

Intermediate Algebra (Algebra 2, year 1 of 2) Curriculum Map Template, 2018-19

Subject: Intermediate Algebra (Algebra 2, year 1 of 2)

Textbook: [Emathinstruction](#) (Supplementary Text: McGraw Hill 2018)

Marking Periods	Unit Title (Big Idea/Major Focus)	Topics/Skills	Evidence of Learning (Assessments)	Resources (texts, online tools, etc.)
<p>Marking Period 1</p>	<p>Unit 0: Algebraic Essentials Review*</p> <p>Enduring Understanding:</p> <ul style="list-style-type: none"> Addition, subtraction, and multiplication are closed operations for polynomials. Exponents can be extended to include zero and negative exponents. Properties of exponents make it easier to simplify products or quotients of powers with the same base or powers raised to a power or products raised to a power. Use rational exponents to represent radicals. <p>Essential Questions:</p> <ul style="list-style-type: none"> How can you rewrite expressions to help you solve problems? How do you solve equations containing multiple operations? How do you add, subtract, factor, and multiply algebraic expressions? 	<ul style="list-style-type: none"> Variables, Terms and Expressions Solving Linear Equations Common Algebraic Expressions Basic Exponent Manipulation Multiplying Polynomials Factoring Polynomials Using Tables on Your Calculator <p>Vocabulary: Variable, Expression, Term, Polynomial, Variable, Factor, Product, Linear equation, factoring</p>	<ul style="list-style-type: none"> Summer Assignment Pre-Assessment Check Performance Tasks Quizzes Castle Learning Exit Tickets Do Nows Class Discussion Daily Handouts Unit Review and Re-engagement Activities Unit Exam 	<p>Emath - Unit 1 (review)</p>
	<p>Unit 1: Functions as the Cornerstones of Algebra</p> <p>Enduring Understanding:</p> <ul style="list-style-type: none"> The domain and range of quadratic functions can be relative to a situation. An inverse function is a function that "undoes" another function; if $f(x)$ maps x to y, then $f^{-1}(y)$ maps y back to x. The inverse of a function may or may not be a function. <p>Essential Questions:</p> <ul style="list-style-type: none"> What makes a particular function family unique from other types of functions? What can key features of a function reveal about the nature of the function? 	<ul style="list-style-type: none"> Introduction to Functions Function Notation Function Composition The Domain and Range of a Function One to One Functions Onto Functions* Inverse Functions Key Features of Functions Interpreting Graphs of Functions More Work with Inverses Unit Review <p>Vocabulary: Function, Composition, Domain, Range, Inverse, Relative Min/Max, Absolute Min/Max, Intervals where function is increasing/decreasing</p>	<ul style="list-style-type: none"> Pre-Assessment Check Performance Tasks Quizzes Castle Learning Exit Tickets Do Nows Class Discussion Daily Handouts Unit Review and Re-engagement Activities Unit Exam 	<p>Emath - Unit 2 *Inverse Functions, * Composition of Functions [See (c.)]</p> <p>McGraw Hill 2018 - Chapter 2 McGraw Hill 2018 - Chapter 5</p>
<p>Marking Period 2</p>	<p>Unit 2: Linear Functions, Equations and Their Algebra</p> <p>Enduring Understanding:</p> <ul style="list-style-type: none"> Mathematical models illustrate the behavior of real-world situations. Linear functions describe a common difference at which variables change. <p>Essential Questions:</p> <ul style="list-style-type: none"> Why are relations and functions represented in multiple ways? How are the properties of functions and functional operations useful? How do you represent relations and functions? 	<ul style="list-style-type: none"> Direct Variation Average Rate of Change Forms of a Line Linear Modeling Inverses of Linear Functions Piecewise Linear Functions Systems of Linear Equations Solve a system of three linear equations in three variables* <i>Matrices</i>* Unit Review <p>Vocabulary: Direct variation, Rate of Change, Piecewise, System, Matrix, inverse</p>	<ul style="list-style-type: none"> Pre-Assessment Check Performance Tasks Quizzes Castle Learning Exit Tickets Do Nows Class Discussion Daily Handouts Unit Review and Re-engagement Activities Unit Exam 	<p>Emath - Unit 3</p> <p>McGraw Hill 2018 - Chapter 1</p>
	<p>Unit 3: Radicals and the Quadratic Formula</p>	<ul style="list-style-type: none"> Square Root Functions 	<ul style="list-style-type: none"> Pre-Assessment Check 	<p>Emath - Unit 8</p>

	<p>Enduring Understanding:</p> <ul style="list-style-type: none"> You can combine like radicals using properties of real numbers. You can write a radical expression in an equivalent form using a fractional (rational) exponent instead of a radical sign. Solving a square root equation may require that you square each side of the equation. This process can introduce extraneous solutions. A square root function is the inverse of a quadratic function that has a restricted domain. <p>Essential Questions:</p> <ul style="list-style-type: none"> To simplify the nth root of an expression, what must be true about the expression? When you square each side of an equation, is the resulting equation equivalent to the original? How are a function and its inverse function related? 	<ul style="list-style-type: none"> Solving Square Root Equations A Closer Look at Extraneous Roots The Basic Exponent Properties Fractional Exponents More Exponent Practice (including negative & zero exponents) The Quadratic Formula More Work with the Quadratic Formula Unit Review <p>Vocabulary: Exponents, Quadratic formula, extraneous, radical</p>	<ul style="list-style-type: none"> Performance Tasks Quizzes Castle Learning Exit Tickets Do Nows Class Discussion Daily Handouts Unit Review and Re-engagement Activities Unit Exam 	<p>McGraw Hill 2018 - Chapter 3 McGraw Hill 2018 - Chapter 5</p>
<p>Marking Period 3</p>	<p>Unit 4: Complex Numbers</p> <p>Enduring Understanding:</p> <ul style="list-style-type: none"> Solutions that exist can exist beyond the real number system. The nature of the roots of a quadratic can be determined by the discriminant <p>Essential Questions:</p> <ul style="list-style-type: none"> How does understanding complex numbers relate to The Fundamental Theorem of Algebra? 	<ul style="list-style-type: none"> Imaginary Numbers & Negative Radicands Complex Numbers: Operations & Simplify Division of Complex Numbers Solving Quadratic Equations with Complex Solutions The Discriminant of a Quadratic The Complex Plane Unit Review <p>Vocabulary: Imaginary, radicand, Complex solution, discriminant, conjugate</p>	<ul style="list-style-type: none"> Pre-Assessment Check Performance Tasks Quizzes Castle Learning Exit Tickets Do Nows Class Discussion Daily Handouts Unit Review and Re-engagement Activities Unit Exam 	<p>Emath - Unit 9</p> <p>McGraw Hill 2018 - Chapter 3</p>
	<p>Unit 5: Quadratic Functions and Their Algebra, Transformations* of Functions</p> <p>Enduring Understanding:</p> <ul style="list-style-type: none"> The structure of quadratic graphs and equations gives insights into their roots. A circle is symmetrical and its points are related by a center and radius. Functions within a family are transformations of the parent function. <p>Essential Questions:</p> <ul style="list-style-type: none"> How does understanding how to find the vertex of a quadratic function help in making decisions in real-life applications? What are the advantages of a quadratic function in vertex form? In standard form? How is any quadratic function related to the parent quadratic function $f(x)=x^2$? 	<ul style="list-style-type: none"> Quadratic Function Review Factoring Factoring Trinomials Complete Factoring Factoring by Grouping Factoring Trinomials Using the AC Method Using Structure to Factor The Zero Product Law Quadratic Inequalities in One Variable* Completing the Square and Shifting Parabolas Modeling with Quadratic Functions Equations of Circles Quadratic-Linear Systems and others The Locus Definition of a Parabola Shifting Functions (include determining points on the transformed graph) Reflecting Parabolas* Vertically Stretching of Functions* Horizontal Stretching of Functions* Even and Odd Functions (include functions that are neither) Unit Review <p>Vocabulary: Factor, zero product, Locus, Focus, Directrix, Even/odd/neither, standard form, vertex form,</p>	<ul style="list-style-type: none"> Pre-Assessment Check Performance Tasks Quizzes Castle Learning Exit Tickets Do Nows Class Discussion Daily Handouts Unit Review and Re-engagement Activities Unit Exam 	<p>Emath - Unit 6 *Emath - Unit 7</p> <p>McGraw Hill 2018 - Chapter 3</p>

<p>Marking Period 4</p>	<p>Unit 6: Polynomials</p> <ul style="list-style-type: none"> The degree of a polynomial function determines its possible solutions, behaviors and properties. The structure of polynomial graphs and equations gives insights into their roots. Rational functions describe the quotient of two polynomial functions. Mathematical models illustrate the behavior of real-world situations. <p>Essential Questions:</p> <ul style="list-style-type: none"> How can you graph rational functions? How can you solve rational equations? What kinds of asymptotes may exist in rational functions and why? Why do rational expressions need to have a defined domain? 	<p>system, grouping</p> <ul style="list-style-type: none"> Power Functions Investigating end behavior in polynomials Graphs and Zeros of a Polynomial (include multiplicity & recognizing factorizations of polynomials functions from the graph) Creating Polynomial Equations Polynomial Identities Introduction to Rational Functions Simplifying Rational Expressions Multiplying and Dividing Rational Expressions Combining Rational Expressions Using Addition and Subtraction Complex Fractions Polynomial Long Division The Remainder Theorem Factor Theorem* <i>Synthetic Division</i> Sum and Difference of Perfect Cubes Solving Rational Equations Solve rational equations that result in quadratic equations that have extraneous roots* Solving Rational Inequalities* Reasoning About Radical and Rational Equations Unit Review <p>Vocabulary: Power function, multiplicity, Polynomial, Synthetic Division, rational function, remainder</p>	<ul style="list-style-type: none"> Pre-Assessment Check Performance Tasks Quizzes Castle Learning Exit Tickets Do Nows Class Discussion Daily Handouts Unit Review and Re-engagement Activities Unit Exam 	<p>Emath - Unit 10</p> <p>McGraw Hill 2018 - Chapter 4 McGraw Hill 2018 - Chapter 7</p>
<p>Summer</p>	<p>Summer Assignment:</p>			