

**FORMAT FOR CORRELATION TO THE GEORGIA PERFORMANCE STANDARDS**

**Subject Area:** Mathematics 3                      **State-Funded Course:** \_\_\_\_\_

**Textbook Title:** Algebra II Mathematics in Context

**Publisher:** Cord Communications

*The GPSs for grades K-12 Science and 9-12 Mathematics may be accessed on-line at: <http://www.georgiastandards.org/>.*

<b><u>Standard</u></b> (Cite Number)	<b>Standard</b> (Cite specific standard)	<b><u>Where Taught</u></b> (If print component, cite page number; if non-print, cite appropriate location.)
<b>MM3A1</b>	<b>Students will analyze graphs of polynomial functions of higher degree.</b>	<b>Chapter 4; Chapter 9</b>
MM3A1a	Graph simple polynomial functions as translations of the function $f(x) = ax^n$ .	179–182
MM3A1b	Understand the effects of the following on the graph of a polynomial function: degree, lead coefficient, and multiplicity of real zeros.	392–393; 413–414
MM3A1c	Determine whether a polynomial function has symmetry and whether it is even, odd, or neither.	420
MM3A1d	Investigate and explain characteristics of polynomial functions, including domain and range, intercepts, zeros, relative and absolute extrema, intervals of increase and decrease, and end behavior.	Chapter 4; Chapter 9
<b>MM3A2</b>	<b>Students will explore logarithmic functions as inverses of exponential functions.</b>	Chapter 5; Chapter 8
MM3A2a	Define and understand the properties of $n$ th roots.	213–214
MM3A2b	Extend properties of exponents to include rational exponents.	213–214
MM3A2c	Define logarithmic functions as inverses of exponential functions.	349–351
MM3A2d	Understand and use properties of logarithms by extending laws of exponents.	354–363
MM3A2e	Investigate and explain characteristics of exponential and logarithmic functions including domain and range, asymptotes, zeros, intercepts, intervals of increase and decrease, and rate of change.	Chapter 8
MM3A2f	Graph functions as transformations of $f(x) = a^x$ , $f(x) = \log_a(x)$ , $f(x) = e^x$ , $f(x) = \ln x$ .	342–351
MM3A2g	Explore real phenomena related to exponential and logarithmic functions including half-life and doubling time.	Chapter 8
<b>MM3A3</b>	<b>Students will solve a variety of equations and inequalities.</b>	<b>Used Throughout; Supplement</b>

MM3A3a	Find real and complex roots of higher degree polynomial equations using the factor theorem, remainder theorem, rational root theorem, and fundamental theorem of algebra, incorporating complex and radical conjugates.	408; 409; 413; 415
MM3A3b	Solve polynomial, exponential, and logarithmic equations analytically, graphically, and using appropriate technology.	Used Throughout
MM3A3c	Solve polynomial, exponential, and logarithmic inequalities analytically, graphically, and using appropriate technology. Represent solution sets of inequalities using interval notation.	Supplement 3–6
MM3A3d	Solve a variety of types of equations by appropriate means choosing among mental calculation, pencil and paper, or appropriate technology.	Used Throughout
<b>MM3A4</b>	<b>Students will perform basic operations with matrices.</b>	<b>Chapter 3</b>
MM3A4a	Add, subtract, multiply, and invert matrices, when possible, choosing appropriate methods, including technology.	106–116; 123–128
MM3A4b	Find the inverses of two-by-two matrices using pencil and paper, and find inverses of larger matrices using technology.	123–128
MM3A4c	Examine the properties of matrices, contrasting them with properties of real numbers.	Chapter 3
<b>MM3A5</b>	<b>Students will use matrices to formulate and solve problems.</b>	<b>Chapter 3</b>
MM3A5a	Represent a system of linear equations as a matrix equation.	129–135
MM3A5b	Solve matrix equations using inverse matrices.	123–128
MM3A5c	Represent and solve realistic problems using systems of linear equations.	129–147
<b>MM3A6</b>	<b>Students will solve linear programming problems in two variables.</b>	78–83
MM3A6a	Solve systems of inequalities in two variables, showing the solutions graphically.	78–83
MM3A6b	Represent and solve realistic problems using linear programming.	94–99
<b>MM3A7</b>	<b>Students will understand and apply matrix representations of vertex-edge graphs.</b>	<b>136–137</b>
MM3A7a	Use graphs to represent realistic situations.	136–137
MM3A7b	Use matrices to represent graphs, and solve problems that can be represented by graphs.	136–137
<b>MM3G1</b>	<b>Students will investigate the relationships between lines and circles.</b>	<b>Chapter 7; Supplement</b>
MM3G1a	Find equations of circles.	311–315
MM3G1b	Graph a circle given an equation in general form.	311–315
MM3G1c	Find the equation of a tangent line to a circle at a given point.	Supplement 1
MM3G1d	Solve a system of equations involving a circle and a line.	323–327; 331–335
MM3G1e	Solve a system of equations involving two circles.	323–327; 331–335
<b>MM3G2</b>	<b>Students will recognize, analyze, and graph the equations of the conic sections (parabolas, circles, ellipses, and hyperbolas).</b>	<b>Chapter 7</b>
MM3G2a	Convert equations of conics by completing the square.	245–255

MM3G2b	Graph conic sections, identifying fundamental characteristics.	Chapter 7
MM3G2c	Write equations of conic sections given appropriate information.	Chapter 7
<b>MM3G3</b>	<b>Students will investigate planes and spheres.</b>	<b>Supplement</b>
MM3G3a	Plot the point $(x, y, z)$ and understand it as a vertex of a rectangular prism.	Supplement 6–13
MM3G3b	Apply the distance formula in 3-space.	Supplement 6–13
MM3G3c	Recognize and understand equations of planes and spheres.	Supplement 14–18
<b>MM3D1</b>	<b>Students will create probability histograms of discrete random variables, using both experimental and theoretical probabilities.</b>	<b>Supplement 19–24</b>
<b>MM3D2</b>	<b>Students will solve problems involving probabilities by interpreting a normal distribution as a probability histogram for a continuous random variable (z-scores are used for a general normal distribution).</b>	<b>Supplement</b>
MM3D2a	Determine intervals about the mean that include a given percent of data.	Supplement 25–31
MM3D2b	Determine the probability that a given value falls within a specified interval.	Supplement 25–31
MM3D2c	Estimate how many items in a population fall within a specified interval.	Supplement 25–31
<b>MM3D3</b>	<b>Students will understand the differences between experimental and observational studies by posing questions and collecting, analyzing, and interpreting data.</b>	<b>Supplement 32</b>
<b>MM3P1</b>	<b>Students will solve problems (using appropriate technology).</b>	<b>Used throughout especially in Math Applications</b>
MM3P1a	Build new mathematical knowledge through problem solving.	Used throughout especially in Math Applications
MM3P1b	Solve problems that arise in mathematics and in other contexts.	Used throughout especially in Math Applications
MM3P1c	Apply and adapt a variety of appropriate strategies to solve problems.	Used throughout especially in Math Applications and Problem Solving feature
MM3P1d	Monitor and reflect on the process of mathematical problem solving.	Used throughout especially in Problem Solving feature
<b>MM3P2</b>	<b>Students will reason and evaluate mathematical arguments.</b>	<b>Used Throughout</b>
MM3P2a	Recognize reasoning and proof as fundamental aspects of mathematics.	Used Throughout
MM3P2b	Make and investigate mathematical conjectures.	Used Throughout
MM3P2c	Develop and evaluate mathematical arguments and proofs.	Used Throughout
MM3P2d	Select and use various types of reasoning and methods of proof.	Used Throughout
<b>MM3P3</b>	<b>Students will communicate mathematically.</b>	<b>Used Throughout</b>
MM3P3a	Organize and consolidate their mathematical thinking through communication.	Used throughout especially Critical Thinking and Think and Discuss

		questions
MM3P3b	Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.	Used throughout especially Critical Thinking and Think and Discuss questions
MM3P3c	Analyze and evaluate the mathematical thinking and strategies of others.	Used throughout especially Critical Thinking and Think and Discuss questions
MM3P3d	Use the language of mathematics to express mathematical ideas precisely.	Used throughout especially Critical Thinking and Think and Discuss questions
<b>MM3P4</b>	<b>Students will make connections among mathematical ideas and to other disciplines.</b>	<b>Used throughout especially in Math Applications</b>
MM3P4a	Recognize and use connections among mathematical ideas.	Used throughout especially in Math Applications
MM3P4b	Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	Used throughout especially in Math Applications
MM3P4c	Recognize and apply mathematics in contexts outside of mathematics.	Used throughout especially in Math Applications
<b>MM3P5</b>	<b>Students will represent mathematics in multiple ways.</b>	<b>Used throughout</b>
MM3P5a	Create and use representations to organize, record, and communicate mathematical ideas.	Used throughout
MM3P5b	Select, apply, and translate among mathematical representations to solve problems.	Used throughout
MM3P5c	Use representations to model and interpret physical, social, and mathematical phenomena.	Used throughout