

HIGH SCHOOL VIRGINIA MATHEMATICS STANDARDS CORRELATED TO THE STOCK MARKET GAME[™]

ALGEBRA I		SMG CORE LESSON*	
A.1	The student will solve multi step linear equations and inequalities in one variable, solve literal equations (formulas) for a given variable, and apply these skills to solve practical problems. Graphing calculators will be used to confirm algebraic solutions.	-Stock -Risk -Dividends	-Money Grow -Strategy -Sell/Hold
A.2	The student will represent verbal quantitative situations algebraically and evaluate these expressions for given replacement values of the variables. Students will choose an appropriate computational technique, such as mental mathematics, calculator, or paper and pencil.	-Risk -Dividends	
A.3	The student will justify steps used in simplifying expressions and solving equations and inequalities. Justifications will include the use of concrete objects; pictorial representations; and the properties of real numbers, equality, and inequality.	-Risks -Dividends -Funds -Tickers	-Sell/Hold -Price Change -Strategy
A.4	The student will use matrices to organize and manipulate data, including matrix addition, subtraction, and scalar multiplication. Data will arise from business, industrial, and consumer situations.	-Risks -Dividends -Funds	-Tickers -Price Change -Strategy
A.5	The student will create and use tabular, symbolic, graphical, verbal, and physical representations to analyze a given set of data for the existence of a pattern, determine the domain and range of relations, and identify the relations that are functions.		
A.6	The student will select, justify, and apply an appropriate technique to graph linear functions and linear inequalities in two variables. Techniques will include slope-intercept, x- and y-intercepts, graphing by transformation, and the use of the graphing calculator.	-Risks -Dividends -Funds	-Tickers -Price Change -Strategy
A.7	The student will determine the slope of a line when given an equation of the line, the graph of the line, or two points on the line. Slope will be described as rate of change and will be positive, negative, zero, or undefined. The graphing calculator will be used to investigate the effect of changes in the slope on the graph of the line.	-Stock -Risk -Dividends -Price Change	-Money Grow -Strategy -Sell/Hold -Tickers
A.8	The student will write an equation of a line when given the graph of the line, two points on the line or the slope and a point on the line.		
A.9	The student will solve systems of two linear equations in two variables both algebraically and graphically and apply these techniques to solve practical problems. Graphing calculators will be used both the as a primary tool for solution and to conform algebraic solution.	-Risk -Money Grow -Dividends -Tickers	-Diversify -Sell/Hold -Price Change -Strategy
A.10	The student will apply the laws of exponents to perform operations on expressions with integral exponents, using scientific notation when appropriate.	-Risk	
A.11	The student will add, subtract, and multiply polynomials and divide polynomials with monomial divisors, using concrete objects, pictorial and area representations, and algebraic manipulations.	-Risk -Dividends -Funds	-Tickers -Price Change -Strategy
A.15	The student will, given a rule, find the values of a function for elements in its domain and locate the zeros of the function both algebraically and with a graphing calculator. The value of $f(x)$ will be related to the ordinate on the graph.	-Risk -Money Grow -Dividends -Funds	-Diversify -Sell/Hold -Strategy
A.16	The student will, given a set of data points, write an equation for a line of best fit and use the equation to make predictions.		
A.17	The student will compare and contrast multiple one-variable data sets, using statistical techniques that include measures of central tendency, range, and box-and-whisker graphs.		
A.18	The student will analyze a relation to determine whether a direct variation exists and represent it algebraically and graphically, if possible.	-Risk -Money Grow -Dividends -Funds -Tickers	-Diversify -Sell/Hold -Price Change -Strategy

*SMG Core Lessons are available to registered SMG teachers. Lessons are on the SMG web site www.stockmarketgame.org in the Teacher Support Center.

ALGEBRA II		SMG CORE LESSON*	
All.1	The student will identify field properties, axioms of equality and inequality, and properties of order that are valid for the set of real numbers and its subsets, complex number, and matrices.	-Risk -Money Grow -Dividends -Funds	-Diversify -Sell/Hold -Strategy
All.2	The student will add, subtract, multiple, divide, and simplify rational expressions, including complex fractions.	ALL	
All.3	The student will (a) add, subtract, multiply, divide, and simplify radical expressions containing positive rational numbers and variables and expressions containing rational exponents; and (b) write rational expressions as expressions containing rational exponents and vice versa.	-Stock -Risk -Money Grow -Dividends -Funds	-Tickers -Sell/Hold -Price Change -Strategy
All.4	The student will solve absolute value equations and inequalities graphically and algebraically. Graphing calculators will be used as a primary method of solution and to verify algebraic solutions.	-Risk -Money Grow	-Dividends -Tickers
All.6	The student will select, justify, and apply a technique to solve a quadratic equation over the set of complex numbers. Graphing calculators will be used for solving and for confirming the algebraic solutions.	-Stock -Risk -Money Grow -Dividends -Tickers	-Diversity -Sell/Hold -Price Change -Strategy
All.8	The student will recognize multiple representations of functions (linear, quadratic, absolute value, step, and exponential functions) and convert between a graph, a table, and symbolic form. A transformational approach to graphing will be employed through the use of graphing calculators.	-Risk -Money Grow -Dividends -Funds	-Diversity -Sell/Hold -Strategy
All.11	The student will use matrix multiplication to solve practical problems. Graphing calculators or computer programs with matrix capabilities will be used to find the product.	-Risk -Money Grow	-Dividends -Tickers
All.12	The student will represent problem situations with a system of linear equations and solve the system, using the inverse matrix method. Graphing calculators or computer programs with matrix capability will be used to perform computations.	-Risk	-Dividends
All.13	The student will solve practical problems, using systems of linear inequalities and linear programming, and describe the results both orally and in writing. A graphing calculator will be used to facilitate solutions to linear programming problems.	-Stock -Risk -Money Grow -Dividends -Tickers	-Diversity -Sell/Hold -Price Change -Strategy
All.17	The student will perform operations on complex numbers and express the results in simplest form. Simplifying results will involve using patterns of the powers of i .	-Stock -Risk -Money Grow	-Dividends -Funds
All.19	The student will collect and analyze data to make predictions and solve practical problems. Graphing calculators will be used to investigate scatter plots and to determine the equation for a curve of best fit. Models will include linear, quadratic, exponential, and logarithmic functions.		
All.20	The student will identify, create, and solve practical problems involving inverse variation and a combination of direct and inverse variations.		

COMPUTER MATHEMATICS		SMG CORE LESSON*	
COM.1	The student will apply programming techniques and skills to solve practical problems in mathematics arising from consumer, business, and other applications in mathematics. Problems will include opportunities for students to analyze data in charts, graphs, and tables and to use their knowledge of equations, formulas, and functions to solve these problems.	-Stock -Risk -Money Grow -Dividends	-Tickers -Diversify -Sell/Hold -Strategy
COM.12	The student will select and implement built-in (library) functions in processing data.	-Stock -Risk -Money Grow -Dividends -Funds	-Tickers -Sell/Hold -Price Change -Strategy

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