Saxon Algebra I

Class Description:
Saxon is a comprehensive homeschool math program, based on the teaching principles of incremental development, continual practice and review, and cumulative assessment. Through the sequential lessons students incrementally build their knowledge through continual practice and review. This text covers topics including signed numbers, exponents, and roots; absolute value; equations and inequalities; scientific notations; unit conversions; polynomials; graphs; factoring; quadratic equations; direct and inverse variations; exponential growth; statistics; and probability.

Learning Materials:
Main Curriculum:
Saxon Algebra 1 (4th Edition) Solutions Manual
Saxon Algebra 1 (4th Edition) Student Text
Saxon Algebra 1 (4th Edition) Testing Book

Learning Goals:
M1.1.A Select and justify functions and equations to model and solve problems.
M1.1.B Solve problems that can be represented by linear functions, equations, and inequalities.
M1.1.C Solve problems that can be represented by a system of two linear equations or inequalities.
M1.1.D Solve problems that can be represented by exponential functions and equations.
M1.2.A Determine whether a relationship is a function and identify the domain, range, roots, and independent and dependent variables.
M1.3.A Write and solve linear equations and inequalities in one variable.
Learning Activities:
The student will follow the text sequentially, as per timeline below.

SEPTEMBER
Week 1: add and subtract fractions, geometric terms, perimeter and circumference (Lessons 1-4)
Week 2: sets, absolute value, addition of signed numbers (Lessons 5-7)
Week 3: area, multiply and divide signed numbers, inverse operations, division by zero, reciprocal and multiplicative inverse (lessons 8-11)
Week 4: symbols of inclusion, order of operations, evaluation of algebraic expressions (12-14)

OCTOBER
Week 1: surface area, factors and coefficients, distributive property, adding like terms (15-18)
Week 2: exponents, volume, product rule for exponents, addition of like terms with exponents (19-21)
Week 3: conditional equations, equivalent equations, additive property of equality, multiplicative property of equality, solution of equations (22-25)
Week 4: more complicated equations and distributive properties, simplifying decimal equations, fractional parts of numbers, functional notation (26-28)

NOVEMBER

Week 1: negative and zero exponents, algebraic phrases, decimal parts of a number, equations with parentheses (29-32)
Week 2: products of prime factors, greatest common factor, factoring the GCF, canceling (33-35)
Week 3: Distributive property of rational expressions that contain positive exponents, minus signs and negative exponents, inequalities,
Week 4: ratio problems, trichotomy axiom, negated inequalities, advanced ratio problems (36-39)

DECEMBER
Week 1: quotient rule for exponents, distributive property of rational expressions that contain negative exponents, addition of like terms in rational expressions, solving multivariable equations (40-42)
Week 2: Least common multiple, addition of rational expressions with equal and unequal denominators, range, median, mean, mode, conjunctions (43-46)

JANUARY
Week 1: percents greater than and less than 100, addition of polynomials, multiplication of polynomials (47-49)
Week 2: Polynomial equations, ordered pairs, Cartesian coordinate system, graphs of linear equations, graphs of vertical and horizontal lines, overall average, power rule for exponents, conversions of volume (50-53)
Week 3: substitution axiom, simultaneous equations, complex fractions, division rule for complex fractions, finite and infinite sets, membership in a set, rearranging before graphing (54-56)
Week 4: addition with negative exponents, percent word problems, rearranging before substitution, geometric solids, prisms and cylinders (58-60)

FEBRUARY
Week 1: subsets and subsets of the set of real numbers, square roots, higher order roots, evaluating using plus or minus, product of square roots rule, repeating decimals (61-63)
Week 2: Domain, additive property of inequality, addition of radical expressions, weighted average, simplification of radical expressions, square roots of large numbers, elimination (64-67)
Week 3: More about complex fractions, factoring trinomials, probability, designated order (68-70)
Week 4: trinomials with common factors, subscripted variables, factors that are sums, pyramids and cones, factoring the difference of two squares, probability without replacement, scientific notation (71-74)

MARCH
Week 1: writing the equation of a line, slope-intercept method of graphing, consecutive integers, consecutive odd and consecutive even integers, fraction and decimal word problems, (75-77)
Week 2: rational equations, systems of equations with subscripted variables, operations with scientific notation, graphical solutions, inconsistent equations, dependent equations (78-81)
Week 3: evaluating functions, domain and range, coin problems, multiplications of radicals, functions (82-84)

Week 4: stem and leaf plots, histograms, division of polynomials, systems of equations, tests for functions, quadratic equations, solutions of quadratic equations by factoring (85-88)

APRIL
Week 1: Value problems, word problems with two statements of equality, multiplicative property of inequality, spheres (89-91)
Week 2: uniform motion problems about equal distances, products of rational expressions, quotients of rational expressions, uniform motions problems of the form D1 + D2 = N, graphs of non-linear functions (92-95)
Week 3: Difference of two squares theorem, Pythagorean theorem, Pythagorean triples, distance between two points, slope formula (96-98)

MAY
Week 1: Uniform motion-unequal distances, place value, rounding numbers, factorable denominators, absolute value inequalities (99-102)
Week 2: abstract rational equations, factoring by grouping (103-105)
Week 3: linear equations, 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, advanced trinomial factoring (106-109)
Week 4: shifts and reflections, conjunctions, disjunctions, multiplication of radical expressions (110-112)

JUNE
Week 1: direct variation, inverse variation, exponential key, exponential growth, using the graphing calculator to graph exponential functions, linear inequalities, quotient rule for square roots (113-116)
Week 2: direct and inverse variation squared, completing the square, the quadratic formula, box-and-whisker plots (117-120)

Progress Criteria/Methods of Evaluation:
For successful completion of this course, the student will complete at least 70% of the lessons/goals, at a minimum of 70% accuracy. The student will take quizzes and summative assessments as they fall in the curriculum.

September Complete Lesson 1 – 14
October Complete Lessons 15 – 28
November Complete Lessons 29 – 39
December Complete Lessons 40 – 46
January Complete Lessons 47 – 60
February Complete Lessons 61 – 74
March Complete Lessons 75 – 88
April Complete Lessons 89 – 98
May Complete Lessons 99 – 112
June Complete Lessons 113 – 120