Enhanced Advanced Algebra/AP Pre-Calculus Teaching & Learning Framework

Semester 1				Semester 2				
Unit 1 2-3 weeks	**Unit 2** 4-5 weeks	**Unit 3** 4-5 weeks	**Unit 4** 4-5 weeks	**Unit 5** 5-6 weeks	**Unit 6** 4-5 weeks	**Unit 7** 3-4 weeks	**Unit 8** 3-4 weeks	**Unit 9** 1-2 weeks
Investigating Descriptive and Inferential Statistics **AA.DSR.2**	**Modeling Radical, Exponential, & Logarithmic Functions** **AA.FGR.3-4**	**Modeling Polynomial Functions & Exploring Linear Algebra & Matrices** **AA.FGR.5** **AA.PAR.6**	**Modeling with Rational & Piecewise-Defined Functions** **AA.FGR.8** **PC.FGR.2**	**Exploring Trigonometric and the Unit Circle** **AA.GSR.7** **PC.FGR.3** **PC.AGR.4**	**Modeling with Conic Sections and Polar Equations** **PC.GSR.5**	**Modeling with Vector Quantities** **PC.AGR.6**	**Modeling with Sequences and Series** **PC.PAR.7**	**Culminating Capstone Unit**
AA.DSR.2.1 (Randomization) **AA.DSR.2.2** (Evaluate reports based on data) **AA.DSR.2.3** (Inferences from a random sample) **AA.DSR.2.4** (Calculate and interpret z-scores) **AA.DSR.2.5** (Fit to a normal distribution) **AA.DSR.2.6** (Using simulations) **AA.DSR.2.7** (Population mean) **AA.DSR.2.8** (Evaluate reports based on data)	**AA.FGR.3.1** (Find and verify inverses) **AA.FGR.3.2** (Graph exponential and logarithmic functions) **AA.FGR.3.3** (Logarithmic properties) **AA.FGR.3.4** (Create exponential equations and use logs to solve) **AA.FGR.3.5** (Create equations in one variable) **AA.FGR.3.6** (Create exponential equations with 2 variables) **AA.FGR.3.7** (Create logarithmic equations with 2 variables) **AA.FGR.4.1** (Expressions with radicals and rational exponents) **AA.FGR.4.2** (Solve simple radical equations) **AA.FGR.4.3** (Analyze and graph radical functions) **AA.FGR.4.4-4.5** (Create and solve radical equations with one & two variables)	**AA.FGR.5.1** (Quadratic regressions) **AA.FGR.5.2-5.3** (Complex numbers, properties, and conjugates) **AA.FGR.5.4** (Equivalent expressions) **AA.FGR.5.5** (Solve quadratic equations and inequalities) **AA.FGR.5.6** (Solving quadratic & linear systems) **AA.FGR.5.7** (Create & analyze equations) **AA.FGR.5.8** (Fundamental theorem of Algebra) **AA.FGR.5.9** (Graphing with zeros) **AA.FGR.5.10** (Equivalent expressions) **AA.FGR.5.11** (Writing Polynomial equations) **AA.PAR.6.1-6.2** (Matrices operations & Systems) **AA.PAR.6.3** (Inverse of a matrix) **AA.PAR.6.4** (Linear programming)	**AA.FGR.8.1** (Rewrite rational expressions) **AA.FGR.8.2** (Rational operations) **AA.FGR.8.3** (Graph simple functions) **AA.FGR.8.4** (Create and solve equations) **PC.FGR.2.1** (Graph piecewise-defined functions) **PC.FGR.2.2** (Characteristics of piecewise) **PC.FGR.2.3** (Limit of piecewise) **PC.FGR.2.4** (Divide polynomials) **PC.FGR.2.5** (Graph rational functions) **PC.FGR.2.6** (Behavior of rational functions at asymptotes) **PC.FGR.2.7** (Limits of rational functions) **PC.FGR.2.8** (Solve rational equations) **PC.FGR.2.9** (Partial fraction decomposition)	**AA.GSR.7.1** (Unit circle) **AA.GSR.7.2** (Radical measures) **PC.FGR.3.1** (Radians) **PC.FGR.3.2** (Build unit circle) **PC.FGR.3.3** (Define all trig ratios in terms of x, y, and r) **PC.FGR.3.4** (Derive trig identities) **PC.FGR.3.5-3.6** (Determine valued, graph and write equations of trig functions) **PC.FGR.3.7** (Classify trig functions as odd or even) **PC.FGR.3.8** (Use inverse functions) **PC.AGR.4.1** (Simplify trig expressions and verify trig identities) **PC.AGR.4.2** (Use sum, difference, double-angle, and half-angle formulas) **PC.AGR.4.3** (Solve trig equations) **PC.AGR.4.4** (Law of Sines and Law of Cosines) **PC.AGR.4.5** (Area of an oblique triangle)	**PC.GSR.5.1** (Identify and graph conic sections) **PC.GSR.5.2** (Convert conic sections from general to standard form) **PC.GSR.5.3** (Define polar coordinates) **PC.GSR.5.4** (Classify special polar equations) **PC.GSR.5.5** (Graph equations in polar plane)	**PC.AGR.6.1** (Vectors as directed line segments) **PC.AGR.6.2** (Add and subtract vectors) **PC.AGR.6.3** (Add and subtract vectors using different methods) **PC.AGR.6.4** (Solve contextual vector problems) **PC.AGR.6.5** (Sketch parametric curves) **PC.AGR.6.6** (Apply parametric equations)	**PC.PAR.7.1** (Demonstrate sequences are functions) **PC.PAR.7.2** (Represent sequences multiple ways) **PC.PAR.7.3** (Limit of a sequence) **PC.PAR.7.4** (Series) **PC.PAR.7.5** (Describe behavior of series) **PC.PAR.7.6** (Sum formula of finite geometric series) **PC.PAR.7.7** (Sum formula of infinite geometric series)	**All Standards** PC.MP.1-8

Standard PC.MM.1 – Apply mathematics to real-life situations; model real-life phenomena using mathematics, and associated learning objectives PC.MM.1.1, PC.MM.1.2, PC.MM.1.3, and PC.MM.1.4 should be addressed throughout the units.

Units contain tasks that depend upon the concepts addressed in earlier units. Mathematical standards are interwoven and should be addressed throughout the year in as many different units and tasks as possible in order to stress the natural connections that exist among mathematical topics.

The Framework for Statistical Reasoning, Mathematical Modeling Framework, and the K-12 Mathematical Practices should be taught throughout the units.

Key for Course Standards: FGR: Functional & Graphical Reasoning; AGR: Algebraic & Geometric Reasoning; GSR: Geometric & Spatial Reasoning; PAR: Patterning & Algebraic Reasoning, MP: Mathematical Practices, MM: Mathematical Modeling