

<b>Grade 9</b>	<b>Mathematics: Algebra I</b>	<b>DOK</b>
<b>Standard 2</b>	<b>Algebra</b>	
M.S.A1.2	Through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics, students will <ul style="list-style-type: none"> <li>demonstrate understanding of patterns, relations and functions,</li> <li>represent and analyze mathematical situations and structures using algebraic symbols,</li> <li>use mathematical models to represent and understand quantitative relationships, and</li> <li>analyze change in various contexts.</li> </ul>	
<i>Objectives</i>	<i>Students will</i>	
M.O.A1.2.1	formulate algebraic expressions for use in equations and inequalities that require planning to accurately model real-world problems.	2
M.O.A1.2.2	create and solve multi-step linear equations, absolute value equations, and linear inequalities in one variable, (with and without technology); apply skills toward solving practical problems such as distance, mixtures or motion and judge the reasonableness of solutions.	2
M.O.A1.2.3	evaluate data provided, given a real-world situation, select an appropriate literal equation and solve for a needed variable.	2
M.O.A1.2.4	develop and test hypotheses to derive the laws of exponents and use them to perform operations on expressions with integral exponents.	2
M.O.A1.2.5	analyze a given set of data and prove the existence of a pattern numerically, algebraically and graphically, write equations from the patterns and make inferences and predictions based on observing the pattern.	3
M.O.A1.2.6	determine the slope of a line through a variety of strategies (e.g. given an equation or graph).	1
M.O.A1.2.7	analyze situations and solve problems to determine the equation of a line given a graph of a line, two points on the line, the slope and a point, or the slope and y intercept.	2
M.O.A1.2.8	Identify a real life situation that involves a constant rate of change; pose a question; make a hypothesis as to the answer; develop, justify and implement a method to collect, organize, and analyze related data; extend the nature of collected, discrete data to that of a continuous linear function that describes the known data set; generalize the results to make a conclusion; compare the hypothesis and the conclusion; present the project numerically, analytically, graphically and verbally using the predictive and analytic tools of algebra (with and without technology)	4
M.O.A1.2.9	create and solve systems of linear equations graphically and numerically using the elimination method and the substitution method, given a real-world situation.	2
M.O.A1.2.10	simplify and evaluate algebraic expressions <ul style="list-style-type: none"> <li>add and subtract polynomials</li> </ul>	1

	<ul style="list-style-type: none"> <li>multiply and divide binomials by binomials or monomials</li> </ul>	
M.O.A1.2.11	create polynomials to represent and solve problems from real-world situations while focusing on symbolic and graphical patterns.	2
M.O.A1.2.12	use area models and graphical representations to develop and explain appropriate methods of factoring.	2
M.O.A1.2.13	simplify and evaluate radical expressions <ul style="list-style-type: none"> <li>through adding, subtracting, multiplying and dividing</li> <li>exact and approximate forms</li> <li>determine when an expression is undefined</li> </ul>	1
M.O.A1.2.14	Choose the most efficient method to solve quadratic equations by <ul style="list-style-type: none"> <li>graphing (with and without technology),</li> <li>factoring</li> <li>quadratic formula</li> </ul> and draw reasonable conclusions about a situation being modeled.	2
M.O.A1.2.15	describe real life situations involving exponential growth and decay equations including $y=2^x$ and $y=(\frac{1}{2})^x$ ; compare the equation with attributes of an associated table and graph to demonstrate an understanding of their interrelationship.	2
M.O.A1.2.16	Simplify and evaluate rational expressions; add, subtract, multiply, and divide. Determine when an expression is undefined	2
M.O.A1.2.17	perform a linear regression (with and without technology), <ul style="list-style-type: none"> <li>compare and evaluate methods of fitting lines to data.</li> <li>identify the equation for the line of regression,</li> <li>examine the correlation coefficient to determine how well the line fits the data</li> <li>use the equation to predict specific values of a variable.</li> </ul>	2
M.O.A1.2.18	compute and interpret the expected value of random variables in simple cases using simulations and rules of probability (with and without technology).	2
M.O.A1.2.19	gather data to create histograms, box plots, scatter plots and normal distribution curves and use them to draw and support conclusions about the data.	2
M.O.A1.2.20	design experiments to model and solve problems using the concepts of sample space and probability distribution.	3
M.O.A1.2.21	use multiple representations, such as words, graphs, tables of values and equations, to solve practical problems; describe advantages and disadvantages of the use of each representation.	2