

High School Mathematics

Level/Course	Quarter 1	Quarter 2	Quarter 3	Quarter 4
<p>Geometry</p>	<p>Content: Basics of Geometry, Reasoning and Logic, Parallel and Perpendicular Lines</p> <p>Skills: constructing proofs through reviewing basics of geometry, proving lines parallel and perpendicular, understanding and constructing logic statements</p>	<p>Content: Triangles and Transformations</p> <p>Skills: solving for missing angles and sides of triangles using trigonometric principals, understanding and applying principals of transformations with various geometric shapes</p>	<p>Content: Quadrilaterals and Circles</p> <p>Skills: solving for measurements in circles and quadrilaterals using properties of exterior angles, diagonals, arcs, chords and tangents; using inscribed angles to solve problems; graphing circles by using the equation of a circle</p>	<p>Content: Surface Area and Volume</p> <p>Skills: calculating the circumference and area of a circle, length of a circular arc, and area of a sector; applying Euler's theorem to real-life situations; deriving formulas for calculating the total surface area and volume of prisms, cylinders, pyramids, cones and spheres; finding and using the scale factor of similar solids</p>
<p>Algebra 2</p>	<p>Content: Equations and Inequalities, Linear Equations and Functions, Systems of Equations</p> <p>Skills: understanding basic notation and terminology of real numbers; applying basic algebraic properties; modeling and solving linear equations; identifying properties of lines and inequalities; modeling, graphing and solving systems of equations</p>	<p>Content: Systems of Equations and Matrices, Quadratic Functions and Factoring, Polynomials and Polynomial Functions</p> <p>Skills: modeling, graphing and solving systems of equations using matrix methods; modeling, graphing and solving quadratic function; demonstrating mastery of factoring methods; expanding on the application of zeros on higher order polynomials; trying additional factoring methods (division)</p>	<p>Content: Functions With Rationals and Radicals, Exponential and Logarithmic Functions, Trigonometric Ratios and Functions</p> <p>Skills: modeling, graphing, and solving radical/root expressions/ functions; modeling, graphing (including transformations); understanding power, combination, and composite functions; modeling, graphing, and solving exponential and logarithmic functions; modeling, graphing, and solving triangular trigonometric functions and sine/cosine laws</p>	<p>Content: Trigonometric Waves and Equations, Rational Functions, Conic Sections</p> <p>Skills: modeling, graphing, and solving trigonometric wave functions (special attention to unit circle); modeling, graphing, and solving rational functions, identifying asymptotic behavior; identifying conic sections and functions of the form of quadratics/circles/ellipses (mastery of distance and midpoint formulae)</p>
<p>Pre-calculus</p>	<p>Content: Functions and Graphs, Polynomial and Rational Functions</p> <p>Skills: sketching basic 12 functions combining with 7 main elements (intercepts, symmetry, even/odd, asymptotes, increasing/decreasing, continuity and domain/range); graphing</p>	<p>Content: Exponential, Logistic and Logarithmic Functions; Multivariate Linear System and Matrices</p> <p>Skills: answering problem-solving questions with exponential/logistic/ logarithmic models, solving systems with multiple variables by Gaussian, REF and RREF both by hand and by graphing</p>	<p>Content: Trigonometric Functions and Analytic Geometry.</p> <p>Skills: evaluating and graphing basic trigonometric functions by hand using a right triangles or unit circle and doing problem solving questions using trigonometry; writing sinusoidal models</p>	<p>Content: Applications of Trigonometry, Discrete Mathematics and Analytic Mathematics</p> <p>Skills: using the basic trigonometric angles, using vectors and bearings to solve real life problems, converting between rectangular and polar forms, solving problems using arithmetic or</p>

	polynomial and rational functions by finding zeros, end behavior, and turning points; applying these to the problem solving questions	calculator	using actual data, understanding and graphing the inverse trigonometric functions. Verifying trigonometric identities and solving trigonometric equations.	geometric sequences and probabilities, writing a series in sigma notation, using the binomial theorem to expand powers of binomials, graphing conics given an equation or other major points, sketching curves given parametric equations and eliminating the parameter.
Statistics	<p>Content: Data Distributions</p> <p>Skills: describing distributions with numerical summaries and graphs, comparing distributions</p>	<p>Content: Correlation, Sampling and Experiments</p> <p>Skills: forming questions, drawing conclusions, and making judgments based on correlation, sampling, and designing statistical experiments</p>	<p>Content: Probability</p> <p>Skills: calculating the probability of simple and compound events, understanding and applying basic probability rules</p>	<p>Content: Inference</p> <p>Skills: making formal statistical conclusions about a larger group from a smaller sample, indicating the confidence interval and significance of the conclusion.</p>
Calculus	<p>Content: Limits and Continuity, The Derivatives</p> <p>Skills: finding limits using 3 approaches (algebraic, numerical, graphical), applying basic rules to differentiate, solving the rate of change problems, differentiating between average rate of change and instantaneous rate of change, understanding and applying derivative techniques (product, quotient, chain rules)</p>	<p>Content: The Derivative In Graphing and Applications; Exponential, Logarithmic and Inverse Trigonometric Functions</p> <p>Skills: differentiating between implicit and explicit form, applying the four-step implicit differentiation process to solve real world problems (related rate), differentiating and integrating exponential/logarithmic functions, sketching $f(x)$ given the graph of $f(x)$ or vice versa</p>	<p>Content: Integration, Applications of Definite Integrals</p> <p>Skills: observing the relationship between derivatives and anti-derivatives; using integrate tests to analyze function behavior; developing techniques to solve problems like greatest profit, least cost, and greatest distances</p>	<p>Content: Integral Evaluation, Integral Techniques</p> <p>Skills: evaluating indefinite and definite integrals, applying the fundamental theorem of calculus to find areas and volumes of solids of revolution, using “u” substitution, integrating by parts or partial fractions for integration</p>
AP Statistics	<p>Content: Univariate Distributions, Relationships Between Variables</p> <p>Skills: describing distributions with numerical summaries and graphs, comparing distributions, estimating probabilities from normal distributions, modeling relationships between two quantitative variables</p>	<p>Content: Sample and Experimental Design, Sampling Distributions, Probability</p> <p>Skills: understanding sound sample and experimental design, understanding and using sampling distributions to describe variability, calculating basic probability</p>	<p>Content: Probability Distributions, Inference for Proportions and Means</p> <p>Skills: understanding and applying basic probability rules, making estimates based on sampling distributions, using sampling distributions to test claims</p>	<p>Content: Chi-Squared Tests, Inference for Regression, Exam Review</p> <p>Skills: using Chi-squared procedures to test claims about categorical variables, using inference procedures with linear models, reviewing for AP exam</p>

<p>AP Calculus AB</p>	<p>Content: Prerequisites for Calculus, Limits and Continuity, Derivatives</p> <p>Skills: modeling, graphing and solving 12 basic functions; exploring and solving limits of functions; developing basic derivatives of functions</p>	<p>Content: Derivatives, Applications of Derivatives</p> <p>Skills: developing and mastering derivatives of functions, developing and mastering derivative applications</p>	<p>Content: The Definite Integral, Differential Equations and Mathematical Modeling, Applications of Definite Integrals</p> <p>Skills: developing and mastering basic integration of derivative functions, modeling of differentials, developing and mastering integration applications</p>	<p>Content: Exam Review, Practice Examinations, Overview of BC Concepts</p> <p>Skills: reviewing College Board Curriculum; completing various practice exam items; mastering derivatives, integration, fundamental calculus theorems; previewing BC concepts</p>
<p>AP Calculus BC</p>	<p>Content: Differential Equations, Application of Integration, Sequences</p> <p>Skills: using numerical methods to estimate solutions of differential equations, calculating arc length and surface area, calculating work with non-constant force, working with sequences</p>	<p>Content: Improper Integrals, Power Series</p> <p>Skills: evaluating improper integrals, using convergence tests for series, representing functions with Taylor series</p>	<p>Content: Parametric, Vectors, Polar</p> <p>Skills: finding and interpreting derivatives and integrals of parametrically defined functions, using vectors, finding and interpreting derivatives and integrals using polar coordinates</p>	<p>Content: Calculus AB Review, Practice Exam</p> <p>Skills: understanding and applying the following: limits, derivative, indefinite and definite integrals, related rates, minimum and maximum problems, mean value theorem, first and second fundamental theorems of calculus; preparing for AP exam</p>