

Overview of Year

Algebra 2 Mathematics Curriculum

SEPT	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE
Unit 1 Patterns in Chance - 7 days	Unit 2 Common Logarithms and Exponential Equations - 7 days	Unit 3 Radicals and Rational Exponents -5 days	Unit 4 Polynomial Expressions and Functions -10 days	Unit 5 Quadratic Polynomials -8 days	Unit 6 Statistical Reasoning 7 days	Unit 7 High Dive -10 days	Unit 8 A Recursive View of Functions -7 days	Unit 9 Standard Deviation and the Normal Curve -7 days	Unit 10 Inverse Functions and Common Logarithms and Their Properties -10 days

Unit 1	Understanding	Essential Question
Patterns in Chance	- Basic probability - Construct sample spaces for equally likely events - Addition rule for probability - Mutually exclusive and non-mutually exclusive events - Modeling probability situations using simulation - Graphing calculator skills in using random digits	How can probability situations be represented visually? How can $P(A \text{ and } B)$ be computed? Why is simulation useful in probability situations?
Performance Task:		

Unit 2	Understanding	Essential Question
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Common Logarithms and Exponential Equations	• Properties of the exponential function • Concept of the logarithm • Multiple representations of the exponential function and properties of logarithms • Use of common logarithms to solve exponential equations • Graphing calculator skills in solving equations using the table and graph	What are the defining characteristics of an exponential function? What is the relationship between exponential functions and logarithms?
Performance Task:		

Unit 3	Understanding	Essential Question
Radicals and Rational Exponents	• Solving radical equations • Equivalent exponential expressions • Solving equations using exponent rules • Meaning of rational exponents • Writing expressions with rational exponents in radical form and vice versa • Solving equations with rational exponents • Solving simple rational equations • Graphing calculator skills in solving equations using the table and graph	What are strategies for solving equations with radicals and rational exponents? What are strategies for writing exponential expressions in equivalent forms?
Performance Task:		

Unit 4	Understanding	Essential Question
Polynomial Expressions and Functions	• Model problem situations with polynomial functions, • Properties of polynomial functions connected to the degree of the function (number of local max/min values, number of zeroes, minimum	What are the defining characteristics of a polynomial function? What are the relationships between the degree of a polynomial function and the

	number of points needed to define a polynomial function, end behavior) • Arithmetic with polynomial expressions • Writing polynomial functions given the zeroes and another point • Finding zeroes of polynomial functions • Properties of graphs of polynomial functions with repeated zeroes • Graphing calculator skills for cubic and quartic regression, finding zeroes of polynomial functions, and factoring	properties of a specific polynomial function?
Performance Task:		

Unit 5	Understanding	Essential Question
Quadratic Polynomials	• Completing the Square • Vertex form of quadratic functions, • Writing quadratic expressions in equivalent forms (standard, factored, vertex) • Quadratic formula • Solving quadratic equations in vertex, standard, and factored form • Writing solutions to quadratic equations in simplest radical form • Complex numbers • Arithmetic with complex numbers (addition, subtraction, and multiplication) • Writing solutions to quadratic equations in $a + bi$ form • Graphing calculator skills in solving quadratic equations using the table and graph	What are the advantages and disadvantages of the three forms of a quadratic function; standard form, factored form, and vertex form? What are complex numbers and how can complex numbers be used to express solutions to quadratic equations?

Performance Task:

Unit 6	Understanding	Essential Question
Statistical Reasoning	• Characteristics of a well- designed experiment • Placebo effect • Use of sampling distributions to determine if difference of two means is statistically significant • Randomization test, • Characteristics of sample surveys, experiments, and observational studies • Relationship between randomization and type of inference and the three types of statistical studies • Concept of margin of error	What are the three major types of statistical studies? How can statistical reasoning be used to make a decision about the effect of a treatment on an outcome?
Performance Task:		

Unit 7	Understanding	Essential Question
High Dive	• Extending the trigonometric functions to all angles, • Graphing the trigonometric functions, • Transformations of the graphs of trigonometric functions, • Identify period, frequency, midline, and amplitude from a graph, function rule, and from a verbal description, • Write trigonometric functions to model real world phenomena, • Radian measure,	What are the defining characteristics of the trigonometric functions? How can the trigonometric functions be used to model real world situations?

	Pythagorean identity	
Performance Task:		

Unit 8	Understanding	Essential Question
A Recursive View of Functions	- Arithmetic sequences and the connection to linear functions - Geometric sequences and the connection to exponential functions, - Recursion - Subscript notation - Arithmetic and geometric series, - Use of arithmetic and geometric sequences and series to solve problems	What are the relationships between arithmetic and geometric sequences and linear and exponential functions? How can arithmetic and geometric sequences and series be used to model real world situations?
Performance Task:		

Unit 9	Understanding	Essential Question
Standard Deviation and the Normal Curve	- Compute and interpret deviations from the mean - Compute, estimate, and interpret the standard deviation - Compare the standard deviation as a measure of spread to the IQR - Characteristics of the normal distribution, - Recognize the standard deviation as a measure of location - Use the mean and standard deviation to fit a data set to the normal distribution and estimate population percentages	What are measures of the spread in a data set and how are these measures related to measures of center? How can measures of center and spread be used together to interpret data in context?

	Recognize when it is appropriate to use the standard deviation as a measure of location	
Performance Task:		

Unit 10	Understanding	Essential Question
Inverse Functions and Common Logarithms and Their Properties	- Conditions that guarantee the existence of an inverse function - Multiple representations of inverse functions: table, equation, graph - Strategies for finding rules for inverse functions - Find rules for inverse functions for linear and basic power functions, - Revisit common logarithms - Evaluate logarithms - Express any positive number as a power of 10 - Rewrite exponential equations in equivalent forms - Solve exponential equations using logarithms - Properties of the logarithmic function	What is an inverse function? How can exponential functions be written in equivalent forms?
Performance Task:		