

# Mary Queen of Peace Curriculum--Math 8th Grade

High Priority Standards: (State, National, CCSS)

## The Number System

### Learning Goal

Students will be able to:  
explain there are numbers that are not rational, and  
approximate them by rational numbers

### Learning Targets

- Know that numbers that are not rational are irrational. Understand formally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
- Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line, diagram, and estimate the value of expressions (for example,  $\pi$ ).

High Priority Standards: (State, National, CCSS)

Expressions and Equations

Learning Goal

Students will be able to: work with radicals and integer exponents.

Learning Targets

- Know and apply the properties of integer exponents to generate equivalent expressions.
- Use square root and cube root symbols to represent solutions to equations. Evaluate square roots of small perfect squares and cube roots of small perfect cubes.
- Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities.
- Perform operations with numbers expressed in scientific notation. Use scientific notation and choose units of appropriate size for measurements of very large/small quantities. Interpret scientific notation generated by various sources, for example technology.

Learning Goal

Students will be able to: prove the connections between proportional relationships, lines, and linear equations.

Learning Targets

- Graph and interpret slope of proportional relationships. Compare two proportional relationships represented in different ways.
- Use similar triangles to explain why the slope is the same between any two distinct points on a

non-vertical line; derive the slope-intercept form of the equation.

### Learning Goal

Students will be able to: analyze and solve linear equations and pairs of simultaneous linear equations

### Learning Targets

- Solve linear equations with one variable.
  - Give examples of linear equations with one, none, and infinitely many solutions.
  - Solve linear equations with rational coefficients, including those that require combining like terms and applying the distributive property.
- Analyze and solve pairs of simultaneous linear equations.
  - Understand that solutions to a system of two linear equations in two variables correspond to the point of intersection on their graphs.
  - Solve systems algebraically and estimate solutions without graphing.
  - Solve real-world and mathematical problems involving two linear equations with two variables.

High Priority Standards: (State, National, CCSS)

## Functions

### Learning Goal

Students will be able to: define, evaluate, and compare functions.

### Learning Targets

- Understand that a function is a rule in which each input has exactly one output. The graph of a function is a set of ordered pairs consisting of an input and its corresponding output.
- Compare properties of two functions represented in different ways—algebraically, graphically, numerically in tables, or verbal descriptions.
- Interpret that the slope-intercept form of an equation defines it as a linear function whose graph is a straight line; be able to give non-examples.

### Learning Goal

Students will be able to: use functions to model relationships

### Learning Targets

- Determine and interpret the rate of change and initial value of a function from a description, ordered pair, table, or graph.
- Describe quantitatively the functional relationship between quantities by analyzing a graph.

High Priority Standards: (State, National, CCSS)

## Geometry

### Learning Goal

Students will be able to: understand congruence and similarity.

### Learning Targets

- Verify the properties of reflection, rotation, and translation experimentally.
- Understand that a two dimensional figure is congruent to another if the second figure is obtained from the first by a sequence of rotations, reflections or translations.
- Describe the effects of dilations, translations, rotations, and reflections.
- Understand that a two dimensional figure is similar to another if the second figure is obtained from the first by a sequence of dilations, rotations, reflections, and translations.
- Informally argue facts about angle sums and exterior angles of triangles when parallel lines cut a transversal.

Learning Goal

Students will be able to: apply the Pythagorean Theorem

Learning Targets

- Prove the Pythagorean Theorem and its converse.
- Apply the Pythagorean Theorem to find unknown side lengths of right triangles.
- Apply the Pythagorean Theorem to find the distance between two points.

Learning Goal

Students will be able to: solve problems involving volume of cones, cylinders, and spheres.

Learning Targets

- Know and apply the formulas for volumes of cones, cylinders, and spheres.

High Priority Standards: (State, National, CCSS)

## Statistics and Probability

### Learning Goal

Students will be able to: investigate patterns in data

### Learning Targets

- Construct and interpret scatter plots to investigate patterns of association between quantities. Describe patterns as clustering, outliers, positive/negative correlation, linear, and nonlinear.
- Know that straight lines are used to model relationships between quantitative variables.
- Use the linear equation model to interpret slope and intercepts.