

# St. Raphael the Archangel

## Challenge Math

### 6th Grade 2017-2018

Learning Goals- Students will:

#### Expression, Equations, and Inequalities

- Apply the properties of real numbers to an expression in order to create an equivalent expression.
- Evaluate expressions in which letters stand for numbers.
- Give possible solutions to simple inequalities and graph on a number line.
- Read and write expressions.
- Read and write simple inequalities.
- Use order of operations to solve expressions.
  
- Solve one-step equations.
  
- Solve two-step equations.
- Identify arithmetic sequences and find subsequent terms.
- Identify geometric sequences and find subsequent terms.
- Demonstrate an understanding of slope.
- Understand, identify, and write functions.
- Evaluate and simplify expressions by combining like terms.
- Evaluate and simplify expressions using the distributive property.
- Evaluate expressions when given a value for each variable.
- Read and write expressions.
- Read and write one- and two-step equations.
- Understand and solve Simple Interest problems.

#### Geometry

- Calculate the area of irregular figures.
- Calculate the area of triangles.
- Calculate the perimeter of regular and irregular polygons.
- Calculate the surface area of a three-dimensional figure (excluding cylinders).
- Calculate the area of quadrilaterals.
- Calculate the volume of rectangular and triangular prisms.
- Draw a polygon in a coordinate plane when given the coordinates.
- Graph ordered pairs on a coordinate plane.

- Identify and describe the components of three-dimensional figures.
- Identify and name angles and recognize adjacent, vertical, congruent, supplementary, and complementary angles.
- Identify and name intersecting, parallel, and skew lines.
- Identify and name lines, points, and planes.
- Understand how to determine whether two figures are similar.
- Identify parts of a circle.
- Identify, construct, and describe right, acute, obtuse, and straight angles.
- Identify and describe a polygon, and classify it based on its number of sides.

## **Ratios and Proportional Relationships**

- Define, identify, write, and demonstrate an understanding of rates and ratios.
- Use ratio and rate reasoning to solve real-world and mathematical problems. (unit rate/unit price).
- Define, identify, write, and demonstrate an understanding of rates and ratios.
- Identify missing side lengths of similar figures.
- Identify scale factor.
- Recognize, represent and solve proportional relationships between quantities.
- Solve percent using proportions and equations.
- Calculate discounts and mark-ups.
- Calculate percent increase and decrease.
- Use ratio and rate reasoning to solve real-world and mathematical problems.

## **Statistics and Probability**

- Create and interpret bar graphs.
- Create and interpret frequency tables and stem and leaf plots.
- Create and interpret line graphs.
- Define probability and determine simple probability for single events.
- Summarize information provided by a set of numerical data (mean, median, mode, range).
- Calculate and analyze measures of central tendency.
- Create and interpret box and whisker plots.
- Create and interpret scatter plots.
- Analyze and interpret different forms of graphs.
- Create and interpret line plots.
- Determine whether two variables represent positive, negative, or no correlation.

- Identify and describe outliers from data sets.

## **The Number System/Rational Numbers**

- Add and subtract positive decimals.
  - Add and subtract positive fractions and mixed numbers.
  - Add integers.
  - Compare rational numbers. (positive and negative numbers, fractions, decimals, and absolute value).
  - Convert numbers between fractions, decimals, and percent.
  - Divide positive decimals.
  - Graph rational numbers (positive and negative numbers, fractions, decimals, and absolute value) on a number line.
  - Identify the greatest common factor.
  - Identify the least common multiple.
  - Multiply and divide positive fractions and mixed numbers.
  - Multiply and divide integers.
  - Multiply positive decimals.
  - Order rational numbers (positive and negative numbers, fractions, decimals, and absolute value).
  - Subtract integers.
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- Add and subtract rational numbers.
  - Identify the greatest common factor.
  - Identify the least common multiple.
  - Round decimals.
  - Multiply and divide rational numbers.
  - Convert numbers between fractions, decimals, and percent.