



Math Department Curriculum Guide

Grade 8 Math Algebra 1

Course Description
The fundamental purpose of the Model Algebra I course is to formalize and extend the mathematics that students learned in the middle grades. For the Model Algebra I course, instructional time should focus on four critical areas: (1) deepen and extend understanding of linear and exponential relationships; (2) contrast linear and exponential relationships with each other and engage in methods for analyzing, solving, and using quadratic functions; (3) extend the laws of exponents to square and cube roots; and (4) apply linear models to data that exhibit a linear trend.
Content Standards
Massachusetts Curriculum Framework - Algebra 1



Subject: Grade 8 – Math Algebra 1

Units	Concepts/ Essential Questions
Term 1 Unit - Relationships Between Quantities and Reasoning With Equations MA Standards : AI.N-Q , AI.A-CED, AI.A-REI A and B	- Create equations and inequalities in one variable and use them to solve problems. - Explain each step in solving a simple equation. - Solve linear equations and inequalities in one variable. - What is the correct order to solve multi-step equations? - What do the solutions to equations and inequalities mean in the context of the problem?
Unit - Linear and Exponential Relationships MA Standards: AI.N-RN, AI.F-IF, AI.A-REI- C	- Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. - Evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. - Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. - Solve systems of linear equations exactly and approximately - Graph the solutions of a linear inequality in two variables as a half-plane - Explain why the x-coordinates of the points where the graphs of the equations intersect are the solutions of the system. - Construct linear and exponential functions - What makes a function, a function? - How can you test to see if the given information is a function? - What does the solution to a system mean?
Term 2 Unit - Descriptive Statistics MA Standards: AI.S-ID A and B	- Summarize, represent, and interpret data on a single count or measurement variable. Use calculators, spreadsheets, and other technology as appropriate. - Summarize, represent, and interpret data on two categorical and quantitative variables - What information is on a two way table? - What statistical questions can we answer and analyze based on data provided?
Unit - Expressions and Equations MA Standards: AI.A-CED, AI.A-SSE -A , AI.A-APR	- Interpret parts of an expression, such as terms, factors, and coefficients - Solve multistep problems. - Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.



Units	Concepts/ Essential Questions
Term 3 Unit - Quadratic Functions and Reasoning MA Standards: AI.F-IF C, AI.A-SSE -B, AI.A-APR	▪ Perform polynomial calculations. ▪ Factoring polynomials. ▪ Interpret linear and quadratic functions that arise in applications in terms of the context. ▪ Analyze functions using different representations. ▪ Identify and calculate parts of the quadratic equation and graph. ▪ Solving quadratics using graphing, factoring and the quadratic formula. ▪ Graph quadratics from the parent function. ▪ Describe how translating quadratic functions are found in the equation.

Textbook
<i>Algebra 1</i> ; published by Savvas/ <i>Algebra 1</i> ;published by McGraw Hill