

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

**Subject Area:** Mathematics 1

**State-Funded Course:** Mathematics 1

**Textbook Title:** MathConnections: Year 1a & Year 1b

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

<u>Standard</u> (Cite Number)	<u>Standard</u> (Cite specific standard)	<u>Where Taught</u> (If print component, cite page number; if non-print, cite appropriate location.)
<b>MM1A1.</b>	<b>Students will explore and interpret the characteristics of functions, using graphs, tables, and simple algebraic techniques.</b>	
MM1A1.a	Represent functions using function notation.	79, 330-remainder of book
MM1A1.b	Graph the basic functions $f(x) = x^n$ , where $n = 1$ to $3$ , $f(x) = x$ , $f(x) =  x $ , and $f(x) = x^2$ .	307-310, 318, 319, 388-398
MM1A1.c	Graph transformations of basic functions including vertical shifts, stretches, and shrinks, as well as reflections across the $x$ - and $y$ -axes.	
MM1A1.d	Investigate and explain the characteristics of a function: domain, range, zeros, intercepts, intervals of increase and decrease, maximum	314-315, 330-342, 356-359

	and minimum values, and end behavior.	
MM1A1.e	Relate to a given context the characteristics of a function, and use graphs and tables to investigate its behavior.	288-299, 308-311, 325-326, 335, 361-371, 374-386
MM1A1.f	Recognize sequences as functions with domains that are whole numbers.	342-355
MM1A1.g	Explore rates of change, comparing constant rates of change (i.e., slope) versus variable rates of change. Compare rates of change of linear, quadratic, square root, and other function families.	171-182, 183-192, 193-216, 288-299
MM1A1.h	Determine graphically and algebraically whether a function has symmetry and whether it is even, odd, or neither.	
MM1A1.i	Understand that any equation in $x$ can be interpreted as the equation $f(x) = g(x)$ , and interpret the solutions of the equation as the $x$ -value(s) of the intersection point(s) of the graphs of $y = f(x)$ and $y = g(x)$ .	350-351
<b>MM1A2.</b>	<b>Students will simplify and operate with radical expressions, polynomials, and rational expressions.</b>	
MM1A2.a	Simplify algebraic and numeric expressions involving square root.	285-287

MM1A2.b	Perform operations with square roots.	116-118, 285-287
MM1A2.c	Add, subtract, multiply, and divide polynomials.	112., 118
MM1A2.d	Expand binomials using the Binomial Theorem.	
MM1A2.e	Add, subtract, multiply, and divide rational expressions.	88-94, 99-103, 105-108, 126, 128, 130-148
MM1A2.f	Factor expressions by greatest common factor, grouping, trial and error, and special products limited to the formulas below. $(x + y)^2 = x^2 + 2xy + y^2$ $(x - y)^2 = x^2 - 2xy + y^2$ $(x + y)(x - y) = x^2 - y^2$ $(x + a)(x + b) = x^2 + (a + b)x + ab$ $(x + y)^3 = x^3 + 3x^2y + 3xy^2 + y^3$ $(x - y)^3 = x^3 - 3x^2y + 3xy^2 - y^3$	
MM1A2.g	Use area and volume models for polynomial arithmetic.	

<p><b>MM1A3.</b></p> <p>MM1A3.a</p> <p>MM1A3.b</p> <p>MM1A3.c</p> <p>MM1A3.d</p>	<p><b>Students will solve simple equations.</b></p> <p>Solve quadratic equations in the form <math>ax^2 + bx + c = 0</math>, where <math>a = 1</math>, by using factorization and finding square roots where applicable.</p> <p>Solve equations involving radicals such as <math>x + b = c</math>, using algebraic techniques.</p> <p>Use a variety of techniques, including technology, tables, and graphs to solve equations resulting from the investigation of <math>x^2 + bx + c = 0</math>.</p> <p>Solve simple rational equations that result in linear equations or quadratic equations with leading coefficient of 1.</p>	
<p><b>MM3G1.</b></p> <p>MM1G1.a</p> <p>MM1G1.b</p>	<p><b>Students will investigate properties of geometric figures in the coordinate plane.</b></p> <p>Determine the distance between two points.</p> <p>Determine the distance between a point and a line.</p>	<p>243-258</p>

MM1G1.c	Determine the midpoint of a segment.	
MM1G1.d	Understand the distance formula as an application of the Pythagorean theorem.	
MM1G1.e	Use the coordinate plane to investigate properties of and verify conjectures related to triangles and quadrilaterals.	
<b>MM1G2.</b>	<b>Students will understand and use the language of mathematical argument and justification.</b>	
MM1G2.a	Use conjecture, inductive reasoning, deductive reasoning, counterexamples, and indirect proof as appropriate.	
MM1G2.b	Understand and use the relationships among a statement and its converse, inverse, and contrapositive.	
<b>MM1G3.</b>	<b>Students will discover, prove, and apply properties of triangles, quadrilaterals, and other polygons.</b>	
MM1G3.a	Determine the sum of interior and exterior angles in a polygon.	
MM1G3.b	Understand and use the triangle inequality, the side-angle inequality, and the exterior-angle inequality.	

MM1G3.c	Understand and use congruence postulates and theorems for triangles (SSS, SAS, ASA, AAS, HL).	
MM1G3.d	Understand, use, and prove properties of and relationships among special quadrilaterals: parallelogram, rectangle, rhombus, square, trapezoid, and kite.	
MM1G3.e	Find and use points of concurrency in triangles: incenter, orthocenter, circumcenter, and centroid.	
<b>MM1D1.</b>	<b>Students will determine the number of outcomes related to a given event.</b>	
MM1D1.a	Apply the addition and multiplication principles of counting.	413-419, 439-443, 444-450
MM1D1.b	Calculate and use simple permutations and combinations.	413-419, 439-443
<b>MM1D2.</b>	<b>Students will use the basic laws of probability.</b>	
MM1D2.a	Find the probabilities of mutually exclusive events.	275-281, 461-466, 467-476, 477-485

MM1D2.b	Find the probabilities of dependent events.	275-281, 461-476, 477-485
MM1D2.c	Calculate conditional probabilities.	275-281, 461-485, 453-460
MM1D2.d	Use expected value to predict outcomes.	475-281, 453-460, 461-485
<b>MM1D3.</b>	<b>Students will relate samples to a population.</b>	
MM1D3.a	Compare summary statistics (mean, median, quartiles, and interquartile range) from one sample data distribution to another sample data distribution in describing center and variability of the data distributions.	12, 14-15, 17, 19-21, 23, 27-29, 31-28, 39-46, 53, 70, 71-74, 48-52, 91-92
MM1D3.b	Compare the averages of the summary statistics from a large number of samples to the corresponding population parameters.	16, 17, 29, 45-46, 70-74
MM1D3.c	Understand that a random sample is used to improve the chance of selecting a representative sample.	4, 8-10, 5-7, 29, 70-74
<b>MM1D4.</b>	<b>Students will explore variability of data by determining the mean absolute deviation (the average of the absolute values of the deviations).</b>	
		53-68, 70-74

<b>MM1P1.</b>	<b>Students will solve problems (using appropriate technology).</b>	
MM1P1.a	Build new mathematical knowledge through problem solving.	Book 1a: pp. 97, 121 – 123, 140, 144 Book 1b: pp. 276 – 278, 460
MM1P1.b	Solve problems that arise in mathematics and in other contexts.	Book 1a: pp. 49 – 52, 70 – 73, 78, 83 – 86, 93, 94, 129, 139, 151 – 157, 206 – 210, 213-216, 222 – 226, 252 – 256, Book 1b: pp. 295, 296, 313 – 316, 319, 325, 326, 376,
MM1P1.c	Apply and adapt a variety of appropriate strategies to solve problems.	Book 1a: pp. 15, 123, 136, 138, 144, 184 – 191 Book 1b: pp. 276 – 278, 308 – 310, 320 – 321, 460
MM1P1.d	Monitor and reflect on the process of mathematical problem solving.	Book 1a: pp. 44, 97, 103, 124, 132, 173 Book 1b: pp. 460
<b>MM1P2.</b>	<b>Students will reason and evaluate mathematical arguments.</b>	
MM1P2.a	Recognize reasoning and proof as fundamental aspects of mathematics.	Book 1a: pp. 97, 103, 123, 177

MM1P2.b	Make and investigate mathematical conjectures.	Book 1a: pp. 15, 123, 136, 138, 144, 184 – 191 Book 1b: pp. 276 – 278, 308 – 310, 320 – 321, 460
MM1P2.c	Develop and evaluate mathematical arguments and proofs.	Book 1a: pp. 97, 103, 123, 177
MM1P2.d	Select and use various types of reasoning and methods of proof.	Book 1a: pp. 97, 103, 123, 177
<b>MM1P3.</b>	<b>Students will communicate mathematically.</b>	
MM1P3.a	Organize and consolidate their mathematical thinking through communication.	Book 1a: pp. 4, 17, 30, 63, 70 – 73, 137, 173, 219 – 221 Book 1b: pp. 276, 281, 283
MM1P3.b	Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.	Book 1a: pp. 4, 17, 30, 40, 44, 48, 61, 63, 70 – 73, 83, 101, 108, 126, 137, 167, 180, 207, 210, 245, 263, 264, 271 Book 1b: pp. 282, 295 – 297, 350, 410, 387, 400, 408 – 410, 460, 463, 466
MM1P3.c	Analyze and evaluate the mathematical thinking and strategies of others.	Book 1b: pp. 275 – 277
MM1P3.d	Use the language of mathematics to express mathematical ideas precisely.	Book 1a: pp. 4, 17, 30, 40, 44, 48, 61, 63, 70 – 73, 83, 101, 108, 126, 137, 167, 180, 207, 210, 245, 263, 264, 271 Book 1b: pp. 282, 295 – 297, 350, 410, 387, 400, 408 – 410, 460, 463, 466

MM1P4.	<b>Students will make connections among mathematical ideas and to other disciplines.</b>	
MM1P4.a	Recognize and use connections among mathematical ideas.	Book 1a: pp. 128, 170 Book 1b: pp. 356, 357, 422 Book 2a: pp. 25, 55 – 65, 71, 72, 88, 100 – 103, 145, 149, 168, 169, 174, 175, 180 – 182, 216, 221
MM1P4.b	Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	Book 1a: pp. 128, 170 Book 1b: pp. 356, 357, 422
MM1P4.c	Recognize and apply mathematics in contexts outside of mathematics.	Book 1a: pp. 49 – 52, 70 – 73, 78, 83 – 86, 93, 94, 129, 139, 151 – 157, 206 – 210, 213-216, 222 – 226, 252 – 256, Book 1b: pp. 295, 296, 313 – 316, 319, 325, 326, 376,
<b>MM1P5.</b>	<b>Students will represent mathematics in multiple ways.</b>	
MM1P5.a	Create and use representations to organize, record, and communicate mathematical ideas.	Book 1a: pp. 8 –11, 16 – 53, 60, 70 – 73, 176 – 210, 219 – 271 Book 1b: pp. 276 – 280, 288 – 328, 356 – 386, 424 – 450, 473, 476, 489 - 492
MM1P5.b	Select, apply, and translate among mathematical representations to solve problems.	Book 1a: pp. 14, 23, 87, 88, 172 – 173, 219 – 221 Book 1b: pp. 307 – 310, 320, 321, 350, 351,

MM1P5.c	Use representations to model and interpret physical, social, and mathematical phenomena.	Book 1a: pp. 49 – 52, 70 – 73, 78, 83 – 86, 93, 94, 129, 139, 151 – 157, 206 – 210, 213-216, 222 – 226, 252 – 256, Book 1b: pp. 295, 296, 313 – 316, 319, 325, 326, 376,
<b>MRC.</b>	<b>MRC. Students will enhance reading in all curriculum areas by:</b>	
MRC.a	<p>Reading in all curriculum areas</p> <ul style="list-style-type: none"> <li>• Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas</li> <li>• Read both informational and fictional texts in a variety of genres and modes of discourse</li> <li>• Read technical texts related to various subject areas</li> </ul>	All sections, all texts
MRC.b	<p>Discussing books</p> <ul style="list-style-type: none"> <li>• Discuss messages and themes from books in all subject areas.</li> <li>• Respond to a variety of texts in multiple modes of discourse.</li> <li>• Relate messages and themes from one subject area to messages and themes in</li> </ul>	

MRC.c	<p>another area.</p> <ul style="list-style-type: none"> <li>• Evaluate the merit of texts in every subject discipline.</li> <li>• Examine author’s purpose in writing.</li> <li>• Recognize the features of disciplinary texts.</li> </ul> <p>Building vocabulary knowledge</p> <ul style="list-style-type: none"> <li>• Demonstrate an understanding of contextual vocabulary in various subjects.</li> <li>• Use content vocabulary in writing and speaking.</li> <li>• Explore understanding of new words found in subject area texts.</li> </ul>	<p>Book 1a: p. 6, 34, 58, 64 – 65, 78, 85, 110 – 111</p> <p>Book 1b: pp. 330 – 332, 347 – 348, 367</p>
MRC.d	<p>Establishing context</p> <ul style="list-style-type: none"> <li>• Explore life experiences related to subject area content.</li> <li>• Discuss in both writing and speaking how certain words are subject area related.</li> <li>• Determine strategies for finding content and contextual meaning for unknown words.</li> </ul>	<p>Book 1a: pp. 2, 4 – 11, 17, 26 – 32, 39 – 52, 70 – 73, 78, 79, 83 – 96, 102 – 104, 117 – 129, 139, 146, 151 – 161, 170 - 175, 193 – 194, 200 – 202, 206 – 210, 213 – 216, 219 – 245, 251 – 271</p> <p>Book 1b: pp. 281 – 299, 307 – 319, 325, 326, 329 – 347, 353, 354, 360 – 378, 380 – 400, 403 – 410, 413 – 419, 424 – 429, 431, 432, 435, 436, 444 – 460,</p>