



Algebra II Year at a Glance

| Grading Period | Unit Title | Learning Targets |
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| Throughout the School Year | | <ul style="list-style-type: none">*Apply mathematics to problems in everyday life*Use a problem-solving model that incorporates analyzing information, formulating a plan, determining a solution, justifying the solution and evaluating the reasonableness of the solution*Select tools to solve problems*Communicate mathematical ideas, reasoning and their implications using multiple representations*Create and use representations to organize, record and communicate mathematical ideas*Analyze mathematical relationships to connect and communicate mathematical ideas*Display, explain and justify mathematical ideas and arguments |
| First Grading Period | Equations and Inequalities | order of operations; classification and properties of real numbers; solve linear equations and inequalities in one variable including applications; compound and absolute value inequalities, including interval notation |
| | Linear Relations and Functions | function notation, including domain and range; graph linear functions from various situations; identify key points on a linear graph; slope; write linear equations from given information; slope-intercept form, point-slope form, standard form; writing lines of best fit using a calculator; piecewise-defined functions; graphing absolute value equations and inequalities using transformations |

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| Second Grading Period | Systems of Equations and Inequalities | solve systems of equations algebraically (<u>PreAP only</u> : systems with three variables); solve systems of linear and absolute value inequalities by graphing; linear programming; solve and classify systems of three equations including applications; matrix operations; use matrices to solve systems of equations with a graphing calculator |
| | Quadratic Functions and Relations | graph quadratic functions from various forms; identify key features of parabolas; solve quadratic equations using various methods (factoring, graphing, completing the square, quadratic formula) including applications; perform operations with complex numbers; discriminant; solve systems of linear and quadratic equations; solve quadratic inequalities |
| Third Grading Period | Polynomials and Polynomial Functions | properties of exponents; operations on polynomials, including synthetic division; degree of polynomials; evaluate polynomials; solve polynomial equations using various methods (factoring, synthetic division, graphing, graphing calculator) including applications; Remainder Theorem; Factor Theorem; Fundamental Theorem of Algebra; Rational Root Theorem; Complex Conjugate Theorem; write polynomial functions given their roots; graph polynomial functions; identify increasing and decreasing intervals |
| | Inverses and Radical Functions and Relations | combine functions using operations and composition; write function inverses; verify inverses through composition; graph square root and cubed root functions by transformation; rationalize denominators; operations on radical expressions; rational exponents; solve radical equations and inequalities, including domain restrictions |
| Fourth Grading Period | Exponential and Logarithmic Functions and Relations | graph exponential growth and decay functions by transformation; exponential and quadratic regressions on the calculator; solve exponential and logarithmic functions using various methods, including applications and domain restrictions; compound interest; evaluate logarithmic expressions; properties of logarithms; graph logarithmic functions using transformations; Change of Base formula; natural base (e) and natural logarithm including applications |
| | Rational Functions and Relations | identify domain restrictions for rational functions; operations on rational functions including complex fractions; graph rational and reciprocal functions; solve rational equations and inequalities including applications; direct, inverse, joint, combined variation |

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| | Sequences and Series | arithmetic and geometric sequences and series including summation notation and infinite geometric series |
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