



# Algebra 1

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STANDARDS	PAGE REFERENCES
<b>STANDARD L1: REASONING ABOUT NUMBERS, SYSTEMS, AND QUANTITATIVE SITUATIONS</b>	
<b>L1.1 Number Systems and Number Sense</b>	
<p><b>L1.1.1</b> Know the different properties that hold in different number systems and recognize that the applicable properties change in the transition from the positive integers to all integers, to the rational numbers, and to the real numbers.</p>	<p><b>Student Edition:</b> 21-25 #35, 26-31, 33-37 #44 &amp; #45, 44 #43, 46-52 <i>Algebra Lab</i> 27-28 <i>Reading Math</i> 38 <b>Teacher Wraparound Edition:</b> DI 34; F 22, 34; Pre-AP 25, 31, 37</p>
<p><b>L1.1.2</b> Explain why the multiplicative inverse of a number has the same sign as the number, while the additive inverse of a number has the opposite sign.</p>	<p><b>Student Edition:</b> 21-25 #36 &amp; #38</p>
<p><b>L1.1.3</b> Explain how the properties of associativity, commutativity, and distributivity, as well as identity and inverse elements, are used in arithmetic and algebraic calculations.</p>	<p><b>Student Edition:</b> 21-25, 26-31, 33-37, 78-84, 85-90, 92-97, 98-103 <i>Algebra Lab</i> 27-28 <i>Reading Math</i> 38 <b>Teacher Wraparound Edition:</b> F 27, 34; Pre-AP 31, 37</p>

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<p><b>L1.1.4</b> Describe the reasons for the different effects of multiplication by, or exponentiation of, a positive number by a number less than 0, a number between 0 and 1, and a number greater than 1.</p>	<p><b>Student Edition:</b>            24 #35, 52 #66, 89 #53, 363 #57, 366-373 #53  <i>Graphing Calculator Lab</i> 367            This standard also can be integrated into Lesson 7-1 on pages 358-364.  <i>MMCE</i> Lesson 1, pp. MI 1-MI 2  <b>Teacher Wraparound Edition:</b>            F 368</p>
<p><b>L1.1.5</b> Justify numerical relationships.</p>	<p><b>Student Edition:</b>            25 #36 &amp; #38, 43 #40-#42, 46-52, 83 #50-#51, 89 #54, 92-97, 101 #25-#32, 114 #39, 160 #55, 165-170, 175 #19-#20, 196-202, 298 #48, 363 #57-#59, 581 #39-#40  <i>Algebra Lab</i> 45, 142, 237  <i>MMCE</i> Lesson 2, pp. MI 3-MI 4  <b>Teacher Wraparound Edition:</b>            F 22</p>
<p><b>L1.2 Representations and Relationships</b></p>	
<p><b>L1.2.2</b> Interpret representations that reflect absolute value relationships.</p>	<p><b>Student Edition:</b>            322-327, 329-333  <i>Graphing Calculator Lab</i> 328  <b>Teacher Wraparound Edition:</b>            DI 323; F 330; Pre-AP 333</p>
<p><b>L1.2.4</b> Organize and summarize a data set in a table, plot, chart, or spreadsheet; find patterns in a display of data; understand and critique data displays in the media.</p>	<p><b>Student Edition:</b>            143-148, 149-154, 227-233  <i>Algebra Lab</i> 142, 509  <i>Graphing Calculator Lab</i> 203, 234-235, 470, 515-516  <i>Prerequisite Skills</i> 711-712, 713, 714-715  <i>Reading Math</i> 171, 649  <i>Spreadsheet Lab</i> 129, 252</p>
<p><b>STANDARD L2: CALCULATION, ALGORITHMS, AND ESTIMATION</b></p>	
<p><b>L2.1 Calculation Using Real and Complex Numbers</b></p>	
<p><b>L2.1.1</b> Explain the meaning and uses of weighted averages.</p>	<p><b>Student Edition:</b>            122-128  <i>Spreadsheet Lab</i> 129  <b>Teacher Wraparound Edition:</b>            DI 124; Pre-AP 128</p>

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<p><b>L2.1.2</b> Calculate fluently with numerical expressions involving exponents; use the rules of exponents; evaluate numerical expressions involving rational and negative exponents; transition easily between roots and exponents.</p>	<p><b>Student Edition:</b> 6-9, 10-14, 358-364, 366-373, 390-395, 398-403, 502-508 <i>Algebra Lab</i> 365 <i>Get Ready</i> 357 <i>Graphing Calculator Lab</i> 367, 535 <b>Teacher Wraparound Edition:</b> F 7; I 367; Pre-AP 363, 371, 395, 534</p>
<p><b>L2.1.4</b> Know that the imaginary number <math>i</math> is one of two solutions to <math>x^2 = -1</math>.</p>	<p><i>MMCE</i> Lesson 3, pp. MI 5-MI 6</p>
<p><b>STANDARD A1: EXPRESSIONS, EQUATIONS, AND INEQUALITIES</b></p>	
<p><b>A1.1 Construction, Interpretation, and Manipulation of Expressions</b></p>	
<p><b>A1.1.1</b> Give a verbal description of an expression that is presented in symbolic form, write an algebraic expression from a verbal description, and evaluate expressions given values of the variables.</p>	<p><b>Student Edition:</b> 6-9, 10-14, 15-20, 37 #58-#61, 70-76, 155-161, 471-477, 480-485, 502-508 <b>Teacher Wraparound Edition:</b> DI 7; F 7, 11, 482; Pre-AP 20</p>
<p><b>A1.1.2</b> Know the properties of exponents and roots and apply them in algebraic expressions.</p>	<p><b>Student Edition:</b> 358-364, 366-373, 390-395, 398-403, 404-409, 502-508, 510-514, 528-534, 549-554, 555-559 <i>Algebra Lab</i> 396-397, 509 <i>Graphing Calculator Lab</i> 367, 504, 535 <b>Teacher Wraparound Edition:</b> F 529; I 359, 367; Pre-AP 371, 395, 508</p>
<p><b>A1.1.3</b> Factor algebraic expressions using, for example, greatest common factor, grouping, and the special product identities.</p>	<p><b>Student Edition:</b> 420-424, 426-431, 434-439, 441-446, 447-452, 454-460 <i>Algebra Lab</i> 425, 432-433, 441, 447 <i>Reading Mathematics</i> 453 <i>MMCE</i> Lesson 5, pp. MI 9-MI 10 <b>Teacher Wraparound Edition:</b> F 421, 427; Pre-AP 395, 421, 428, 436, 446</p>

STANDARDS	PAGE REFERENCES
<b>A1.2 Solutions of Equations and Inequalities</b>	
<p><b>A1.2.1</b> Write equations and inequalities with one or two variables to represent mathematical or applied situations, and solve.</p>	<p><b>Student Edition:</b>  70-76, 78-84, 85-90, 92-97, 98-103, 105-110, 111-115, 117-121, 122-128, 215 Ex 3, 224 #36-#38, 227-233, 294-299, 301-307, 428-429, 436-439, 443-445, 449-452, 456-460, 480-499, 541-546, 626-630  <i>Algebra Lab</i> 72, 77, 91  <i>Graphing Calculator Lab</i> 234-235  <i>Reading Mathematics</i> 116  <i>Spreadsheet Lab</i> 129</p>
<p><b>A1.2.2</b> Associate a given equation with a function whose zeros are the solutions of the equation.</p>	<p><b>Student Edition:</b>  53-60, 149-154, 155-161, 480-485  <i>Graphing Calculator Lab</i> 210-211, 470, 515-516</p>
<p><b>A1.2.3</b> Solve linear and quadratic equations and inequalities including systems of up to three linear equations with three unknowns. Justify steps in the solution, and apply the quadratic formula appropriately.</p>	<p><b>Student Edition:</b>  98-103, 260-265, 272-278, 280-284, 294-299, 301-307, 308-313, 329-333, 341-345, 434-439, 441-446, 447-452, 454-460, 480-485, 486-491, 493-499  <i>Algebra Lab</i> 500  <i>Graphing Calculator Lab</i> 309, 340  <i>Reading Mathematics</i> 453  <i>MMCE</i> Lesson 6, pp. MI 11-MI 12</p>
<p><b>A1.2.4</b> Solve absolute value equations and inequalities and justify steps in the solution.</p>	<p><b>Student Edition:</b>  322-327, 329-333, 338 #31 &amp; #32  <i>Graphing Calculator Lab</i> 328  <b>Teacher Wraparound Edition:</b>  DI 323; F 330; Pre-AP 333; TNT 324, 330</p>
<p><b>A1.2.6</b> Solve power equations and equations including radical expressions; justify steps in the solution, and explain how extraneous solutions may arise.</p>	<p><b>Student Edition:</b>  434-439, 441-446, 447-452, 454-460, 480-485, 486-491, 493-499, 541-546, 629-630  <i>Algebra Lab</i> 500-501  <i>Graphing Calculator Lab</i> 543  <i>Reading Mathematics</i> 453  <i>MMCE</i> Lesson 5, pp. MI 9-MI 10  <b>Teacher Wraparound Edition:</b>  I 443; Pre-AP 446, 452, 488, 546</p>

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<p><b>A1.2.8</b> Solve an equation involving several variables (with numerical or letter coefficients) for a designated variable. Justify steps in the solution.</p>	<p><b>Student Edition:</b> 117-121, 155-161, 204-209, 260-265 <i>Graphing Calculator Lab</i> 162-163 <b>Teacher Wraparound Edition:</b> F 119, 261; Pre-AP 121</p>
<p><b>STANDARD A2: FUNCTIONS</b></p>	
<p><b>A2.1 Definitions, Representations, and Attributes of Functions</b></p>	
<p><b>A2.1.1</b> Determine whether a relationship (given in contextual, symbolic, tabular, or graphical form) is a function and identify its domain and range.</p>	<p><b>Student Edition:</b> 53-58, 143-148, 149-154, 155-161, 471-477 <i>Algebra Lab</i> 59 <b>Teacher Wraparound Edition:</b> F 151</p>
<p><b>A2.1.2</b> Read, interpret, and use function notation and evaluate a function at a value in its domain.</p>	<p><b>Student Edition:</b> 149-154 <b>Teacher Wraparound Edition:</b> Pre-AP 154; TNT 151</p>
<p><b>A2.1.3</b> Represent functions in symbols, graphs, tables, diagrams, or words and translate among representations.</p>	<p><b>Student Edition:</b> 53-58, 143-148, 149-154, 155-161, 165-170, 172-176, 204-209, 213-218, 220-225, 227-233, 471-477, 480-485 <i>Algebra Lab</i> 59, 142, 145 <i>Graphing Calculator Lab</i> 162 <b>Teacher Wraparound Edition:</b> F 151, 482</p>
<p><b>A2.1.4</b> Recognize that functions may be defined by different expressions over different intervals of their domains; such functions are piecewise-defined.</p>	<p><b>Student Edition:</b> 153 #48, 322-327 <i>Graphing Calculator Lab</i> 219, 328, 547 <b>Teacher Wraparound Edition:</b> DI 323; TNT 324</p>
<p><b>A2.1.5</b> Recognize that functions may be defined recursively. Compute values of and graph simple recursively defined functions.</p>	<p><b>Student Edition:</b> 165-170 <b>Teacher Wraparound Edition:</b> F 167; Pre-AP 170; TNT 166, 167</p>

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<p><b>A2.1.6</b> Identify the zeros of a function, the intervals where the values of a function are positive or negative, and describe the behavior of a function as <math>x</math> approaches positive or negative infinity, given the symbolic and graphical representations.</p>	<p><b>Student Edition:</b> 155-157, 471-477, 480-485, 502-508 <i>Algebra Lab</i> 142, 509 <i>Graphing Calculator Lab</i> 478-479 <i>MMCE</i> Lesson 11, pp. MI 21-MI 22 <b>Teacher Wraparound Edition:</b> F 504</p>
<p><b>A2.1.7</b> Identify and interpret the key features of a function from its graph or its formula(s).</p>	<p><b>Student Edition:</b> 53-58, 155-161, 187-195, 196-202, 204-209, 236-241, 471-477, 480-485, 502-508 <i>Algebra Lab</i> 59 <i>Graphing Calculator Lab</i> 197, 203, 210-211, 234-235, 470, 478-479 <i>MMCE</i> Lesson 10, pp. MI 19-MI 20 <b>Teacher Wraparound Edition:</b> TNT 188</p>
<p><b>A2.2 Operations and Transformations with Functions</b></p>	
<p><b>A2.2.1</b> Combine functions by addition, subtraction, multiplication, and division.</p>	<p>149-154 <i>MMCE</i> Lesson 7, pp. MI 13-MI 14</p>
<p><b>A2.2.2</b> Apply given transformations to parent functions and represent symbolically.</p>	<p><b>Student Edition:</b> <i>Graphing Calculator Lab</i> 210-211, 478-479, 504</p>
<p><b>A2.2.3</b> Determine whether a function (given in tabular or graphical form) has an inverse and recognize simple inverse pairs.</p>	<p><b>Student Edition:</b> 143-148 <i>Algebra Lab</i> 145 <i>MMCE</i> Lesson 9, pp. MI 17-MI 18 <b>Teacher Wraparound Edition:</b> F 146</p>
<p><b>A2.3 Representations of Functions</b></p>	
<p><b>A2.3.1</b> Identify a function as a member of a family of functions based on its symbolic or graphical representation; recognize that different families of functions have different asymptotic behavior.</p>	<p><b>Student Edition:</b> 155-161, 196-202, 236-241, 471-477, 502-508, 510-514 <i>Algebra Lab</i> 509 <i>Graphing Calculator Lab</i> 197, 210-211, 219, 470, 478-479, 504, 515-516 <i>MMCE</i> Lesson 11, pp. MI 21-MI 22 <b>Teacher Wraparound Edition:</b> F 156</p>

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<b>A2.3.2</b> Describe the tabular pattern associated with functions having a constant rate of change (linear); or variable rates of change.	<b>Student Edition:</b> 165-170, 172-176, 187-195, 471-477, 502-508 <i>Algebra Lab</i> 509 <i>Graphing Calculator Lab</i> 470
<b>A2.3.3</b> Write the general symbolic forms that characterize each family of functions.	<b>Student Edition:</b> 155-161, 322-327, 471-477, 480-485 <b>Teacher Wraparound Edition:</b> F 156, 473
<b>A2.4 Models of Real-World Situations Using Families of Functions</b>	
<b>A2.4.1</b> Identify the family of function best suited for modeling a given real-world situation.	<b>Student Edition:</b> 196-202, 206 Ex 4, 208 #33-#34, 213-218, 224 #36-#41, 227-233, 483 Ex 6, 484 #32-#40, 488 Ex 4, 490 #42, 495 Ex 2, 497 #22, 498 #37-#39, 502-508, 510-514 <i>Algebra Lab</i> 228, 500-501, 509 <i>Graphing Calculator Lab</i> 234-235, 515-516
<b>A2.4.2</b> Adapt the general symbolic form of a function to one that fits the specifications of a given situation by using the information to replace arbitrary constants with numbers.	<b>Student Edition:</b> 206 Ex 4, 208 #33-#34, 215 Ex 3, 217 #26-#29, 224 #36-#41, 227-233, 502-508, 510-514 <i>Algebra Lab</i> 500-501, 509 <i>Graphing Calculator Lab</i> 219, 234-235, 493-499
<b>A2.4.3</b> Using the adapted general symbolic form, draw reasonable conclusions about the situation being modeled.	<b>Student Edition:</b> 484 #33 & #36, 488 Ex 4, 495 Ex 2, 497 #22, 504 Ex 3, 506 #19-#22, 507 #37-#40, 510-514 <i>Algebra Lab</i> 500-501
<b>STANDARD A3: FAMILIES OF FUNCTIONS</b>	
<b>A3.1 Lines and Linear Functions</b>	
<b>A3.1.1</b> Write the symbolic forms of linear functions (standard, point-slope, and slope-intercept) given appropriate information and convert between forms.	<b>Student Edition:</b> 155-161, 204-209, 213-218, 220-225, 227-233, 236-241 <i>Graphing Calculator Lab</i> 162-163, 197, 203, 210-211 <b>Teacher Wraparound Edition:</b> F 156, 206, 215, 221; Pre-AP 215, 225; TNT 215

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<b>A3.1.2</b> Graph lines (including those of the form $x = h$ and $y = k$ ) given appropriate information.	<b>Student Edition:</b> 155-161, 172-176, 196-202, 204-209, 227-233 <i>Algebra Lab</i> 228 <i>Graphing Calculator Lab</i> 162-163, 197, 203, 210-211 <b>Teacher Wraparound Edition:</b> I 158; Pre-AP 233
<b>A3.1.3</b> Relate the coefficients in a linear function to the slope and x- and y-intercepts of its graph.	<b>Student Edition:</b> 155-161, 204-209, 213-218
<b>A3.1.4</b> Find an equation of the line parallel or perpendicular to given line, through a given point; understand and use the facts that non-vertical parallel lines have equal slopes, and that non-vertical perpendicular lines have slopes that multiply to give -1.	<b>Student Edition:</b> 236-241 <i>Algebra Lab</i> 237 <b>Teacher Wraparound Edition:</b> F 238; I 237; Pre-AP 241
<b>A3.2 Exponential and Logarithmic Functions</b>	
<b>A3.2.1</b> Write the symbolic form and sketch the graph of an exponential function given appropriate information.	<b>Student Edition:</b> 502-508, 510-514 <i>Algebra Lab</i> 509 <i>Graphing Calculator Lab</i> 504, 515-516 <b>Teacher Wraparound Edition:</b> F 504; I 504; Pre-AP 514; TNT 503
<b>A3.2.4</b> Understand and use the fact that the base of an exponential function determines whether the function increases or decreases and how base affects the rate of growth or decay.	<b>Student Edition:</b> 502-508, 510-514 <i>Algebra Lab</i> 509 <i>Graphing Calculator Lab</i> 504, 515-516 <b>Teacher Wraparound Edition:</b> F 511
<b>A3.2.5</b> Relate exponential functions to real phenomena, including half-life and doubling time.	<b>Student Edition:</b> 502-508, 510-514 <i>Algebra Lab</i> 509 <i>Graphing Calculator Lab</i> 504, 515-516 <i>MMCE</i> Lesson 19, pp. MI 37-MI 38 <b>Teacher Wraparound Edition:</b> I 504; Pre-AP 508, 514

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<b>A3.3 Quadratic Functions</b>	
<b>A3.3.1</b> Write the symbolic form and sketch the graph of a quadratic function given appropriate information.	<b>Student Edition:</b> 471-477, 480-485 <i>Graphing Calculator Lab</i> 470, 478-479 <b>Teacher Wraparound Edition:</b> DI 481; F 473, 482; I 474; Pre-AP 474, 485; TNT 472
<b>A3.3.2</b> Identify the elements of a parabola (vertex, axis of symmetry, direction of opening) given its symbolic form or its graph, and relate these elements to the coefficient(s) of the symbolic form of the function.	<b>Student Edition:</b> 471-477, 480-485 <i>Graphing Calculator Lab</i> 470, 478-479 <b>Teacher Wraparound Edition:</b> F 473
<b>A3.3.3</b> Convert quadratic functions from standard to vertex form by completing the square.	<b>Student Edition:</b> 486-491 <i>MMCE Lesson 12</i> , pp. MI 23-MI 24 <b>Teacher Wraparound Edition:</b> Pre-AP 488; TNT 487
<b>A3.3.4</b> Relate the number of real solutions of a quadratic equation to the graph of the associated quadratic function.	<b>Student Edition:</b> 471-477, 480-485, 490 #45 <b>Teacher Wraparound Edition:</b> DI 481; F 482
<b>A3.3.5</b> Express quadratic functions in vertex form to identify their maxima or minima and in factored form to identify their zeros.	<b>Student Edition:</b> 471-477, 480-485, 486-491 <i>MMCE Lesson 12</i> , pp. MI 23-MI 24 <b>Teacher Wraparound Edition:</b> DI 481
<b>A3.4 Power Functions</b>	
<b>A3.4.1</b> Write the symbolic form and sketch the graph of power functions.	<b>Student Edition:</b> 471-477 <i>Graphing Calculator Lab</i> 478-479 <i>MMCE Lesson 13</i> , pp. MI 25-MI 26
<b>A3.4.2</b> Express directly and inversely proportional relationships as functions and recognize their characteristics.	<b>Student Edition:</b> 196-202, 577-582 <i>Algebra Lab</i> 365 <i>Graphing Calculator Lab</i> 197, 576 <b>Teacher Wraparound Edition:</b> F 579; Pre-AP 199, 582

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<b>A3.4.3</b> Analyze the graphs of power functions, noting reflectional or rotational symmetry.	<b>Student Edition:</b> 471-477 <i>MMCE</i> Lesson 13, pp. MI 25-MI 26 <b>Teacher Wraparound Edition:</b> I 474
<b>A3.5 Polynomial Functions</b>	
<b>A3.5.1</b> Write the symbolic form and sketch the graph of simple polynomial functions.	<b>Student Edition:</b> 471-477 <i>Graphing Calculator Lab</i> 470, 478-479 <i>MMCE</i> Lesson 8, pp. MI 15-MI 16
<b>A3.5.2</b> Understand the effects of degree, leading coefficient, and number of real zeros on the graphs of polynomial functions of degree greater than 2.	<i>MMCE</i> Lesson 8, pp. MI 15-MI 16 <i>MMCE</i> Lesson 14, pp. MI 27-MI 28
<b>A3.5.3</b> Determine the maximum possible number of zeros of a polynomial function and understand the relationship between the x-intercepts of the graph and the factored form of the function.	<b>Student Edition:</b> 471-477, 480-485 <i>MMCE</i> Lesson 14, MI 27-MI 28
<b>STANDARD S2: BIVARIATE DATA-EXAMINING RELATIONSHIPS</b>	
<b>S2.1 Scatterplots and Correlation</b>	
<b>S2.1.1</b> Construct a scatterplot for a bivariate data set with appropriate labels and scales.	<b>Student Edition:</b> 227-233 <i>Algebra Lab</i> 228 <i>Graphing Calculator Lab</i> 234-235, 515-516
<b>S2.1.2</b> Given a scatterplot, identify patterns, clusters, and outliers. Recognize no correlation, weak correlation, and strong correlation.	<b>Student Edition:</b> 227-233 <i>Algebra Lab</i> 228 <i>Graphing Calculator Lab</i> 234-235 <i>MMCE</i> Lesson 16, pp. MI 31-MI 32
<b>S2.1.3</b> Estimate and interpret Pearson's correlation coefficient for a scatterplot of a bivariate data set. Recognize that correlation measures the strength of linear association.	<b>Student Edition:</b> <i>Graphing Calculator Lab</i> 234-235

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<p><b>S2.1.4</b> Differentiate between correlation and causation. Know that a strong correlation does not imply a cause-and-effect relationship. Recognize the role of lurking variables in correlation.</p>	<p>The following pages can be used to help meet this standard.</p> <p><b>Student Edition:</b> 227-233 <i>Algebra Lab 228</i> <i>Graphing Calculator Lab 234-235</i></p>
<p><b>S2.2 Linear Regression</b></p>	
<p><b>S2.2.1</b> For bivariate data that appear to form a linear pattern, find the least squares regression line by estimating visually and by calculating the equation of the regression line. Interpret the slope of the equation for a regression line.</p>	<p>The following page references can be used to integrate least squares.</p> <p><b>Student Edition:</b> 227-233 <i>Algebra Lab 228</i> <i>Graphing Calculator Lab 234-235</i></p>
<p><b>S2.2.2</b> Use the equation of the least squares regression line to make appropriate predictions.</p>	<p>The following page references can be used to integrate least squares.</p> <p><b>Student Edition:</b> 227-233 <i>Algebra Lab 228</i> <i>Graphing Calculator Lab 234-235</i></p>