

# Glencoe Algebra 2 ©2003

correlated to

## SOUTH CAROLINA MATH CURRICULUM STANDARDS Algebra 2

OBJECTIVES	LESSON REFERENCES
<p><b>I. Understanding Functions</b></p> <p>Each of the standards in this section applies to all types of functions studied in this course (quadratic, exponential, absolute value, radical, and rational).</p> <p><b>A. Properties of Functions</b></p> <ol style="list-style-type: none"><li>1. Identify the mathematical domains and ranges of functions for a variety of situations both from graphical, tabular, and algebraic representations.</li><li>2. Determine reasonable domain and range values for given problem situations.</li><li>3. Collect data and record results, organize the data, make scatterplots, fit the curves to the appropriate parent function using graphing calculator technology and computer software.</li></ol>	<p>2-1, 2-2, 2-3, 2-6, 2-7, 2-SGR, 2-PT, 4-4, 7-9, 8-1, 10-1</p> <p>2-1, 2-5, 2-5GCI, 2-6, 6-2GCI, 7-2, 7-2GCI, 7-9, 10-1AA, 10-2GCI, 13-6</p> <p>2-5, 2-5GCI, 2-6, 2-SGR, 2-PT, 6-2GCI, 7-2GCI, 10-1AA, 10-2GCI, 11-4</p>

**KEY** AA = Algebra Activity      GCI = Graphing Calculator Investigation      PT = Practice Test  
SGR = Study Guide Review      SI = Spreadsheet Investigation

OBJECTIVES	LESSON REFERENCES
<p>4. Recognize that real-world phenomenon can be modeled by specific functions; make predictions, decisions and critical judgments using the model. Graphing calculator technology and computer software are to be used for data organization and curve fitting.</p> <p>5. Determine changes in slope relative to the change in the independent variable.</p> <p><b>B. Solving Equations and Inequalities</b></p> <p>1. Analyze situations and formulate systems of equations or inequalities in two or more unknowns to solve problems.</p> <p>2. Use algebraic methods, graphs, tables, and matrices to solve systems of equations or inequalities; verify solutions using computer algebra systems, spreadsheets, and graphing calculators.</p> <p>3. Identify the kinds of equations that can and cannot be solved in each subset of the complex number system.</p> <p>4. Demonstrate that no solution or multiple solutions may exist.</p> <p>5. Use computer algebra systems, spreadsheets, and graphing</p>	<p>2-1, 2-2, 2-5, 2-5GCI, 2-6, 2-7, 2-SGR, 2-PT, 6-1, 6-2, 6-2GCI, 6-5, 6-6, 7-1, 7-2, 7-3, 7-4, 7-5, 7-6, 7-8, 7-9, 9-3, 9-5, 9-6, 10-1AA, 10-1, 10-2, 10-2GCI, 13-6, 14-1,14-2</p> <p>2-3, 2-4, 2-SGR, 2-PT</p> <p>3-2, 3-3, 3-5, 3-PT, 4-6, 4-8</p> <p>3-2, 3-3, 3-3GCI, 3-4, 3-5, 3-SGR, 3-PT, 4-6, 4-8, 4-8GCI, 4-SGR, 4-PT</p> <p>1-3, 1-4, 5-8, 5-8GCI, 5-9, 6-2, 6-3, 6-4, 6-5, 7-3, 7-5, 9-6, 10-1, 10-2, 10-3, 10-4, 10-4GCI, 10-5, 10-6, 14-7GCI, 14-7</p> <p>1-4, 1-5, 1-6, 1-SGR, 1-PT, 5-8, 6-2, 6-3, 6-4, 6-5, 6-SGR, 6-PT, 7-3, 7-5, 7-6, 14-7, 14-SGR, 14-PT</p> <p>3-4, 3-SGR, 3-PT</p>

OBJECTIVES	LESSON REFERENCES
<p>calculators to solve linear programming problems.</p> <p>6. Identify and use properties related to operations with matrices to justify the steps in solving applied problems.</p> <p><b>II. Algebra and Geometry</b></p> <p><b>A. Algebraic and Geometric Representations of Functions</b></p> <p>1. Identify and sketch graphs of parent functions, including square root (<math>y = \sqrt{x}</math>), inverse (<math>y = 1/x</math>), exponential (<math>y = a^x</math>), and absolute value (<math>y =  x </math>) functions.</p> <p>2. With and without using a graphing calculator, investigate, describe, and predict the effects of vertical and horizontal translations, reflections, and dilations on parent functions.</p> <p>3. Perform the composition of functions.</p> <p>4. Recognize inverse relationships between various functions.</p> <p><b>B. Conic Sections</b></p> <p>1. Explain each conic section as the intersection of a plane and cone(s).</p> <p>2. Identify symmetries from graphs of conic sections.</p>	<p>4-2, 4-3, 4-4, 4-SGR, 4-PT</p> <p>2-3, 2-6, 2-SGR, 6-5GCI, 6-6, 7-9, 9-3GCI, 10-1, 10-2</p> <p>6-6, 6-SGR, 14-2, 14-3, 14-4, 14-5, 14-6, 14-SGR</p> <p>7-7, 7-8, 7-SGR, 7-PT, 10-1AA</p> <p>7-8, 7-SGR, 10-1AA, 10-2, 11-7, 13-1SI, 13-7, 13-SGR</p> <p>8-2, 8-6</p> <p>6-1, 6-2, 6-6, 6-SGR, 8-2, 8-4, 8-5</p>

OBJECTIVES	LESSON REFERENCES
<p>3. Complete the square to determine the type, shape, and location of a conic section.</p> <p><b>III. Quadratic, Square Root, and Absolute Value Functions</b></p> <p><b>A. Quadratic Functions.</b></p> <p>1. Represent quadratic functions in algebraic, tabular, graphical, and verbal forms using paper and pencil, graphing calculators, computer algebra, and spreadsheet technologies.</p> <p>2. Generate a quadratic function from its roots or its graph.</p> <p>3. Use the parent function to sketch graphs and to investigate, describe, and predict the effects of changes in <math>a</math>, <math>h</math>, and <math>k</math> on the graphs of <math>y = a(x - h)^2 + k</math> form of a function.</p> <p>4. Use complex numbers to describe the solutions of quadratic equations.</p> <p><b>B. Quadratic Equations and Inequalities</b></p> <p>1. Formulate quadratic equations and inequalities to solve problems.</p> <p>2. Solve quadratic equations and inequalities including solutions from the complex number system.</p>	<p>8-2, 8-3, 8-4, 8-5, 8-6, 8-SGR, 8-PT</p> <p>6-1, 6-2GCI, 6-5GCI, 6-6, 6-SGR, 6-PT, 9-5, 9-SGR</p> <p>6-3, 6-4, 6-SGR, 6-PT, 8-2</p> <p>6-5GCI, 6-6, 6-SGR, 6-PT, 8-2, 8-SGR</p> <p>5-9, 6-2, 6-3, 6-4, 6-5, 6-6, 6-SGR, 6-PT</p> <p>6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-PT, 8-2</p> <p>5-9, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-SGR</p>

OBJECTIVES	LESSON REFERENCES
<p>3. Analyze the solutions of quadratic equations using discriminants and solve quadratic equations using the quadratic formula.</p> <p>4. Using graphing calculators and computer algebra systems, compare and translate between algebraic and graphical solutions of quadratic equations.</p> <p><b>C. Radical Functions and Absolute Value Functions</b></p> <p>1. Represent radical and absolute value functions in algebraic, tabular, graphical, and verbal forms using paper and pencil, graphing calculators, computer algebra, and spreadsheet technologies.</p> <p>2. Solve square root and absolute value equations and inequalities using graphs, tables, and algebraic methods. Verify solutions using graphing calculators, computer algebra systems, and spreadsheets.</p> <p>3. Analyze situations modeled by square root and absolute value functions, formulate equations or inequalities, and solve problems.</p>	<p>6-5, 6-6, 6-SGR, 6-PT</p> <p>6-2, 6-3, 6-4, 6-5, 6-5GCI</p> <p>2-6, 2-7, 2-SGR, 2-PT, 3-1, 7-4, 9-5, 9-SGR</p> <p>1-4, 1-5, 1-6, 1-SGR, 1-PT, 2-7, 5-8, 5-8GCI, 5-9, 5-SGR</p> <p>1-4, 1-6, 2-6, 2-7, 5-8, 5-PT</p>

OBJECTIVES	LESSON REFERENCES
<p><b>IV. Rational and Exponential Functions</b></p> <p><b>A. Rational Functions</b></p> <ol style="list-style-type: none"> <li>1. Represent rational functions in algebraic, tabular, graphical, and verbal forms using paper and pencil, graphing calculators, computer algebra, and spreadsheet technologies.</li> <li>2. Solve problem situations using direct and inverse variation.</li> </ol> <p><b>B. Exponential Functions</b></p> <ol style="list-style-type: none"> <li>1. Represent exponential functions in algebraic, tabular, graphical, and verbal forms using paper and pencil, graphing calculators, computer algebra, and spreadsheet technologies.</li> <li>2. Analyze a situation modeled by an exponential function, formulate an equation or inequality, and solve the problem.</li> </ol>	<p>9-3, 9-3GCI, 9-4, 9-5, 9-SGR, 9-PT</p> <p>9-4, 9-SGR, 9-PT</p> <p>10-1AA, 10-1, 10-2, 10-2GCI, 10-SGR, 10-PT</p> <p>10-1AA, 10-1, 10-2GCI</p>