

## MCPS Bridge to Algebra 2 Framework

### Content Standard 1.0 Knowledge of Patterns, Algebra and Functions

Students will algebraically represent, model, analyze, and solve mathematical and real-world problems involving functional patterns and relationships.

#### Expectation 1.1

**The student will model, analyze and apply linear functions.**

##### Indicators

- 1.1.B.1 solve real world problems using linear equations and linear inequalities.
- 1.1.B.2 apply direct variation to solve real world problems.
- 1.1.B.3 analyze patterns of change in data to determine if a linear relationship appropriately models the data.
- 1.1.B.4 interpret the slope and y-intercept of a linear equation in the context of a real world problem.
- 1.1.B.5 represent the equation of a line in slope-intercept and point-slope form.
- 1.1.B.6 determine a linear trend line to a scatter plot of data.
- 1.1.B.7 apply linear functions to model data with a regression equation and make predictions using the function.
- 1.1.B.8 interpret and solve problems involving piece-wise functions.
- 1.1.B.9 determine the rate of change (slope) of a linear function represented numerically, algebraically, and graphically.

#### Expectation 1.2

**The student will model, analyze and apply systems of linear equations and inequalities in two variables.**

##### Indicators

- 1.2.B.1 model a real world problem using a system of equations.
- 1.2.B.2 solve a system of equations numerically, algebraically, graphically, and using matrices.
- 1.2.B.3 perform operations on matrices.
- 1.2.B.4 represent a system of inequalities numerically, algebraically and graphically.
- 1.2.B.5 solve a system of linear inequalities graphically.

## MCPS Bridge to Algebra 2 Framework

### Expectation 1.3

**The student will model, analyze and apply quadratic functions.**

#### Indicators

- 1.3.B.1 represent quadratic functions numerically, algebraically, and graphically and identify their properties.
- 1.3.B.2 analyze patterns of change in data to determine if a quadratic relationship appropriately models the data.
- 1.3.B.3 represent translations and dilations of quadratic functions numerically, algebraically, and graphically.
- 1.3.B.4 model data using quadratic functions.
- 1.3.B.5 simplify radical expressions.
- 1.3.B.6 solve quadratic equations by inverse operations, factoring, completing the square, and the quadratic formula.
- 1.3.B.7 apply quadratic functions to real world problems.
- 1.3.B.8 apply inverse variation to solve real world problems.
- 1.3.B.9 recognize the square root function as the inverse of the quadratic function.

### Expectation 1.4

**The student will model, analyze and apply exponential functions.**

#### Indicators

- 1.4.B.1 represent exponential functions numerically, algebraically, and graphically.
- 1.4.B.2 identify properties of exponential functions.
- 1.4.B.3 represent translations of exponential functions numerically, algebraically, and graphically.
- 1.4.B.4 apply exponential functions to real world problems.
- 1.4.B.5 analyze patterns of change in data to determine if an exponential relationship appropriately models the data.
- 1.4.B.6 model data using exponential functions.
- 1.4.B.7 solve exponential equations algebraically and graphically.
- 1.4.B.8 recognize the logarithmic function as the inverse of the exponential function.

## MCPS Bridge to Algebra 2 Framework

### **Expectation 1.5**

**The student will analyze functional relationships using the language of mathematics.**

Indicators

- 1.5.B.1 describe functions using domain and range, independent and dependent variables, increasing, decreasing, constant, minimum, and maximum.
- 1.5.B.2 determine whether a relation that is expressed numerically or graphically is a function.
- 1.5.B.3 represent functions numerically, algebraically, and graphically.

## **Content Standard 5.0 Knowledge of Probability**

### **Maryland Content Standard: Knowledge of Probability**

Students will use experimental methods and theoretical reasoning to determine probabilities, to make predictions, and to solve problems about events whose outcomes involve random variation.

### **Expectation 5.1**

**The student will calculate experimental and theoretical probability.**

Indicators

- 5.1.B.1 apply counting principles to determine the total number of outcomes for an event.
- 5.1.B.2 calculate the theoretical probability of an event.
- 5.1.B.3 determine the experimental probability of an event.
- 5.1.B.4 determine the conditional probability of an event.
- 5.1.B.5 define independent and dependent events.
- 5.1.B.6 determine probabilities for compound events.