PreCalculus Mathematics Curriculum

Marking Period	Reading/Writing Assignment	Chapter/Section
1	Unit Portfolio: Error Analysis	Units 1-2
2	LOST project.	Unit 3
3	Unit Portfolio: Notes To Future Self	Units 4-6
4	End of Year Reflection	Units 1-8

Scoring Guide for Written Work

1 - Emerging	2 - Intermediate	3 - Proficient	4 - Exemplary
Conceptual Understanding Demonstrates almost no understanding of learning targets, and includes significant errors or deficiencies in thought.	**Conceptual Understanding** Demonstrates some understanding of learning targets, potentially including several errors or deficiencies in thought.	**Conceptual Understanding** Demonstrates nearly all understanding of learning targets, potentially including a minor error or deficiency in thought.	**Conceptual Understanding** Demonstrates complete understanding of learning targets.
Mathematical Skills Gives incorrect answers and explanations and does not follow or implement correct processes or methods for the solution.	**Mathematical Skills** Gives partially correct answers and explanations, does not use ideal processes or methods, and work is not clear.	**Mathematical Skills** Gives correct or nearly correct answers and explanations through solving equations, drawing graphs, identifying figures, etc., and may also lack some clarity.	**Mathematical Skills** Gives clear and correct answers and explanations through solving equations, drawing graphs, identifying figures, etc..
Work Habits Does not complete the majority of tasks and/or work is unintelligible.	**Work Habits** Completes almost all tasks but work is not organized or easily understood.	**Work Habits** Completes tasks thoroughly, and work is mostly organized and legible.	**Work Habits** Completes tasks thoroughly, and work is organized, legible, and easily understood.

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Content Topics and Pacing

Topic	Duration	Learning Target(s)
Unit 1 Functions and their Graphs.	**~3 Weeks**	• Use the Distance Formula to find the distance between two points. • Use the Midpoint Formula to find the midpoint of a line segment • Identify - and -intercepts of graphs of equations. • Find the domains of functions. • Find the zeros of functions. • Determine intervals on which functions are increasing or decreasing. • Identify and graph linear and squaring functions. • Identify and graph cubic, square root, and reciprocal functions. • Use vertical and horizontal shifts to sketch graphs of functions.
Unit 2 Polynomial and Rational Functions.	**~4 weeks**	• Write quadratic functions in standard form and use the results to sketch their graphs. • Use the Leading Coefficient Test to determine the end behaviors of graphs of polynomial functions. • Find real zeros of polynomial functions and use them as sketching aids. • Use long division to divide polynomials by other polynomials. • Use the Remainder Theorem and the Factor Theorem. • Use the imaginary unit to write complex numbers. • Add, subtract, and multiply complex numbers.

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		• Use the Fundamental Theorem of Algebra to determine numbers of zeros of polynomial functions. • Find zeros of polynomials by factoring. • Find domains of rational functions. • Find vertical and horizontal asymptotes of graphs of rational functions. • Sketch graphs of rational functions.
Unit 3 Exponential and Logarithmic functions.	**~3 weeks**	• Recognize and evaluate exponential functions with base . • Graph exponential functions and use the One-to-One Property. • Recognize and evaluate logarithmic functions with base . • Graph logarithmic functions. • Use the change-of-base formula to rewrite and evaluate logarithmic expressions. • Use properties of logarithms to evaluate or rewrite logarithmic expressions. • Use properties of logarithms to expand or condense logarithmic expressions. • Solve simple exponential and logarithmic equations. • Solve more complicated exponential equations. • Solve more complicated logarithmic equations.
Unit 4 Trigonometry.	**~5 weeks**	• Describe angles. • Use radian measure. • Use degree measure. • Identify a unit circle and describe its relationship to real

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		numbers. • Evaluate trigonometric functions using the unit circle. • Evaluate trigonometric functions of acute angles. • Use fundamental trigonometric identities. • Evaluate trigonometric functions of any angle. • Find reference angles. • Sketch the graphs of basic sine and cosine functions. • Use amplitude and period to help sketch the graphs of sine and cosine functions. • Sketch translations of the graphs of sine and cosine functions. • Sketch the graphs of tangent functions. • Sketch the graphs of cotangent functions. • Sketch the graphs of secant and cosecant functions.
Unit 5 Analytic Trigonometry.	**~ 4 weeks**	• Recognize and write the fundamental trigonometric identities. • Use the fundamental trigonometric identities to evaluate trigonometric functions, simplify trigonometric expressions, and rewrite trigonometric expressions. • Verify trigonometric identities. • Use standard algebraic techniques to solve trigonometric equations. • Solve trigonometric equations of quadratic type. • Use sum and difference formulas to evaluate trigonometric functions, verify identities, and solve trigonometric equations.

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		• Use trigonometric formulas to rewrite real-life models.
Unit 6 Systems of Equations/Inequalities.	**~ 4 weeks**	• Use the method of substitution to solve systems of linear equations in two variables • Use a graphical method to solve systems of equations in two variables. • Use the method of elimination to solve systems of linear equations in two variables. • Use systems of linear equations in three or more variables to model and solve real-life problems. • Recognize partial fraction decompositions of rational expressions. • Find partial fraction decompositions of rational expressions.
Unit 7 Sequences, Series, and Probability.	**~ 4 weeks**	• Write explicit and recursive formulas given a sequence. • Find missing terms of an arithmetic sequence. • Write explicit rules for an arithmetic sequence. • Find missing terms of a geometric sequence. • Write explicit rules for a geometric sequence. • Describe the behavior of a geometric sequence as n approaches infinity. • Write proofs by induction.