Secondary Mathematics 2 Scope and Sequence

**Polynomials (7 days)**

* Unit 1 Cluster 4: Perform arithmetic operations on polynomials (A.APR.1)
* Factoring Trinomials (*first time factoring trinomials*)

**Quadratic Functions (13 days)**

*Graphing: Contrast and Compare Quadratic Graphs to Linear and Exponential Graphs*

* Unit 2 Clusters 1 and 2: Interpreting and analyzing functions (F.IF.4, F.IF.5, and F.IF.7a,b)
* Unit 3 Cluster 3: Graph equations on coordinate axes with labels and scales. (A.CED.2)
* Unit 2 Cluster 4: Transformations (F.BF.3) *include graphing absolute value functions*
* Unit 2 Cluster 3: Determine an explicit expression, a recursive process, or steps for calculation from a context. (F.BF.1a)
* Unit 2 Clusters 1 and 5: Average rate of change and comparing functions (F.IF.6 and F.LE.3)
* Unit 2 Cluster 2: Compare properties of two functions represented differently (F.IF.9)

*Solve Quadratic Functions*

* Unit 2 Cluster 2: Solving quadratic functions by factoring and completing the square (F.IF.8a, A.SSE.1a, and A.SSE.3a,b)
* Unit 1 Cluster 3: Arithmetic operations with complex numbers (N.CN.1 and N.CN.2)
* *(Honors) Unit 1 Cluster 3: Conjugates and quotients of complex numbers (N.CN.3)*
* Unit 3 Cluster 4: Derive the quadratic formula by completing the square. (A.REI.4)
* Unit 3 Clusters 4 and 5: Solve equations by finding the square root, completing the square, using the quadratic formula and by factoring (recognize when quadratic formula gives complex solutions and write them as *a*$\pm $*bi*) (A.REI.4 and N.CN.7)
* Unit 3 Cluster 5: Extend polynomial identities to the complex numbers. (N.CN.8)
* Unit 3 Cluster 5: Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials. (N.CN.9)

**Benchmark #1**: Suggested time for giving it October 27-30. Due to the district office by December 1.

**Expressions and Equations (13 days)**

* Unit 3 Cluster 1: Quadratic in nature (A.SSE.2)
* Unit 2 Cluster 3: Combine standard function types using arithmetic operations (F.BF.1b)
* Unit 2 Cluster 4: Inverses (F.BF.4)
* Unit 3 Cluster 3: Writing and solving one variable inequalities; solving for a specified variable (A.CED.1 and A.CED.4)
* *(Honors) Unit 3 Cluster 3:Solving one variable polynomial and rational inequalities*
* Unit 3 Cluster 3: Writing equations in two variables (A.CED.2)
* Unit 3 Cluster 6: Solving systems of equations (A.REI.7)
* *(Honors) Unit 3 Cluster 6: Using a vector variable to solve equations; using the inverse of a matrix to solve equations (A.REI.8 and A.RIE.9)*

**Exponential and Rational Expressions and Equations (7 days)**

* Unit 1 Cluster 1: Extending the properties of exponents (N.RN.1 and N.RN.2)
* Unit 1 Cluster 2: Using properties of rational and irrational numbers (N.RN.3)
* Unit 3 Cluster 2: Using structure to solve exponential equations (F.IF.8b, A.SSE.1b, A.SSE.3c)

**Benchmark #2:** Suggested time for giving it January 16-22. Due to the district office by March 2.

**Trigonometry (9 days)**

* Unit 5 Cluster 5: Define trigonometric ratios and solve problems involving right triangles (G.SRT.6, G.SRT.7, G.SRT.8)
* *(Honors) Unit 5 Cluster 5: Complex numbers (N.CN.3, N.CN.4, N.CN.5, and N.CN.6)*
* Unit 5 Cluster 6: Prove the pythagorean identity $sin^{2}θ + cos^{2}θ =1$ and use it to find sin(ϴ), cos(ϴ), or tan(ϴ) given one of them and the quadrant of the angle (F.TF.8)
* *(Honors) Unit 5 Cluster 6: Write trigonometric expressions in equivalent forms*
* *(Honors) Unit 5 Cluster 6: Prove trigonometric identities*
* *(Honors) Unit 5 Cluster 6: Prove addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems (F.TF.9)*

**Similarity and Proof (9 days)**

* Unit 5 Cluster 1: Understand similarity in terms of transformations (G.SRT.1, G.SRT.2, and G.SRT.3)
* Unit 5 Cluster 2: Prove theorems about lines and angles (G.CO.9)
* Unit 5 Cluster 2: Prove theorems about triangles (G.CO.10)
* Unit 5 Cluster 2: Prove theorems about parallelograms (G.CO.11)
* Unit 5 Cluster 3: Prove theorems about triangles using similarity (G.SRT.4)
* Unit 5 Cluster 3: Use congruence and similarity criteria of triangles to solve problems and prove relationships (G.SRT.5)
* Unit 5 Cluster 4: Find the point on a directed line segment between two given points that partitions the segment in a given ratio (G.GPE.6)

**Benchmark #3:** Suggested time for giving it March 23-26. Due to the district office by May 4.

**Circles (8 days)**

* Unit 6 Cluster 1: Understand and apply theorems about circles (G.C.1, G.C.2, G.C.3 and G.C.4)
* Unit 6 Cluster 2: Find arc length and areas of sectors of circles (G.C.5)
* Unit 6 Cluster 3: Derive the equation of a circle; complete the square to find the center and the radius of a circle given an equation (G.GPE.1)
* Unit 6 Cluster 3: Deriving the equation of a parabola (G.GPE.2)
* *(Honors) Unit 6 Cluster 3: Deriving the equation of an ellipse and a hyperbola (G.GPE.3)*
* Unit 6 Cluster 4: Use coordinates to prove simple geometric theorems algebraically (G.GPE.4)
* Unit 6 Cluster 5: Explain volume formulas and use them to solve problems (G.GMD.1, G.GMD.2, and G.GMD.3)

**Probability (8 days)**

* Unit 4 Cluster 1: Understand independence and conditional probability and use them to interpret data (S.CP.1)
* Unit 4 Cluster 2: Use the rules of probability to compute probabilities of compound events in a uniform probability model (S.CP.2 through S.CP.7)
* Unit 4 Cluster 3: Use probability to evaluate outcomes of decisions (S.CP.8, S.CP.9, S.MD.6 and S.MD.7)

**Benchmark #4:** Suggested time for giving it May 26-29. Due to the district office by June 4.