Mathematics for College Algebra

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| Quarter  | Week | Major Concepts/Topics | Resources1 | Standard(s) |
| Qtr 1 | Aug 12 - 19 | **Equations Review** (preparing for standard/slope-intercept form)* Multi-step (combining like terms/distributive property)
* Variables on both sides
* Literal equations (solve for specified variable)
 | 3.2\*3.5 | MA.912.AR.2.5MA.912.AR.1.2 |
| Aug 22 – 26Aug 29 – Sep 2Sep 6 - 16 | **Graphs and Functions*** Ordered pairs and graphs
* Equations in two variables (graph, intercepts, symmetry)
* Relations and functions, function notation, vertical line test, domain, range, increasing, decreasing, even, odd, step, piece-wise, absolute value
* Slope, slope-intercept form, parallel, perpendicular
* Point-slope form, equations (through 2 points, parallel and perpendicular, horizontal and vertical), writing function, rate of change
* Linear inequalities review
* Absolute value equations and inequalites
* Graph linear inequalities
 | 4.1\*4.2\*4.34.44.53.6\*3.74.7\* | MA.912.AR.2.4MA.912.F.2.5MA.912.AR.2.5MA.912.AR.3.7MA.912.AR.4.4MA.912.AR.9.10MA.912.F.1.2MA.912.AR.1.2MA.912.F.1.3MA.912.F.1.6MA.912.AR.4.2MA.912.AR.9.4MA.912.AR.9.6 |
| Sep 19 – 23Sep 26 – Sep 30Oct 3 – 7 | **Exponents and Polynomials*** Integer exponents (rules of exponents, zero, negative, using rules of exponents)
* Adding and subtracting polynomials (degrees, leading coefficients, adding horizontally/vertically, subtracting horizontally/vertically, combining polynomials)
* Multiplying polynomials: special products (monomials, binomials using FOIL/Distributive Property, simplifying, multiplying polynomials horizontally/ vertically, raising to power, special products)
* Dividing polynomials and synthetic division (dividing by monomial, long division, synthetic division
 | 5.15.25.35.4 | MA.912.NSO.1.2MA.912.AR.1.3MA.912.F.3.2MA.912.AR.1.5 |
| Qtr 2 | Oct 10 – 19Oct 20 - 28 | **Solving Polynomial Equations*** Factoring polynomials review (monomials, grouping, trinomials, specials forms)
* Solving polynomials equations by factoring (zero product property, solving by factoring, repeated solution, higher-degree equations, four factors)
 | 6.1-6.4\*6.5 | MA.912.AR.3.8 |
| Oct 31 – Nov 11Nov 14 – 18Nov 28 – Dec 16 | **Rational Expressions, Equations and Functions*** Rational expressions and functions (definitions, domain, simplifying, change in sign, two-variables)
* Multiplying and dividing rational expressions
* Adding and subtracting rational expressions (like denominators, unlike denominators, least common multiplies, combining)
* Solving rational expressions (constant denominators, variable denominators, no solution, cross-multiplying, two solutions
* Graphing rational functions (vertical/horizontal asymptotes, sketching graph)
 | 7.17.27.37.57.6 | MA.912.F.1.2MA.912.AR.1.9MA.912.AR.8.1 |
| Qtr 3 | Jan 4 – 13Jan 17-20Jan 23-27 | **Systems of Equations and Inequalities*** Solving systems of equations by graphing and substitution (checking solutions, graphing, infinitely many solutions, no solution, substitution)
* Solving systems of equations by elimination (elimination, no solution, infinitely many solutions)
* Systems of linear inequalities (graphing system, finding boundaries)
 | 8.18.28.6 | MA.912.AR.9.6MA.912.AR.9.4 |
| Jan 30 – Feb 3Feb 6 - 10 | **Radical and Complex Numbers*** Radicals and rational exponents (nth roots, inverses of nth roots, rational exponents, evaluating expressions with rational exponents, evaluating radical functions, domain, approximating square roots, graphing square root and cube root functions)
* Simplifying radical expressions (simplifying, rationalizing denominator, distance formula)
* Radical Equations (solving one radicand, two radicands, converts to quadratic, repeated squaring each side)
 | 9.19.2\*9.5 | MA.912.F.1.2MA.912.NSO.1.1MA.912.NSO.1.2MA.912.NSO.1.3MA.912.AR.7.1 |
| Feb 13 – 17Feb 21 – 24 Feb 28 – Mar 3 Mar 6 – 10  | **Quadratic Equations, Functions and Inequalities*** Solving quadratic equations (factoring, square root property, quadratic form)
* Quadratic Formula (two distinct solutions, repeated solution, no solution – complex, discriminant, writing equations from solutions, reverse of zero-factor property)
* Graphs of quadratic equations (standard form, vertex using formula, zeroes of a function, sketching parabola, writing equation of parabola, properties of quadratic functions)
* Applications of quadratic equations
* Quadratic and rational inequalities (test intervals)
 | 10.110.310.410.510.6 | MA.912.AR.3.8MA.912.AR.3.7MA.912.F.1.2 |
| Qtr 4 | Mar 13 – 17Mar 27 – 31 Apr 3 - 6Apr 10 - 14 | **Exponential and Logarithmic Functions*** Exponential functions (definition, rules, evaluating, graphing, transformations, reflections, natural exponential function
* Composite and inverse functions (definition, composition of two functions, comparing compositions of functions, domain/range, inverse, horizontal line test, inverse function algebraically, graphing inverse functions, verifying inverse functions graphically)
* Logarithmic functions (definition, evaluating logarithms, properties, common logarithms, graphing logarithmic function, natural logarithmic functions, properties of natural logarithms, graphing natural logarithmic function, change of base)
* Properties of logarithms (properties, expanding, condensing)
* Solving exponential and logarithmic equations (one-to-one properties, inverse properties, checking for extraneous solutions)
* Applications
 | 11.111.211.311.411.511.6 | MA.912.AR.5.4MA.912.AR.5.6MA.912.AR.5.7MA.912.F.1.2MA.912.F.1.6MA.912.F.3.4MA.912.F.3.6MA.912.F.3.7MA.912.AR.5.8MA.912.AR.5.9MA.912.NSO.1.6MA.912.AR.5.2MA.912.NSO.1.7 |
| Apr 17 – 21Apr 24 - 28  | **Transformations and Combinations of Functions*** Shifting graphs, writing equations from graphs
* Reflecting graphs and writing equations from graphs
* Nonrigid transformations
* Arithmetic combinations of functions
* Determining a function type
 | Appendix B | MA.912.AR.1.3MA.912.F.1.1MA.912.F.2.1MA.912.F.2.2MA.912.F.2.3MA.912.F.2.4MA.912.F.2.5MA.912.F.3.2 |
|  | May 1 – 5May 8 – 12May 15 – 19 | **Conics*** Circles and parabolas (conic sections, standard equation of circle centered at origin, writing equation of circle, sketching circle, standard equation of circle not centered at origin, writing equation of circle, standard equation of parabola, writing equation of parabola, sketching parabola)
* Ellipses (standard equation of ellipse centered at origin, writing equation of ellipse, sketching ellipse, standard equation of ellipse not centered at origin, writing equation, sketching ellipse, semielliptical archway)
* Hyperbolas (standard equation of hyperbola centered at origin, sketching hyperbola, writing equation for hyperbola, standard equation for hyperbola not centered at origin, sketching hyperbola)
* Solving nonlinear systems of equations (graphically, substitution, no solution, elimination)
 | 12.112.212.312.4 | MA.912.AR.1.2MA.912.AR.3.7MA.912.AR.9.6 |

1 Resources listed are from Larson’s *College Prep Algebra, Florida edition, 2e Update* (2022). Other supplemental resources may be utilized as needed.

\* Not part of the standards for this course but needed for review (preparing for standards)