

**High School Math Department
Course Topics by Quarter**

Course	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Algebra 1	<ul style="list-style-type: none"> -Order of Operations -Combining Like Terms -Properties of Real Numbers -Introduction to Functions -Solving Linear Equations -Introduction to Inequalities <p>(N-Q.1)(N-Q.3)(A-CED.3)(F-IF.1-2)(F-IF.7)(F-LE.1)</p>	<ul style="list-style-type: none"> -Measures of Central Tendency -Graphing Linear Equations and Functions - Writing Linear Equations <p>(A-SSE.1)(A-RIE.10-11)</p>	<ul style="list-style-type: none"> -Systems of Linear Equations and Inequalities -Exponents and Exponential Functions -Polynomials and Factoring <p>(N-RN.2)(A-SSE.3)(A-APR.1-2)(A-REI.4-6)(A-RIE.12)(F-IF.7-8)(F-LE.1)(F-LE.3)(F-LE.5)</p>	<ul style="list-style-type: none"> -Quadratic Equations and Functions - Introduction to Rational Equations and Functions <p>((APR.7)(F-IF.7)</p>
Algebra 1A	<ul style="list-style-type: none"> -Operations on Integers -Operations on Fractions -Distributive Property -Exponents -Order of Operations <p>(N-Q.1)(N-Q.2)(N-Q.3)</p>	<ul style="list-style-type: none"> -Inverse Operations -Solving Equations (Simple and Multi-step) -Decimal Equations -Applications of Equations <p>(A-REI.1)(F-IF.1-2)</p>	<ul style="list-style-type: none"> -Introduction of functions -Graphing linear equations (multiple forms) -Intercepts -Slope -Writing Equations of lines in slope-intercept form <p>(A-REI.10-11)</p>	<ul style="list-style-type: none"> -Forms of linear equations -Graphing inequalities -Solving inequalities (Simple and Multi-step) -Applications of Inequalities -Introduction of Data Analysis <p>(A-REI.12)</p>

Algebra 1B	<ul style="list-style-type: none"> -Operations on Integers - Solving single and multi-step equations -Operations with exponents - Scientific Notation -Exponential Growth/Decay <p>(N-RN.2)(N-Q.1)(N-Q.3)(F-IF.7-8)(F-LE.1)(F-LE.3)(F-LE.5)</p>	<ul style="list-style-type: none"> -Graphing equations in $y=mx+b$ form -Solving Systems of Equations by Graphing, Substitution, and Elimination <p>(A-CED.3)(A-REI.5-6)(F-IF.7)</p>	<ul style="list-style-type: none"> -Operations with polynomials - Factoring - Graphing and Solving Quadratics <p>(A-SSE.1)(A-SS E.3)(A-APR.1-2)(A-REI.2)(A-REI.4)(F-IF.7-8)(F-LE.1)</p>	<ul style="list-style-type: none"> -Simplifying Rational Expressions - Simplifying and performing operations with radicals <p>(N-RN.2)(A-APR.7)(F-IF.7)</p>
Geometry	<ul style="list-style-type: none"> -Points, Lines, and Planes - Segment and Angle Bisectors -Angle Pair Relationships -Transformation s (Reflections, Rotations, Translations, Dilations, and Compositions) -Parallel Lines and Transversals -Perpendicular and Parallel Lines in Coordinate Plane <p>(N-Q.3)(G-CO.1-6)(G-CO.12)(G-SRT.1)G-GPE.4-7)</p>	<ul style="list-style-type: none"> -Conditional Statements -Inductive/Deductive Reasoning -Algebraic Proofs -Proving Triangles are congruent -Proving Statements about Segments and Angles - Quadrilaterals and their Properties <p>(A-REI.1)(G-CO.7-11)(G-CO.12)(G-GPE.4-7)</p>	<ul style="list-style-type: none"> -Area of Quadrilaterals - Similarity in Polygons -Proving Triangles are Similar -Properties and Segments in Triangles -Right Triangles - Pythagorean Thm - Trig Ratios -Vectors <p>(N-VM.1)(N-VM.2)(N-VM.3)(N-VM.4)(G-CO.12)(G-SRT.1-3)(G-SRT.6-8)(G-GPE.4-7)</p>	<ul style="list-style-type: none"> -Tangents, Arcs, and Chords in Circles - Angle and Segment Relationships in Circles -Equation of Circles - Area of Polygons and Circles -Arc Length / Sector Area -Surface Area and Volume of 3-D Objects <p>(G-CO.12-13)(G-C.1-5)(G-GPE.4-7)(G-GMD.1-4)(G-MG.1-3)</p>

<p>Applied Geometry</p>	<ul style="list-style-type: none"> -Finding and Describing Patterns -Inductive Reasoning -Points, Lines, Planes -Intersections -Segments & Their Measure -Angles & Their Measure -Segment Bisectors -Angle Bisectors -Complementary & Supplementary -Vertical angles -If-then statements & Deductive Reasoning -Properties of Equality & Congruence -Relationships between lines -Thms about Perp. Lines -Angles formed by transversals -Parallel Lines & Transversals <p>(N-Q.3)(A-REI.1)(G-CO.1)(G-CO.2)(G-CO.12)(G-GPE.4-7)</p>	<ul style="list-style-type: none"> -Showing Lines are Parallel -Classifying Triangles -Angle measures in triangles -Isosceles & Equilateral Triangles -Pyth. Thm -Distance formula -Converse of Pyth. Thm -Medians of triangles -Triangle inequalities -Congruence & Triangles -SSS, SAS, ASA, AAS, HL -Using congruent triangles -Angle Bisectors and Perp. bisectors -translations, reflections, symmetry <p>(G-CO.1)(G-CO.2)(G-CO.3)(G-CO.7-8)(G-CO.10)(G-CO.12)(G-SRT.4-5)(G-GPE.4-7)</p>	<ul style="list-style-type: none"> -Polygons -parallelograms -showing quadrilaterals are parallelograms -Rhombus, Rectangle, square -trapezoids -reasoning with quads. -ratio & proportion -similar polygons -AA, SSS, & SAS Similarity -Proportions of similar triangles -Dilations <p>(N-Q.2)(G-CO.2)(G-CO.3)(G-CO.12)(G-SRT.1-8)(G-GPE.4-7)</p>	<ul style="list-style-type: none"> -Classifying Polygons -Angles of polygons -Area of polygons -Circumference & area of circles -solid figures -surface area and volume of prisms, cylinders, pyramids, cones and spheres -Simplifying roots -45-45-90 triangles -30-60-90 triangles -tangent, sine and cosine ratios -solving right triangles <p>(G-CO.2)(G-CO.12)(G-CO.6-8)(G-GPE.4-7)(G-GMD.1)(G-GMD.3)(G-MG.1-3)</p>
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Algebra 2	<ul style="list-style-type: none"> -Introduction to functions -Solving equations and systems of equations -Linear functions review -Systems of linear inequalities and linear programming -Begin matrices (N-Q.3)(A-CED.3)(A-REI.1-12)(F-IF.1-2)(F-IF.4-5)(F-IF.7-8)(F-BF.3)(S-ID.6) 	<ul style="list-style-type: none"> -Solving systems with matrices -Quadratic Functions -Solving quadratic equations using various methods -Graphing quadratics -Radical properties -Imaginary numbers and their properties (N-CN.1)(N-CN.2)(N-CN.5)(N-V.M.6-10)(A-SSE.3)(A-REI.4)(A-REI.8-9)(F-IF.7-8)(F-BF.3)(S-SRT.4-5) 	<ul style="list-style-type: none"> -Conic sections: graphs and equations -Polynomial functions: graphs and operations -Inverse functions -Rational Root Test (N-RN.3) -Solving polynomials for all solutions -Fundamental Thm of Algebra (N-CN.7)(N-CN.8)(N-CN.9)(A-SS.1)(A-APR.1-3)(A-APR.4)(A-REI.2)(F-IF.7-8)(F-BF.1)(F-BF.4)(F-LE.2)(G-SRT.4-5)(G-GPE.2-3) 	<ul style="list-style-type: none"> -Exponential Functions -Modeling growth and decay -Logarithmic Functions and modeling -Solving and graphing logs and exponentials -Rationals (N-RN.1, N-RN.2) -Solving and graphing rational functions (A-APR.7)(F-IF.7-8)(F-BF.5)(F-LE.4)
Statistics	N/A	N/A	<ul style="list-style-type: none"> -Types of data/statistical studies -Random Samples with Survey/Experimental Design -Visually Representing Data (Bar Graph, pie chart, time plot, histogram, frequency distributions, stem-and-leaf displays) - Measures of Central Tendency -Measures of Variation 	<ul style="list-style-type: none"> -Paired Data and Scatter Diagrams -Linear Regression -Linear Correlation - Probability -Probability with Compound Events -Trees -Permutations and Combinations (N-Q.2)(S-ID.3)(S-ID.6-9)(S-IC.3-6)(S-CP.1-9)(S-MD.1-4)(S-MD.1-7)

			- Percentiles/Box and Whisker Plots (N-Q.2)(S-ID.1-2)(S-ID.5)(S-IC.1- 2)	
Trigonometry	-Pythagorean Thm -Special Right Triangles -The Six Trig functions -Basic Trig Identities -Angles on the coordinate plane -DD vs. DMS -Even and Odd Trig Functions -The Unit Circle -Radians and Degrees (N-Q.3)(F-TF.1- 4)(F-TF.8-9)	-Arc length and sector area -Linear and angular velocities -All trig identities (applications, proofs, evaluation) -Trig inverses -Solving trigonometric equations (F-TF.1-4)(F-TF. 8-9)	-Graphs of trig functions and their shifts -Graphs of inverse trig functions -Law of Sines -Law of Cosines and the ambiguous case -Solving all triangles -Vectors -Applications of vectors to college statics and engineering (F-TF.1-4)(F-TF. 5-7)(G-SRT.9-11)	-Complex Numbers and Trigonometric Form (Compute all operations) -Roots of complex numbers -Polar Coordinates -Graphs of Polar Coordinates -Extensions of trigonometry into engineering -Using matrices to rotate and reflect (N-CN.1)(N-CN. 2)(N-CN.3)(N-C N.4)(F-TF.1-4)(N -VM.12)

<p>Pre-Calculus</p>	<ul style="list-style-type: none"> -Review: Cartesian Plane, graphs of equations, & solving equations -Lines in the plane -Functions -graphs of functions - shifting, reflecting, and stretching graphs -Combinations of functions -Inverse Functions -Quadratic Functions -Polynomial Functions of Higher Degree -Polynomial Functions of higher degree -Real zeros -Complex numbers -Fund Thm of Alg -Rational functions & asymptotes -Exponential Functions -Logarithmic Functions <p>(N-Q.3)(N-CN.1)(N-CN.2)(A-SSE.3)(A-APR.1-3)(A-APR.6)(A-REI.4-6)(F-IF.7)(F-BF.1)(F-BF.3-4)</p>	<ul style="list-style-type: none"> -Properties of Logs - Solving exponential & log equations - Exponential & log Models - Nonlinear models -Radians & Degree measure -The unit circle -Right Triangle Trig. -Trig. Functions of any angle -Graphs of Sine, Cosine, & other trig functions -Inverse Trig functions <p>(F-IF.4)(F-IF.7-8)(F-BF.3)(F-BF.5)(F-LE.4)(F-TF.1-4)(F-TF.5-7)(F-TF.8-9)(S-ID.4)</p>	<ul style="list-style-type: none"> -Using Fundamental Trig Identities -Verifying Trig identities -Solving trig equations -Sum & Difference Formulas -Multiple-Angle and Product-to-Sum formulas -Law of Sines -Law of Cosines - Vectors in a Plane -Trig. Form of complex numbers -Linear systems of equations -Solving linear equations in two variables -Multivariable linear systems -Matrices & systems -Operations with matrices <p>(N-CN.3)(N-CN.4)(N-CN.6)(N-VM.1-5)(A-APR.4)(F-IF.7)(F-TF.1-4)(F-TF.5-7)(F-TF.8-9)(G-SRT.9-11)</p>	<ul style="list-style-type: none"> -Inverse of a square matrix -determinant of square matrix -Applications of matrices & determinants -Sequences & Series -Arithmetic & Geometric Sequences & Series -Binomial Thm -Counting principles -Probability -Circles & Parabolas -Ellipses -Hyperbolas -Parametric Equations -Polar Coordinates & graphs -Intro to limits -Evaluating limits <p>(N-VM.6-12)(A-SSE.4)(A-APR.5)(A-REI.8-9)(F-IF.3)(F-IF.7)(F-BF.2)(F-BF.3)(G-GPE.1)(G-GPE.2-3)(S-CP.1-3,6-9)</p>
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Calculus	-Functions, Trigonometric, Parametrics, Exponentials, and Logarithm Review -Finding limits -Limits and Continuity -EVT -IVT -Slopes at points -Tangent and normals to curves -Derivative by definition (N-Q.3)(F-IF.6)(F-IF.7)(F-BF.1)	-Derivatives by product rule, sum rule, quotient rules -Derivatives of Trig Functions -Application to Tangent Lines -Chain Rule -Implicit Differentiation -Derivatives of Inverse Trig Functions -Derivatives of Exponential Functions -Related Rates Applications of Derivatives -L'Hopital's Rule (F-IF.4)(F-IF.6)(F-BF.2)	-Graphs of Derivatives and Second Derivatives and their relation -First and Second Derivative Tests -Approximation and Newton's Method (Linearization) -Concavity -Riemann Sums -Trapezoidal and Simpson's Approximation -The definite integral and the Fundamental Theorem of Calculus (F-IF.4)(G-GMD.4)	-Integration of indefinite integrals -Substitution -Integration by Parts -Differentials and applications -Pumping and accumulation applications -AP Prep (G-GMD.4)
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Standards that hit every quarter:

A-SSE.2
 A-CED.1-2
 A-CED.4
 A-REI.3
 F-IF.9
 F-BF.1
 S-ID.7

Missed Standards:

N-VM.12