St. Raphael the Archangel
Algebra
8th Grade 2017-2018

Learning Goals- Students will:

Arithmetic with Polynomials and Rational Expressions

1. **Evaluate and simplify expressions using properties of math.**
2. **Factor polynomials.**
3. **Multiply polynomials.**
4. **Identify arithmetic sequences and find subsequent terms.**
5. **Identify geometric sequences and find subsequent terms.**
6. **Solve multi-step equations.**
7. **Solve one, two, and multi-step inequalities.**
8. **Read and write expressions.**

Creating Equations

1. **Convert all three linear formulas freely.**
2. **Create and solve mixture, motion and complex problems in one variable.**
3. **Use standard form to identify and graph lines.**
4. **Demonstrate an understanding of slope.**
5. **Understand, identify, and write functions.**
6. **Use point-slope form to identify and graph lines.**
7. **Use slope-intercept form to identify and graph lines.**
8. **Create/describe relations that are functions and non-functions.**
9. **Define and identify direct and inverse variation within functions.**

Geometry

1. **Calculate measures of unknown angles in a diagram that shows parallel lines cut by a transversal.**
2. **Calculate the volume of three-dimensional figures.**

Ratios and Proportional Relationships

1. **Identify scale factor.**
2. **Calculate percent increase and decrease.**
3. **Recognize, represent, and solve proportional relationships.**
4. **Define probability and determine simple probability for single events.**

5. **Define and determine theoretical and experimental probability.**
6. **Determine probability for compound events.**
7. **Understand that the probability of a chance event can be described using a number between 0 and 1.**
8. **Calculate discounts and mark-ups.**

Reasoning with Equations and Inequalities

1. **Solve and graph absolute value equations and inequalities.**
2. **Graph linear equations and systems of linear equations.**
3. **Solve systems of equations using elimination.**
4. **Solve systems of equations using substitution.**
5. **Read and write expressions and one, two, and multi-step equations.**
6. **Solve quadratic equations by completing the square.**
7. **Solve quadratic equations by factoring and using zero-product property.**
8. **Solve quadratic equations by using the quadratic formula.**
9. **Use the FOIL method to create quadratic equations.**
10. **Graph quadratic equations using the line of symmetry and the discriminant.**
11. **Analyze and compare proportional relationships.**
12. **Solve one, two, and multi-step inequalities.**
13. **Solve and write one-step equations.**
14. **Graph one, two, and multi-step inequalities.**
15. **Solve quadratic equations by graphing and using square roots.**
16. **Solve quadratic inequalities by graphing.**
17. **Find the axis of symmetry and the vertex of quadratic functions.**

Seeing Structure in Expressions

1. **Add, subtract, multiply, and divide numbers using scientific notation.**
2. **Calculate probabilities of compound events.**
3. **Calculate square and cube roots.**
4. **Determine whether two figures are congruent.**
5. **Explain and use the Pythagorean Theorem.**
6. **Simplify and solve radical expressions.**
7. **Understand how to determine whether two figures are similar.**
8. **Understand that every number has a decimal expansion.**
9. **Use the properties of integer exponents to simplify expressions.**
10. **Evaluate and simplify expressions by combining like terms.**
11. **Create and interpret scatter plots.**

The Number System/Rational Numbers

1. **Add and subtract rational numbers.**

2. **Convert numbers between fractions, decimals, and percent.**
3. **Multiply and divide rational numbers.**
4. **Differentiate and identify rational and irrational numbers.**