**Algebra 2 CC 2019-2020 Course Outline**

**1st Day Activities – Info Sheet, Policies, etc., Index card Activity**

1. **Functions**
   1. **Essential Skills - Functions and Relations, vocabulary intro, parent functions; set notation**
   2. **Domain and Range – Cut and paste Do Now; restricted domains**

**Function Notation – evaluating functions, compositions**

* 1. **Inverse Functions – one-to-one , inverse graphically, compositions, algebraically**
  2. **Apps**
  3. **Quest (and Lesson 2-1)**

1. **Linear Functions**

* 1. **Essential Skills, evaluate algebraic expressions (do now – add store feature from calculator), solve equations in one variable (inconsistent – no solutions and identity) average rate of change graphs and tables (slope formula)**
  2. **Linear Equation –do now – - put into “ y = “ form , have students find x and y intercept, positive vs. negative portion from the graph, equation from graph (both forms), relate direct variation; slope-intercept form, point-slope form; write equations of a line given 2 points, etc.**
  3. **Absolute Value and Piecewise Functions Graphically – Do Now – graph inverse linear functions graphically**
  4. **Linear Equations Algebraically – Do Now – graph systems of linear-absolute equations and inequalities; solve absolute value equations from do now; solve absolute value inequalities algebraically**
  5. **System of linear equations in 2 variables –algebraically-substitution and elimination, word problems; System of linear equations in 3 variable using elimination and substitution**
  6. **Apps**
  7. **Test**

1. **Exponential  and Logarithmic Functions**

* 1. **Essential Skills – Exponent Rules (include negative and rational exponents) - hand out reference sheet**

**Exponential Growth and Decay – equations and graphs, domain, range, incr/dec, pos, neg, application problems**

* 1. **Interest and Mortgage Problems and Discovering e – formula from sheet ; Solving using a common base**

**HW: graph log equations, pos/neg, domain/range, etc.**

* 1. **Intro to Logs and Log Properties**
  2. **Solving Log Equations**
  3. **Apps – Newton’s Law of Cooling**
  4. **Test**

1. **Sequences and Series**

* 1. **Essential Skills – Identify as arithmetic or geometric, simple arithmetic and geometric equations using formula sheet**
  2. **Arithmetic and Geometric Sequences – relate to linear and exponential functions**
  3. **Recursive Sequences – Write explicit formulas from recursive**
  4. **Arithmetic and Geometric Series – include mortgage payment**

**Summation Notation and review**

* 1. **Apps**
  2. **Test**

1. **Quadratics**

* 1. **Essential Skills – Do Now – quadratic formula from reference sheet; Factoring ( GCF, DOPS, Trinomials with a=1) Polynomial identities involving factoring**
  2. **Factoring Trinomials (a>1) and Factoring by Grouping**
  3. **Solve Quadratic Equations using “zero product law” and Quadratic Formula (do now – simply radicals) Modeling Quadratics (do now- solve graphically)**
  4. **Solve Quadratic Inequalities – algebraically and graphically (1 root versus 2)**
  5. **Completing the Square and Review Circle Equation (center-radius and standard)**
  6. **Vertex Form of a Quadratic – graphically and algebraically**
  7. **Locus Definition of a parabola – focus and directrix**
  8. **Systems of Equations – linear-quadratic-circle – graphically and algebraically**
  9. **Apps (include modeling)**
  10. **Test**

1. **Radical Functions and Complex Numbers**

* 1. **Essential Skills – Square root functions and graphs – max/min, inc/dec, etc; Fractional Exponents to radicals**
  2. **Solving radical equations graphically and algebraically (include system of equations)**
  3. **Complex Numbers Operations including Powers of i**

**Quadratic Formula with complex roots**

* 1. **Apps**

1. **Transformations**

* 1. **Essential Skills – parent functions and shifting functions**

**Reflecting functions; Even and Odd Functions**

* 1. **Vertical stretching and Compressing**

**Horizontal stretching and compressing**

* 1. **Apps**
  2. **Test**

1. **Power Functions**
   1. **Essential Skills – Characteristics of Power Functions – end behavior, odd/even, etc, Fundamental Theorem of Algebra**
   2. **Solving Graphically and Algebraically**
   3. **Factored Form of Polynomial**
   4. **Polynomial Identities (Do Now – big review)**
   5. **Rational Functions – undefined values/restricted domains and simplify**

**Multiply Divide Rational Functions**

* 1. **Add and Subtract Rational Functions**
  2. **All Operations**
  3. **Polynomial Long Division (connection with 0 remainder and factored form)**
  4. **Polynomial Long Division with remainder**
  5. **Remainder Theorem**
  6. **Solving Fractional Equations**
  7. **Solving Inequalities**
  8. **Apps**
  9. **Test**

1. **Trigonometry**
   1. **Essential Skills –Angles in standard position (reference, co-terminal – degrees)**
   2. **Radian Measure and arc length**
   3. **Unit Circle and Review SOH CAH TOA in Do Now**

**Special right triangles and exact values**

* 1. **Evaluate sin and cos and Pythagorean identity**
  2. **Graphing Sine and Cosine**

**Transformations of sine and cosine**

* 1. **Modeling sine and cosine**
  2. **Tangent – quotient identity**
  3. **Apps**
  4. **Test**

**10. Probability**

1. **Essential Skills - Theoretical vs. empirical; Tree Diagrams, frequency tables,**
2. **Set Theory and Adding – union, intersection, vocab**
3. **Conditional Probability, independent vs dependent events, Venn diagrams**
4. **Multiplying – with and without replacement**
5. **Apps**

**11. Statistics**

1. **Essential Skills – Measures of Central Tendency and Dispersion, Categorizing Data**
2. **Variability and Population Parameters**
3. **Normal Distribution and Z scores**
4. **Sample Means and Proportions – confidence intervals; difference of sample means**
5. **Regressions and Scatter Plots – margin of error**
6. **Apps/Quiz**

**Algebra 2 Common Core Regents**