

# Calendar-Based Curriculum Map: Algebra I

|                           | <b>August/September</b>   | <b>October</b>  | <b>November</b>   |
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| <b>Essential Question</b> | <ul style="list-style-type: none"> <li>How will students understand numbers, ways of representing numbers, relationships among numbers, and number systems?</li> <li>How will students understand meanings of operations and how they relate to one another?</li> <li>How will students understand patterns, relations, and functions?</li> <li>How will students represent and analyze mathematical situations and structures using algebraic symbols?</li> <li>How will students use visualization, spatial reasoning, and geometric modeling to solve problems?</li> </ul> | <ul style="list-style-type: none"> <li>How will students understand patterns, relations and functions?</li> <li>How will students represent and analyze mathematical situations and structures using algebraic symbols?</li> <li>How will students analyze change in various contexts?</li> <li>How will students apply appropriate techniques, tools, and formulas to determine measurements?</li> <li>How will students formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them?</li> </ul> | <ul style="list-style-type: none"> <li>How will students represent and analyze mathematical situations and structures using algebraic symbols?</li> <li>How will students select and use appropriate statistical methods to analyze data?</li> <li>How will students develop and evaluate inferences and predictions that are based on data?</li> </ul> |
| <b>Content</b>            | <ul style="list-style-type: none"> <li>Read, write, and compare numbers</li> <li>Represent and use real numbers</li> <li>Compose and</li> </ul>   | <ul style="list-style-type: none"> <li>Identify and compare functions</li> <li>Describe the effects of parameter changes</li> <li>Represent mathematical</li> </ul>   | <ul style="list-style-type: none"> <li>Utilize equivalent forms</li> <li>Utilize systems</li> <li>Represent data algebraically</li> <li>Develop and evaluate</li> </ul>   |

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|                      | <p>decompose numbers</p> <ul style="list-style-type: none"> <li>Describe effects of operations</li> <li>Apply operations on real and complex numbers</li> <li>Create and analyze patterns</li> <li>Classify objects and representations</li> <li>Represent mathematical situations</li> <li>Describe and use mathematical manipulation</li> <li>Draw and use visual models</li> </ul> | <p>situations</p> <ul style="list-style-type: none"> <li>Utilize equivalent forms</li> <li>Analyze change</li> <li>Analyze precision</li> <li>Use relationships within a system of measurement</li> <li>Formulate questions</li> <li>Represent and interpret data</li> </ul>  | <p>inferences</p>  |
| <p><b>Skills</b></p> | <ul style="list-style-type: none"> <li>NO1A: Compare and order rational and irrational numbers, including finding their approximate locations on a number line</li> <li>NO1B: Use real numbers and various models, drawings, etc. to solve problems</li> <li>NO1C: Use a variety of representations to demonstrate an understanding of very large and very small numbers</li> </ul>   | <ul style="list-style-type: none"> <li>AR1D: Understand and compare the properties of linear and nonlinear functions</li> <li>AR1E: Describe the effects of parameter changes on linear, exponential growth/decay and quadratic functions including intercepts</li> <li>AR2A: Use symbolic algebra to represent and solve problems that involve linear and quadratic relationships including equations and inequalities</li> <li>AR2C: Use and solve equivalent forms of</li> </ul> | <ul style="list-style-type: none"> <li>AR2C: Use and solve equivalent forms of equations</li> <li>AR2D: Use and solve systems of linear equations or inequalities with 2 variables</li> <li>DP2C: Given a scatter plot, determine an equation for a line of best fit</li> <li>DP3A: Make conjectures are possible relationships between 2 characteristics of a sample on the basis of scatter plots of the data</li> </ul> |

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|  | <ul style="list-style-type: none"> <li>• NO2B: Describe the effects of operations, such as multiplication, division, and computing powers and roots on the magnitude of quantities</li> <li>• NO2D: Apply operations to real numbers, using mental computation or paper-and-pencil calculations for simple cases and technology for more complicated cases</li> <li>• AR1B: Generalize patterns using explicitly or recursively defined functions</li> <li>• AR1C: Compare and contrast various forms of representations of patterns</li> <li>• AR2A: Use symbolic algebra to represent and solve problems that involve linear and quadratic relationships including equations and inequalities</li> <li>• AR2B: Describe and use algebraic manipulations, including factoring and rules of integer exponents and apply properties of exponents</li> </ul> | <p>equations</p> <ul style="list-style-type: none"> <li>• AR4A: Analyze linear and quadratic functions by investigating rates of change, intercepts, and zeros</li> <li>• M2D: Describe the effects of operations, such as multiplication, division and computing powers and roots on magnitudes of quantities and effects of computation on precision which include the judging of reasonableness of numerical computations and their results</li> <li>• M2E: Use unit analysis to solve problems</li> <li>• DP1A: Formulate questions and collect data about a characteristic which include sample spaces and distributions</li> <li>• DP1C: Select and use appropriate graphical representation of data and given one-variable quantitative data, display the distribution and describe its shape</li> </ul> |  |
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|                             | <ul style="list-style-type: none"> <li>• GSR4B: Draw or use visual models to represent and solve problems</li> </ul>   |   |   |
| <b>Assessments</b>          | <ul style="list-style-type: none"> <li>• Teacher created materials</li> <li>• Publisher provided materials</li> <li>• Observations</li> <li>• Oral assessments</li> </ul>                              | <ul style="list-style-type: none"> <li>• Teacher created materials</li> <li>• Publisher provided materials</li> <li>• Observations</li> <li>• Oral assessments</li> </ul> | <ul style="list-style-type: none"> <li>• Teacher created materials</li> <li>• Publisher provided materials</li> <li>• Observations</li> <li>• Oral assessments</li> </ul>   |
| <b>Activities/Resources</b> | <ul style="list-style-type: none"> <li>• McDougal Littell Algebra I Textbook</li> <li>• Mnemonics</li> <li>• Number lines</li> <li>• Calculators</li> <li>• Pattern and Function Connection</li> </ul> | <ul style="list-style-type: none"> <li>• McDougal Littell Algebra I Textbook</li> <li>• Graphing calculators</li> <li>• Hands on Equations</li> <li>• Recipes</li> </ul>  | <ul style="list-style-type: none"> <li>• McDougal Littell Algebra I Textbook</li> <li>• Graphing calculators</li> <li>• Scatter Plot Excel Activity</li> <li>• Online graphing websites</li> <li>• Investigating linear modeling activity</li> <li>• Pattern and function connection</li> </ul> |

# Calendar-Based Curriculum Map: Algebra I

|                           | <b>December</b>  | <b>January</b>  | <b>February</b>  |
|---------------------------|--|---|--|
| <b>Essential Question</b> | <ul style="list-style-type: none"> <li>How will students represent and analyze mathematical situations and structures using algebraic symbols?</li> <li>How will students select and use appropriate statistical methods to analyze data?</li> </ul> | <ul style="list-style-type: none"> <li>How will students represent and analyze mathematical situations and structures using algebraic symbols?</li> </ul> | <ul style="list-style-type: none"> <li>How will students understand numbers, ways of representing numbers, relationships among numbers, and number systems?</li> <li>How will students understand meanings of operations and how they relate to one another?</li> <li>How will students understand patterns, relations, and functions?</li> <li>How will students represent and analyze mathematical situations and structures using algebraic models?</li> <li>How will students use mathematical models to represent and understand quantitative relationships?</li> </ul> |
| <b>Content</b>            | <ul style="list-style-type: none"> <li>Represent mathematical situations</li> <li>Utilize systems</li> <li>Describe and analyze data</li> </ul>  | <ul style="list-style-type: none"> <li>Represent mathematical situations</li> <li>Utilize equivalent forms</li> <li>Utilize systems</li> </ul>            | <ul style="list-style-type: none"> <li>Compose and decompose numbers</li> <li>Describe effects of operations</li> <li>Identify and compare functions</li> <li>Understand the effects of parameter changes</li> <li>Describe and use mathematical</li> </ul>  |

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| <p><b>Skills</b></p>   | <ul style="list-style-type: none"> <li>• AR2A: Use symbolic algebra to represent and solve problems that involve linear and quadratic relationships including equations and inequalities</li> <li>• AR2D: Use and solve systems of linear equations or inequalities with 2 variables</li> <li>• DP2A: Apply statistical measures of center to solve problems</li> </ul>  |   |
|  | <ul style="list-style-type: none"> <li>• AR2A: Use symbolic algebra to represent and solve problems that involve linear and quadratic relationships including equations and inequalities</li> <li>• AR2C: Use and solve equivalent forms of equations</li> <li>• AR2D: Use and solve systems of linear equations or inequalities with 2 variables</li> </ul>   |   |
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| <p>manipulations</p> <ul style="list-style-type: none"> <li>• Use mathematical models</li> </ul> | <ul style="list-style-type: none"> <li>• NO1C: Use a variety of representations to demonstrate an understanding of very large and very small numbers</li> <li>• NO2B: Describe the effects of operations, such as multiplication, division, and computing powers and roots on the magnitude of the quantities</li> <li>• AR1D: Understand and compare the properties of linear and nonlinear functions</li> <li>• AR1E: Describe the effects of parameter changes on linear, exponential growth/decay, and quadratic functions including intercepts</li> </ul> | <ul style="list-style-type: none"> <li>• AR2B: Describe and use algebraic manipulations, including factoring and</li> </ul> |

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|                             |  |   | <p>rules of integer exponents and apply properties of exponents</p> <ul style="list-style-type: none"> <li>AR3A: Identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem</li> </ul> |
| <b>Assessments</b>          | <ul style="list-style-type: none"> <li>Teacher created materials</li> <li>Publisher provided materials</li> <li>Observations</li> <li>Oral assessments</li> </ul>  | <ul style="list-style-type: none"> <li>Teacher created materials</li> <li>Publisher provided materials</li> <li>Observations</li> <li>Oral assessments</li> </ul>   | <ul style="list-style-type: none"> <li>Teacher created materials</li> <li>Publisher provided materials</li> <li>Observations</li> <li>Oral assessments</li> </ul>  |
| <b>Activities/Resources</b> | <ul style="list-style-type: none"> <li>McDougal Littell Algebra I Textbook</li> <li>Graphing calculators</li> <li>Online graphing websites</li> <li>Pattern and function connection</li> <li>Investigating inequalities activity</li> <li>Centers of data notes/worksheet</li> <li>Centers of data activities: Three Blind Mice Song and Measures of Center Cadence</li> </ul> | <ul style="list-style-type: none"> <li>McDougal Littell Algebra I Textbook</li> <li>Graphing calculators</li> <li>Online graphing websites</li> <li>Pattern and function connection</li> <li>Investigating inequalities activity</li> </ul> | <ul style="list-style-type: none"> <li>McDougal Littell Algebra I Textbook</li> <li>Graphing calculators</li> <li>Online graphing websites</li> <li>Pattern and function connection</li> <li>Investigating powers activity</li> </ul>                      |

# Calendar-Based Curriculum Map: Algebra I

|                           | March  | April  | May  |
|---------------------------|--|--|--|
| <b>Essential Question</b> | <ul style="list-style-type: none"> <li>How will students understand patterns, relations, and functions?</li> <li>How will students use mathematical models to represent and understand quantitative relationships?</li> <li>How will students analyze change in various contexts?</li> </ul> | <ul style="list-style-type: none"> <li>How will students represent and analyze mathematical situations and structures using algebraic symbols?</li> </ul>  | <ul style="list-style-type: none"> <li>How will students compute fluently and make reasonable estimates?</li> <li>How will students analyze characteristics and properties of two- and three-dimensional and geometric shapes and develop mathematical arguments about geometric relationships?</li> </ul> |
| <b>Content</b>            | <ul style="list-style-type: none"> <li>Identify and compare functions</li> <li>Understand the effects of parameter changes</li> <li>Use mathematical models</li> <li>Analyze change</li> </ul>   | <ul style="list-style-type: none"> <li>Represent mathematical situations</li> <li>Describe and use mathematical manipulation</li> </ul>  | <ul style="list-style-type: none"> <li>Estimate and justify solutions</li> <li>Use proportional reasoning</li> <li>Apply geometric relationships</li> </ul>  |
| <b>Skills</b>             | <ul style="list-style-type: none"> <li>AR1D: Understand and compare the properties of linear and nonlinear functions</li> <li>AR1E: Describe the effects of parameter changes on linear, exponential</li> </ul>  | <ul style="list-style-type: none"> <li>AR2A: Use symbolic algebra to represent and solve problems that involve linear and quadratic relationships including equations and inequalities</li> <li>AR2B: Describe and use algebraic manipulations, including factoring and</li> </ul> | <ul style="list-style-type: none"> <li>NO3D: Judge the reasonableness of numerical computations and their results</li> <li>NO3E: Solve problems involving proportions</li> <li>GSR1B: Apply geometric properties such as similarity and angle relationship to</li> </ul>                                   |

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|                             | <p>growth/decay, and quadratic functions including intercepts</p> <ul style="list-style-type: none"> <li>AR3A: Identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem</li> <li>AR4A: Analyze linear and quadratic functions by investigating rates of change, intercepts, and zeros</li> </ul> | <p>rules of integer exponents and apply properties of exponents</p>  | <p>solve multi-step problem in 2 dimensions</p>   |
| <b>Assessments</b>          | <ul style="list-style-type: none"> <li>Teacher created materials</li> <li>Publisher provided materials</li> <li>Observations</li> <li>Oral assessments</li> </ul>  | <ul style="list-style-type: none"> <li>Teacher created materials</li> <li>Publisher provided materials</li> <li>Observations</li> <li>Oral assessments</li> </ul>  | <ul style="list-style-type: none"> <li>Teacher created materials</li> <li>Publisher provided materials</li> <li>Observations</li> <li>Oral assessments</li> </ul> |
| <b>Activities/Resources</b> | <ul style="list-style-type: none"> <li>McDougal Littell Algebra I Textbook</li> <li>Graphing calculators</li> <li>Online graphing websites</li> <li>Pattern and function connection</li> <li>Investigating graphs of quadratic functions activity</li> <li>MAP review and released items</li> </ul>  | <ul style="list-style-type: none"> <li>McDougal Littell Algebra I Textbook</li> <li>Graphing calculators</li> <li>Online graphing websites</li> <li>Pattern and function connection</li> <li>Modeling addition of polynomials activity</li> <li>Modeling factorization activity</li> </ul> | <ul style="list-style-type: none"> <li>McDougal Littell Algebra I Textbook</li> <li>Graphing calculators</li> <li>Online graphing websites</li> </ul>             |