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AGA

Algebra 1 Geometry Algebra 2

Scope and Sequence

	Algebra 1	Geometry	Algebra 2
Number and Quantity			
The Real Number System (N-RN)			
Properties of exponents to rational exponents			
Properties of exponents	●		◇
Radical notation	●		◇
Properties of rational and irrational numbers			
Sum or product of (non-zero) rational number and irrational number	●		◇
Sum or product of two rational numbers	●		◇
Quantities (N-Q)			
Reasoning and units to solve			
Accuracy to limitation on measurement	●		
Data display	●		
Graphical display	●		
Interpret units in a formula	●		
Scale and origin in graph	●		
Units to solve multi-step problems	●		
The Complex Number System (N-CN)			
Arithmetic operations			
$a+bi$ form of a complex number, a and b real			●
Add complex numbers			●
Complex number i such that $i^2=-1$			●
Conjugate of complex numbers			●
Multiply complex numbers			●
Quotients of complex numbers			●
Subtract complex numbers			●
Complex plane			
Add geometrically			●
Conjugation geometrically			●
Midpoint of a segment			●
Multiply geometrically			●
Rectangular form			●
Subtract geometrically			●
Complex numbers in polynomial identities and equations			
Fundamental Theorem of Algebra			●
Polynomial identities to complex numbers			●
Quadratic equation with real coefficient(s) and complex solution(s)			●
Vector and Matrix Quantities (N-VM)			
Vector quantities			
Coordinates of initial point		●	

	Algebra 1	Geometry	Algebra 2
Coordinates of terminal point		●	
Directed line segment		●	
Direction		●	
Magnitude		●	
Vector components		●	
Vector symbols		●	
Algebra			
Seeing Structure in Expressions (A-SSE)			
Function concept and function notations			
Coefficient	●		◇
Factor	●		◇
Product in an expression	●		◇
Rewrite an expression	●		◇
Term	●		◇
Equivalent forms of expressions to solve problems			
Complete the square	●		◇
Equivalent form production	●		◇
Properties of exponents: exponential function transformation	●		◇
Properties of exponents: sum of a finite geometric series formula			●
Property of quantity explanation	●		◇
Quadratic factoring	●		◇
Arithmetic with Polynomials and Rational Expressions (A-APR)			
Arithmetic operations on polynomials			
Add polynomial expressions	●		◇
Multiply polynomial expressions	●		◇
Subtract polynomial expressions	●		◇
Zeros and factors of polynomials			
Factor to identify zeros			●
Graph construction			●
Remainder Theorem			●
Polynomial identities to solve problems			
Binomial Theorem			●
Polynomial identity proofs to describe numerical relationships			●
Rewrite rational expressions			
Add rational expressions			●
Computer algebra system			●
Divide rational expressions			●
Inspection			●

	Algebra 1	Geometry	Algebra 2
Long division			●
Multiply rational expressions			●
Rational expressions written in different forms			●
Subtract rational expressions			●
Create Equations (A-CED)			
Describe numbers or relationships			
Constraints by equations or inequalities	●		◇
Constraints by systems of equations or inequalities	●		◇
Equation in one variable	●		◇
Equation in two or more variables	●		◇
Exponential functions	●		◇
Formula rearrangement to solve for a quantity of interest	●		◇
Graph equations on coordinate axes	●		◇
Inequality in one variable	●		◇
Linear functions	●		◇
Quadratic functions	●		◇
Rational functions			●
Viable/non-viable solutions for modeling	●		◇
Reasoning with Equations and Inequalities (A-REI)			
Solving equations as a reasoning process			
Construct argument to justify solution method	●		◇
Explain reasoning	●		◇
Radical equation in one variable	●		◇
Rational equation in one variable			●
Solving equations and inequalities in one variable			
Coefficients as a letter	●		◇
Complex solutions			●
Factorization	●		◇
Linear equation	●		◇
Linear inequality	●		◇
Quadratic equation: by inspection	●		◇
Quadratic equation: complete the square	●		◇
Quadratic formula	●		◇
System of equations			
Algebraic solution (exact)	●		◇
Graphical solution (approximate)	●		◇
Solution for two equations in two variables	●		◇
System of one linear equation and one quadratic equation	●		◇

● Investigate and Analyze ◇ Apply and Extend

	Algebra 1	Geometry	Algebra 2
System of two linear equations	●		◇
Graphical solutions for equations and inequalities			
Absolute value function	●		◇
Approximate solution from graph	●		◇
Exponential function	●		◇
Graph on a coordinate plane	●		◇
Intersection(s) as solution(s	●		◇
Linear function	●		◇
Linear inequality solution as a half-plane	●		◇
Logarithmic function			●
Polynomial function	●		◇
Rational function			●
Solution set to a system of inequalities as intersection of corresponding half-planes	●		◇
Table of values	●		◇
Functions			
Interpreting Functions (F-IF)			
Function concept and function notations			
Element of the domain, *x*	●		◇
Element of the range, *f(x)*	●		◇
Function *f*	●		◇
Function notation	●		◇
Graph of *f* for equation *y=f(x)*	●		◇
Output of *f* corresponds to input *x*	●		◇
Sequence as a function	●		◇
Applications in context			
Average rate of change	●		◇
Domain as related to graph	●		◇
End behavior	●		◇
Graph key features	●		◇
Intercepts	●		◇
Interval behavior (increase, decrease)	●		◇
Periodicity			●
Relative maximum(s) and minimum(s)			●
Symmetry	●		◇
Table key features	●		◇
Function representation by graph			
Absolute value			●

	Algebra 1	Geometry	Algebra 2
Compare function represented graphically to algebraically	●		◇
Cube root	●		◇
Exponent properties	●		◇
Exponential	●		◇
Exponential growth or decay	●		◇
Graph key features	●		◇
Linear	●		◇
Logarithmic			●
Piecewise-defined			●
Polynomial	●		◇
Quadratic	●		◇
Quadratic function expressed factored, completing the square	●		◇
Rational			●
Square root	●		◇
Trigonometric			●
Building Functions (F-BF)			
Relationship between two quantities			
Arithmetic sequence	●		◇
Calculation from a context	●		◇
Combine function types arithmetically	●		◇
Compose function (composite)			●
Explicit expression	●		◇
Geometric sequence	●		◇
Recursive process	●		◇
New function from existing function			
Domain restriction to create invertible function			●
Even function	●		◇
Exponent and logarithm inverse relationship			●
Graph effect from change	●		◇
Inverse function expression	●		◇
Odd function	●		◇
Values of inverse function from graph or table	●		◇
Verify one function is inverse of another			●
Linear, Quadratic, and Exponential Models (F-LE)			
Construct and compare linear, quadratic, exponential models			
Constant percent growth or decay rate of change	●		◇

● Investigate and Analyze ◇ Apply and Extend

	Algebra 1	Geometry	Algebra 2
Constant rate of change	●		◇
Exponential function growth exceeds polynomial function growth	●		◇
Exponential model function growth	●		◇
Function construction from a graph, relationship description, input-output pairs (tables)	●		◇
Linear model function growth	●		◇
Parameter interpretation	●		◇
Trigonometric Functions (F-TF)			
Domain from unit circle			
Counterclockwise traversal around unit circle			●
Geometric determination of sine, cosine, tangent values of special triangles for π/6 , π/4 , π/3			●
Periodicity explained from unit circle			●
Radian measure as arc length subtended by an angle in unit circle			●
Sine, cosine, and tangent values for $\pi \pm x$, $2\pi - x$ from unit circle			●
Symmetry (odd and even) explained from unit circle			●
Unit circle in coordinate plane			●
Periodic phenomena			
Amplitude			●
Evaluate solution			●
Frequency			●
Interpret solution			●
Midline			●
Trigonometric identities			
Pythagorean identity proof			●
Pythagorean identity to find trigonometric value			●
Geometry			
Congruence (G-CO)			
Transformations in the plane			
Defined terms: angle, circle, perpendicular line, parallel line, line segment		●	
Definition of rotation, reflection, and translation		●	
Draw transformed figure		●	
Rotation and reflection		●	
Sequence of a transformation		●	
Transformation as a function		●	
Transformation representation		●	

	Algebra 1	Geometry	Algebra 2
Translation versus stretch		●	
Undefined terms: point, line, distance along a line, distance around a circular arc		●	
Rigid motion congruence			
Determine congruency		●	
Transform a figure		●	
Triangle congruency criteria (ASA, SAS, SSS)		●	
Prove geometric theorems			
Line and angle		●	
Parallelogram		●	
Triangle		●	
Geometric construction			
Compass		●	
Equilateral triangle, square, regular hexagon inscribed in a circle		●	
Paper folding		●	
Reflective devices		●	
Software		●	
Straightedge		●	
String		●	
Similarity, Right Triangles, Trigonometry (G-SRT)			
Similarity transformations			
AA triangle criterion		●	
Definition of similarity		●	
Dilation given center and scale factor		●	
Similar triangles		●	
Prove similarity theorems			
Geometric figure relationships		●	
Triangles		●	
Trigonometric ratios and right triangles			
Cosine as ratio of adjacent to hypotenuse		●	
Pythagorean Theorem		●	
Sine and cosine relationship		●	
Sine as ratio of opposite to hypotenuse		●	
Solve right triangles		●	
Tangent as ratio of opposite to adjacent		●	
Trigonometric ratio definitions for acute angles		●	
Trigonometry in general triangles			
Area formula		●	

● Investigate and Analyze ◇ Apply and Extend

	Algebra 1	Geometry	Algebra 2
Law of Cosines		●	
Law of Sines		●	
Non-right triangles		●	
Right triangles		●	
Circles (G-C)			
Circle theorems			
Angles of a quadrilateral inscribed in a circle		●	
Chords		●	
Circumscribed circle in a triangle		●	
Inscribed angle		●	
Inscribed circle in a triangle		●	
Radii		●	
Similarity		●	
Tangent line to a circle construction		●	
Arc length and area of sectors			
Arc length intercepted by an angle as ratio		●	
Area of a sector formula		●	
Radian measure		●	
Expressing Geometric Properties with Equations (G-GPE)			
Conic section equation and geometry			
Center		●	●
Complete the square		●	●
Directrix		●	●
Equation of a circle		●	●
Equation of a parabola		●	●
Focus		●	●
Radius		●	●
Algebraic proofs of geometric theorems			
Area computation, triangle and rectangle		●	
Coordinates		●	
Perimeter computation, polygon		●	
Segment partition for a given ratio		●	
Slope of parallel lines		●	
Slope of perpendicular lines		●	
Geometric Measurement and Dimension (G-GMD)			
Volume formulas			
Area of a circle		●	◇

	Algebra 1	Geometry	Algebra 2
Cavalieri's principle		●	
Circumference of a circle		●	◇
Problem solving		●	◇
Volume of a cone		●	◇
Volume of a cylinder		●	◇
Volume of a pyramid		●	◇
Volume of a sphere		●	◇
Two-dimensional and three-dimensional object relationships			
Cross-section of three-dimensional objects		●	◇
Rotation of two-dimensional object		●	◇
Modeling with Geometry (G-MG)			
Modeling situations			
Density based on area and volume		●	
Describe objects		●	
Design problem solutions		●	
Statistics and Probability			
Interpreting Categorical and Quantitative Data (S-ID)			
Single count or measurement variable			
Box plot	●		◇
Compare centers and spreads of data sets	●		◇
Dot plot	●		
Effects of outliers	●		◇
Estimate area under the normal curve	●		◇
Estimate population percentage	●		◇
Histogram	●		◇
Interpret shapes, centers, and spreads of data sets	●		◇
Normal distribution	●		◇
Two-way frequency table	●		◇
Two categorical and quantitative variables			
Fit a linear model to data	●		◇
Fit function to data (linear, quadratic, exponential)	●		◇
Plot and analyze residuals	●		◇
Recognize associations and trends	●		◇
Relative frequencies (joint, marginal, conditional)	●		◇
Scatter plot	●		◇
Interpret linear models			
Correlation and causation	●		◇

● Investigate and Analyze ◇ Apply and Extend

	Algebra 1	Geometry	Algebra 2
Correlation coefficient for a linear fit	●		◇
Intercept (constant term)	●		◇
Slope (rate of change)	●		◇
Making Inferences and Justifying Conclusions (S-IC)			
Random processes			
Inferences about a population			●
Model consistent with results			●
Sample surveys, experiments, and observational studies			
Compare a randomized experiment			●
Evaluate a report			●
Margin of error			●
Population mean or proportion			●
Randomization			●
Simulations			●
Conditional Probability and the Rules of Probability (S-CP)			
Independence and conditional probability			
Conditional probability			●
Independent and conditional probability			●
Independent probability determination			●
Sample space description			●
Two-way frequency table for probability			●
Union (or), intersection (and), complement (not)			●
Rules of probability			
Addition Rule of probability			●
Conditional probability of A given B as a fraction			●
Multiplication Rule of probability			●
Permutation and combination to compute probability of a compound event			●
Using Probability to Make Decisions			
Expected values			
Empirically assigned probability			●
Expected value of random variable			●
Graph probability distribution			●
Numerical value assigned to random variable			●
Theoretical probability			●
Evaluate outcomes			
Fair decision using probability			●
Probability concepts for decision-making			●

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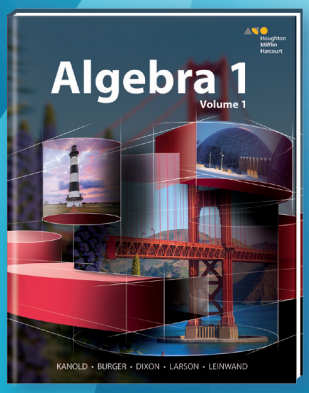

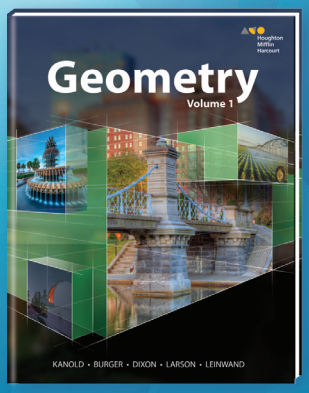

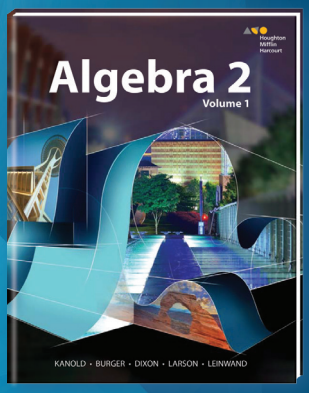

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