Georgia Performance Standards

Mathematics for Finance

Correlated to EMC Publishing ***Personal Finance: A Lifetime Responsibility***

The Georgia Performance Standards for **Mathematics for Finance** may be accessed online at http://www.georgiastandards.org/

Acronym Key for Print Materials
SE refers to *Student Edition*
SAB refers to *Student Activities Book: Forms & Documents*
MSW refers to *Math Skills Workbook*

Standard (cite Number)	**Standard** **Numbers and Operations** Students will explore the applications of ratios, proportions, and percents in financial situations.	**Where Taught** **[SE: Page(s); MSW: (Activity #); SAB (Activity #)]**
NUMBERS AND OPERATIONS MAMFN1	**Students will use fractions, percents, and ratios to solve problems related to stock transactions, credit cards, taxes, budgets, automobile purchases, fuel economy, Social Security, Medicare, retirement planning, checking and saving accounts and other related finance applications.** a. Apply percent increase and decrease b. Apply ratios and proportions	**SE: a:** 41; 82-91; 96, 97; 124; 154-156, 158-160; 162-169; 172-174, 176-183; 184-190; 241-244; 265-272; 343-346, 348-353; 358-360, 368; 369-373; 391-395; 399-404; 412, 414, 417-422; PFRC pp. 448-451 **MSW:** 1; 4; 5; 6; 8; 16; 19-21; 23-26; 29-32; 37-44; **SAB:** 13, 21, 22, 63, 79 **SE: b:** 7, 9; 36, 37; 71; 86, 88; 98; 104; 107; 124; 154, 155, 159, 160; 162-169; 176-183; 184-190; 241-244; 257; 265-272; 285, 286, 290; 346, 349, 350; 358, 359; 369-373, 379; 399-404; 412, 415-422; PFRC pp. 448-451

		MSW: 1; 4; 5; 6; 7; 8; 9; 12; 13; 15; 22; 27; 29-33; 35-40; 42; 43 **SAB:** 13, 16, 18, 20-22, 26, 32, 38, 55, 63, 67, 68, 79
Standard (cite Number)	**Standard** **Algebra** Students will explore the applications of functions, their characteristics, their use in modeling and matrices for solving problems in financial situations.	**Where Taught**
ALGEBRA MAMFA1	**Students will use basic functions to solve and model problems related to stock transactions, banking and credit, employment and taxes, rent and mortgages, retirement planning and other related finance applications.** a. Apply linear, quadratic, and cubic functions. b. Apply rational and square root functions. c. Apply greatest integer and piecewise functions. d. Apply exponential and logarithmic functions.	**SE: a:** 166; 176-183; 184-190; 265-275; 342-353; **b, c:** 185-190; 197; 265-277 **d:** 191-195 [in the context of analyzing a business] **MSW:** 7, 20, 31, 32, 38-40 **b, c:** 23, 24, 32
ALGEBRA MAMFA2	**Students will understand the characteristics of these functions as they relate to financial situations.** a. Understand domain and range when limited to a problem situation b. Understand and apply limits as end behavior of modeling	**SE: a, b:** 103-107; 166, 167, 172-183; 184-190 **MSW:** 12

ALGEBRA MAMFA3	**Students will use formulas to investigate investments in banking and retirement planning.** a. Apply simple and compound interest formulas b. Apply future and present value formulas	**SE: a:** 161, 166; 449-451 **b:** 185, 186 **MSW:** 19-25 **SAB:** 54-57
ALGEBRA MAMFA4	**Students will understand and use matrices to represent data and solve banking and retirement problems.**	**SE:** 104-116; 172-190 **MSW:** 12-15 **SAB:** 23-41
Standard (cite number)	**Standard** Geometry Students will use geometry to explore floor plans, square footage, and models of furniture arrangements.	**Where Taught** (cite print page)
GEOMETRY MAMFG1	**Students will apply the concepts of area, volume, scale factors, and scale drawings to planning for housing.**	**SE:** 252-260 **MSW:** 32 [in context of $/sq. ft of house]
	Students will apply the distance formula to trip planning.	**SE:** 229-235 **MSW:** 29
GEOMETRY MAMFG3	**Students will apply the properties of angles and segments in circles to accident investigation data.**	**SE:** 396, 397 **SAB:** 81
Standard (cite number)	**Standard** Data Analysis and Statistics Students will explore representations and models of data as tools in the decision making process of finance.	**Where Taught** (cite print page)

DATA ANALYSIS AND STATISTICS MAMFD1	**Students will use measures of central tendency to investigate data found in the stock market, retirement planning, transportation, budgeting, and home rental or ownership.**	**SE:** 104-111, 208-209; 172-190; 229-235; 259, 260, 265-267 **MSW:** 3, 12, 23-26 **SAB:** 29, 31
DATA ANALYSIS AND STATISTICS MAMFD2	**Students will use data displays including bar graphs, line graphs, stock bar charts, candlestick charts, box and whisker plots, stem and leaf plots, circle graphs, and scatterplots to recognize and interpret trends related to the stock market, retirement planning, insurance, car purchasing, and home rental or ownership.**	**SE:** 104-115, 208-209; 172-190; 229-235; 259, 260, 265-267; 410-412, 417-422, 423-427 **MSW:** 3, 12, 23-26, 44, 55-57 **SAB:** 29, 31
DATA ANALYSIS AND STATISTICS MAMFD3	**Students will use linear, quadratic, and cubic regressions as well as the correlation coefficient to move supply and demand, revenue, profit, and other financial problem situations.**	**SE:** 436, 441, 442, 443 **MSW:** 7
DATA ANALYSIS AND STATISTICS MAMFD4	**Students will use probability, the Monte Carlo method, and expected value to model and predict outcomes related to the stock market, retirement planning, insurance, and investing.**	**SE:** 104-115, 208-209; 172-190; 410-412, 417-422, 423-427 **MSW:** 22-26, 44 **SAB:** 55-57
Standard (cite number)	**Standard** Process Standards The following process standards are essential to mastering each of the mathematics content standards. They emphasize critical dimensions of the mathematical proficiency that all students need.	**Where Taught** (cite print page)

PROCESS STANDARDS MM1P1	**Students will solve problems (using appropriate technology).** a. Build new mathematical knowledge through problem solving. b. Solve problems that arise in mathematics and in other contexts. c. Apply and adapt a variety of appropriate strategies to solve problems. d. Monitor and reflect on the process of mathematical problem solving.	**SE: a:** 31, 59, 91, 169, 197, 277, 327, 355, 381, 407 **b:** 31, 59, 91, 117, 145, 197, 249, 277, 355, 407 **c:** 59, 91, 145, 169, 197, 225, 249, 277, 327, 355, 381, 429 **d:** 59, 117, 145, 197, 249, 277, 301, 381, 429 **MSW: a, b, c, d:** [all] **SAB: b, d:** [all]
PROCESS STANDARDS MM1P2	**Students will reason and evaluate mathematical arguments.** a. Recognize reasoning and proof as fundamental aspects of mathematics. b. Make and investigate mathematical conjecture. c. Develop and evaluate mathematical arguments and proofs. d. Select and use various types of reasoning and methods of proof.	**SE: a, d:** [all]; **b:** 172-199; **c:** 94-117; 120-127; 162-169; 172-199 **MSW: a, b, c, d:** [all] **SAB: d:** [all] (This stretches the concept of mathematical "proof" a bit to include the kind of analysis and proof that a budget, credit card statement or credit report, or IRA statement would include.)

PROCESS STANDARDS MM1P3	**Students will communicate mathematically.** a. Organize and consolidate their mathematical thinking through communication. b. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others. c. Analyze and evaluate the mathematical thinking and strategies of others. d. Use the language of mathematics to express mathematical ideas precisely.	**SE: a:** [Review and Assessment "Practicing Math" exercises, such as pp 31, 59, 91, 169, 197, 277, 327, 355, 381, and 407] **b:** [Review and Assessment "Practicing Math" exercises, such as pp 31, 59, 91, 117, 145, 197, 249, 277, 355, and 407] **c:** [Review and Assessment "Taking It Home" exercises, such as pp 91, 169, 197, 225, 249, 381, and 429] **d:** [Review and Assessment "Practicing Math" exercises, such as pp 59, 91, 117, 145, 169, 197, 225, 249, 277, 301, 327, 355, 381, 429] **MSW: b, d:** [The MSW workbook meets this standard because individual activities are discrete and focus on one mathematical idea or skill.] **SAB: a:** [The SAB workbook as a whole, and the individual activities, meet this standard because the purpose of the documents is to organize and consolidate mathematical thinking.] **c:** 23, 25, 27, 30, 32, 34-36
PROCESS STANDARDS MM1P4	**Students will make connections among mathematical ideas and to other disciplines.** a. Recognize and use connections among mathematical ideas. b. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	**SE: a:** [all] (textbook begins with fairly simple math, then progressively adds, and re-uses, different math skills for different purposes); **b:** [all] (textbook is set up so that student is introduced to basics of income, saving, and investing, then is

	c. Recognize and apply mathematics in contexts outside of mathematics.	introduced to more and more complex and specific aspects of personal finance) ; **c:** [all] (example: pp 191-195, in the context of investing in or analyzing a business) **MSW:** [As a whole, this workbook meets this standard, but individual activities are discrete and focus on one mathematical idea or skill.]
PROCESS STANDARDS MM1P5	**Students will represent mathematics in multiple ways.** a. Create and use representations to organize, record, and communicate mathematical ideas. b. Select, apply, and translate among mathematical representations to solve problems. c. Use representations to model and interpret physical, social, and mathematical phenomena.	**SE: a:** 166; 176-183; 184-190; 265-275; 342-353; **b:** [Review and Assessment "Practicing Math" exercises, such as pp 59, 91, 145, 169, 197, 225, 249, 277, 327, 355, 381, 429] **c:** 104-115; 172-190; 197; 208-209; 233-235; 265-267; 417-422; **MSW: a, c:** [all] **b:** 1, 3, 4, 6, 7, 9, 10, 18-21, 29, 32, 33, 36, 43, Reference Handbook