ALGEBRA 2 COMMON CORE CURRICULUM- revised Sept 2, 2020

Code: M551 Full Year (1 Credit) Rank Weight: 1.00

REMOTE LEARNING ORDER for 2020-2021 School Year

Trig:

- SOH, CAH, TOA relationships
- Solving for angles and sides in right triangles
- Unit Circle and value of trig along the unit circle
- "ASTC" positive and negative relationships
- Co-function Relationships
- Reciprocal Trig Relationships
- Pythagorean Identities and using them to find trig values
- Given a point, find the exact values of the trig relationships
- Degrees versus radians and converting
- Graphing Trig
    - Basic Sine and Cosine and Tangent Graphs

Polynomials - Basic Skills

- Degrees and terms of Polynomials
- Combining Like Terms (addition and subtraction)
- The Multiplication of Polynomial
- The Long Division of Polynomials
- Order of Operations Problems

RADICALS:

- Simplifying Radicals and basic operations
- Solving 1st degree Radical Equations (no quadratics..yet)

Factoring:

- Basic Factoring Types (GCF, Squares, Trinomials, grouping)
- Factoring completely

QUADRATICS:

- Solving Quadratics by factoring
- Finding the Roots and Solving by Quadratic Formula
- Solving Quadratics by Complete the Square
- Bring back Radical Equations and solve 2nd degree quadratic equations
- Graphing Parabolas
    - Algebraically with axis of symmetry and roots
    - calculator
- Shifting Parabolas (left, right, up, down)

Graphing Polynomials (combines first two units):

- Sketching Polynomials from their expressions/equations
- Writing Equations of Polynomials from their graphs
- Remainder Theorem
    - Bring Back Long division and Compare to the Remainder Theorem: "Is it a Factor?"
    - "Given a factor/root, what is the original polynomial expression/equation"
    - "How does the Remainder Theorem and roots relate to the graph of the curve?"

Revisit of Trig Graphs:

- Amplitude, Frequency, periods, vertical shifts, horizontal shifts of Sine and Cosine Curves
- Create a curve given a trig equation
- Create a trig equation given a curve
- Word problems and cyclical behaviors (cut remote learning)

Quadratics:

- Vertex Form of a Parabola-definition
- Changing the form of a quadratic Equation: from standard to vertex form and vertex to standard form
- Focus and Directrix Definitions
- Determining Focus/Directrix/Vertex given two values
- Determining Focus/Directrix/Vertex given the quadratic Equation
- Writing Equations of Quadratics given focus/directrix/vertex (from diagram or given values)

Rational Expressions and Equations

- Undefined Values of Rational Expressions
- Simplifying Equivalent Rational Expressions
- Multiplying Rational Expressions (dividing rational expressions is for honors only)
- Adding & Subtracting Rational Expressions
- Solving Rational Equations
- Word Problems Leading to Rational Equations (honors)

System Of Equations:

- Graphing Basics:
    - Lines
    - Graphing Parabolas
    - Graphing Circles
- Graphing Systems of Equations
- Linear Systems by elimination and substitution
- Equations in Three Variables

Complex Numbers:

- Imaginary Numbers: Simplifying and basic operations
- Complex Numbers: basic operations (dividing is for honors only)
- Solving Quadratic Equations with complex roots
- Factoring into linear terms to the Complex Realm (honors)

Exponents:

- Integer Exponents
- Rational Exponents
- Graphing Exponential Functions Basics
- Solving Exponential Equations using Common Base Method
- Solving Equations using reciprocal Exponents
- Word Problems with Exponents (plug in values and solve using intersecting graphs: "Moose")
- Base 10 & Scientific Notation (honors?)

Logarithms

- Converting between Log and Exponential Forms
- Graphing logs - basics
- Solving Logarithmic Equations
- Bacteria & Exponential Growth (solving using logs)
- Mortgage Problems (Cut Remote Learning)

If It Looks Like we will have a regents in this 2020-2021 school year: we must revise this portion of the content guide:

Geometric Series & Finance

The Mathematics Behind a Structured Savings Plan
Buying a Car
Credit Cards
Buying a House
The Million Dollar Problem

Modeling Data Distributions

Distributions – Center, Shape & Spread
Using a Curve to Model a Data Distribution
Normal Distributions

Drawing Conclusions Using Data from a Sample

Types of Statistical Studies
Using Sample Data to Estimate a Population Characteristic
Sampling Variability in the Sample Proportion
Margin of Error when Estimating a Population Proportion
Sampling Variability in the Sample Mean
Margin of Error when Estimating a Population Mean
Evaluating Reports Based on Data from a Sample

Drawing Conclusions Using Data from an Experiment

Experiments & the Role of Random Assignment
Differences Due to Random Assignment Alone
Ruling Out Chance
Drawing a Conclusion from an Experiment
Evaluating Reports Based on Data from an Experiment

Probability

Chance Experiments, Sample Spaces & Events
Calculating Probabilities of Events Using Two-Way Tables
Calculating Conditional Probabilities & Evaluating Independence Using Two-Way Tables
Events & Venn Diagrams
Probability Rules

Assessment: Students will take a district-wide at the end of the 2nd quarter and the NYS Algebra 2 Common Core Regents Examination in June. The Regents will be the final for the course.

Resources: https://www.engageny.org/resource/high-school-algebra-ii
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