**Overview for PFA Algebra 2**

In the second semester of Saxon Algebra 2 at Pioneer Family Academy, we complete in order lessons 61 through 122 along with the respective tests for those lessons. The book is written in a spiral review method. Covered in this semester are the following topics:

**Number sense**

Relationships of Numbers | Percent Mark-up | Complex Numbers (a + bi) | Subsets of the Real Numbers | Converting Repeating Decimals as Fractions | Numbers, Numerals and Value | Fundamental Counting Principle | Permutations | Probability | Independent Events | Letter Symbols for Sets | Set Builder Notation | Intersection of Sets | Union of Sets | Venn Diagrams | Metric Volume

**Algebraic Expressions and Equations**

Complex Roots of Quadratic Equations | Addition of Vectors | Complex Fractions | Complex Numbers (a + bi) | Substitution Method with 3 unknowns | Signs of Fractions | Radical Denominators | Use of a Scientific Calculator | Scientific Notation | Powers of Roots | Gas Law Problems | Advanced Abstract Equations | The Quadratic Formula | Lines from Experimental Data | Factorable Denominators and Sign Changes | Using both Substitution and Elimination | Negative Vectors | Advanced Radical Equations | Multiple Radicals | Complex Numbers and Real Numbers | Products of Complex Conjugates | Dividing Complex Numbers | Algebraic Simplification | Product Rule with Variables | Power Rule with Variables | Degree of Equations | Solutions to Systems of Equations | Systems of Non-Linear Equations | Greater Than | Trichotomy and Transitive Axioms | Irrational Roots | Slope Formula | Distance Formula | Gas Law Equations PV = nRT | Conjunctions and Disjunctions | Systems of Three Equations | Linear Inequalities | Greater Than or Equal; Less Than or Equal | Systems of Linear Inequalities | The Discriminant | Dependent and Independent Variables | Functions | Functional Notation | Joint and Combined Variation | Absolute-Value Inequalities | Absolute Value Conjunctions | Absolute Value Disjunctions | Absolute Value and Negative Numbers | Graphing Parabolas | Sums and Products of Functions | Advanced Polynomial Division | Advanced Factoring | Sum and Difference of Two Cubes | Fractional Exponents | Quadratic Inequalities; Greater than and Less than | Three Statements of Equality | Logarithms and Antilogarithms | Nonlinear Inequalities | Exponential Equations | Exponential Functions | Compound Interest | Logarithmic Equations | Absolute Value Inequalities | Laws of Logarithms

**Geometry (topics briefly covered- not comprehensive)**

Special Right Triangles 30° – 60° – 90° and 45° – 45° – 90° | Negative Angles | Conditions of Congruence | Proofs of Congruence | Isosceles Triangles

**Word Problems**

Chemical Compounds and Mixture problems | Advanced Uniform Motion Problems | Force Vectors at a Point | Direct Variation and Inverse Variation as a Ratio | Boat-in-the-River Problems | Number Word Problems | Age Word Problems | Rational Inequalities