

**HILLSBOROUGH TOWNSHIP HIGH SCHOOL**

**MATHEMATICS CURRICULUM**

**Algebra I**

**July, 2020**

## Course Overview

### Algebra 1

The Algebra I curriculum is written to address the needs of all students no matter when they take Algebra 1. This course is structured using the New Jersey Student Learning Standards for Mathematics. Content to be taught include but is not limited to numerical and algebraic expressions; algebraic equations and inequalities; data, statistics and probability; functions; graphing linear functions; systems of equations; exponential functions; radical expressions; factoring polynomials; and quadratic functions. 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.

A variety of tools and strategies will be incorporated into the instruction of the curriculum to enhance the learning of every child. Such technological tools include calculators, computers, and web based sites as appropriate. Cross-curricular connections are made to help students see how algebra 1 content is applied in other content areas and in everyday life. Participation in the Algebra 1 course helps prepare students to take the any New Jersey Student Learning Assessment and/or any assessment tied to high school graduation. Successful completion of this course should prepare students to take geometry.

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<b>Unit Title:</b> Unit 1 Solving Linear Equations	<b>Timeframe/Pacing:</b> 15 days
<b>Essential Questions</b> <ul style="list-style-type: none"><li>● How do linear equations model real-life problems?</li><li>● How does absolute value work in solving equations?</li><li>● How do we use the relationship between units of measurement to use a formula for one measurement to write a formula for a different measurement?</li></ul>	
<b>Enduring Understandings</b> <ul style="list-style-type: none"><li>● The relationship between models of a real-life situation in the form of a table of data, the graph of an equation and the equation itself can be used to solve linear equations, solve absolute value equations, rewrite equations and formulas, and translate problems into equations.</li></ul>	
<b>Standards Taught and Assessed</b> <ul style="list-style-type: none"><li>● <input checked="" type="checkbox"/> <b>A.CED.A.1:</b> Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</li><li>● <input checked="" type="checkbox"/> <b>A.CED.A.4:</b> Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law <math>V = IR</math> to highlight resistance <math>R</math></li><li>● <input checked="" type="checkbox"/> <b>A.REI.A.1:</b> Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.</li><li>● <input checked="" type="checkbox"/> <b>A.REI.B.3:</b> Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</li><li>● <input type="checkbox"/> <b>N.Q.A.1:</b> Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.</li></ul>	
<b>Highlighted Interdisciplinary Connections</b> <ul style="list-style-type: none"><li>● <b>English Language Arts: NJLSA.R4:</b> Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.</li><li>● <b>Computer Science and Design Thinking: 8.2.5.ED.2:</b> Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.</li></ul>	

**Key:**  Major Cluster     Supporting Cluster     Additional Cluster

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**Highlighted Career Ready Practices and 21st Century Themes and Skills**

- **9.4.5.IML.2:** Create a visual representation to organize information about a problem or issue.
- **9.4.5.IML.3:** Represent the same data in multiple visual formats in order to tell a story about the data.
- **9.4.12.CT.1:** Identify problem-solving strategies used in the development of an innovative product or practice.
- **9.4.12.CT.2:** Explain the potential benefits of collaborating to enhance critical thinking and problem solving.
- **9.4.12.IML.4:** Assess and critique the appropriateness and impact of existing data visualizations for an intended audience.

**Social Emotional Learning Competencies**

- **2.1.12.EH.1:** Recognize one’s personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.
- **2.1.12.EH.3:** Describe strategies to appropriately respond to stressors in a variety of situations.
- **2.1.12.EH.4:** Analyze and adapt mental and emotional health messages and communication techniques to peers and other specific target audiences.

**Pre-Assessment**

- A.CED.A.1
- A.CED.A.4
- A.REI.A.1
- A.REI.B.3

**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**

- ELL - Spanish student edition, reviews, assessments and videos are available via Big Ideas Math teacher resources.
- Specific other accommodations/modifications per a student’s IEP or 504 plan

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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>■ <b>A.CED.A.1:</b> Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</p>	<p>SMP1 - Make sense of problems and persevere in solving them.</p>	<p>A repair bill for your car is \$553. The parts cost \$265. The labor cost is \$48 per hour. Write and solve an equation to find the number of hours of labor spent repairing the car.</p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>■ <b>A.CED.A.4:</b> Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law <math>V = IR</math> to highlight resistance <math>R</math></p>	<p>SMP3 - Construct viable arguments and critique the reasoning of others. SMP7 - Look for and make use of structure.</p>	<p>The formula for the surface area <math>S</math> of a rectangular prism is <math>S = 2lw + 2lh + 2wh</math>. Solve the formula for the length <math>l</math>.</p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ <b>A.REI.A.1:</b> Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption</p>	<p>SMP4 - Model with mathematics. SMP5 - Use appropriate tools strategically. SMP6 - Attend to</p>	<p>Solve each equation. Justify each step. Check your answer. <math>x - 3 = -5</math></p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p>

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that the original equation has a solution. Construct a viable argument to justify a solution method.	precision.			Specific other accommodations/modifications per a student's IEP or 504 plan
<p>■ <b>A.REI.B.3:</b> Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</p>	SMP1 - Make sense of problems and persevere in solving them.	<p>Solve the equation. Check your solution.</p> $3(x + 1) + 6 = -9$ <p>Solve each equation. Graph the solutions, if possible.</p> $ x - 4  = 6$	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>□ <b>N.Q.A.1:</b> Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.</p>	SMP3- Construct viable arguments and critique the reasoning of others. MP4 - Model with mathematics.	<p>The formula <math>d = 1/2n + 26</math> relates the nozzle pressure <math>n</math> (in pounds per square inch) of a fire hose and the maximum horizontal distance the water reaches <math>d</math> (in feet). How much pressure is needed to reach a fire 50 feet away?</p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Benchmark 1</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> </ul>		

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	<ul style="list-style-type: none"> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● <b>Common Assessment 1</b> <ul style="list-style-type: none"> <li>○ A.CED.A.1</li> <li>○ A.REI.A.1</li> <li>○ A.REI.B.3</li> </ul> </li> <li>● <b>Common Assessment 2</b> <ul style="list-style-type: none"> <li>○ A.CED.A.1</li> <li>○ A.CED.A.4</li> <li>○ A.REI.B.3</li> </ul> </li> <li>● <b>Unit 1 Performance Task</b></li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>

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<b>Unit Title:</b> Unit 2 Solving Linear Inequalities	<b>Timeframe/Pacing:</b> 12
<b>Essential Questions</b> <ul style="list-style-type: none"> <li>● How do we use inequalities to model real-life situations?</li> <li>● How do inequalities describe intervals on the real number line?</li> </ul>	
<b>Enduring Understandings</b> <ul style="list-style-type: none"> <li>● There are similarities we use to graph and solve linear equations that are also used to solve and graph linear inequalities.</li> </ul>	
<b>Standards Taught and Assessed</b> <ul style="list-style-type: none"> <li>● ■ <b>A.CED.A.1:</b> Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</li> <li>● ■ <b>A.REI.B.3:</b> Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.</li> </ul>	
<b>Highlighted Interdisciplinary Connections</b> <ul style="list-style-type: none"> <li>● <b>English Language Arts: RI.11-12.7:</b> Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.</li> <li>● <b>Computer Science and Design Thinking: 8.2.5.ED.2:</b> Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.</li> </ul>	
<b>Highlighted Career Ready Practices and 21st Century Themes and Skill</b> <ul style="list-style-type: none"> <li>● <b>9.4.5.IML.2:</b> Create a visual representation to organize information about a problem or issue.</li> <li>● <b>9.4.5.IML.3:</b> Represent the same data in multiple visual formats in order to tell a story about the data.</li> <li>● <b>9.4.12.CT.1:</b> Identify problem-solving strategies used in the development of an innovative product or practice.</li> <li>● <b>9.4.12.CT.2:</b> Explain the potential benefits of collaborating to enhance critical thinking and problem solving..</li> <li>● <b>9.4.12.IML.4:</b> Assess and critique the appropriateness and impact of existing data visualizations for an intended audience.</li> </ul>	
<b>Social Emotional Learning Competencies</b> <ul style="list-style-type: none"> <li>● <b>2.1.12.EH.1:</b> Recognize one’s personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li> <li>● <b>2.1.12.EH.3:</b> Describe strategies to appropriately respond to stressors in a variety of situations.</li> <li>● <b>2.1.12.EH.4:</b> Analyze and adapt mental and emotional health messages and communication techniques to peers and other specific target audiences.</li> </ul>	

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<b>Pre-Assessment</b> <ul style="list-style-type: none"> <li>● A.CED.A.1</li> <li>● A.REI.B.3</li> </ul>		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> <ul style="list-style-type: none"> <li>● ELL - Spanish student edition, reviews, assessments and videos are available via Big Ideas Math teacher resources.</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan</li> </ul>		
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>■ <b>A.CED.A.1:</b> Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</p>	<p>SMP3 - Construct viable arguments and critique the reasoning of others. SMP5 - Use appropriate tools strategically. SMP6 - Attend to precision. SMP8 - Look for and express regularity in repeated reasoning.</p>	<p>You earn \$9.50 per hour at your job. Write and solve an inequality that represents the numbers of hours you need to buy a \$247 camera.</p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>■ <b>A.REI.B.3:</b> Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</p>	<p>SMP2 - Reason abstractly and quantitatively. SMP5 - Use appropriate tools strategically. SMP7 - Look for and make use of structure.</p>	<p>Solve and graph the inequality <math>6x - 5 &lt; 2x + 11</math></p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>

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<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Not applicable</li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● <b>Common Assessment 1</b> <ul style="list-style-type: none"> <li>○ A.CED.A.1</li> <li>○ A.REI.B.3</li> </ul> </li> <li>● <b>Common Assessment 2</b> <ul style="list-style-type: none"> <li>○ A.CED.A.1</li> <li>○ A.REI.B.3</li> </ul> </li> <li>● <b>Unit 2 Performance Task</b></li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>

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<b>Unit Title:</b> Unit 3 Graphing Linear Functions	<b>Timeframe/Pacing:</b> 19
<b>Essential Questions</b> <ul style="list-style-type: none"><li>• How do we determine whether a relation is a function and whether it is linear or nonlinear?</li><li>• How do we use function notation to represent a function?</li><li>• How can you describe the graph of the equation in the form of <math>Ax + By = C</math> and <math>y = mx + b</math>?</li><li>• How do the values of <math>a</math>, <math>h</math>, and <math>k</math> affect the graph of the absolute value function <math>g(x) = a x - h  + k</math>?</li></ul>	
<b>Enduring Understandings</b> <ul style="list-style-type: none"><li>• Functions are a mathematical way to describe relationships between two quantities that vary.</li><li>• Linear functions graph to form lines and follow particular patterns and can be described by a linear equation.</li><li>• The relationship between two lines can be determined by comparing their slopes and <math>y</math>-intercepts.</li><li>• A transformation of an absolute value function can be mapped back to its parent graph.</li></ul>	
<b>Standards Taught and Assessed</b> <ul style="list-style-type: none"><li>• ■ <b>A-CED.A.2:</b> Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</li><li>• ■ <b>A.REI.D.10:</b> Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).</li><li>• ◎ <b>F.BF.B.3:</b> Identify the effect on the graph of replacing <math>f(x)</math> by <math>f(x) + k</math>, <math>k f(x)</math>, <math>f(kx)</math>, and <math>f(x + k)</math> for specific values of <math>k</math> (both positive and negative); find the value of <math>k</math> given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.</li><li>• ■ <b>F.IF.A.1:</b> Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If <math>f</math> is a function and <math>x</math> is an element of its domain, then <math>f(x)</math> denotes the output of <math>f</math> corresponding to the input <math>x</math>. The graph of <math>f</math> is the graph of the equation <math>y = f(x)</math>.</li><li>• ■ <b>F.IF.A.2:</b> Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.</li><li>• ■ <b>F.IF.B.4:</b> For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.★</li></ul>	

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- **F.IF.B.5** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function  $h(n)$  gives the number of person-hours it takes to assemble  $n$  engines in a factory, then the positive integers would be an appropriate domain for the function.★
- **F.IF.C.7a:** Graph linear and quadratic functions and show intercepts, maxima, and minima.
- **F.IF.C.7b:** Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
- **F.IF.C.9:** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.
- **F.LE.A.1b:** Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
- **F.LE.B.5:** Interpret the parameters in a linear or exponential function in terms of a context.

#### Highlighted Interdisciplinary Connections

- **Computer Science and Design Thinking: 8.2.5.ED.2:** Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

#### Highlighted Career Ready Practices and 21st Century Themes and Skills

- **9.4.5.IML.2:** Create a visual representation to organize information about a problem or issue.
- **9.4.5.IML.3:** Represent the same data in multiple visual formats in order to tell a story about the data.
- **9.4.12.CT.1:** Identify problem-solving strategies used in the development of an innovative product or practice.
- **9.4.12.CT.2:** Explain the potential benefits of collaborating to enhance critical thinking and problem solving.
- **9.4.12.IML.4:** Assess and critique the appropriateness and impact of existing data visualizations for an intended audience.

#### Social Emotional Learning Competencies

- **2.1.12.EH.1:** Recognize one's personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.
- **2.1.12.EH.3:** Describe strategies to appropriately respond to stressors in a variety of situations.
- **2.1.12.EH.4:** Analyze and adapt mental and emotional health messages and communication techniques to peers and other specific target audiences (e.g., dimensions of health).

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<b>Pre-Assessment</b> <ul style="list-style-type: none"> <li>● A.CED.A.2</li> <li>● F.IF.A.1</li> <li>● F.IF.A.2</li> <li>● F.IF.B.4</li> <li>● F.IF.C.7a</li> </ul>		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> <ul style="list-style-type: none"> <li>● ELL - Spanish student edition, reviews, assessments and videos are available via Big Ideas Math teacher resources.</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan</li> </ul>		
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)
<b>■ A.CED.A.2:</b> Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	SMP2 - Reason abstractly and quantitatively. SMP5 - Use appropriate tools strategically. MP6 - Attend to precision.	You are planning an awards banquet for your school. You need to rent tables to seat 180 people. Tables come in two sizes. Small tables seat 6 people, and large tables seat 10 people. The equation $6x + 10y = 180$ models this situation, where $x$ is the number of small tables and $y$ is the number of large tables. a. Graph the equation. Interpret the intercepts. b. Find four possible solutions in the context of the problem	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.
<b>■ A.REI.D.10:</b> Understand that the graph of an equation in two variables is the set of all its	SMP2 - Reason abstractly and quantitatively. SMP5 - Use appropriate tools strategically.	You are planning an awards banquet for your school. You need to rent tables to seat 180 people.	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes

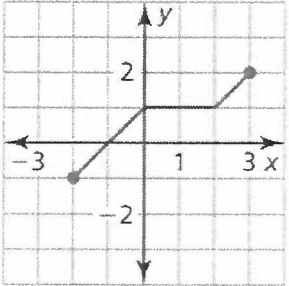
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<p>solutions plotted in the coordinate plane, often forming a curve (which could be a line).</p>	<p>SMP6 - Attend to precision.</p>	<p>Tables come in two sizes. Small tables seat 6 people, and large tables seat 10 people. The equation <math>6x + 10y = 180</math> models this situation, where <math>x</math> is the number of small tables and <math>y</math> is the number of large tables. a. Graph the equation. Interpret the intercepts. b. Find four possible solutions in the context of the problem</p>		<p>-Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>⊙ <b>F.BF.B.3:</b> Identify the effect on the graph of replacing <math>f(x)</math> by <math>f(x) + k</math>, <math>k f(x)</math>, <math>f(kx)</math>, and <math>f(x + k)</math> for specific values of <math>k</math> (both positive and negative); find the value of <math>k</math> given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.</p>	<p>SMP5 - Use appropriate tools strategically.</p>	<p>Describe the transformations from the graph of <math>f(x) = x</math> to the graph of <math>g(x) = -2x + 3</math>.</p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>

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<p>■ <b>F.IF.A.1:</b> Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If <math>f</math> is a function and <math>x</math> is an element of its domain, then <math>f(x)</math> denotes the output of <math>f</math>.</p>	<p>SMP3 - Construct viable arguments and critique the reasoning of others.</p>	<p>Find the domain and range of a function represented by the graph.</p> 	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>■ <b>F.IF.A.2:</b> Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.</p>	<p>SMP1 - Make sense of problems and persevere in solving them. SMP6 - Attend to precision. SMP8 - Look for and express regularity in repeated reasoning.</p>	<p>A helicopter travels according to the function <math>f(x) = 350 - 125x</math> where <math>f(x)</math> is the number miles the helicopter is from its destination after <math>x</math> hours. How far will the helicopter travel in 3.5 hours?</p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>■ <b>F.IF.B.4:</b> For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the</p>	<p>SMP2 - Reason abstractly and quantitatively. SMP3 - Construct viable arguments and critique the reasoning of others. SMP5 - Use appropriate tools strategically.</p>	<p>A linear function <math>g</math> models a relationship in which the dependent variable increases 3 units for every 1 unit the independent variable increases. Graph <math>g</math> when <math>g(0) = 3</math>. Identify the slope, <math>y</math>-intercept, and <math>x</math>-intercept</p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications</p>

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<p>relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★</p>		<p>of the graph.</p>		<p>ions per a student's IEP or 504 plan.</p>
<p>■ <b>F.IF.B.5:</b> Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function <math>h(n)</math> gives the number of person-hours it takes to assemble <math>n</math> engines in a factory, then the positive integers would be an appropriate domain for the function. ★</p>	<p>SMP2 - Reason abstractly and quantitatively. SMP3 - Construct viable arguments and critique the reasoning of others. SMP5 - Use appropriate tools strategically. SMP6 - Attend to precision.</p>	<p>A submersible that is exploring the ocean floor begins to ascend to the surface. The elevation <math>h</math> (in feet) of the submersible is modeled by the function <math>h(t) = 650t - 13,000</math>, where <math>t</math> is the time (in minutes) since the submersible began to ascend. a. Graph the function and identify its domain and range. b. Interpret the slope and the intercepts of the graph.</p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>□ <b>F.IF.C.7a:</b> Graph linear and quadratic functions and show intercepts, maxima, and minima.</p>	<p>SMP3 - Construct viable arguments and critique the reasoning of others. SMP6 - Attend to precision.</p>	<p>Graph <math>2x + y = 2</math>. Identify the x-intercept.</p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modificat</p>

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				ions per a student's IEP or 504 plan.
<p><b>□ F.IF.C.7b:</b> Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.</p>	<p>SMP5 - Use appropriate tools strategically. SMP7 - Look for and make use of structure.</p>	<p>Graph the function. <math>q(x) = 2 x </math></p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p><b>□ F.IF.C.9:</b> Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.</p>	<p>SMP1 - Make sense of problems and persevere in solving them. SMP6 - Attend to precision. SMP8 - Look for and express regularity in repeated reasoning.</p>	<p>The graph shows the number of miles a helicopter is from its destination after <math>x</math> hours on its first flight. On its second flight, the helicopter travels 50 miles farther and increases its speed by 25 miles per hour. The function <math>f(x) = 350 - 125x</math> represents the second flight, where <math>f(x)</math> is the number of miles the helicopter is from its destination after <math>x</math> hours. Which flight takes less time? Explain.</p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>

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<p><input type="checkbox"/> <b>F.LE.A.1b:</b> Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.</p>	<p>SMP3 - Construct viable arguments and critique the reasoning of others. SMP6 - Attend to precision.</p>	<p>A linear function <math>g</math> models a relationship in which the dependent variable increases 3 units for every 1 unit the independent variable increases. Graph <math>g</math> when <math>g(0) = 3</math>. Identify the slope, y-intercept, and x-intercept of the graph.</p>	<p>The Dynamic Classroom <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p><input type="checkbox"/> <b>F.LE.B.5:</b> Interpret the parameters in a linear or exponential function in terms of a context.</p>	<p>SMP2 - Reason abstractly and quantitatively. SMP3 - Construct viable arguments and critique the reasoning of others. SMP5 - Use appropriate tools strategically. SMP6 - Attend to precision.</p>	<p>A linear function <math>g</math> models a relationship in which the dependent variable increases 3 units for every 1 unit the independent variable increases. Graph <math>g</math> when <math>g(0) = 3</math>. Identify the slope, y-intercept, and x-intercept of the graph.</p>	<p>The Dynamic Classroom <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>

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<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Quarterly 1</li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● <b>Common Assessment 1</b> <ul style="list-style-type: none"> <li>○ A.CED.A.2</li> <li>○ A.REI.D.10</li> <li>○ F.IF.A.1</li> <li>○ F.IF.B.5</li> <li>○ F.LE.A.1b</li> </ul> </li> <li>● <b>Common Assessment 2</b> <ul style="list-style-type: none"> <li>○ A.CED.A.2</li> <li>○ F.IF.C.7a</li> <li>○ F.IF.B.4</li> <li>○ F.LE.B.5</li> </ul> </li> <li>● <b>Common Assessment 3</b> <ul style="list-style-type: none"> <li>○ F.IF.C.7a</li> <li>○ F.IF.C.7b</li> <li>○ F.BF.B.3</li> <li>○ A.CED.A.2</li> <li>○ A.REI.D.10</li> </ul> </li> <li>● <b>Unit 3 Performance Task</b></li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>

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<b>Unit Title:</b> Unit 4 Writing Linear Functions	<b>Timeframe/Pacing:</b> 15
<p><b>Essential Questions</b></p> <ul style="list-style-type: none"> <li>● How are the equation of a line, the graph of a line and the slope of a line related?</li> <li>● How do we analytically find a line of best fit for a scatter plot and use it to make conclusions about data? Why is this useful?</li> <li>● How do we use an arithmetic sequence to describe a pattern?</li> <li>● How can a function be represented by more than one equation?</li> </ul>	
<p><b>Enduring Understandings</b></p> <ul style="list-style-type: none"> <li>● Linear functions represent situations involving a constant rate of change.</li> <li>● The slope of a line is constant. Any point is a pair of coordinates generated by a particular equation.</li> <li>● Although scatter plots and trend lines reveal a pattern, the relationship of the variables may indicate a correlation, but not causation.</li> <li>● Two sets of numerical data can be graphed as ordered pairs. If the two sets of data are related, a line on the graph can be used to estimate or predict values.</li> <li>● Arithmetic and geometric sequences and series are mathematical patterns that stem from practical situations.</li> </ul>	
<p><b>Standards Taught and Assessed</b></p> <ul style="list-style-type: none"> <li>● <input checked="" type="checkbox"/> <b>A.CED.A.2:</b> Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</li> <li>● <input checked="" type="checkbox"/> <b>A.REI.D.10:</b> Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).</li> <li>● <input type="checkbox"/> <b>F.BF.A.1a:</b> Determine an explicit expression, a recursive process, or steps for calculation from a context.</li> <li>● <input type="checkbox"/> <b>F.BF.A.2:</b> Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.★</li> <li>● <input checked="" type="checkbox"/> <b>F.IF.A.3:</b> Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by <math>f(0) = f(1) = 1</math>, <math>f(n+1) = f(n) + f(n-1)</math> for <math>n \geq 1</math>.</li> <li>● <input type="checkbox"/> <b>F.IF.C.7b:</b> Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.</li> <li>● <input type="checkbox"/> <b>F.LE.A.1b:</b> Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.</li> <li>● <input type="checkbox"/> <b>F.LE.A.2:</b> Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).</li> <li>● <input type="checkbox"/> <b>F.LE.B.5:</b> Interpret the parameters in a linear or exponential function in terms of a context</li> <li>● <input type="checkbox"/> <b>S.ID.B.6a:</b> Fit a function to the data (including with the use of technology); use functions fitted to data to solve problems in the</li> </ul>	

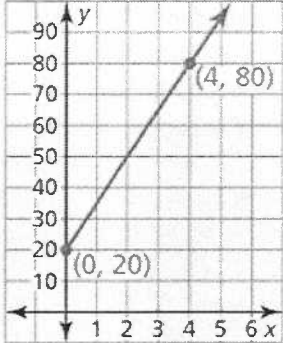
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<p>context of the data. Use given functions or choose a function suggested by the context. Emphasize linear and exponential models</p> <ul style="list-style-type: none"> <li>● <input type="checkbox"/> <b>S.ID.B.6c:</b> Fit a linear function for a scatter plot that suggests a linear association.</li> <li>● <input checked="" type="checkbox"/> <b>S.ID.C.7:</b> Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.</li> </ul>	
<p><b>Highlighted Interdisciplinary Connections</b></p> <ul style="list-style-type: none"> <li>● <b>Computer Science and Design Thinking: 8.2.5.ED.2:</b> Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.</li> <li>● <b>English Language Arts: NJLSA.R7:</b> Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.</li> <li>● <b>Computer Science and Design Thinking: 2.12.EC.3:</b> Synthesize data, analyze trends, and draw conclusions regarding the effect of a technology on the individual, culture, society, and environment and share this information with the appropriate audience</li> </ul>	
<p><b>Highlighted Career Ready Practices and 21st Century Themes and Skills</b></p> <ul style="list-style-type: none"> <li>● <b>9.4.5.IML.2:</b> Create a visual representation to organize information about a problem or issue.</li> <li>● <b>9.4.5.IML.3:</b> Represent the same data in multiple visual formats in order to tell a story about the data.</li> <li>● <b>9.4.12.CT.1:</b> Identify problem-solving strategies used in the development of an innovative product or practice.</li> <li>● <b>9.4.12.CT.2:</b> Explain the potential benefits of collaborating to enhance critical thinking and problem solving.</li> <li>● <b>9.4.12.IML.4:</b> Assess and critique the appropriateness and impact of existing data visualizations for an intended audience.</li> </ul>	
<p><b>Social Emotional Learning Competencies</b></p> <ul style="list-style-type: none"> <li>● <b>2.1.12.EH.1:</b> Recognize one’s personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li> <li>● <b>2.1.12.EH.3:</b> Describe strategies to appropriately respond to stressors in a variety of situations.</li> <li>● <b>2.1.12.EH.4:</b> Analyze and adapt mental and emotional health messages and communication techniques to peers and other specific target audiences.</li> </ul>	
<p><b>Pre-Assessment</b></p> <ul style="list-style-type: none"> <li>● F.BF.A.2</li> <li>● S.ID.C.7</li> <li>● F.LE.A.2</li> <li>● A.REI.D.10</li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● ELL - Spanish student edition, reviews, assessments and videos are available via Big Ideas Math teacher resources.</li> <li>● Specific other accommodations/modifications per a student’s IEP or 504 plan</li> </ul>

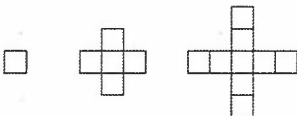
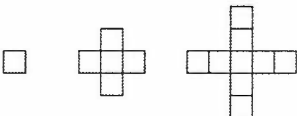
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Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
<p>■ <b>A.CED.A.2:</b> Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</p>	<p>SMP1 - Make sense of problems and persevere in solving them. SMP5 - Use appropriate tools strategically.</p>	<p>Write a linear function <math>f</math> with the values <math>f(0)=10</math> and <math>f(6)=34</math></p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>■ <b>A.REI.D.10:</b> Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).</p>	<p>SMP1 - Make sense of problems and persevere in solving them. SMP5 - Use appropriate tools strategically.</p>	<p>Find two additional solutions for the graph</p> 	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>□ <b>F.BF.A.1a:</b> Determine an explicit expression, a recursive process, or steps</p>	<p>SMP2 - Reason abstractly and quantitatively. SMP3 - Construct viable</p>	<p>Write an equation for the relation:</p>	<p>The Dynamic Classroom  <u>Student Journal with</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions</p>

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<p>for calculation from a context.</p>	<p>arguments and critique the reasoning of others.</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="padding: 5px;">Number of months</th> <th style="padding: 5px;">Total cost (dollars)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;">3</td> <td style="text-align: center; padding: 5px;">176</td> </tr> <tr> <td style="text-align: center; padding: 5px;">6</td> <td style="text-align: center; padding: 5px;">302</td> </tr> <tr> <td style="text-align: center; padding: 5px;">9</td> <td style="text-align: center; padding: 5px;">428</td> </tr> <tr> <td style="text-align: center; padding: 5px;">12</td> <td style="text-align: center; padding: 5px;">554</td> </tr> </tbody> </table>	Number of months	Total cost (dollars)	3	176	6	302	9	428	12	554	<p><u>Exploration Activities</u></p>	<p>-Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
Number of months	Total cost (dollars)													
3	176													
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<p><input type="checkbox"/> <b>F.BF.A.2:</b> Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.★</p>	<p>SMP2 - Reason abstractly and quantitatively. SMP3 - Construct viable arguments and critique the reasoning of others.</p>	<p>Write a function <math>f</math> that represents the arithmetic sequence and find <math>f(30)</math>.</p> 	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>										
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<p><input type="checkbox"/> <b>F.IF.C.7b:</b> Graph square root, cube root, and</p>	<p>SMP1-Make sense of problems and persevere</p>	<p>Graph</p>	<p>The Dynamic Classroom</p>	<p>-Calculator use -Read/clarify directions</p>										

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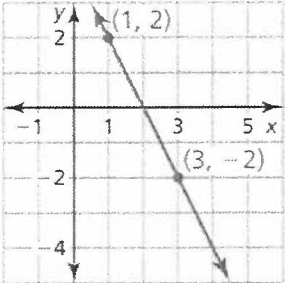
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<p>piecewise-defined functions, including step functions and absolute value functions.</p>	<p>in solving them. SMP5-Use appropriate tools strategically.</p>	$y = \begin{cases} -x - 4, & \text{if } x < 0 \\ x, & \text{if } x \geq 0 \end{cases}$ <p>Describe the domain and range.</p>	<p><u>Student Journal with Exploration Activities</u></p>	<p>-Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>												
<p><input type="checkbox"/> <b>F.LE.A.1b:</b> Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.</p>	<p>SMP1 - Make sense of problems and persevere in solving them. SMP2 - Reason abstractly and quantitatively SMP4 - Model with mathematics. SMP6 - Attend to precision.</p>	<p>Can this situation be modeled by a linear equation? If so, write a linear model that represents the amount of water left in the tank as a function of time.</p> <table border="1"> <tr> <td>Time (minutes)</td> <td>8</td> <td>10</td> <td>12</td> <td>14</td> <td>16</td> </tr> <tr> <td>Water (gallons)</td> <td>155</td> <td>150</td> <td>145</td> <td>140</td> <td>135</td> </tr> </table>	Time (minutes)	8	10	12	14	16	Water (gallons)	155	150	145	140	135	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
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<p><input type="checkbox"/> <b>F.LE.A.2:</b> Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).</p>	<p>SMP2 - Reason abstractly and quantitatively. SMP3 - Construct viable arguments and critique the reasoning of others.</p>	<p>Write an equation in slope-intercept form of the line shown.</p> 	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<ul style="list-style-type: none"> <li>-Calculator use</li> <li>-Read/clarify directions</li> <li>-Modify questions</li> <li>-Copy of notes</li> <li>-Preferential seating</li> </ul> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p><input type="checkbox"/> <b>F.LE.B.5:</b> Interpret the parameters in a linear or exponential function in terms of a context</p>	<p>SMP3 - Construct viable arguments and critique the reasoning of others. SMP5 - Use appropriate tools strategically.</p>	<p>The table shows the weekly sales of a DVD and the number of weeks since its release. Write an equation that models the DVD sales as a function of the number of weeks</p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<ul style="list-style-type: none"> <li>-Calculator use</li> <li>-Read/clarify directions</li> <li>-Modify questions</li> <li>-Copy of notes</li> <li>-Preferential seating</li> </ul>

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		<p>since its release. Interpret the slope and y-intercept of the line of fit.</p> <table border="1" style="font-size: small;"> <tr> <td>Week, <math>x</math></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>Sales (millions), <math>y</math></td> <td>\$19</td> <td>\$15</td> <td>\$12</td> <td>\$11</td> <td>\$10</td> <td>\$8</td> <td>\$7</td> <td>\$5</td> </tr> </table>	Week, $x$	1	2	3	4	5	6	7	8	Sales (millions), $y$	\$19	\$15	\$12	\$11	\$10	\$8	\$7	\$5		Specific other accommodations/modifications per a student's IEP or 504 plan.
Week, $x$	1	2	3	4	5	6	7	8														
Sales (millions), $y$	\$19	\$15	\$12	\$11	\$10	\$8	\$7	\$5														
<p><input type="checkbox"/> <b>S.ID.B.6a:</b> Fit a function to the data (including with the use of technology); use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear and exponential models</p>	<p>SMP3 - Construct viable arguments and critique the reasoning of others. SMP5 - Use appropriate tools strategically.</p>	<p>The table shows the durations <math>x</math> (in minutes) of several eruptions of the geyser Old Faithful and the times <math>y</math> (in minutes) until the next eruption. (a) Use a graphing calculator to find an equation of the line of best fit. Then plot the data and graph the equation in the same viewing window. (b) Identify and interpret the correlation coefficient. (c) Interpret the slope and y-intercept of the line of best fit</p> <table border="1" style="font-size: small;"> <tr> <td>Duration, <math>x</math></td> <td>2.0</td> <td>3.7</td> <td>4.2</td> <td>6.9</td> <td>3.1</td> <td>2.5</td> <td>4.4</td> <td>3.9</td> </tr> <tr> <td>Time, <math>y</math></td> <td>80</td> <td>81</td> <td>84</td> <td>88</td> <td>72</td> <td>62</td> <td>85</td> <td>85</td> </tr> </table> <p>a. Approximate the duration before a time of 77 minutes. b. Predict the time after an eruption lasting 5.0 minutes.</p>	Duration, $x$	2.0	3.7	4.2	6.9	3.1	2.5	4.4	3.9	Time, $y$	80	81	84	88	72	62	85	85	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
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Time, $y$	80	81	84	88	72	62	85	85														
<p><input type="checkbox"/> <b>S.ID.B.6c:</b> Fit a linear function for a scatter plot that suggests a linear</p>	<p>SMP3 - Construct viable arguments and critique the reasoning of others.</p>	<p>The table shows the weekly sales of a DVD and the number of weeks</p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions</p>																		

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<p>association.</p>	<p>SMP5 - Use appropriate tools strategically.</p>	<p>since its release. Write an equation that models the DVD sales as a function of the number of weeks since its release. Interpret the slope and y-intercept of the line of fit.</p> <table border="1" style="font-size: small;"> <tr> <td>Week, <math>x</math></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>Sales (millions), <math>y</math></td> <td>\$19</td> <td>\$15</td> <td>\$12</td> <td>\$11</td> <td>\$10</td> <td>\$9</td> <td>\$7</td> <td>\$5</td> </tr> </table>	Week, $x$	1	2	3	4	5	6	7	8	Sales (millions), $y$	\$19	\$15	\$12	\$11	\$10	\$9	\$7	\$5	<p><u>Exploration Activities</u></p>	<p>-Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
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<p>■ <b>S.ID.C.7:</b> Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.</p>	<p>SMP1 - Make sense of problems and persevere in solving them. SMP2 - Reason abstractly and quantitatively SMP6 - Attend to precision.</p>	<p>The table shows the weekly sales of a DVD and the number of weeks since its release. Write an equation that models the DVD sales as a function of the number of weeks since its release. Interpret the slope and y-intercept of the line of fit.</p> <table border="1" style="font-size: small;"> <tr> <td>Week, <math>x</math></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>Sales (millions), <math>y</math></td> <td>\$19</td> <td>\$15</td> <td>\$12</td> <td>\$11</td> <td>\$10</td> <td>\$9</td> <td>\$7</td> <td>\$5</td> </tr> </table>	Week, $x$	1	2	3	4	5	6	7	8	Sales (millions), $y$	\$19	\$15	\$12	\$11	\$10	\$9	\$7	\$5	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
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<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Benchmark 2</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>																				

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<b>Summative Assessment(s)</b>	<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b>
<ul style="list-style-type: none"> <li>● <b>Common Assessment 1</b> <ul style="list-style-type: none"> <li>○ A.CED.A.2</li> <li>○ F.BF.A.1a</li> <li>○ F.LE.A.1b</li> <li>○ F.LE.A.2</li> </ul> </li> <li>● <b>Common Assessment 2</b> <ul style="list-style-type: none"> <li>○ F.LE.B.5</li> <li>○ S.ID.B.6a</li> <li>○ S.ID.B.6c</li> <li>○ S.ID.B.7</li> </ul> </li> <li>● <b>Common Assessment 3</b> <ul style="list-style-type: none"> <li>○ A.CED.A.2</li> <li>○ A.REI.D.10</li> <li>○ F.IF.A.3</li> <li>○ F.IF.C.7b</li> <li>○ F.BF.A.1a</li> <li>○ F.BF.A.2</li> <li>○ F.FE.A.2</li> </ul> </li> <li>● <b>Unit 4 Performance Task</b></li> </ul>	<ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>

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<b>Unit Title:</b> Unit 5 Solving Systems of Linear Equations	<b>Timeframe/Pacing:</b> 16
<p><b>Essential Questions</b></p> <ul style="list-style-type: none"> <li>● How do we choose which method to solve a system of linear equations?</li> <li>● How many solutions are there for a system of linear equations?</li> <li>● How do we graph a linear inequality in two variables?</li> </ul>	
<p><b>Enduring Understandings</b></p> <ul style="list-style-type: none"> <li>● Systems of equations and/or inequalities are used to model and solve real-world problems involving two or more variables.</li> </ul>	
<p><b>Standards Taught and Assessed</b></p> <p>■ <b>A.CED.A.3:</b> Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods</p> <p>⊙ <b>A.REI.C.5:</b> Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.</p> <p>⊙ <b>A.REI.C.6:</b> Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.</p> <p>■ <b>A.REI.D.12:</b> Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.</p>	
<p><b>Highlighted Interdisciplinary Connections</b></p> <ul style="list-style-type: none"> <li>● <b>Computer Science and Design Thinking:8.2.5.ED.2:</b> Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.</li> <li>● <b>Computer Science and Design Thinking: 8.2.12.ED.6:</b> Analyze the effects of changing resources when designing a specific product or system (e.g., materials, energy, tools, capital, labor).</li> </ul>	
<p><b>Highlighted Career Ready Practices and 21st Century Themes and Skills</b></p> <ul style="list-style-type: none"> <li>● <b>9.4.5.IML.2:</b> Create a visual representation to organize information about a problem or issue.</li> <li>● <b>9.4.5.IML.3:</b> Represent the same data in multiple visual formats in order to tell a story about the data.</li> <li>● <b>9.4.12.CT.1:</b> Identify problem-solving strategies used in the development of an innovative product or practice.</li> <li>● <b>9.4.12.CT.2:</b> Explain the potential benefits of collaborating to enhance critical thinking and problem solving.</li> <li>● <b>9.4.12.IML.4:</b> Assess and critique the appropriateness and impact of existing data visualizations for an intended audience.</li> </ul>	

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<b>Social Emotional Learning Competencies</b>				
<ul style="list-style-type: none"> <li>● <b>2.1.12.EH.1:</b> Recognize one’s personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li> <li>● <b>2.1.12.EH.3:</b> Describe strategies to appropriately respond to stressors in a variety of situations (e.g., academics, relationships, shootings, death, car accidents, illness).</li> <li>● <b>2.1.12.EH.4:</b> Analyze and adapt mental and emotional health messages and communication techniques to peers and other specific target audiences (e.g., dimensions of health).</li> </ul>				
<b>Pre-Assessment</b>		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b>		
<ul style="list-style-type: none"> <li>● A.CED.A.3</li> <li>● A.REI.C.6</li> <li>● A.REI.D.12</li> </ul>		<ul style="list-style-type: none"> <li>● ELL - Spanish student edition, reviews, assessments and videos are available via Big Ideas Math teacher resources.</li> <li>● Specific other accommodations/modifications per a student’s IEP or 504 plan</li> </ul>		
<b>Student Learning Objectives: We are learning to/that...</b>	<b>Student Strategies (Mathematical Practices)</b>	<b>Formative Assessment</b>	<b>Activities and Resources</b>	<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b>
<p>■ <b>A.CED.A.3:</b> . Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.</p>	<p>SMP2 - Reason abstractly and quantitatively. SMP3 - Construct viable arguments and critique the reasoning of others. SMP4 - Model with mathematics. SMP5 - Use appropriate tools strategically.</p>	<p>A roofing contractor buys 30 bundles of shingles and 4 rolls of roofing paper for \$1040. In a 2nd purchase, the contractor buys 8 bundles of shingles for \$256. Find the price per bundle of shingles and the price per roll of roofing paper.</p>	<p>The Dynamic Classroom <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student’s IEP or 504 plan.</p>

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<p>⊙ <b>A.REI.C.5:</b> Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.</p>	<p>SMP1 - Make sense of problems and persevere in solving them. SMP7 - Look for and make use of structure.</p>	<p>Solve the system of linear equations by elimination: <math>x - 3y = 24</math> <math>3x + y = 12</math>. Check your solution.</p>	<p>The Dynamic Classroom <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>⊙ <b>A.REI.C.6:</b> Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.</p>	<p>SMP4 - Model with mathematics SMP6 - Attend to precision. SMP7 - Look for and make use of structure. SMP8 - Look for and express regularity in repeated reasoning.</p>	<p>Solve the system of linear equations by graphing. <math>y = -2x + 5</math> <math>y = 4x - 1</math> Check your answer by solving by substitution.</p>	<p>The Dynamic Classroom <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan</p>
<p>■ <b>A.REI.D.12:</b> Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.</p>	<p>SMP5 - Use appropriate tools strategically. SMP6 - Attend to precision.</p>	<p>Graph the system of linear inequalities. <math>y \leq 3</math> <math>y &gt; x + 2</math></p>	<p>The Dynamic Classroom <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan</p>

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<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Not applicable</li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● <b>Common Assessment 1</b> <ul style="list-style-type: none"> <li>○ A.CED.A.3</li> <li>○ A.REI.C.5</li> <li>○ A.REI.C.6</li> </ul> </li> <li>● <b>Common Assessment 2</b> <ul style="list-style-type: none"> <li>○ A.CED.A.3</li> <li>○ A.REI.C.12</li> </ul> </li> <li>● <b>Unit 5 Performance Task</b></li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>

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<b>Unit Title:</b> Unit 6 Exponential Functions & Sequences	<b>Timeframe/Pacing:</b> 20 days
<p><b>Essential Questions</b></p> <ul style="list-style-type: none"> <li>• What general rules govern exponents and how do we write them?</li> <li>• How do we use patterns to write and evaluate an <math>n</math>th root of a number?</li> <li>• What are the characteristics of the graph of an exponential function?</li> <li>• How does a geometric sequence describe a pattern?</li> </ul>	
<p><b>Enduring Understandings</b></p> <ul style="list-style-type: none"> <li>• Linear functions have a constant difference, whereas exponential functions have a constant ratio.</li> <li>• Arithmetic and geometric sequences and series are mathematical patterns that stem from practical situations.</li> </ul>	
<p><b>Standards Taught and Assessed</b></p> <ul style="list-style-type: none"> <li>• <input type="checkbox"/> <b>N.RN.A.1:</b> Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define <math>5^{1/3}</math> to be the cube root of 5 because we want <math>(5^{1/3})^3 = 5^{(1/3)3}</math> to hold, so <math>(5^{1/3})^3</math> must equal 5.</li> <li>• <input type="checkbox"/> <b>N.RN.A.2:</b> Rewrite expressions involving radicals and rational exponents using the properties of exponents.</li> <li>• <input type="checkbox"/> <b>A.CED.A.2:</b> Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</li> <li>• <input type="checkbox"/> <b>A.SSE.B.3c:</b> Use the properties of exponents to transform expressions for exponential functions. For example the expression <math>1.15^t</math> can be rewritten as <math>(1.15^{1/12})^{12t} \approx 1.012^{12t}</math> to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.</li> <li>• <input type="checkbox"/> <b>F.IF.A.3:</b> . Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by <math>f(0) = f(1) = 1</math>, <math>f(n+1) = f(n) + f(n-1)</math> for <math>n \geq 1</math>.</li> <li>• <input type="checkbox"/> <b>F.IF.B.4:</b> For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.★</li> <li>• <input type="checkbox"/> <b>F.IF.C.7e:</b> Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.</li> <li>• <input type="checkbox"/> <b>F.IF.C.8b:</b> Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as <math>y = (1.02)^t</math>, <math>y = (0.97)^t</math>, <math>y = (1.01)12^t</math>, <math>y = (1.2)^t/10</math>, and classify them as representing exponential growth or decay</li> </ul>	

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- **F.IF.C.9:** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum
- **F.BF.A.1a:** Determine an explicit expression, a recursive process, or steps for calculation from a context.
- **F.BF.A.2:** Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.★
- **F-BF.B.3:** Identify the effect on the graph of replacing  $f(x)$  by  $f(x) + k$ ,  $k f(x)$ ,  $f(kx)$ , and  $f(x + k)$  for specific values of  $k$  (both positive and negative); find the value of  $k$  given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.
- **F.LE.A.1a:** Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.
- **F-LE.A.1c:** Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
- **F.LE.A.2:** Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

**Highlighted Interdisciplinary Connections**

- **Computer Science and Design Thinking: 8.2.12.EC.3:** Synthesize data, analyze trends, and draw conclusions regarding the effect of a technology on the individual, culture, society, and environment and share this information with the appropriate audience.
- **Computer Science and Design Thinking: 8.1.8.DA.1:** Organize and transform data collected using computational tools to make it usable for a specific purpose.
- **Computer Science and Design Thinking: 8.1.12.DA.5:** Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

**Highlighted Career Ready Practices and 21st Century Themes and Skills**

- **9.4.5.IML.2:** Create a visual representation to organize information about a problem or issue.
- **9.4.5.IML.3:** Represent the same data in multiple visual formats in order to tell a story about the data.
- **9.4.12.CT.1:** Identify problem-solving strategies used in the development of an innovative product or practice.
- **9.4.12.CT.2:** Explain the potential benefits of collaborating to enhance critical thinking and problem solving.
- **9.4.12.IML.4:** Assess and critique the appropriateness and impact of existing data visualizations for an intended audience

**Social Emotional Learning Competencies**

- **2.1.12.EH.1:** Recognize one's personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.
- **2.1.12.EH.3:** Describe strategies to appropriately respond to stressors in a variety of situations (e.g., academics, relationships, shootings,

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<p>death, car accidents, illness).</p> <ul style="list-style-type: none"> <li>● <b>2.1.12.EH.4:</b> Analyze and adapt mental and emotional health messages and communication techniques to peers and other specific target audiences (e.g., dimensions of health).</li> </ul>				
<p><b>Pre-Assessment</b></p> <ul style="list-style-type: none"> <li>● N.RN.A.1</li> <li>● N.RN.A.2</li> <li>● F.LE.A.2</li> <li>● F.IF.C.7e</li> <li>● A.CED.A.2</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● ELL - Spanish student edition, reviews, assessments and videos are available via Big Ideas Math teacher resources.</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> </ul>		
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)
<input type="checkbox"/> <b>N.RN.A.1:</b> Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.	MP2-Reason abstractly and quantitatively. MP3-Construct viable arguments and critique the reasoning of others.	Evaluate $16^{3/4}$	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.
<input type="checkbox"/> <b>N.RN.A.2:</b> Rewrite expressions involving radicals and rational exponents using the properties of exponents.	MP3-Construct viable arguments and critique the reasoning of others. MP7-Look for and make use of structure. MP8	Simplify the expression $\frac{4x^0}{y^{-3}}$ Write your answer using only positive exponents.	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating

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				Specific other accommodations/modifications per a student's IEP or 504 plan.
<input type="checkbox"/> <b>A.CED.A.2:</b> Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	MP2-Reason abstractly and quantitatively.	Graph $f(x) = 4(2)^x$ Compare the graph to the graph of the parent function. Describe the domain and range of $f$	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.
<input type="checkbox"/> <b>A.SSE.B.3c:</b> Use the properties of exponents to transform expressions for exponential functions.	MP3-Construct viable arguments and critique the reasoning of others. MP4-Model with mathematics	You deposit \$100 in a savings account that earns 6% annual interest compounded monthly. Write a function that represents the balance after $t$ years.	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.
<input type="checkbox"/> <b>F.IF.A.3:</b> . Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.	MP4-Model with mathematics MP5-Use appropriate tools strategically. MP8-Look for and express regularity in repeated reasoning.	Write an equation for the $n$ th term of the geometric sequence 2, 12, 72, 432, . . . Then find $a_{10}$ .	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating

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				Specific other accommodations/modifications per a student's IEP or 504 plan.
<input type="checkbox"/> <b>F.IF.B.4:</b> For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.★	M2-Reason abstractly and quantitatively.	<p>The value of a car is \$21,500. It loses 12% of its value every year.</p> <p>(a) Write a function that represents the value <math>y</math> (in dollars) of the car after <math>t</math> years.</p> <p>(b) Find the approximate monthly percent decrease in value.</p> <p>(c) Graph the function from part (a). Use the graph to estimate the value of the car after 6 years</p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use</p> <p>-Read/clarify directions</p> <p>-Modify questions</p> <p>-Copy of notes</p> <p>-Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<input type="checkbox"/> <b>F.IF.C.7e:</b> Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	<p>M5-Use appropriate tools strategically.</p> <p>M7-Look for and make use of structure.</p>	<p>Graph <math>f(x) = 4(2)^x</math>.</p> <p>Describe the domain and range of <math>f</math>.</p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use</p> <p>-Read/clarify directions</p> <p>-Modify questions</p> <p>-Copy of notes</p> <p>-Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>

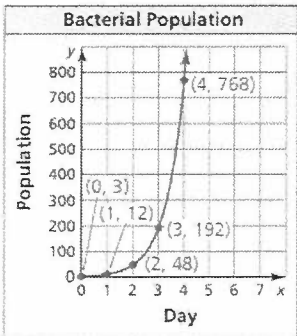
Key:  Major Cluster     Supporting Cluster     Additional Cluster

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				ions per a student's IEP or 504 plan.
<input type="checkbox"/> <b>F.IF.C.8b:</b> Use the properties of exponents to interpret expressions for exponential functions.	M5-Use appropriate tools strategically. M7-Look for and make use of structure.	Determine whether each function represents exponential growth or exponential decay. Identify the percent rate of change. $y = 5(1.07)^t$	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.
<input type="checkbox"/> <b>F.IF.C.9:</b> Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	M2-Reason abstractly and quantitatively.	An exponential function $g$ models a relationship in which the dependent variable is multiplied by 2.5 for every 1 unit the independent variable $x$ increases. Graph $g$ when $g(0) = 4$ . Compare $g$ and the function $f$ from Example 3 over the interval $x = 0$ to $x = 2$ .	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.
<input type="checkbox"/> <b>F.BF.A.1a:</b> Determine an explicit expression, a recursive process, or steps for calculation from a context.	M2-Reason abstractly and quantitatively.	The graph represents a bacterial population $y$ after $x$ days. a. Write an exponential function that represents the population. b. Find the population after	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating

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		12 hours and after 5 days 		Specific other accommodations/modifications per a student's IEP or 504 plan.
<input type="checkbox"/> <b>F.BF.A.2:</b> Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.★	M2-Reason abstractly and quantitatively.	Write an equation for the nth term of the geometric sequence 2, 12, 72, 432, . . .	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.
<input type="checkbox"/> <b>F.BF.B.3:</b> Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$ , $k f(x)$ , $f(kx)$ , and $f(x + k)$ for specific values of $k$ (both positive and negative); find the value of $k$ given the graphs. Experiment with cases and illustrate an explanation of	M2-Reason abstractly and quantitatively.	Graph $f(x) = -\left(\frac{1}{2}\right)^x$ . Compare the graph to the graph of the parent function. Describe the domain and range of $f$ .	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.

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the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.														
<input type="checkbox"/> <b>F.LE.A.1a:</b> Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.	MP5-Use appropriate tools strategically. MP8-Look for and express regularity in repeated reasoning.	Graph the geometric sequence 32, 16, 8, 4, 2, . . . What do you notice?	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.										
<input type="checkbox"/> <b>F.LE.A.1c:</b> Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	MP3-Construct viable arguments and critique the reasoning of others. MP4-Model with mathematics	Determine whether each table represents an exponential growth function, an exponential decay function, or neither.  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th><math>x</math></th> <th><math>y</math></th> </tr> </thead> <tbody> <tr> <td>0</td> <td>270</td> </tr> <tr> <td>1</td> <td>90</td> </tr> <tr> <td>2</td> <td>30</td> </tr> <tr> <td>3</td> <td>10</td> </tr> </tbody> </table>	$x$	$y$	0	270	1	90	2	30	3	10	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.
$x$	$y$													
0	270													
1	90													
2	30													
3	10													
<input type="checkbox"/> <b>F.LE.A.2:</b> Construct linear and exponential functions, including	MP5-Use appropriate tools strategically. MP8-Look for and express	Clicking the zoom-out button on a mapping website doubles the side	The Dynamic Classroom  <u>Student Journal with</u>	-Calculator use -Read/clarify directions -Modify questions										

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<p>arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).</p>	<p>regularity in repeated reasoning.</p>	<p>length of the square map. After how many clicks on the zoom-out button is the side length of the map 640 miles?</p> <table border="1"> <tr> <td>Zoom-out clicks</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>Map side length (miles)</td> <td>5</td> <td>10</td> <td>20</td> </tr> </table>	Zoom-out clicks	1	2	3	Map side length (miles)	5	10	20	<p><u>Exploration Activities</u></p>	<p>-Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
Zoom-out clicks	1	2	3									
Map side length (miles)	5	10	20									
<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Quarterly 2</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>										
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● <b>Common Assessment 1</b> <ul style="list-style-type: none"> <li>○ N.RN.A.1</li> <li>○ N.RN.A.2</li> </ul> </li> <li>● <b>Common Assessment 2</b> <ul style="list-style-type: none"> <li>○ A.CED.A.2</li> <li>○ A.SSE.B.3c</li> <li>○ F.IF.B.4</li> <li>○ F.IF.C.7e</li> <li>○ F.IF.C.8b</li> <li>○ F.IF.C.9</li> <li>○ F.BF.A.1a</li> <li>○ F.BF.B.3</li> <li>○ F.LE.A.1a</li> <li>○ F.LE.A.1c</li> <li>○ F.LE.A.2</li> </ul> </li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>										

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<ul style="list-style-type: none"><li>● <b>Common Assessment 3</b><ul style="list-style-type: none"><li>○ F.IF.A.3</li><li>○ F.BF.A.2</li><li>○ F.LE.A.2</li></ul></li><li>● <b>Unit 6 Performance Task</b></li></ul>	
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<b>Unit Title:</b> Unit 7 Polynomial Equations & Factoring	<b>Timeframe/Pacing:</b> 22
<p><b>Essential Questions</b></p> <ul style="list-style-type: none"> <li>● Why do we simplify polynomial expressions?</li> <li>● What are the patterns in the special products <math>(a + b)(a - b)</math>, <math>(a + b)^2</math>, and <math>(a - b)^2</math> ?</li> <li>● How do we solve a polynomial equation?</li> <li>● How do we factor a polynomial completely?</li> </ul>	
<p><b>Enduring Understandings</b></p> <ul style="list-style-type: none"> <li>● When adding and subtracting polynomials, you can only combine like terms.</li> <li>● The properties of integers apply to polynomials.</li> <li>● Factors are a subset of a product and with the distributive property allow options in solving polynomials.</li> <li>● Solving polynomials involves the reversal of operations, the distributive property and rules of exponents.</li> <li>● Multiplying and factoring polynomials are related.</li> </ul>	
<p><b>Standards Taught and Assessed</b></p> <ul style="list-style-type: none"> <li>● <input checked="" type="checkbox"/> <b>A.APR.A.1:</b> Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.</li> <li>● <input type="checkbox"/> <b>A.APR.B.3:</b> Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.</li> <li>● <input checked="" type="checkbox"/> <b>A.REI.B.4b:</b> Solve quadratic equations by inspection (e.g., for <math>x^2 = 49</math>), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as <math>a \pm bi</math> for real numbers <math>a</math> and <math>b</math>.</li> <li>● <input checked="" type="checkbox"/> <b>A.SSE.A.2:</b> Use the structure of an expression to identify ways to rewrite it. For example, see <math>x^4 - y^4</math> as <math>(x^2)^2 - (y^2)^2</math>, thus recognizing it as a difference of squares that can be factored as <math>(x^2 - y^2)(x^2 + y^2)</math>.</li> <li>● <input type="checkbox"/> <b>A.SSE.B.3a:</b> Factor a quadratic expression to reveal the zeros of the function it defines.</li> </ul>	
<p><b>Highlighted Interdisciplinary Connections</b></p> <ul style="list-style-type: none"> <li>● <b>Computer Science and Design Thinking: 8.1.2.AP.4:</b> Break down a task into a sequence of steps.</li> </ul>	
<p><b>Highlighted Career Ready Practices and 21st Century Themes and Skills</b></p> <ul style="list-style-type: none"> <li>● <b>9.4.5.IML.2:</b> Create a visual representation to organize information about a problem or issue.</li> </ul>	

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<ul style="list-style-type: none"> <li>● <b>9.4.12.CT.1:</b> Identify problem-solving strategies used in the development of an innovative product or practice.</li> <li>● <b>9.4.12.CT.2:</b> Explain the potential benefits of collaborating to enhance critical thinking and problem solving.</li> </ul>				
<p><b>Social Emotional Learning Competencies</b></p> <ul style="list-style-type: none"> <li>● <b>2.1.12.EH.1:</b> Recognize one’s personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li> <li>● <b>2.1.12.EH.3:</b> Describe strategies to appropriately respond to stressors in a variety of situations.</li> <li>● <b>2.1.12.EH.4:</b> Analyze and adapt mental and emotional health messages and communication techniques to peers and other specific target audiences.</li> </ul>				
<p><b>Pre-Assessment</b></p> <ul style="list-style-type: none"> <li>● A.APR.A.1</li> <li>● A.APR.B.3</li> <li>● A.REI.B.4b</li> <li>● A.SSE.A.2</li> <li>● A.SSE.B.3a</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● ELL - Spanish student edition, reviews, assessments and videos are available via Big Ideas Math teacher resources.</li> <li>● Specific other accommodations/modifications per a student’s IEP or 504 plan.</li> </ul>		
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>■ <b>A.APR.A.1:</b> Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.</p>	<p>MP1-Make sense of problems and persevere in solving them. MP2-Reason abstractly and quantitatively MP6-Attend to precision. MP7-Look for and make use of structure.</p>	<p>Find <math>(x + 5) + (x^2 - 3x - 2)</math> Find <math>(x + 5) - (x^2 - 3x - 2)</math> Find <math>(x + 5)(x^2 - 3x - 2)</math></p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student’s IEP or 504 plan.</p>

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<p>□ <b>A.APR.B.3:</b> Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.</p>	<p>MP1-Make sense of problems and persevere in solving them. MP5-Use appropriate tools strategically.</p>	<p>You can model the arch of a fireplace using the equation <math>y = -1/9(x + 18)(x - 18)</math>, where <math>x</math> and <math>y</math> are measured in inches. The <math>x</math>-axis represents the floor. Find the width of the arch at floor level.</p>	<p>The Dynamic Classroom <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>■ <b>A.REI.B.4b:</b> Solve quadratic equations by inspection (e.g., for <math>x^2 = 49</math>), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as <math>a \pm bi</math> for real numbers <math>a</math> and <math>b</math>.</p>	<p>MP1-Make sense of problems and persevere in solving them.</p>	<p>Solve <math>2x^2 + 8x = 0</math></p>	<p>The Dynamic Classroom <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>■ <b>A.SSE.A.2:</b> Use the structure of an expression to identify ways to rewrite it. For example, see <math>x^4 - y^4</math> as <math>(x^2)^2 - (y^2)^2</math>, thus</p>	<p>MP2-Reason abstractly and quantitatively MP4-Model with mathematics.</p>	<p>Factor <math>x^2 - 25</math></p>	<p>The Dynamic Classroom <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p>

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recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$ .				Specific other accommodations/modifications per a student's IEP or 504 plan.
<input type="checkbox"/> <b>A.SSE.B.3a:</b> Factor a quadratic expression to reveal the zeros of the function it defines.	MP6-Attend to precision. MP7-Look for and make use of structure.	Solve $2x^3 + 8x^2 = 10x$	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.
<b>Benchmark Assessment</b> ● Not Applicable		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> ● Calculator use ● Read/clarify directions ● Modify questions ● Extra time ● Specific other accommodations/modifications per a student's IEP or 504 plan. ● Challenge questions		
<b>Summative Assessment(s)</b> ● <b>Common Assessment 1</b> ○ A.APR.A.1 ● <b>Common Assessment 2</b> ○ A.APR.B.3 ○ A.REI.B.4b ○ A.SSE.A.2 ○ A.SSE.B.3a ● <b>Unit 7 Performance Task</b>		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> ● Calculator use ● Read/clarify directions ● Modify questions ● Extra time ● Specific other accommodations/modifications per a student's IEP or 504 plan. ● Challenge questions		

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<b>Unit Title:</b> Unit 8 Graphing Quadratic Functions	<b>Timeframe/Pacing:</b> 18
<p><b>Essential Questions</b></p> <ul style="list-style-type: none"> <li>● What are the characteristics of the graph of a quadratic function of the form <math>f(x) = ax^2 + bx + c</math> ?</li> <li>● How can you describe the graph of <math>f(x) = a(x - h)^2 + k</math>?</li> <li>● What are the characteristics of the graph of <math>f(x) = a(x - p)(x - q)</math>?</li> </ul>	
<p><b>Enduring Understandings</b></p> <ul style="list-style-type: none"> <li>● A quadratic function is a type of nonlinear function that models certain situations where the rate of change is not constant.</li> <li>● Transformations on a quadratic can be mapped back to its parent function.</li> <li>● Functions can be used to model and analyze real-world problems.</li> </ul>	
<p><b>Standards Taught and Assessed</b></p> <ul style="list-style-type: none"> <li>● <input type="checkbox"/> <b>A.APR.B.3:</b> Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.</li> <li>● <input checked="" type="checkbox"/> <b>A.CED.A.2:</b> Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</li> <li>● <input type="checkbox"/> <b>A.SSE.B.3a:</b> Factor a quadratic expression to reveal the zeros of the function it defines</li> <li>● <input checked="" type="checkbox"/> <b>F.IF.B.4:</b> For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.★</li> <li>● <input type="checkbox"/> <b>F.IF.C.7a:</b> Graph linear and quadratic functions and show intercepts, maxima, and minima.</li> <li>● <input type="checkbox"/> <b>F.IF.C.8a:</b> Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.</li> <li>● <input type="checkbox"/> <b>F.IF.C.9:</b> Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.</li> <li>● <input type="checkbox"/> <b>F.BF.A.1a:</b> Determine an explicit expression, a recursive process, or steps for calculation from a context.</li> <li>● <input checked="" type="checkbox"/> <b>F.BF.B.3:</b> Identify the effect on the graph of replacing <math>f(x)</math> by <math>f(x) + k</math>, <math>k f(x)</math>, <math>f(kx)</math>, and <math>f(x + k)</math> for specific values of <math>k</math> (both positive and negative); find the value of <math>k</math> given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.</li> </ul>	

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**Highlighted Interdisciplinary Connections**

- **English Language Arts: RL.9-10.1.** Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferentially, including determining where the text leaves matters uncertain.
- **Computer Science and Design Thinking: 8.1.12.DA.5:** Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

**Highlighted Career Ready Practices and 21st Century Themes and Skills**

- **9.4.5.IML.2:** Create a visual representation to organize information about a problem or issue.
- **9.4.12.CT.1:** Identify problem-solving strategies used in the development of an innovative product or practice.
- **9.4.12.CT.2:** Explain the potential benefits of collaborating to enhance critical thinking and problem solving.

**Social Emotional Learning Competencies**

- **2.1.12.EH.1:** Recognize one’s personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.
- **2.1.12.EH.3:** Describe strategies to appropriately respond to stressors in a variety of situations.
- **2.1.12.EH.4:** Analyze and adapt mental and emotional health messages and communication techniques to peers and other specific target audiences.

**Pre-Assessment**

- F.IF.B.4
- F.IF.C.7a
- F.BF.B.3

**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**

- ELL - Spanish student edition, reviews, assessments and videos are available via Big Ideas Math teacher resources.
- Specific other accommodations/modifications per a student’s IEP or 504 plan.

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)
<input type="checkbox"/> <b>A.APR.B.3:</b> Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by	MP6-Attend to precision. MP7-Look for and make use of structure.	Graph $f(x) = -(x+1)(x-5)$ .	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating

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the polynomial.				Specific other accommodations/modifications per a student's IEP or 504 plan.
<p>■ <b>A.CED.A.2:</b> Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</p>	MP6-Attend to precision.	Graph $f(x) = 3x^2 - 6x + 5$ .	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>□ <b>A.SSE.B.3a:</b> Factor a quadratic expression to reveal the zeros of the function it defines</p>	<p>MP2-Reason abstractly and quantitatively. MP3-Construct viable arguments and critique the reasoning of others. MP5-Use appropriate tools strategically.</p>	<p>Find the zeros of the function. <math>f(x) = -2x^2 - 10x - 12</math></p>	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>■ <b>F.IF.B.4:</b> For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch</p>	<p>MP5-Use appropriate tools strategically. MP7-Look for and make use of structure.</p>	Graph $g(x) = \frac{1}{2}(x - 4)^2$ .	The Dynamic Classroom  <u>Student Journal with Exploration Activities</u>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p>

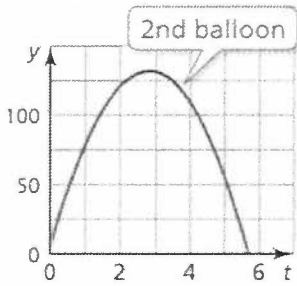
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<p>graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.★</p>				<p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>■ <b>F.IF.C.7a:</b> Graph linear and quadratic functions and show intercepts, maxima, and minima.</p>	<p>MP1-Make sense of problems and persevere in solving them. MP4-Model with mathematics MP5-Use appropriate tools strategically. MP7-Look for and make use of structure.</p>	<p>Graph <math>f(x) = 3x^2 - 6x + 5</math>.</p>	<p>The Dynamic Classroom <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>■ <b>F.IF.C.8a:</b> Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.</p>	<p>MP7-Look for and make use of structure.</p>	<p>Graph <math>f(x) = 2x^2 - 8</math>.</p>	<p>The Dynamic Classroom <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student's IEP or 504 plan.</p>

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<p>□ <b>F.IF.C.9:</b> Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).</p>	<p>MP1-Make sense of problems and persevere in solving them. MP4-Model with mathematics MP5-Use appropriate tools strategically. MP7-Look for and make use of structure.</p>	<p>A group of friends is launching water balloons. The function <math>f(t) = -16t^2 + 80t + 5</math> represents the height (in feet) of the first water balloon <math>t</math> seconds after it is launched. The height of the second water balloon <math>t</math> seconds after it is launched is shown in the graph. Which water balloon went higher?</p> 	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>□ <b>F.BF.A.1a:</b> Determine an explicit expression, a recursive process, or steps for calculation from a context.</p>	<p>MP1-Make sense of problems and persevere in solving them. MP4-Model with mathematics</p>	<p>Write a quadratic function in standard form whose graph satisfies the given condition(s). a. vertex: <math>(-3, 4)</math> b. passes through <math>(-9, 0)</math>, <math>(-2, 0)</math>, and <math>(-4, 20)</math></p>	<p>The Dynamic Classroom</p> <p><u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>⊙ <b>F.BF.B.3:</b> Identify the</p>	<p>MP1-Make sense of</p>	<p>Graph <math>h(x) = -1/3 x^2 - 2</math>.</p>	<p>The Dynamic Classroom</p>	<p>-Calculator use</p>

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<p>effect on the graph of replacing <math>f(x)</math> by <math>f(x) + k</math>, <math>k f(x)</math>, <math>f(kx)</math>, and <math>f(x + k)</math> for specific values of <math>k</math> (both positive and negative); find the value of <math>k</math> given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.</p>	<p>problems and persevere in solving them. MP5-Use appropriate tools strategically. MP7-Look for and make use of structure.</p>	<p>Compare the graph to the graph of <math>f(x) = x^2</math>.</p>	<p><u>Student Journal with Exploration Activities</u></p>	<p>-Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Benchmark 3</li> <li>● Quarterly 3</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>		
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● <b>Common Assessment 1</b> <ul style="list-style-type: none"> <li>○ A.CED.A.2</li> <li>○ F.IF.C.7a</li> <li>○ F.BF.B.3</li> <li>○ F.IF.C.9</li> </ul> </li> <li>● <b>Common Assessment 2</b> <ul style="list-style-type: none"> <li>○ A.CED.A.2</li> <li>○ A.APR.B.3</li> </ul> </li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>		

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<ul style="list-style-type: none"><li>○ F.IF.B.4</li><li>○ F.IF.C.8a</li><li>○ F.BF.A.1a</li><li>○ F.BF.B.3</li><li>○ A.SSE.B.3a</li><li>● <b>Unit 8 Performance Task</b></li></ul>	
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<b>Unit Title:</b> Unit 9 Solving Quadratic Equations	<b>Timeframe/Pacing:</b> 20
<p><b>Essential Questions</b></p> <ul style="list-style-type: none"> <li>● What rules apply to operating on and simplifying square roots?</li> <li>● How do we use a graph to solve a quadratic equation in one variable?</li> <li>● How do we determine the number of solutions of a quadratic equation?</li> <li>● How do we determine which method to use to solve a quadratic equation?</li> </ul>	
<p><b>Enduring Understandings</b></p> <ul style="list-style-type: none"> <li>● There is more than one way to solve a quadratic equation in standard form.</li> <li>● Setting the equation equal to zero allows us to find the zeros of the quadratic function.</li> </ul>	
<p><b>Standards Taught and Assessed</b></p> <p>■ <b>A.CED.A.1:</b> Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</p> <p>■ <b>A.REI.B.4a:</b> Use the method of completing the square to transform any quadratic equation in <math>x</math> into an equation of the form <math>(x - p)^2 = q</math> that has the same solutions. Derive the quadratic formula from this form.</p> <p>■ <b>A.REI.B.4b:</b> Solve quadratic equations by inspection (e.g., for <math>x^2 = 49</math>), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as <math>a \pm bi</math> for real numbers <math>a</math> and <math>b</math>.</p> <p>□ <b>F.IF.C.7a:</b> Graph linear and quadratic functions and show intercepts, maxima, and minima.</p> <p>□ <b>F.IF.C.8a:</b> Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.</p> <p>■ <b>N.RN.A.2:</b> Rewrite expressions involving radicals and rational exponents using the properties of exponents.</p>	
<p><b>Highlighted Interdisciplinary Connections</b></p> <ul style="list-style-type: none"> <li>● <b>Computer Science and Design Thinking: 8.1.5.AP.1:</b> Compare and refine multiple algorithms for the same task and determine which is the most appropriate.</li> </ul>	
<p><b>Highlighted Career Ready Practices and 21st Century Themes and Skills</b></p> <ul style="list-style-type: none"> <li>● <b>9.4.12.CT.1:</b> Identify problem-solving strategies used in the development of an innovative product or practice.</li> <li>● <b>9.4.12.CT.2:</b> Explain the potential benefits of collaborating to enhance critical thinking and problem solving.</li> </ul>	

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<p><b>Social Emotional Learning Competencies</b></p> <ul style="list-style-type: none"> <li>● <b>2.1.12.EH.1:</b> Recognize one’s personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li> <li>● <b>2.1.12.EH.3:</b> Describe strategies to appropriately respond to stressors in a variety of situations .</li> <li>● <b>2.1.12.EH.4:</b> Analyze and adapt mental and emotional health messages and communication techniques to peers and other specific target audiences.</li> </ul>				
<p><b>Pre-Assessment</b></p> <ul style="list-style-type: none"> <li>● N.RN.A.2</li> <li>● F.IF.C.8a</li> <li>● A.REI.B.4b</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● ELL - Spanish student edition, reviews, assessments and videos are available via Big Ideas Math teacher resources.</li> <li>● Specific other accommodations/modifications per a student’s IEP or 504 plan.</li> </ul>		
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>■ <b>A.CED.A.1:</b> Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</p>	<p>MP2-Reason abstractly and quantitatively. MP3-Construct viable arguments and critique the reasoning of others. MP6-Attend to precision.</p>	<p>Solve <math>3x^2 - 27 = 0</math> using square roots</p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student’s IEP or 504 plan.</p>
<p>■ <b>A.REI.B.4a:</b> Use the method of completing the square to transform any quadratic equation in x into an equation of the form <math>(x - p)^2 = q</math> that has</p>	<p>MP1-Make sense of problems and persevere in solving them. MP2-Reason abstractly and quantitatively. MP3-Construct viable</p>	<p>Solve <math>x^2 - 16x = -15</math> by completing the square.</p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p>

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the same solutions. Derive the quadratic formula from this form.	arguments and critique the reasoning of others. MP4-Model with mathematics. MP7-Look for and make use of structure.			Specific other accommodations/modifications per a student's IEP or 504 plan.
<p>■ <b>A.REI.B.4b:</b> Solve quadratic equations by inspection (e.g., for <math>x^2 = 49</math>), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as <math>a \pm bi</math> for real numbers <math>a</math> and <math>b</math>.</p>	<p>MP1-Make sense of problems and persevere in solving them. MP2-Reason abstractly and quantitatively. MP3-Construct viable arguments and critique the reasoning of others. MP4-Model with mathematics. MP7-Look for and make use of structureMP1</p>	<p>Solve the equation using any method. Explain your choice of method. <math>x^2 - 10x = 1</math></p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>□ <b>F.IF.C.7a:</b> Graph linear and quadratic functions and show intercepts, maxima, and minima.</p>	<p>MP1-Make sense of problems and persevere in solving them. MP5-Use appropriate tools strategically.</p>	<p>The function <math>y = -16x^2 + 96x</math> represents the height <math>y</math> (in feet) of a model rocket <math>x</math> seconds after it is launched. (a) Find the maximum height of the rocket. (b) Find and interpret the axis of symmetry.</p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>□ <b>F.IF.C.8a:</b> Use the process of factoring and</p>	<p>MP1-Make sense of problems and persevere in</p>	<p>The function <math>y = -16x^2 + 96x</math> represents the height <math>y</math></p>	<p>The Dynamic Classroom</p>	<p>-Calculator use -Read/clarify directions</p>

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<p>completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.</p>	<p>solving them. MP2-Reason abstractly and quantitatively. MP3-Construct viable arguments and critique the reasoning of others. MP4-Model with mathematics. MP7-Look for and make use of structure</p>	<p>(in feet) of a model rocket <math>x</math> seconds after it is launched. (a) Find the maximum height of the rocket. (b) Find and interpret the axis of symmetry.</p>	<p><u>Student Journal with Exploration Activities</u></p>	<p>-Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p>■ <b>N.RN.A.2:</b> Rewrite expressions involving radicals and rational exponents using the properties of exponents.</p>	<p>MP2-Reason abstractly and quantitatively. MP3-Construct viable arguments and critique the reasoning of others.</p>	<p>Write in simplest form <math>\sqrt{9x^3}</math></p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Not Applicable</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>		
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● Common Assessment 1</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p>		

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<ul style="list-style-type: none"><li>○ N.RN.A.2</li><li>● <b>Common Assessment 2</b><ul style="list-style-type: none"><li>○ A.CED.A.1</li><li>○ A.REI.B.4a</li><li>○ A.REI.B.4b</li><li>○ F.IF.C.7a</li><li>○ F.IF.C.8a</li></ul></li><li>● <b>Unit 9 Performance Task</b></li></ul>	<ul style="list-style-type: none"><li>● Calculator use</li><li>● Read/clarify directions</li><li>● Modify questions</li><li>● Extra time</li><li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li><li>● Challenge questions</li></ul>
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<b>Unit Title:</b> Unit 10 Radical Functions & Equations	<b>Timeframe/Pacing:</b> 9
<p><b>Essential Questions</b></p> <ul style="list-style-type: none"> <li>● What are some of the characteristics of the graph of a square root function?</li> <li>● How do we solve an equation that contains square roots?</li> </ul>	
<p><b>Enduring Understandings</b></p> <ul style="list-style-type: none"> <li>● The characteristics of power and radical functions and their representations are useful in solving real-world problems.</li> </ul>	
<p><b>Standards Taught and Assessed</b></p> <p>■ <b>A.CED.A.1:</b> Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</p> <p>■ <b>A.CED.A.2:</b> Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</p> <p>■ <b>F.IF.B.4:</b> For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★</p> <p>□ <b>F.IF.C.7b:</b> Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.</p> <p>□ <b>F.IF.C.9:</b> Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.</p>	
<p><b>Highlighted Interdisciplinary Connections</b></p> <ul style="list-style-type: none"> <li>● <b>Computer Science and Design Thinking: 8.1.12.DA.5:</b> Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.</li> </ul>	
<p><b>Highlighted Career Ready Practices and 21st Century Themes and Skills</b></p> <ul style="list-style-type: none"> <li>● <b>9.4.5.IML.2:</b> Create a visual representation to organize information about a problem or issue.</li> <li>● <b>9.4.12.CT.1:</b> Identify problem-solving strategies used in the development of an innovative product or practice.</li> <li>● <b>9.4.12.CT.2:</b> Explain the potential benefits of collaborating to enhance critical thinking and problem solving.</li> </ul>	

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<p><b>Social Emotional Learning Competencies</b></p> <ul style="list-style-type: none"> <li>● <b>2.1.12.EH.1:</b> Recognize one’s personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li> <li>● <b>2.1.12.EH.3:</b> Describe strategies to appropriately respond to stressors in a variety of situations.</li> <li>● <b>2.1.12.EH.4:</b> Analyze and adapt mental and emotional health messages and communication techniques to peers and other specific target audiences.</li> </ul>				
<p><b>Pre-Assessment</b></p> <ul style="list-style-type: none"> <li>● F.IF.B.4</li> <li>● F.IF.C.7b</li> <li>● F.IF.C.9</li> <li>● A.CED.A.1</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● ELL - Spanish student edition, reviews, assessments and videos are available via Big Ideas Math teacher resources.</li> <li>● Specific other accommodations/modifications per a student’s IEP or 504 plan.</li> </ul>		
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>■ <b>A.CED.A.1:</b> Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</p>	<p>SMP3 - Construct viable arguments and critique the reasoning of others. SMP4 - Model with mathematics. SMP7 - Look for and make use of structure</p>	<p>Solve each equation. <math>\sqrt{x} + 5 = 13</math></p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student’s IEP or 504 plan.</p>
<p>■ <b>A.CED.A.2:</b> Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with</p>	<p>SMP6 - Attend to precision. SMP7 - Look for and make use of structure.</p>	<p>Graph <math>f(x) = \sqrt{x} + 3</math>.</p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p>

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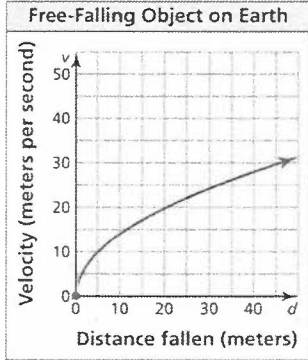
labels and scales.				Specific other accommodations/modifications per a student's IEP or 504 plan.
<p>■ <b>F.IF.B.4:</b> For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.★</p>	<p>SMP6 - Attend to precision. SMP7 - Look for and make use of structure.</p>	<p>The velocity <math>v</math> (in meters per second) of a tsunami can be modeled by the function <math>v(x) = \sqrt{9.8x}</math>, where <math>x</math> is the water depth (in meters). (a) Graph the function. At what depth does the velocity of the tsunami exceed 200 meters per second? (b) What happens to the average rate of change of the velocity as the water depth increases?</p>	<p>The Dynamic Classroom <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>

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<p><input type="checkbox"/> <b>F.IF.C.7b:</b> Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.</p>	<p>SMP6 - Attend to precision. SMP7 - Look for and make use of structure.</p>	<p>Graph <math>f(x) = \sqrt{x} + 3</math>.</p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
<p><input type="checkbox"/> <b>F.IF.C.9:</b> Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.</p>	<p>SMP6 - Attend to precision. SMP7 - Look for and make use of structure.</p>	<p>The model <math>v(d) = \sqrt{2gd}</math> represents the velocity <math>v</math> (in meters per second) of a free-falling object on the moon, where <math>g</math> is the constant 1.6 meters per second squared and <math>d</math> is the distance (in meters) the object has fallen. The velocity of a free-falling object on Earth is shown in the graph. Compare the velocities by finding and</p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Calculator use -Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>

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		<p>interpreting their average rates of change over the interval <math>d = 0</math> to <math>d = 10</math>.</p>			
<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Not Applicable</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>	<div style="text-align: center;"> <p><b>Free-Falling Object on Earth</b></p>  </div>		
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● <b>Common Assessment 1</b> <ul style="list-style-type: none"> <li>○ A.CED.A.2</li> <li>○ F.IF.B.4</li> <li>○ F.IF.C.7b</li> <li>○ F.IF.C.9</li> </ul> </li> <li>● <b>Common Assessment 2</b> <ul style="list-style-type: none"> <li>○ A.CED.A.1</li> </ul> </li> <li>● <b>Unit 10 Performance Task</b></li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>			

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<b>Unit Title:</b> Unit 11 Data Analysis & Displays	<b>Timeframe/Pacing:</b> 14
<p><b>Essential Questions</b></p> <ul style="list-style-type: none"> <li>● How do we describe the variation of a data set?</li> <li>● How do we use a box-and-whisker plot to describe a data set?</li> <li>● How do we use a histogram to characterize the basic shape of a distribution?</li> <li>● How do we display data in a way that helps us make decisions?</li> </ul>	
<p><b>Enduring Understandings</b></p> <ul style="list-style-type: none"> <li>● There are several measures of data variation and some are better indicators of data trends than others.</li> <li>● The way that data is collected, organized and displayed influences interpretation.</li> </ul>	
<p><b>Standards Taught and Assessed</b></p> <ul style="list-style-type: none"> <li>⊙ <b>S.ID.A.1:</b> Represent data with plots on the real number line (dot plots, histograms, and box plots).</li> <li>⊙ <b>S.ID.A.2:</b> Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.</li> <li>⊙ <b>S.ID.A.3:</b> Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).</li> </ul>	
<p><b>Highlighted Interdisciplinary Connections</b></p> <ul style="list-style-type: none"> <li>● <b>Computer Science and Design Thinking: 8.1.8.DA.1:</b> Organize and transform data collected using computational tools to make it usable for a specific purpose.</li> <li>● <b>Computer Science and Design Thinking: 8.1.8.DA.4:</b> Transform data to remove errors and improve the accuracy of the data for analysis.</li> <li>● <b>Computer Science and Design Thinking: 8.1.12.DA.5:</b> Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.</li> </ul>	
<p><b>Highlighted Career Ready Practices and 21st Century Themes and Skills</b></p> <ul style="list-style-type: none"> <li>● <b>9.4.5.IML.2:</b> Create a visual representation to organize information about a problem or issue.</li> <li>● <b>9.4.5.IML.3:</b> Represent the same data in multiple visual formats in order to tell a story about the data.</li> <li>● <b>9.4.12.CT.1:</b> Identify problem-solving strategies used in the development of an innovative product or practice.</li> <li>● <b>9.4.12.CT.2:</b> Explain the potential benefits of collaborating to enhance critical thinking and problem solving.</li> <li>● <b>9.4.12.IML.4:</b> Assess and critique the appropriateness and impact of existing data visualizations for an intended audiences.</li> </ul>	

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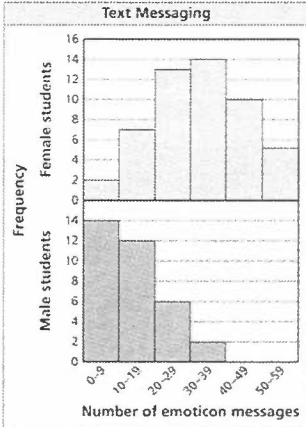
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<p><b>Social Emotional Learning Competencies</b></p> <ul style="list-style-type: none"> <li>● <b>2.1.12.EH.1:</b> Recognize one’s personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li> <li>● <b>2.1.12.EH.3:</b> Describe strategies to appropriately respond to stressors in a variety of situations (e.g., academics, relationships, shootings, death, car accidents, illness).</li> <li>● <b>2.1.12.EH.4:</b> Analyze and adapt mental and emotional health messages and communication techniques to peers and other specific target audience (e.g., dimensions of health).</li> </ul>				
<p><b>Pre-Assessment</b></p> <ul style="list-style-type: none"> <li>● S.ID.A.1</li> <li>● S.ID.A.2</li> <li>● S.ID.A.3</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● ELL - Spanish student edition, reviews, assessments and videos are available via Big Ideas Math teacher resources.</li> <li>● Specific other accommodations/modifications per a student’s IEP or 504 plan.</li> </ul>		
<p><b>Student Learning Objectives: We are learning to/that...</b></p>	<p><b>Student Strategies (Mathematical Practices)</b></p>	<p><b>Formative Assessment</b></p>	<p><b>Activities and Resources</b></p>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p>
<p>☉ <b>S.ID.A.1:</b> Represent data with plots on the real number line (dot plots, histograms, and box plots).</p>	<p>SMP2 - Reason abstractly and quantitatively. SMP4 - Model with mathematics. SMP5 - Use appropriate tools strategically.</p>	<p>Make a box-and-whisker plot that represents the ages of the members of a backpacking expedition in the mountains. 24, 30, 30, 22, 25, 22, 18, 25, 28, 30, 25, 27</p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Read/clarify directions -Modify questions -Copy of notes -Preferential seating  Specific other accommodations/modifications per a student’s IEP or 504 plan.</p>
<p>☉ <b>S.ID.A.2:</b> Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range,</p>	<p>SMP2 - Reason abstractly and quantitatively. SMP6 - Attend to precision.</p>	<p>Find the mean, median, mode, range, and standard deviation when each hourly wage increases by \$0.50. Find the mean, median,</p>	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p>

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<p>standard deviation) of two or more different data sets.</p>		<p>mode, range, and standard deviation when each hourly wage increases by 10%.</p> <table border="1"> <thead> <tr> <th colspan="2">Students' Hourly Wages</th> </tr> </thead> <tbody> <tr> <td>\$17.00</td> <td>\$8.75</td> </tr> <tr> <td>\$9.25</td> <td>\$8.95</td> </tr> <tr> <td>\$9.15</td> <td>\$8.75</td> </tr> <tr> <td>\$9.60</td> <td>\$9.75</td> </tr> </tbody> </table>	Students' Hourly Wages		\$17.00	\$8.75	\$9.25	\$8.95	\$9.15	\$8.75	\$9.60	\$9.75		<p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>											
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<p>⊙ <b>S.ID.A.3:</b> Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).</p>	<p>SMP2 - Reason abstractly and quantitatively. SMP3 - Construct viable arguments and critique the reasoning of others. SMP5 - Use appropriate tools strategically.</p>	<p>Compare the distributions using their shapes and appropriate measures of center and variation.</p>  <table border="1"> <caption>Text Messaging Data</caption> <thead> <tr> <th>Number of emoticon messages</th> <th>Female students (Frequency)</th> <th>Male students (Frequency)</th> </tr> </thead> <tbody> <tr> <td>0-9</td> <td>7</td> <td>14</td> </tr> <tr> <td>10-19</td> <td>13</td> <td>12</td> </tr> <tr> <td>20-29</td> <td>14</td> <td>6</td> </tr> <tr> <td>30-39</td> <td>10</td> <td>2</td> </tr> <tr> <td>40-49</td> <td>5</td> <td>0</td> </tr> <tr> <td>50-59</td> <td>0</td> <td>0</td> </tr> </tbody> </table>	Number of emoticon messages	Female students (Frequency)	Male students (Frequency)	0-9	7	14	10-19	13	12	20-29	14	6	30-39	10	2	40-49	5	0	50-59	0	0	<p>The Dynamic Classroom  <u>Student Journal with Exploration Activities</u></p>	<p>-Read/clarify directions -Modify questions -Copy of notes -Preferential seating</p> <p>Specific other accommodations/modifications per a student's IEP or 504 plan.</p>
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<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>Quarterly 4</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>Calculator use</li> <li>Read/clarify directions</li> <li>Modify questions</li> </ul>																							

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	<ul style="list-style-type: none"> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● <b>Common Assessment 1</b> <ul style="list-style-type: none"> <li>○ S.ID.A.1</li> <li>○ S.ID.A.3</li> </ul> </li> <li>● <b>Common Assessment 2</b> <ul style="list-style-type: none"> <li>○ S.ID.A.1</li> <li>○ S.ID.A.2</li> <li>○ S.ID.A.3</li> </ul> </li> <li>● <b>Unit 11 Performance Task</b></li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Calculator use</li> <li>● Read/clarify directions</li> <li>● Modify questions</li> <li>● Extra time</li> <li>● Specific other accommodations/modifications per a student's IEP or 504 plan.</li> <li>● Challenge questions</li> </ul>

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**Bibliography**  
**Print and Digital Resources**  
**Algebra 1**

Print and Digital Supplemental Materials/Resources:

Larson, R., Boswell, L., (2019). *Big Ideas Math Algebra 1*. Big Ideas Learning, LLC:  
Pennsylvania.

Digital Only Resources:

<https://www.bigideasmath.com> (textbook website)