MathJam Algebra 1 Course Syllabus
Saxon Algebra I

Required Materials:

- Saxon, John. *Algebra I: An Incremental Development.* Third Edition. Austin: Saxon Publishers, 2003.
    - ISBN 978-1-56577-134-5
- Saxon, John. *Algebra 1 Solutions Manual: An Incremental Development.* Third Edition. Austin: Saxon Publishers, 2003
    - ISBN 978-1-56577-137-6

Course Description:
Algebra I focuses on the essential principles of algebra. Topics include but are not limited to: linear equations, Cartesian coordinate system, introduction to polynomials and quadratics, rational expressions, factoring, introduction to systems of equations, radicals, basic set theory, introduction to function notation, surface area, right prisms and cylinders, pyramids and cones, ratios and proportion, scientific notation, introduction to statistics, Pythagorean theorem and triples, and transformations.

Prerequisite Skills: Expanding products of polynomials; simplifying polynomials; conversions from fractions to decimals; finding percents; solving linear equations; multiplying, dividing, and simplifying exponents; using ratios and rates, simplifying square roots, two-step word problems

Practice Assignments:

- *Problem Sets:* Each lesson in the textbook has a practice problem set. Selected problems (from the instructor) in each and every lesson are to be completed within the week of the lessons. Although not all problems in each set will be required for course credit, it is encouraged to try all problems to increase mastery.
- Example: Week one, lessons 1-4 will be lectured and taught. By the following Monday, all assigned problems for lessons 1-4 are to be completed and solutions checked by the student (use the Solutions Manual). **The Solutions Manual is to be used by the student after attempting the problem set to assess how well they did and to go back and re-work problems they missed and ask for help when needed to understand what was missed.**
- Mr. Casper will provide brief video lessons for each chapter in the text book. These videos will be found on mathjam.academy.

Tests:

- *Bi-Weekly Tests:* Students will be assessed using some problems from their homework (so make sure you always work hard on all HW problems!) and problems not from the homework but sourced and or created that are related to the curriculum.
- Test prep videos will be provided as well for each test.

Grading breakdown:

Course Work	*Percentage*
Homework Problem Sets	30 %
Tests	70 %
Total	**100 %**

Schedule:

Week	**Lessons**	**Date**	**Homework**	**Topic**
0	--		Introduction	Orientation
1	1-4		Problem Sets: 1-4	Adding and Subtracting Fractions, Lines and Segments, Angles, Polygons, Triangles, Quadrilaterals, Perimeter, Circumference, Review of Arithmetic
2	5-8		Problem Sets: 5-8	Sets, Absolute Value, Adding Signed Numbers, Rules for Addition, Adding More Than Two Numbers, Inserting Parentheses Mentally, Definition of Subtraction, The Opposite of a Number, Simplifying More Difficult Notations, Area
3	9-12		Problem Sets: 9-12 **Watch Test Prep Video before Test Test 1 (1-8)**	Rules for Multiplication of Signed Numbers, Inverse Operations, Rules for Division of Signed Numbers, Summary, Division by Zero, Exchange of Factors in Multiplication, Conversions of Area, Reciprocal and Multiplicative Inverse, Order of Operations, Identifying Multiplication and Addition, Symbols of Inclusion, Order of Operations
4	13-16		Problem Sets: 13-16	Multiple Symbols of Inclusion, More on Order of Operation, Products of Signed Numbers, Evaluation of Algebraic Expressions, Surface Area, More Complicated Evaluations
5	17-20		Problem Sets: 17-20	Factors and Coefficients, Terms, The Distributive Property, Like Terms, Additions of Like Terms, Exponents,

			Watch Test Prep Video before Test Test 2 (9-16)	Powers of Negative Numbers, Roots, Evaluation of Powers, Volume
6	21-24		Problem Sets: 21-24	Product Rule for Exponents, Addition of Like Terms with Exponents, Review of Numerical and Algebraic Expressions, Statements and Sentences, Conditional Equations, Equivalent Equations, Additive Property of Equality, Multiplicative Property of Equality
7	25-28		Problem Sets: 25-28 **Watch Test Prep Video before Test Test 3 (17-24)**	Solution of Equations, More Complicated Equations, More on the Distributive Property, Simplifying Decimal Equations, Fractional Parts of Numbers, Functional Notation.
8	29-32		Problem Sets: 29-32	Negative Exponents, Zero Exponents, Algebraic Phrases, Decimal Parts of Number, Equations with Parentheses, Word Problems
9	33-36		Problem Sets: 33-36 **Watch Test Prep Video before Test Test 4 (25-32)**	Products of Prime Factors, Statements About Unequal Quantities, Greatest Common Factor, Factoring The Greatest Common Factor, Canceling, Distributive Property of Rational Expressions that Contain Positive Exponents, Minus Signs and Negative Exponents
10	37-40		Problem Sets: 37-40	Inequalities, Greater Than and Less Than, Graphical Solutions of Inequalities, Ratio Problems, Trichotomy Axiom, Negated Inequalities, Advanced Ratio Problems, Quotient Rule for Exponents, Distributive Property of Rational Expressions that Contain Negative Exponents
11	41-44		Problem Sets: 41-44 **Watch Test Prep Video before Test**	Addition of Like Terms in Rational Expressions, Two-Step Problems, Solving Multivariable Equations, Least Common Multiple, Least Common Multiples of

			Test 5 (33-40)	Algebraic Expressions, Addition of Rational Expressions with Equal Denominators, Addition of Rational Expressions with Unequal Denominators
12	45-48		Problem Sets: 45-48	Range, Median, Mode, and Mean, Conjunctions, Percents Less than 100, Percents Greater Than 100, Polynomials, Degree, Addition of Polynomials
13	49-52		Problem Sets: 49-52 **Watch Test Prep Video before Test Test 6 (41-48)**	Multiplication of Polynomials, Polynomial Equations, Ordered Pairs, Cartesian Coordinate System, Graphs of Linear Equations, Graphs of Vertical and Horizontal Lines, More on Addition of Rational Expressions with Unequal Denominators, Overall Average
14	53-56		Problem Sets: 53-56	Power Rule for Exponents, Conversions of Volume, Substitution Axiom, Simultaneous Equations, Solving Simultaneous Equations by Substitution, Complex Fractions, Division Rule for Complex Fractions, Finite and Infinite Sets, Membership in a Set, Rearranging Before Graphing
15	57-60		Problem Sets: 57-60 **Watch Test Prep Video before Test Test 7 (49-56)**	Addition of Algebraic Expressions with Negative Exponents, Percent Word Problems, Rearranging Before Substitution, Geometric Solids, Prisms and Cylinders
16	61-64		Problem Sets: 61-64	Subsets, Subsets of the Set of Real Numbers, Square Roots, Higher Order Roots, Evaluating Using Plus or Minus, Product of Square Roots, Repeating Decimals, Domain, Additive Property of Inequality
17	65-68		Problem Sets: 65-68 **Watch Test Prep Video before Test Test 8 (57-64)**	Addition of Radical Expressions, Weighted Average, Simplification of Radical Expressions, Square Roots of Large Numbers, REview of Equivalent

				Equations, Elimination, More About Complex Fractions
18	69-72		Problem Sets: 69-72	Factoring Trinomials, Probability, Designated Order, Trinomials with Common Factors, Subscripted Variables, Factors That Are Sums, Pyramids and Cones
19	73-76		Problem Sets: 73-76 **Watch Test Prep Video before Test Test 9 (65-72)**	Factoring the Differences of Two Squares, Probability Without Replacement, Scientific Notation, Writing the Equation of a Line, Slope-Intercept Method of Graphing, Consecutive Integers
20	77-80		Problem Sets: 77-80	Consecutive Odd and Consecutive Even Integers, Fraction and Decimal Word Problems, Rational Equations, Systems of Equations with Subscripted Variables, Operations with Scientific Notation
21	81-84		Problem Sets: 81-84 **Watch Test Prep Video before Test Test 10 (73-80)**	Graphical Solutions, Inconsistent Equations, Dependent Equations, Evaluating Functions, Domain and Range, Evaluating Functions, Domain and Range, Coin Problems, Multiplication of Radicals, Functions
22	85-88		Problem Sets: 85-88	Stem-and-Leaf Plots, Histograms, Divisions of Polynomials, More on System of Equations, Tests for Functions, Quadratic Equations, Solution of Quadratic Equations by Factoring
23	89-92		Problem Sets: 89-92 **Watch Test Prep Video before Test Test 11 (81-88)**	Value Problems, Word PRoblems with Two Statements of Equality, Multiplicative Property of Inequality, Spheres, Uniform Motion Problems about Equal Distances

24	93-96		Problem Sets: 93-96	Products of Rational Expressions, Quotients of Rational Expressions, Uniform Motion Problems of the Form D1+D2=N, Graphs of Nonlinear Functions, Difference of Two Squares Theorem
25	97-100		Problem Sets: 97-100 **Watch Test Prep Video before Test Test 12 (89-96)**	Angels and Trigangels, Pythagorean Theorem Pythagorean Triples, Distance Between Two Points, Slope Formula, Uniform Motion -- Unequal Distances, Place Value, Rounding Numbers
26	101-104		Problem Sets: 101-104	Factorable Denominators, Absolute Value Inequalities, More on Rational Equations, Abstract Rational Equations
27	105-108		Problem Sets: 105-108 **Watch Test Prep Video before Test Test 13 (97-104)**	Factoring by Grouping, Linear Equations, Equation of a Line Through Two Points, Line Parallel to a Given Line, Equation of a Line Through Two Points, Line Parallel to a Given Line, Equation of a Line with a Given Slope, Square Roots Revisited, Radical Equations
28	109-112		Problem Sets: 109-112	Advanced Trinomial Factoring, Vertical Shifts, Horizontal Shifts, Reflection About the *x* Axis, Combinations of Shifts and Reflections, More on Conjunctions, Disjunctions, More on Multiplication of Radical Expressions
29	113-116		Problem Sets: 113-116 **Watch Test Prep Video before Test Test 14 (105-112)**	Direct Variation, Inverse Variation, Exponential Key, Exponential Growth, Using the Graphing Calculator to Graph Exponential Functions, Linear Inequalities, Quotient Rule for Square Roots
30	117-120		Problem Sets: 117-120	Direct and Inverse Variation Squared, Completing the Square, The Quadratic

				Formula, Use the Quadratic Formula, Box-and-Whisker Plots.
31			**Test 15 (113-116)**	