



1st Quarter

Resources: Glencoe Literature,

Week	Unit/Lesson	Reporting Categories	Learning Objectives
1st:	Welcome, Introduction, Review, and Student Survey.		
2nd:	Ch: 1 Lessons 1-1, 1-2, 1-3, 1-4	<ul style="list-style-type: none"> Use the order of operations to evaluate expressions. Use formulas. Classify real numbers. Use the properties of real numbers to evaluate expressions. Translate verbal expressions into algebraic expressions and equations, and vice versa. Solve equations using the properties of equality. Evaluate expressions involving absolute value. Solve absolute value equations.	A2. 6D Cubic, cube root, absolute value and rational functions, equations, and inequalities. The student applies mathematical processes to understand that cubic, cube root, absolute value and rational functions, equations, and inequalities can be used to model situations, solve problems, and make predictions. The student is expected to formulate absolute value linear equations. A2. 6E Solve absolute value linear equations
3rd:	Lessons 1-5, 1-6, Ch:1 Review and Test	<ul style="list-style-type: none"> Solve one-step inequalities. Solve multi-step inequalities. Solve compound inequalities. Solve absolute value inequalities.	A2. 7I Write the domain and range of a function in interval notation, inequalities, and set notation A2. 6F Solve absolute value linear inequalities
4th:	Ch: 2 Lessons 2-1, 2-2	<ul style="list-style-type: none"> Analyze relations and functions. Use equations of relations and functions. Identify linear relations and functions. Write linear equations in standard form.	A2.7I Write the domain and range of a function in interval notation, inequalities, and set notation
5th:	Lessons 2-3, 2-4, 2-5	<ul style="list-style-type: none"> Find rate of change. Determine the slope of a line. Write an equation of a line given the slope and a point on the line. Write an equation of a line parallel or perpendicular to a given line. 	A2. 8B Use regression methods available through technology to write a linear function, a quadratic function, and an exponential function from a given set of data



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		<ul style="list-style-type: none"> Use scatter plots and prediction equations. Model data using lines of regression. 	<p>A2. 8C Predict and make decisions and critical judgments from a given set of data using linear, quadratic, and exponential models.</p>
6th:	<p>Lessons 2-6, 2-7, 2-8 Ch: 2 Review & Test</p>	<ul style="list-style-type: none"> Write and graph piecewise defined functions. Identify and use parent functions. Describe transformations of functions. Graph linear inequalities. <p>Graph absolute value inequalities.</p>	<p>A2. 2A Graph the functions $f(x)=\sqrt{x}$, $f(x)=1/x$, $f(x)=x^3$, $f(x)=\sqrt[3]{x}$, $f(x)=b^x$, $f(x)= x$, and $f(x)=\log_b(x)$ where b is 2, 10, and e, and, when applicable, analyze the key attributes such as domain, range, intercepts, symmetries, asymptotic behavior, and maximum and minimum given an interval.</p> <p>A2.7I Write the domain and range of a function in interval notation, inequalities, and set notation.</p> <p>A2. 2A Graph the functions $f(x)=\sqrt{x}$, $f(x)=1/x$, $f(x)=x^3$, $f(x)=\sqrt[3]{x}$, $f(x)=b^x$, $f(x)= x$, and $f(x)=\log_b(x)$ where b is 2, 10, and e, and, when applicable, analyze the key attributes such as domain, range, intercepts, symmetries, asymptotic behavior, and maximum and minimum given an interval.</p>
7th:	<p>Ch: 3 Lessons 3-1, 3-2, 3-3, 3-4</p>	<ul style="list-style-type: none"> Solve systems of linear equations graphically. Solve systems of linear equations algebraically. Solve systems of linear inequalities by graphing. Determine the coordinates of the vertices of a region formed by the graphs of a system of inequalities. Find the maximum and minimum values of a function. Solve real-world optimization problems using linear programming. Solve systems of linear equations in three variables. 	<p>A2. 3A Formulate systems of equations, including systems consisting of three linear equations in three variables and systems consisting of two equations, the first linear and the second quadratic.</p> <p>A2. 3E Formulate systems of at least two linear inequalities in two variables.</p> <p>A2. 3F Solve systems of two or more linear inequalities in two variables.</p> <p>A2. 3G Determine possible solutions in the solution set of systems of two or more linear inequalities in two variables.</p>



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		Solve real-world problems using systems of equations in three variables.	
8th:	Lessons 3-4, 3-5, 3-6, 3-7	<ul style="list-style-type: none"> Analyze data in matrices. Perform Algebraic operations with matrices. Multiply matrices. Use the properties of matrix multiplication. Evaluate determinants. Solve systems of equations by using Cramer's Rule.	<p>A2. 3A Formulate systems of equations, including systems consisting of three linear equations in three variables and systems consisting of two equations, the first linear and the second quadratic.</p> <p>A2. 3B Solve systems of three linear equations in three variables by using Gaussian elimination, technology with matrices, and substitution.</p>
9th:	Lessons 3-8, Ch: 3 Review & Test Ch: 4 Lessons 4-1, 4-2, 4-3	<ul style="list-style-type: none"> Find the inverse of a 2x2 matrix. Write and solve matrix equations for a system of equations. <ul style="list-style-type: none"> Graph quadratic functions. Find and interpret the maximum and minimum values of a quadratic function. Solve quadratic functions by graphing. Estimate solutions of quadratic equations by graphing. Write quadratic equations in standard form. Solve quadratic equations by factoring.	<p>A2. 3A Formulate systems of equations, including systems consisting of three linear equations in three variables and systems consisting of two equations, the first linear and the second quadratic.</p> <p>A2. 3B Solve systems of three linear equations in three variables by using Gaussian elimination, technology with matrices, and substitution.</p> <p>A2. 7I Write the domain and range of a function in interval notation, inequalities, and set notation.</p> <p>A2. 8B Use regression methods available through technology to write a linear function, a quadratic function, and an exponential function from a given set of data</p> <p>A2. 4F Solve quadratic and square root equations.</p>



2nd Quarter

Resources:			
Week	Unit/Lesson	Learning Objectives	Reporting Categories
1st:	Lessons 4-4, 4-5, 4-6	<ul style="list-style-type: none"> Perform operations with pure imaginary numbers. Perform operations with complex numbers. Solve quadratic equations by using Square Root Property. Solve quadratic equations by completing the square. Solve quadratic equations by using Quadratic Formula. <p>Use the discriminant to determine the number and type of roots of a quadratic equation.</p>	<p>A2. 7A Add, subtract, and multiply complex numbers.</p> <p>A2. 4F Solve quadratic and square root equations.</p>
2nd:	Lessons 4-7, 4-8, Ch: 4 Review & Test	<ul style="list-style-type: none"> Write a quadratic function in the form $y = a(x-h)^2+k$ Transform graph of quadratic functions of the form: $y = a(x-h)^2+k$. Graph quadratic inequalities in two variables. Solve quadratic inequalities in one variable. 	<p>A2. 4B Write the equation of a parabola using given attributes, including vertex, focus, directrix, axis of symmetry, and direction of opening.</p> <p>A2. 4D Transform a quadratic function $f(x) = ax^2 + bx + c$ to the form $f(x) = a(x - h)^2 + k$ to identify the different attributes of $f(x)$.</p> <p>A2. 6A Analyze the effect on the graphs of $f(x) = x^3$ and $f(x) = \sqrt[3]{x}$ when $f(x)$ is replaced by $af(x)$, $f(bx)$, $f(x - c)$, and $f(x) + d$ for specific positive and negative real values of a, b, c, and d.</p> <p>A2. 4H Solve quadratic inequalities.</p>
3rd:	Ch: 5 Lessons 5-1, 5-2, 5-3, 5-4	<ul style="list-style-type: none"> Multiply, divide, and simplify monomials and expressions involving powers. Divide polynomials using long division. Divide polynomials using synthetic division. Graph polynomial functions and locate their zeros. 	<p>A2. 7B Add, subtract, and multiply polynomials</p> <p>A2. 7C Determine the quotient of a polynomial of degree three and of degree four when divided by a polynomial of degree one and of degree two.</p> <p>A2. 2A Graph the functions $f(x)=\sqrt{x}$, $f(x)=1/x$, $f(x)=x^3$, $f(x)=\sqrt[3]{x}$, $f(x)=b^x$, $f(x)= x$, and $f(x)=\log_b(x)$ where b is 2, 10, and e, and, when applicable, analyze the key attributes such as domain, range, intercepts,</p>



2nd Quarter

Resources:			
Week	Unit/Lesson	Learning Objectives	Reporting Categories
		Find the relative maxima and minima of polynomial functions.	<p>symmetries, asymptotic behavior, and maximum and minimum given an interval.</p> <p>A2. 8A Analyze data to select the appropriate model from among linear, quadratic, and exponential models.</p>
4th:	Lessons 5-5, 5-6, 5-7, 5-8	<ul style="list-style-type: none"> Factor polynomials. Solve polynomial equations by factoring. Evaluate functions by using synthetic substitution. Determine whether a binomial is a factor of a polynomial by using synthetic substitution. Determine the number and type of roots for a polynomial equation. Find zeroes of a polynomial function. Identify possible rational zeroes of a polynomial. <p>Find all of the rational zeroes of a polynomial function.</p>	<p>A2. 7D Determine the linear factors of a polynomial function of degree three and of degree four using algebraic methods.</p> <p>A2. 7E Determine linear and quadratic factors of a polynomial expression of degree three and of degree four, including factoring the sum and difference of two cubes and factoring by grouping.</p> <p>A2. 6A Analyze the effect on the graphs of $f(x) = x^3$ and $f(x) = \sqrt[3]{x}$ when $f(x)$ is replaced by $af(x)$, $f(bx)$, $f(x - c)$, and $f(x) + d$ for specific positive and negative real values of a, b, c, and d.</p>
5th:	<p>Ch: 5 Review & Test</p> <p>Ch: 6</p> <p>Lessons 6-1, 6-2</p>	<ul style="list-style-type: none"> Find the sum, difference, product, and quotient of functions. Find the composition of functions. Find the inverse of a function or relation. Determine whether two functions or relations are inverses. 	<p>A2. 2B Graph and write the inverse of a function using notation such as $f^{-1}(x)$</p> <p>A2. 2D Use the composition of two functions, including the necessary restrictions on the domain, to determine if the functions are inverses of each other.</p> <p>A2. 4C Determine the effect on the graph of $f(x) = \sqrt{x}$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(bx)$, and $f(x - c)$ for specific positive and negative values of a, b, c, and d.</p>



2nd Quarter

Resources:			
Week	Unit/Lesson	Learning Objectives	Reporting Categories
6th:	6-3, 6-4	<ul style="list-style-type: none"> Graph and analyze square root functions. Graph square root inequalities. Simplify radicals. Use a calculator to approximate radicals. 	<p>A2. 2C Describe and analyze the relationship between a function and its inverse (quadratic and square root, logarithmic and exponential), including the restriction(s) on domain, which will restrict its range.</p> <p>A2. 4C Determine the effect on the graph of $f(x) = \sqrt{x}$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(bx)$, and $f(x - c)$ for specific positive and negative values of a, b, c, and d.</p> <p>A2.2A Graph the functions $f(x) = \sqrt{x}$, $f(x) = 1/x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = x$, and $f(x) = \log_b(x)$ where b is 2, 10, and e, and, when applicable, analyze the key attributes such as domain, range, intercepts, symmetries, asymptotic behavior, and maximum and minimum given an interval.</p> <p>A2.7G Rewrite radical expressions that contain variables to equivalent forms.</p> <p>A2. 6A Analyze the effect on the graphs of $f(x) = x^3$ and $f(x) = \sqrt[3]{x}$ when $f(x)$ is replaced by $af(x)$, $f(bx)$, $f(x - c)$, and $f(x) + d$ for specific positive and negative real values of a, b, c, and d.</p>
7th:	6-5, 6-6, 6-7 Ch: 6 Review & Test	<ul style="list-style-type: none"> Simplify radical expressions. Add, subtract, multiply, and divide radical expressions. Write expressions with rational exponents in radical form and vice versa. Write expressions with rational exponents in radical form and vice versa. Simplify expressions in exponential or radical form. Solve equations containing radicals. Solve inequalities containing radicals. 	<p>A2. 7G Rewrite radical expressions that contain variables to equivalent forms.</p> <p>A2. 7H Solve equations involving rational exponents.</p> <p>A2. 4F Solve quadratic and square root equations.</p> <p>A2. 4G Identify extraneous solutions of square root equations.</p>



Darul Arqam North

Scope and Sequence
9th Algebra II

2nd Quarter

Resources:

Week	Unit/Lesson	Learning Objectives	Reporting Categories
			A2. 4E Formulate quadratic and square root equations using technology given a table of data.
8th:	Review (Ch 1-6)	Midterm Review	Midterm Review
9th:	Benchmark		



3rd Quarter

Resources:			
Week	Unit/ Lesson	Learning Objectives	Reporting Categories
1st:	Ch: 7 Lessons 7-1, 7-2	<ul style="list-style-type: none"> Graph exponential growth functions. Graph exponential decay functions. Solve exponential equations. Solve exponential inequalities. 	<p>A2. 2A Graph the functions $f(x)=\sqrt{x}$, $f(x)=1/x$, $f(x)=x^3$, $f(x)=\sqrt[3]{x}$, $f(x)=b^x$, $f(x)= x$, and $f(x)=\log_b(x)$ where b is 2, 10, and e, and, when applicable, analyze the key attributes such as domain, range, intercepts, symmetries, asymptotic behavior, and maximum and minimum given an interval.</p> <p>A2. 5A Determine the effects on the key attributes on the graphs of $f(x) = b^x$ and $f(x) = \log_b(x)$ where b is 2, 10, and e when $f(x)$ is replaced by $af(x)$, $f(x) + d$, and $f(x - c)$ for specific positive and negative real values of a, c, and d.</p> <p>A2. 8A Analyze data to select the appropriate model from among linear, quadratic, and exponential models.</p> <p>A2.5B Formulate exponential and logarithmic equations that model real-world situations, including exponential relationships written in recursive notation.</p> <p>A2. 5D Solve exponential equations of the form $y = ab^x$ where a is a nonzero real number and b is greater than zero and not equal to one and single logarithmic equations having real solutions.</p>
	2nd:	Lessons 7-3, 7-4, 7-5	<ul style="list-style-type: none"> Evaluate logarithmic expressions. Graph logarithmic functions. Solve logarithmic equations. Solve logarithmic inequalities. Simplify and evaluate expressions using the properties of logarithms. Solve logarithmic equations using the properties of logarithms.



3rd Quarter

Resources:			
Week	Unit/ Lesson	Learning Objectives	Reporting Categories
			<p>and $f(x - c)$ for specific positive and negative real values of a, c, and d.</p> <p>A2. 5B Formulate exponential and logarithmic equations that model real-world situations, including exponential relationships written in recursive notation.</p> <p>A2. 5D Solve exponential equations of the form $y = ab^x$ where a is a nonzero real number and b is greater than zero and not equal to one and single logarithmic equations having real solutions.</p> <p>A2. 5E Determine the reasonableness of a solution to a logarithmic equation.</p>
3rd:	Lessons 7-6, 7-7, 7-8	<ul style="list-style-type: none"> • Solve exponential equations and inequalities using common logarithms. • Evaluate logarithmic expressions using the Change of Base Formula. • Evaluate expressions involving the natural base and natural logarithm. • Solve exponential equations and inequalities using natural logarithms. • Use logarithms to solve problems involving exponential growth and decay. • Use logarithms to solve problems involving logistic growth. 	<p>A2. 5B Formulate exponential and logarithmic equations that model real-world situations, including exponential relationships written in recursive notation.</p> <p>A2. 5E Determine the reasonableness of a solution to a logarithmic equation.</p> <p>A2. 2A Graph the functions $f(x)=\sqrt{x}$, $f(x)=1/x$, $f(x)=x^3$, $f(x)=\sqrt[3]{x}$, $f(x)=b^x$, $f(x)= x$, and $f(x)=\log_b(x)$ where b is 2, 10, and e, and, when applicable, analyze the key attributes such as domain, range, intercepts, symmetries, asymptotic behavior, and maximum and minimum given an interval.</p> <p>A2. 5C Rewrite exponential equations as their corresponding logarithmic equations and logarithmic equations as their corresponding exponential equations.</p> <p>A2. 5A Determine the effects on the key attributes on the graphs of $f(x) = b^x$ and $f(x) = \log_b(x)$ where b is 2, 10, and e when $f(x)$ is replaced by $af(x)$, $f(x) + d$, and $f(x - c)$ for specific positive and negative real values of a, c, and d.</p>



3rd Quarter

Resources:			
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			A2. 5D Solve exponential equations of the form $y = ab^x$ where a is a nonzero real number and b is greater than zero and not equal to one and single logarithmic equations having real solutions.
4th:	Ch: 7 Review & Test Ch: 8 Lessons 8-1, 8-2	<ul style="list-style-type: none"> • Simplify rational expressions. • Simplify complex fractions. • Determine the LCM of polynomials. • Add and subtract rational expressions. 	A2. 7F Determine the sum, difference, product, and quotient of rational expressions with integral exponents of degree one and of degree two. A2. 6G Analyze the effect on the graphs of $f(x) = 1/x$ when $f(x)$ is replaced by $af(x)$, $f(bx)$, $f(x-c)$, and $f(x) + d$ for specific positive and negative real values of a , b , c , and d .
5th:	Lessons 8-3, 8-4, 8-5	<ul style="list-style-type: none"> • Determine properties of reciprocal functions. • Graph transformations of reciprocal functions. • Graph rational functions with vertical and horizontal asymptotes. • Graph rational functions with oblique asymptotes and point discontinuity. • Recognize and solve direct and joint variation. • Recognize and solve direct and joint variation. 	A2. 6G Analyze the effect on the graphs of $f(x) = 1/x$ when $f(x)$ is replaced by $af(x)$, $f(bx)$, $f(x-c)$, and $f(x) + d$ for specific positive and negative real values of a , b , c , and d . A2. 6K Determine the asymptotic restrictions on the domain of a rational function and represent domain and range using interval notation, inequalities, and set notation. A2. 2A Graph the functions $f(x) = \sqrt{x}$, $f(x) = 1/x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = x $, and $f(x) = \log_b(x)$ where b is 2, 10, and e , and, when applicable, analyze the key attributes such as domain, range, intercepts, symmetries, asymptotic behavior, and maximum and minimum given an interval. A2.6L Formulate and solve equations involving inverse variation. A2. 6H Formulate rational equations that model real-world situations.



3rd Quarter

Resources:

Week	Unit/ Lesson	Learning Objectives	Reporting Categories
			<p>A2. 6I Solve rational equations that have real solutions.</p> <p>A2. 6J Determine the reasonableness of a solution to a rational equation.</p>
6th:	<p>Lesson 8-6 CH: 8 Review & Test</p>	<ul style="list-style-type: none"> Solve rational equations. <p>Solve rational inequalities.</p>	<p>A2. 6I Solve rational equations that have real solutions.</p>
7th:	<p>Ch: 9 Lessons 9-1, 9-2, 9-3</p>	<ul style="list-style-type: none"> Find the midpoint of a segment on the coordinate plane. Find the distance between two points on the coordinate plane. Write equations of parabolas in standard form. Graph parabolas. Write equations of circles. <p>Graph circles.</p>	<p>A2.4B Write the equation of a parabola using given attributes, including vertex, focus, directrix, axis of symmetry, and direction of opening.</p>
8th:	<p>Lessons 9-4, 9-5</p>	<ul style="list-style-type: none"> Write equations of ellipses. Graph ellipses. Write equations of hyperbolas <p>Graph hyperbolas.</p>	<p>A2.3C Solve, algebraically, systems of two equations in two variables consisting of a linear equation and a quadratic equation.</p>
9th:	<p>Lessons 9-6, 9-7 Ch: 9 Review & Test</p>	<ul style="list-style-type: none"> Write equations of conic sections in standard form. Identify conic sections from their equations. Solve systems of linear and nonlinear equations algebraically and graphically. <p>Solve systems of linear and nonlinear inequalities graphically.</p>	<p>A2.3C Solve, algebraically, systems of two equations in two variables consisting of a linear equation and a quadratic equation.</p> <p>A2. 3D Determine the reasonableness of solutions to systems of a linear equation and a quadratic equation in two variables.</p>



4th Quarter

Resources:

Week	Unit/Lesson	Learning Objectives	Reporting Categories
1st:	Ch: 10 Lessons 10-1, 10-2, 10-3	<ul style="list-style-type: none"> Relate arithmetic sequences to linear functions. Relate geometric sequences to exponential functions. Use arithmetic sequences. Find sums of arithmetic sequences. Use geometric sequences. Find sums of geometric sequences.	A2. 5B Formulate exponential and logarithmic equations that model real-world situations, including exponential relationships written in recursive notation.
2nd:	Lessons 10-4, 10-5	<ul style="list-style-type: none"> Find sums of infinite geometric series. Write repeating decimals as fractions. Recognize and use special sequences. Iterate functions.	A2, 5B Formulate exponential and logarithmic equations that model real-world situations, including exponential relationships written in recursive notation.
3rd:	10-6, 10-7 Ch: 10 Review & Test	<ul style="list-style-type: none"> Use Pascal's triangle to expand powers of binomials. Use the Binomial Theorem to expand powers of trinomials. Prove statements by using mathematical induction. Disprove statements by finding a counterexample. 	A2. 5B Formulate exponential and logarithmic equations that model real-world situations, including exponential relationships written in recursive notation.
4th:	Ch: 12 Lessons 12-1, 12-2	<ul style="list-style-type: none"> Find values of trigonometric functions. Use trigonometric functions to find side lengths and angle measure of right triangle. Draw and find angles in standard position. 	Step Up to 10 th Grade Geometry



4th Quarter

Resources:

Week	Unit/Lesson	Learning Objectives	Reporting Categories
		<ul style="list-style-type: none">Convert between degree measures and radian measures.	
5th:	Make-up Week		
6th:	Review Chapters 1-4		
7th: Apr 29 -	Review Chapters 5-8		
8th:	Review Chapters 7-12		
9th:	Finals Graduation		