

Comparison Chart

Shormann Algebra 1 to Saxon Algebra 1

Teaching all the topics covered in Saxon Algebra 1, Shormann Algebra 1 includes topics and 21st Century math topics, like computer math, technology applications, and real-life application word problems, not found in Saxon Algebra 1.

	Saxon	Shormann
Arithmetic		
History of Arithmetic		
Origin of Arithmetic Symbols		•
Whole Numbers		
Round whole numbers	•	•
Operations with Whole Numbers		
Add Whole Numbers	•	•
Subtract Whole Numbers	•	•
Multiply Whole Numbers	•	•
Divide Whole Numbers	•	•
Fractions		
Add Fractions	•	•
Add Mixed Numbers	•	•
Subtract Fractions	•	•
Subtract Mixed Numbers	•	•
Multiply Fractions	•	•
Multiply Mixed Numbers	•	•
Divide Fractions	•	•
Divide Mixed Numbers	•	•
Convert between mixed numbers and improper fractions	•	•
Decimal Numbers		
Understand Decimal Numbers	•	•
Order Decimal Numbers on the Number Line	•	•
Round Decimal Numbers		•
Round Repeating Decimal Numbers	•	•

Convert Decimal Numbers to Fractions		•
Convert Decimal Numbers to Percents		•
Add And Subtract Decimal Numbers	•	•
Multiply And Divide Decimal Numbers	•	•
Understand and Use Scientific Notation		
For Large And Small Numbers	•	•
With Addition Of Exponents	•	•
In Multiplication	•	•
In Division	•	•
In Approximating		•
On a Scientific Calculator		•
In Unit Conversions		•
Graphs (Analytical Geometry)	•	•
Descartes and Fermat and history of analytical geometry		•
Graphs of Data		
Interpret and construct bar graphs		•
Interpret and construct broken line graphs		•
Interpret and construct pie graphs		•
Graphs on the Coordinate Plane		
Define axes, coordinates, quadrants, and origin	•	•
Recognize and Plot Ordered Pairs	•	•
Use the Distance Formula		•
Graph Linear Equations		
Equation Of A Line	•	•
By Substitution	•	•
To Solve Systems Of Equations	•	•
Finding Slopes	•	•
Slope Formula	•	•
y-Intercept	•	•
Vertical And Horizontal Lines	•	•
Parallel and Perpendicular Lines	•	•
Using Slope-Intercept Form	•	•

Given Two Ordered Pairs	•	•
Given Slope	•	•
Given Experimental Data		•
Find best-fit line using linear regression on calculator and/or computer		•
Use combinations of algebraic, tabular, graphical, or verbal descriptions of linear functions		•
Interpret situations in terms of given graphs or create situations that fit graphs		•
Consistent, Inconsistent, and Dependent	•	•
Graph Circles, Ellipses, Hyperbolas, and Parabolas	•	•
Identify graphic and symbolic forms of the following nonlinear functions: absolute value, quadratic, square root, exponential, cubic, reciprocal		•
Determine whether or not given situations can be represented by linear or nonlinear functions		•
Complex Plane		•
graphing $a+bi$		•
Number Sets		
History of Number		
Other Numeral Systems, including binary (for computer math), Roman Numerals, Sexagesimal		•
Origin of Zero		•
Infinity		•
Infinitesimal		•
Sets		
Use Set Notation	•	•
Distinguish Between Finite and Infinite	•	•
Understand Set Membership	•	•
Represent Subsets of the Real Numbers Symbolically	•	•
Represent Subsets of the Real Numbers Using Diagrams		•
Identify Subsets	•	•
Real Numbers		
Classify the Real Numbers		
Natural (Counting) Numbers and Whole Numbers	•	•
Integers, Rational Numbers, and Irrational Numbers	•	•
Prime and Composite Numbers	•	•
Order on a Number Line		•
Compute sums, products, differences, and quotients of decimal numbers	•	•

Perform operations with integers	•	•
Addition	•	•
Subtraction	•	•
Multiplication	•	•
Division	•	•
Symbols of Inclusion	•	•
Absolute Value	•	•
Identifying negative numbers	•	•
Opposites with multiple signs	•	•
Within order of operations	•	•
Parentheses	•	•
Parentheses, braces, and brackets	•	•
Understanding elementary number theory	•	•
Prime and Composite numbers	•	•
Factors and Divisibility		•
Find least common multiples	•	•
Find reciprocals	•	•
Find greatest common factors	•	•
Understand inverse operations	•	•
Know the properties of real numbers	•	•
Chart of properties	•	•
Commutative property of addition and multiplication	•	•
Associative property of Addition and Multiplication	•	•
Distributive Property	•	•
Additive Inverse	•	•
Multiplicative Inverse	•	•
Additive Identity	•	•
Multiplicative Identity	•	•
Of zero	•	•
Of -1	•	•
Of 1	•	•
Of equality	•	•

Additive Property	.	.
Of zero	.	.
Of equality	.	.
Complex Numbers		
Euler's notation for $i = \text{square root of } -1$.
Use the standard form for a complex number		.
Measurement		
The Lord abhors dishonest weights and measures(Deuteronomy 25:16, Proverbs 20:23, e		.
English Measurement		
Know U.S. Customary units of length and volume	.	.
Metric Measurement		
Know the metric units of length and volume	.	.
Conversion by Unit Multipliers		
Convert within English system		
in./ft, ft/yd, ft/mi	.	.
Multiple unit multipliers	.	.
Volume	.	.
Area	.	.
Convert within metric system		
cm/m, km/m	.	.
Multiple unit multipliers	.	.
Area		.
Volume	.	.
Convert between english and metric units		
Length	.	.
Area	.	.
Volume	.	.
Foreign Currency Conversion		
Convert US to foreign and vice-versa		.
Convert foreign to foreign using 2 unit multipliers		.
Ratio, Proportion, Percent, and Rate		
History of Ratio		

Define ratio	•	•
Connect idea of ratio to rational, logos, and other areas like language, unity and diversity		•
Greek's discovery of square root of 2 and problems they had		•
History of pi, golden ratio, etc.		•
Ratio		
Solve ratio word problems	•	•
Express Rates as ratios		•
Compare unit prices		•
Solve Rate Problems	•	•
Solve advanced ratio problems involving totals	•	•
Proportion		
Cross multiply to solve proportions	•	•
Use scale factors on geometric shapes		•
Solve similar triangles for missing sides		•
Percent		
Find percents of numbers	•	•
fraction/decimal/percent conversion		•
Use the percent equation	•	•
Solve percent word problems	•	•
Visualize percents using diagrams	•	•
Use percents greater than one hundred	•	•
Solve percent increase/decrease problems	•	•
Rate		
Solve uniform motion problems	•	•
Exponents		
Know order of operations with exponents	•	•
Evaluate expressions with exponents	•	•
Simplify powers of fractions	•	•
Simplify powers of signed numbers		•
Know the product theorem for Exponents	•	•
Evaluate powers of negative bases	•	•
Use negative exponents	•	•

Solve equations with exponents	•	•
Use zero as an exponent	•	•
Know the quotient rule for exponents	•	•
Know the power theorem for exponents	•	•
Use the exponent calculator key	•	•
Understand exponential increase and decrease	•	•
Roots		
Find square roots, cube roots, and fourth roots	•	•
Know order of operations with roots	•	•
Evaluate expressions with roots	•	•
Take root of negative numbers	•	•
Know the product of square roots rule	•	•
Square roots and approximations		•
Add radical expressions	•	•
Multiply radical expressions	•	•
Find roots of large numbers	•	•
Solve radical equations	•	•
Know the quotient theorem for roots	•	•
Convert roots to fractional exponents		•
Use Euler's notation		•
Statistics and Probability		
Probability		
Use counting techniques to compute probability	•	•
Simple Probability	•	•
Independent events	•	•
Product of probabilities	•	•
Statistics		
Use and construct stem-and-leaf plots	•	
Use and construct histograms	•	•
Use and construct box-and-whisker plots	•	•
Compute measures of central tendency	•	•
Find averages	•	•

Overall	•	•
Weighted	•	•
Linear regressions on calculator/computer		•
Using Punnett Squares		•
Using Hardy-Weinberg equation		•
Using Chi Square		•
Algebraic Expressions		
Simplifying expressions		
Combine like terms		
Simple	•	•
With exponents	•	•
With negative exponents	•	•
Simplify exponential expressions		
With exponentials and radicals/powers rule	•	•
With signed numbers	•	•
Explanation	•	•
Evaluation with signed numbers	•	•
Multiplication and division	•	•
Distributive property and negative exponents	•	•
Evaluate expressions with substitution		
For variables	•	•
With symbols of inclusion	•	•
With signed numbers	•	•
With signed numbers and symbols of inclusion	•	•
Simplifying expressions using		
Distributive property	•	•
Order of operations	•	•
With fractions	•	•
With symbols of inclusion	•	•
Reduce expressions by common factor	•	•
Find the least common multiple of expressions	•	•
Find the greatest common factor of expressions	•	•

Simplify radical expressions		
Addition	•	•
Multiplication	•	•
Simplify Polynomial expressions		
Monomials	•	•
Binomials	•	•
Difference of two squares	•	•
Trinomials	•	•
Simple factoring	•	•
Common factors	•	•
Common factor sums	•	•
Lead coefficients greater than one	•	•
Degrees of polynomials	•	•
Addition of polynomials	•	•
Multiplication of Polynomials	•	•
Division of Polynomials		
Simple	•	•
Missing term in dividend	•	•
Factoring by grouping	•	•
Expanding Polynomials		•
Simplify rational expressions	•	•
Multiplication	•	•
Addition	•	•
Factoring		
Before multiplication	•	•
Before addition	•	•
Division	•	•
Denominators		
Factoring	•	•
Rationalizing		
By multiplication by radical		•
Simplify complex fractions	•	•

Denominator-numerator same-quantity rule	•	•
Multiplicative property of equality	•	•
Additive property of equality	•	•
Advanced	•	•
Algebraic Equations		
History of Algebra		
Define algebra, etymology		•
Sawyer's "bag of rocks" idea to bridge algebra and arithmetic		•
Simplifying and solving equations		
Define equations and basic rules	•	•
Simple	•	•
Conditional	•	•
Equivalent	•	•
Addition and Subtraction rules	•	•
Multiplication and Division rules	•	•
Use the fractional-part-of-a-number equation	•	•
Solve abstract equations	•	•
Use the decimal-part-of-a-number equation	•	•
Solve equations with mixed numbers	•	•
Use the percent equation	•	•
Solve multiple-step equations	•	•
Using two rules	•	•
Format	•	•
Variables on each side of equals sign	•	•
Two-step	•	•
Multiple terms	•	•
Multivariable abstract	•	•
Solve equations that have negative coefficients	•	•
Solve equations that have symbols of inclusion	•	•
Solve equations using distributive property	•	•
Translate word phrases into algebraic expressions	•	•
Translate word sentences into algebraic expressions	•	•

Solving equations involving variation	•	•
Direct and inverse variation	•	•
Squared	•	•
Solve rational equations	•	•
Solve radical equations	•	•
Linear Equations		
Find equations of lines	•	•
Using slope intercept form	•	•
Given two points	•	•
Parallel to given lines	•	•
With given slopes	•	•
Finding slopes	•	•
Horizontal and vertical lines	•	•
Slope formula	•	•
Distance Formula	•	•
Graph linear equations	•	•
Simple	•	•
Rearranging before graphing	•	•
For solution	•	•
Slope-intercept method	•	•
Solve two equations in two unknowns (systems of equations)	•	•
Substituting	•	•
For variable	•	•
One variable for another variable	•	•
Rearranging before substitution	•	•
Subscripted variables	•	•
With fractions and decimal numbers	•	•
Using linear combination (elimination)	•	•
Elimination of a variable	•	•
Subscripted variables	•	•
With fractions and decimal numbers	•	•
By graphing	•	•

Simple	•	•
Consistent, inconsistent, and dependant equations		•
Quadratic Equations		
Solve by factoring	•	•
Use difference of two squares theorem	•	•
Complete the square	•	•
Use the quadratic formula	•	•
Other types of Equations		
Solve exponential growth problems	•	•
Find compound interest with calculator	•	•
Find roots of equations	•	•
Using quadratic formula	•	•
Solve equations with applications	•	•
Simple and compound interest	•	•
Coin problems	•	•
Explore nonlinear equations	•	•
Parabolas	•	•
Algebraic Skills (Functions)		
Understanding functions	•	•
Define domain, range, independent variable, and dependent variable	•	•
Find domain and range from graphs of functions		•
Find domain and range from symbolic forms of functions		•
Use function notation	•	•
Interpret and makes inferences from functional relationships		•
Use the vertical line test (function or relation)	•	•
Represent functions as ordered pairs	•	•
Modeling functions		
Graphically	•	•
Numerically	•	•
Symbolically	•	•
Verbally	•	•
Describe functional relationships for given problem situations and write equations or inequalities to answer questions arising from the situations		•

Operations with functions (addition, subtraction, multiplication, division)		•
Evaluate functions		•
Evaluating Scientific Formulas		
Ideal Gas Law	•	•
Evaluate a variety of scientific formulas	•	•
Trigonometry and Logarithms		
Trigonometry		
Define and use sine, cosine, and tangent		•
Evaluate trigonometric and inverse trigonometric functions with a scientific calculator		•
Solve right triangles		•
Define vectors		•
Use Parallelogram Law to sketch location of resultant vectors		•
Periodicity		•
Unit Circle		•
Logarithms		
Logarithm means exponent		•
Solve simple logarithmic equations		•
Find logarithms with a scientific calculator		•
Geometry		
History of Geometry		
Euclid and axioms, postulates, deductive reasoning		•
Aristotle, logic and syllogisms		•
Deductive Reasoning and Proof		
Define and compare deductive and inductive reasoning		•
Euclid, axioms and postulates		•
Euclid, theorems and proofs		•
Concept of proof and proof technique		•
Use of proof in various professions		•
Triangle Congruency		•

Triangle proofs		•
Construction		
Construct and justify statements about geometric figures and their properties	•	•
Use construction to prove Euclid's Propositions I and II (Book 1)	•	•
Lines, points, segments, and planes		
Identify lines	•	•
Intersecting	•	•
Parallel	•	•
Identify points and find distances between points	•	•
Identify segments	•	•
Characteristics	•	•
Identify planes and planes in space	•	•
Angles		
Identify vertices of angles	•	•
Identify kinds of angles	•	•
Right, acute, straight, and obtuse angles	•	•
Polygons		
Classify polygons	•	•
Convex and concave	•	•
Equilateral and equiangular	•	•
By number of sides	•	•
Triangles	•	•
Quadrilaterals	•	•
Inscribed	•	•
Squares	•	•
Trapezoids	•	•
Parallelograms	•	•
Rhombuses	•	•
Rectangles	•	•
Pentagons	•	•
Hexagons	•	•
Understand regularity of polygons	•	•

Translate, rotate, and reflect polygons	•	•
Identify vertices of polygons	•	•
Draw diagonals of polygons	•	•
Circles		
Identify parts of circles	•	•
Radii and diameters	•	•
Use degree measures	•	•
Triangles		
Classify triangles	•	•
Right, obtuse, acute, scalene, isosceles, and equilateral	•	•
Find measures of angles	•	•
Geometric Solids		
Identify cylinders and prisms	•	•
Identify circular and right circular cones	•	•
Identify rectangular and square pyramids	•	•
Identify spheres	•	•
Perimeter and Circumference		
Compute perimeters of shapes	•	•
Define π	•	•
Compute circumferences	•	•
Circles	•	•
Semicircles	•	•
Area		
Find areas of polygons	•	•
Rectangles and squares	•	•
Triangles	•	•
Parallelograms and trapezoids	•	•
Find areas of complex shapes	•	•
Made of two or more polygons	•	•
Made of polygons and semicircles	•	•
Find areas of circles, sectors, and semicircles	•	•
Surface Area and Volume		

Find surface areas of geometric solids	•	•
Right circular cylinders	•	•
Triangular prisms and rectangular pyramids	•	•
Circular cones	•	•
Spheres	•	•
Complex shapes as the base	•	•
Find volumes of geometric solids	•	•
Right cylinders and prisms	•	•
Complex shapes as the base	•	•
Cones, pyramids, and spheres	•	•
Pythagorean Theorem		
Find side lengths	•	•
Graph points to find distance	•	•
Pythagorean triples		•
Geometry in art and architecture		
Identify one point perspective in famous paintings		•
Create one point perspective drawing		•
Identify top, front, side view of architectural drawing		•
Make a net (two-dimensional model) of the surface area of a solid		•
Tessellations and Fractals		•
Transformations		•
Calculus Fundamentals		
History of Calculus, Newton, Leibniz, definition		•
Infinity		•
Infinitesimal, Bernoulli, Euler		•
Limits		•
Derivatives		
Derivative means slope		•
Derivative of simple polynomials like $f(x) = x^2$		•
Integrals		
Summing area under a speed vs. time graph to find distance		•
Using upper rectangles to estimate area under a simple polynomial function		•

Ratios as rates		•
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