in school sports? not involved in school sports? Organize the results in a two-way table. c. Does the table in part (b) show a relationship between grade level</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension Graphic Organizer - Information Frame Student Journal Media Unit 6 Resources</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>														

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		and involvement in school sports? Explain.		
<input type="checkbox"/> 8.SP.A.1 Use appropriate data displays to represent situations	SMP 4 Model with mathematics	Choose an appropriate display for the situation. Explain your reasoning. 1. the outcomes of flipping a coin 20 times 2. comparison of students' test scores and how long students studied 3. the number of students participating in after-school sports each year	Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension <u>Graphic Organizer - Information Frame</u> <u>Student Journal</u> <u>Media</u> <u>Unit 6 Resources</u>	Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan
Benchmark Assessment ● Not Applicable		Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504) ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages.		
Summative Assessment(s) ● Unit 6 <u>Performance Task</u> ● Unit 6 Check In 1 (8.SP.A.1, 8.SP.A.2, 8.SP.A.3) ● Unit 6 Check In 2 (8.SP.A.4)				

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Unit Title: Unit 7 Functions	Time Frame/Pacing: 18 days
Essential Questions <ul style="list-style-type: none"> • How are patterns of change related to the behavior of functions? 	
Enduring Understandings <ul style="list-style-type: none"> • Patterns and relationships can be represented graphically, numerically, symbolically, or verbally. 	
Standards Taught and Assessed <p>■ Major Clusters</p> <ul style="list-style-type: none"> • 8.F.A.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. • 8.F.A.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • 8.F.A.3 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. • ■ 8.F.B.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. • ■ 8.F.B.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. 	
Highlighted Interdisciplinary Connections <p>Science</p> <ul style="list-style-type: none"> • RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). • MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. 	
Highlighted Career Ready Practices and 21st Century Themes and Skill	

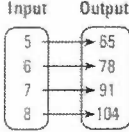
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<ul style="list-style-type: none"> 9.4.8.CI.1: Assess data gathered on varying perspectives on causes of climate change (e.g., cross cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4). 				
Social Emotional Learning Competencies <ul style="list-style-type: none"> 2.1.8.PGD.1: Explain how appropriate health care can promote personal health. 				
Pre-Assessment <ul style="list-style-type: none"> 8.F.A.1 8.F.A.2 8.F.A.3 8.F.B.4 8.F.B.5 		Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504) <ul style="list-style-type: none"> extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
<p>■ 8.F.A.1 Understand the concept of a function</p>	<p>SMP 3 Construct viable arguments and critique the reasoning of others</p>	<p>1. List the ordered pairs shown in the mapping diagram. Then determine whether the relation is a function.</p> <div style="text-align: center;"> </div> <p>2. Describe the relationship between the inputs and outputs in the diagram. Then determine whether the relation is a function.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p>Graphic Organizer - Example/Non-example Chart</p> <p>Media</p> <p>Student Journal</p> <p>Unit 7 Resources</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>

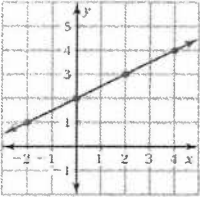
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<p>■ 8.F.A.1, 8.F.B.4, Represent functions in a variety of ways</p>	<p>SMP 8 Look for and express regularity in repeated reasoning</p>	<p>1. Write a function rule for “The output is one-third of the input.”</p> <p>2. Write a function rule for “The output is four less than three times the input.”</p> <p>Find the value of y for the given value of x.</p> <p>3. $y = 6x$; $x = -4$</p> <p>4. $y = x/5 - 8$; $x = 50$</p> <p>5. Graph the function $y = 3x - 4$.</p> <p>6. You are selling magazines to raise money for your school. Each subscription you sell earns \$8 for your school.</p> <p>a. Write a function that represents the total amount d that you can raise for your school after selling s subscriptions.</p> <p>b. How much money will you raise if you sell 20 subscriptions?</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p>Graphic Organizer - Example/Non-example Chart</p> <p>Media</p> <p>Student Journal</p> <p>Unit 7 Resources</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student’s IEP or 504 plan</p>
<p>■ 8.F.A.2; 8.F.A.3; 8.F.B.4 Use functions to model linear relationships</p>	<p>SMP 2 Reason abstractly and quantitatively</p>	<p>Use the graph or table to write a linear function that relates y to x.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment,</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work,</p>

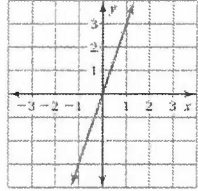
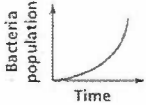
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		<p>1. </p> <p>2. <table border="1" data-bbox="974 449 1255 515"> <tr> <td>x</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> </tr> <tr> <td>y</td> <td>9</td> <td>4</td> <td>-1</td> <td>-6</td> </tr> </table></p> <p>3. The growth y (in feet) of a maple tree in x years is represented by the linear function $y = 1.5x$. The table shows the yearly growth for a pine tree. Which tree grows faster? How much faster?</p> <table border="1" data-bbox="944 832 1251 882"> <tr> <td>Time (year), x</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>Growth (feet), y</td> <td>0.75</td> <td>1.5</td> <td>2.25</td> <td>3</td> </tr> </table>	x	-2	-1	0	1	y	9	4	-1	-6	Time (year), x	1	2	3	4	Growth (feet), y	0.75	1.5	2.25	3	<p>tutorial videos, skills review handbook, skills trainer, enrichment and extension Graphic Organizer - Example/Non-example Chart Media Student Journal Unit 7 Resources</p>	<p>one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
x	-2	-1	0	1																				
y	9	4	-1	-6																				
Time (year), x	1	2	3	4																				
Growth (feet), y	0.75	1.5	2.25	3																				
<p>■ 8.F.A.3 Understand differences between linear and nonlinear functions</p>	<p>SMP 3 Construct viable arguments and critique the reasoning of others</p>	<p>Does the table, equation, or graph represent a linear or nonlinear function? Explain.</p> <p>1. <table border="1" data-bbox="974 1063 1251 1129"> <tr> <td>x</td> <td>-2</td> <td>0</td> <td>2</td> <td>4</td> </tr> <tr> <td>y</td> <td>8</td> <td>0</td> <td>8</td> <td>64</td> </tr> </table></p> <p>2. <table border="1" data-bbox="974 1169 1251 1235"> <tr> <td>x</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> </tr> <tr> <td>y</td> <td>15</td> <td>22</td> <td>29</td> <td>36</td> </tr> </table></p> <p>3. $5x + 4y = 12$</p>	x	-2	0	2	4	y	8	0	8	64	x	-1	0	1	2	y	15	22	29	36	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension Graphic Organizer - Example/Non-example Chart Media Student Journal Unit 7 Resources</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
x	-2	0	2	4																				
y	8	0	8	64																				
x	-1	0	1	2																				
y	15	22	29	36																				

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		<p>4. </p>		
<p>■ 8.F.B.5 Use graphs of functions to describe relationships between quantities</p>	<p>SMP 4 Model with mathematics</p>	<p>1. Describe the change in the bacteria population over time.</p>  <p>2. After takeoff, the altitude of an airplane increases at a constant rate, then remains constant for a time, and then decreases at a constant rate until the airplane lands. Sketch a graph that represents this situation.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension Graphic Organizer - Example/Non-example Chart Media Student Journal Unit 7 Resources</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>Benchmark Assessment</p> <ul style="list-style-type: none"> ● Not applicable 		<p>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</p>		
<p>Summative Assessment(s)</p> <ul style="list-style-type: none"> ● Unit 7 Performance Task ● Unit 7 Check In 1 (8.F.A.1, 8.F.A.2, 8.F.A.3, 8.F.B.4) ● Unit 7 Check In 2 (8.F.B.4) 		<ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		

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Unit Title: Unit 8 Exponents and Scientific Notation	Time Frame/Pacing: 21 days
Essential Questions <ul style="list-style-type: none"> ● How can we compare and contrast numbers? ● What are the laws of exponents? ● How do you use scientific notation? 	
Enduring Understandings <ul style="list-style-type: none"> ● One representation may sometimes be more helpful than another; used together, multiple representations give a fuller understanding of a problem. ● A quantity can be represented numerically in various ways. Problem solving depends upon choosing wise ways. ● Numeric fluency includes both the understanding of and the ability to appropriately use numbers. 	
Standards Taught and Assessed <p>■ Major Clusters</p> <ul style="list-style-type: none"> ● 8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. ● 8.EE.A.3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. ● 8.EE.A.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology. 	
Highlighted Interdisciplinary Connections <p>Science</p> <ul style="list-style-type: none"> ● MS-PS1-3 Gather and make sense of information to describe that synthetic materials come from natural resources and impact society ● MS-ESS1-3 Analyze and interpret data to determine scale properties of objects in the solar system. 	
Highlighted Career Ready Practices and 21st Century Themes and Skill <ul style="list-style-type: none"> ● 9.4.8.CI.1: Assess data gathered on varying perspectives on causes of climate change (e.g., cross cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions 	
Social Emotional Learning Competencies <ul style="list-style-type: none"> ● 2.1.8.EH.1: Compare and contrast stress management strategies that are used to address various types of stress-induced situations (e.g., 	

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academics, family, personal relationships, finances, celebrations, violence).				
Pre-Assessment <ul style="list-style-type: none"> ● 8.EE.A.1 ● 8.EE.A.3 ● 8.EE.A.4 		Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504) <ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
■ 8.EE.A.1 Use exponents to write and evaluate expressions	SMP 8 Look for and express regularity in repeated reasoning.	Write the product using exponents. 1. $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$ 2. $a \cdot a \cdot b \cdot b \cdot b \cdot b$ Evaluate the expression. 3. 7^2 4. -3^4 5. $(-3)^4$ 6. $\frac{3}{4} \left(2^5 - 6 \div \left(\frac{1}{2} \right)^2 \right)$	Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension <u>Media</u> <u>Graphic Organizer - Definition and Example Chart</u> <u>Unit 8 Resources</u> <u>Student Journal</u>	Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan
■ 8.EE.A.1 Generate equivalent expressions involving products of powers	SMP 8 Look for and express regularity in repeated reasoning.	Simplify the expression. Write your answer as a power. 1. $b^2 \cdot b^6$ 2. $(-2)^3 \cdot (-2)^2$ 3. $(c^8)^3$	Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and	Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities,

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		<p>Simplify the expression.</p> <p>4. $(-5w)^4$</p> <p>5. $(st)^{11}$</p>	<p>extension</p> <p><u>Media</u></p> <p><u>Graphic Organizer - Definition and Example Chart</u></p> <p><u>Unit 8 Resources</u></p> <p><u>Student Journal</u></p>	<p>manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ 8.EE.A.1 Generate equivalent expressions involving quotients of powers</p>	<p>SMP 8 Look for and express regularity in repeated reasoning</p>	<p>$\frac{(-4)^3}{(-4)^1}$</p> <p>1. $\frac{9 \cdot 7^7}{9 \cdot 7^3}$</p> <p>2. $\frac{5^4 \cdot 5^2}{5^3}$</p> <p>3. $\frac{m^{10}}{m^5 \cdot m^2}$</p> <p>4. $\frac{y^{17} \cdot y^6}{y^{10} \cdot y^3}$</p> <p>5.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Media</u></p> <p><u>Graphic Organizer - Definition and Example Chart</u></p> <p><u>Unit 8 Resources</u></p> <p><u>Student Journal</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ 8.EE.A.1 Understand the concept of zero and negative exponents</p>	<p>SMP 8 Look for and express regularity in repeated reasoning</p>	<p>Evaluate the expression.</p> <p>1. 5^{-3}</p> <p>2. 9^0</p> <p>3. $2^{-2} \cdot \frac{1}{2^5}$</p> <p>Simplify.</p> <p>Write the expression using only positive exponents.</p> <p>4. $4b^{-5}$</p> <p>5. $\frac{2^{-4} \cdot m^0 \cdot n^{-3}}{n^{-4}}$</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Media</u></p> <p><u>Graphic Organizer - Definition and Example Chart</u></p> <p><u>Unit 8 Resources</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>

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			<u>Student Journal</u>	
<p>■ 8.EE.A.3 Round numbers and write answers as the product of a single digit and a power of ten</p>	<p>SMP 7 Look for and make use of structure</p>	<p>Round the number. Write the result as a product of a single digit and a power of 10.</p> <ol style="list-style-type: none"> 1. 0.00000876 2. 52,976,000,000 3. Company A sells \$4,406,000 worth of merchandise in one year. Company B sells 2 times this amount. What is the approximate amount of merchandise sold by Company B? 4. The population of Cornville, Maine is about 1314. The population of Maine is about 1,328,361. Approximately how many times greater is the population of Maine than the population of Cornville? 	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Media</u> <u>Graphic Organizer - Definition and Example Chart</u> <u>Unit 8 Resources</u> <u>Student Journal</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ 8.EE.A.3; 8.EE.A.4 Understand scientific notation</p>	<p>SMP 2 Reason abstractly and quantitatively</p>	<p>Write the number in scientific notation.</p> <ol style="list-style-type: none"> 1. 0.00035 2. 0.0000000000567 3. 25,500,000 <p>Write the number in standard form.</p> <ol style="list-style-type: none"> 4. 1.66×10^3 5. 5×10^{-4} 6. 4.576×10^8 	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Media</u> <u>Graphic Organizer - Definition and Example Chart</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one one one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>

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			<u>Unit 8 Resources</u> <u>Student Journal</u>	
<p>■ 8.EE.A.4 Perform operations with numbers written in scientific notation</p>	<p>SMP 7 Look for and make use of structure</p>	<p>Evaluate the expression. Write your answer in scientific notation.</p> <ol style="list-style-type: none"> 1. $(3.4 \times 10^6) + (8.1 \times 10^6)$ 2. $(4.3 \times 10^{-3}) + (7.8 \times 10^{-4})$ 3. $(5.6 \times 10^{-8}) - (1.9 \times 10^{-8})$ 4. $(1.7 \times 10^2) \times (4.3 \times 10^4)$ 5. $(6.2 \times 10^5) \div (2 \times 10^{-4})$ <p><i>The mass of Earth is about 6.58×10^{21} tons.</i></p> <p><i>The mass of Mars is about 7.07×10^{20} tons.</i></p> <p>6. <i>How much greater is the mass of Earth than the mass of Mars?</i></p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Media</u> <u>Graphic Organizer - Definition and Example Chart</u> <u>Unit 8 Resources</u> <u>Student Journal</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>Benchmark Assessment</p> <ul style="list-style-type: none"> ● Quarterly Assessment 3 		<p>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</p> <ul style="list-style-type: none"> ● extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
<p>Summative Assessment(s)</p> <ul style="list-style-type: none"> ● Unit 8 Performance Task ● Unit 8 Check In 1 (8.EE.A.1) ● Unit 8 Check In 2 (8.EE.A.3, 8.EE.A.4) 				

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Unit Title: Unit 9 Real Numbers and the Pythagorean Theorem	Timeframe/Pacing: 19 days
Essential Questions <ul style="list-style-type: none">• How do geometric relationships help to solve problems and/or make sense of phenomena?• What is the Pythagorean Theorem?• How can we compare and contrast numbers?	
Enduring Understandings <ul style="list-style-type: none">• Geometric relationships provide a means to make sense of a variety of phenomena.• Numeric fluency includes both the understanding of and the ability to appropriately use numbers.	
Standards Taught and Assessed <input type="checkbox"/> Supporting Clusters <ul style="list-style-type: none">• 8.NS.A.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.• 8.NS.A.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions. (e.g., π^2). <input checked="" type="checkbox"/> Major Clusters <ul style="list-style-type: none">• 8.EE.A.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.• 8.G.B.6 Explain a proof of the Pythagorean Theorem and its converse.• 8.G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.• 8.G.B.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	
Highlighted Interdisciplinary Connections Science <ul style="list-style-type: none">• MS-PS2-2 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	

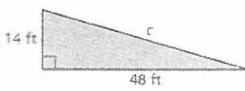
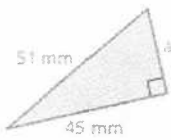
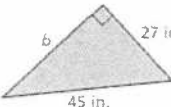
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<ul style="list-style-type: none"> RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. 				
Highlighted Career Ready Practices and 21st Century Themes and Skill <ul style="list-style-type: none"> 9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2). 				
Social Emotional Learning Competencies <ul style="list-style-type: none"> 2.1.8.EH.2: Analyze how personal attributes, resiliency, and protective factors support mental and emotional health. 				
Pre-Assessment <ul style="list-style-type: none"> 8.NS.A.1 8.NS.A.2 8.EE.A.2 8.G.B.6 8.G.B.7 8.G.B.8 		Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504) <ul style="list-style-type: none"> extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
<ul style="list-style-type: none"> ■ 8.EE.A.2 Find the square root of a number 	SMP 3 Construct viable arguments and critique the reasoning of others SMP 2 Reason abstractly and quantitatively	1. Find the two square roots of 169. Find the square root(s). 2. $\sqrt{225}$ 3. $\pm\sqrt{4.41}$ 4. $-\sqrt{16/25}$ 5. Solve the equation $x^2 - 4 = 32$	Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension <u>Graphic Organizer - Four Square</u> <u>Scientific Calculator</u> <u>Media</u>	Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan

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			<u>Unit 9 Resources</u> <u>Student Journal</u>	
<p>■ 8.EE.A.2; 8.G.B.6; 8.G.B.7; 8.G.B.8 Use the Pythagorean Theorem to find missing lengths</p>	<p>SMP 2 Reason abstractly and quantitatively</p> <p>SMP 7 Look for and make use of structure</p>	<p>Find the missing length of the triangle.</p> <p>1. </p> <p>2. </p> <p>3. </p> <p>Find the distance between the points.</p> <p>4. (0, 4), (3, 0)</p> <p>5. (-3, -1), (5, 5)</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Graphic Organizer - Four Square</u></p> <p><u>Scientific Calculator Media</u></p> <p><u>Unit 9 Resources</u> <u>Student Journal</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ 8.EE.A.2 Find the cube root of a number and use</p>	<p>SMP 2 Reason abstractly and quantitatively</p> <p>SMP 6 Attend to precision</p>	<p>1. Find $\sqrt[3]{-512}$</p> <p>2. $3 + 4\sqrt[3]{27}$</p> <p>3. $(\sqrt[3]{-8})^3 + 15$</p> <p>4. Evaluate when $b = 25$. $(\sqrt[3]{5b}) - \frac{3b}{5}$</p> <p>5. Solve $2x^3 - 5 = -21$</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Graphic Organizer - Four Square</u></p> <p><u>Scientific Calculator</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a</p>

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			<u>Media</u> <u>Unit 9 Resources</u> <u>Student Journal</u>	student's IEP or 504 plan
<input type="checkbox"/> 8.NS.A.1 Convert between different forms of rational numbers	SMP 2 Reason abstractly and quantitatively SMP 4 Model with mathematics	Write the fraction or mixed number as a decimal. 1. $\frac{7}{20}$ 2. $-3\frac{11}{18}$ Write the repeating decimal as a fraction or a mixed number. 3. $0.1111\dots$ 4. $0.75555\dots$ 5. $-3.81818181\dots$	Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension <u>Graphic Organizer - Four Square</u> <u>Scientific Calculator</u> <u>Media</u> <u>Unit 9 Resources</u> <u>Student Journal</u>	Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan
<input type="checkbox"/> 8.NS.A.1; 8.NS.A.2 - Understand the concept of irrational numbers	SMP 2 Reason abstractly and quantitatively SMP 7 Look for and make use of structure	1. Classify $\sqrt{-65}$. Approximate the number to the nearest (a) integer and (b) tenth. 2. $\sqrt{99}$ 3. $\sqrt{\frac{15}{2}}$ Which number is greater? Explain. 4. $2\frac{11}{12}$, $\sqrt{8}$ 5. $\frac{4}{5}$, $\sqrt{49/64}$ 6. Approximate the distance between (2, -3)	Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension <u>Graphic Organizer - Four Square</u> <u>Scientific Calculator</u> <u>Media</u> <u>Unit 9 Resources</u> <u>Student Journal</u>	Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan

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		and $(-3, 4)$ to the nearest tenth.		
<p>■ 8.G.B.6 Use the converse of the Pythagorean Theorem</p>	SMP 3 Construct viable arguments and critique the reasoning of others	<p>Tell whether the triangle with the given side lengths is a right triangle.</p> <p>1. 32 m, 56 m, 64 m 2. 1.8 mi, 8 mi, 8.2 mi</p> <p>Tell whether the points form a right triangle.</p> <p>3. $(-1, 3)$, $(4, 3)$, $(3, 1)$ 4. $(-2, 4)$, $(0, -1)$, $(2, 0)$</p>	<p>EExtra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p>Graphic Organizer - Four Square Scientific Calculator Media Unit 9 Resources Student Journal</p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>Benchmark Assessment</p> <ul style="list-style-type: none"> Benchmark Assessment 3 		<p>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</p> <ul style="list-style-type: none"> extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
<p>Summative Assessment(s)</p> <ul style="list-style-type: none"> Unit 9 Performance Task Unit 9 Check In 1 (8.EE.A.2, 8.G.B.6, 8.G.B.7, 8.G.B.8) Unit 9 Check In 2 (8.NS.A.1, 8.NS.A.2) 		<p>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</p> <ul style="list-style-type: none"> extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		

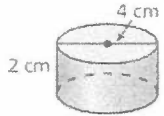
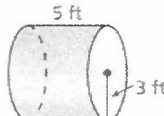
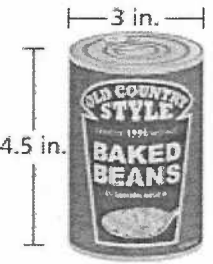
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Unit Title: Unit 10 Volume and Similar Solids		Time Frame/Pacing: 16 days
Essential Questions		
<ul style="list-style-type: none"> • How can measurements be used to solve problems? 		
Enduring Understandings		
<ul style="list-style-type: none"> • Everyday objects have a variety of attributes, each of which can be measured in many ways. • What we measure affects how we measure it. • Measurements can be used to describe, compare, and make sense of phenomena. 		
Standards Taught and Assessed		
<ul style="list-style-type: none"> • 8.G.C.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. 		
Highlighted Interdisciplinary Connections		
English Language Arts		
<ul style="list-style-type: none"> • NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence 		
Highlighted Career Ready Practices and 21st Century Themes and Skill		
<ul style="list-style-type: none"> • 9.1.8.FP.6: Compare and contrast advertising messages to understand what they are trying to accomplish. 		
Social Emotional Learning Competencies		
<ul style="list-style-type: none"> • 2.2.8.N.1: Analyze how culture, health status, age and access to healthy foods can influence personal eating habits. 		
Pre-Assessment	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)	
<ul style="list-style-type: none"> • 8.G.C.9 	<ul style="list-style-type: none"> • extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 	

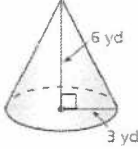
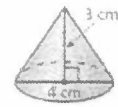

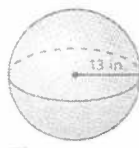
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Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
<p>⊙ 8.G.C.9 Find the volume of a cylinder</p>	<p>SMP 8 Look for and express regularity in repeated reasoning</p> <p>SMP 6 Attend to precision</p>	<p>Find the volume of the cylinder. Round your answer to the nearest tenth.</p> <p>1. </p> <p>2. </p> <p>3. Find the volume of the can of beans. Round your answer to the nearest whole number.</p> <p></p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Media</u> <u>Student Journal</u> <u>Unit 10 Resources</u> <u>Graphic Organizer - Summary Triangle</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>

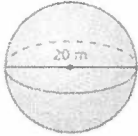
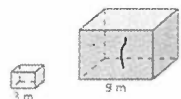
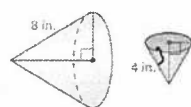
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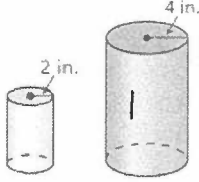
<p>⊙ 8.G.C.9 Find the volume of a cone</p>	<p>SMP 8 Look for and express regularity in repeated reasoning</p> <p>SMP 6 Attend to precision</p>	<p>Find the volume of the cone. Round your answer to the nearest tenth.</p> <p>1.</p>  <p>2.</p>  <p>3. The volume of the ice cream cone is 4.71 cubic inches. Find the height of the cone.</p> 	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Media</u> <u>Student Journal</u> <u>Unit 10 Resources</u> <u>Graphic Organizer - Summary Triangle</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>⊙ 8.G.C.9 Find the volume of a sphere</p>	<p>SMP 8 Look for and express regularity in repeated reasoning.</p> <p>SMP 6 Attend to precision.</p>	<p>Find the volume of the sphere. Round your answer to the nearest tenth.</p> <p>1.</p> 	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Media</u> <u>Student Journal</u> <u>Unit 10 Resources</u> <u>Graphic Organizer - Summary Triangle</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>

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		<p>2</p>  <p>3. Find the radius of a sphere with a volume of 7776π cubic millimeters.</p> <p>4. In Example 3, the diameter of the silo is 18 meters and the overall height is 62 meters. What is the volume of the silo? Round your answer to the nearest thousand?</p>		
<p>⊙ 8.G.C.9 Find the surface areas and volumes of similar solids</p>	<p>SMP 1 Make sense of problems and persevere in solving them</p> <p>SMP 7 Look for and make use of structure</p>	<p>The solids are similar. Find the surface area of the number 1 solid.</p> <p>1.</p>  <p>2.</p>  <p>3. The cylinders are similar. Find the volume of the red cylinder.</p>	<p>Extra Practice, reteach puzzle time, student journal, self-assessment, tutorial videos, skills review handbook, skills trainer, enrichment and extension</p> <p><u>Media</u></p> <p><u>Student Journal</u></p> <p><u>Unit 10 Resources</u></p> <p><u>Graphic Organizer - Summary Triangle</u></p>	<p>Visual diagrams, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plan</p>

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<p>Benchmark Assessment</p> <ul style="list-style-type: none"> Quarterly 4 Assessment 		<p>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</p> <ul style="list-style-type: none"> extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		
<p>Summative Assessment(s)</p> <ul style="list-style-type: none"> Unit 10 <u>Performance Task</u> Unit 10 Check In 1 (8.G.C.9) Unit 10 Check In 2 (8.G.C.9) 		<p>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</p> <ul style="list-style-type: none"> extended time, scribe, speech to text, challenge questions, and specific other accommodations/modifications per a student's IEP or 504 plan, student resources in multiple languages. 		

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Bibliography

Grade 8

Supplemental Materials/Resources:

Larson, R. and Boswell, L. (2019). *Big ideas math: Modeling in real life*. Big Ideas Learning: Erie, Pennsylvania.

Digital Resources:

bigideaslearning.com - all print materials are also available digitally along with digital only resources