Intermediate Algebra Curriculum

Board Approved: 02/19/2026

Course Information

High School
Full Year

Course Description:
This course is designed to reinforce basic algebraic concepts and enhance the students' understanding of mathematical applications. An introduction of Algebra 2 concepts will ready the student for Algebra 2 or for a post-secondary Intermediate Algebra course. This course includes the following topics: operations with real numbers, first-degree equations and inequalities, operations with polynomials, factoring, operations with rational expressions, exponents, operations with radicals, quadratic equations, and graphing.

Transfer Goals:

- Problem-solving skills: Learn to understand and solve problems effectively.
- Logical and numerical thinking: Apply reasoning and math skills to solve different situations.
- Constructing arguments and critiquing: Build strong arguments and evaluate others' reasoning.
- Using math in real-life situations: Apply mathematical concepts to solve practical problems.
- Strategic thinking and attention to detail: Use the right tools and techniques with precision to solve problems efficiently.

Curriculum Standards:
Algebra 1 Missouri Learning Standards
Algebra 2 Missouri Learning Standards

Curriculum Resource(s): Reveal Algebra 1 & 2 © 2020 - McGraw Hill

Unit 1: Number & Quantity

Timeframe: ***see current scope and sequence***

Unit Description: Extend and use properties of rational exponents. Use units to solve problems.	
Enduring Understandings: ● Rational exponents share the same properties as integer exponents. ● Conversion between rational exponent form and radical form yields equivalent expressions. ● Providing appropriate units to a number is essential to have an accurate answer. ● Conversation rates are needed when converting units. ● When using numbers in real-world contexts, it is important to be precise and use appropriate units.	**Essential Questions:** ● How do the properties compare of a rational exponent to an integer exponent? ● What are different ways in which you can write an equivalent version of a given expression involving rational exponents? ● Why is it important to have units when solving a problem? ● What do you need to know when converting units? ● How do numbers relate to real-world contexts and applications?

Unit 1 Standards	
STANDARD CODE	**STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:**
A1.NQ.A.1	● I can explain the properties of exponents, including rational exponents.
A1.NQ.A.2	● I can rewrite expressions with rational exponents as equivalent radical expressions. ● I can rewrite radical expressions as equivalent expressions with rational exponents.
A1.NQ.B.3	● I can identify, label, and use appropriate units of measure within a problem. ● I can convert units and rates. ● I can use units within problems. ● I can choose and interpret the scale and origin in graphs and data displays.
A1.NQ.B.4	● I can define and use appropriate quantities for representing a given context or problem.
A1.NQ.B.5	● I can choose the right amount of detail based on what I am measuring.

Unit 2: Seeing Structure in Expressions

Timeframe: ***see current scope and sequence***

Unit Description: Interpret and use structure.	
Enduring Understandings: ● Terms of a formula or expression have meaning based on the context of the problem. ● Polynomial expressions can be written in many forms. (vertex, standard, factored) ● Equivalent forms of polynomial expressions provide information to support the context of the situation. ● Factored form provides the factors of the quadratic function and can be solved using the zero product property. ● A quadratic function in vertex form provides the maximum or minimum value of the function.	**Essential Questions:** ● How do you interpret the contextual meaning of individual terms of a formula or expression? ● What are the different forms to write a polynomial expression? ● How can you analyze polynomial expressions to be able to rewrite in equivalent forms? ● How does factored form provide the zeros of a quadratic function? ● Why is completing the square of a quadratic function important?

Unit 2 Standards	
STANDARD CODE	**STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:**
A1.SSE.A.1	● I can determine the real-world context of the variables in an expression (For example, the coefficient for the number of dimes is 0.10 because the value of a dime is 10 cents.) ● I can interpret the real-world context of each individual term or factor of an expression. ● I can interpret the meaning of individual terms or factors from a given problem that utilizes formulas or expressions in terms of the context of the situation. (For example, I can compare how doubling the principal affects the final amount when using the compound interest formula.)
A1.SSE.A.2	● I can factor the GCF out of a polynomial expression. ● I can factor a trinomial with a leading coefficient of 1. ● I can factor a trinomial with a leading coefficient that is not 1. ● I can factor special cases, such as a difference of two perfect squares and a perfect square trinomial. ● I can write a polynomial expression in equivalent forms. ● I can find the product of two polynomials.

priority standards indicated in* ***bold*

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A1.SSE.A.3	• I can find the zeros of a quadratic function by rewriting it in factored form. • I can complete the square to find the maximum or minimum value.

Unit 3: Creating Equations

Timeframe: ***see current scope and sequence***

Unit Description: Create equations that describe linear, quadratic, and exponential relationships.

Enduring Understandings:

- A linear equation has a slope (rate of change), y-intercept (starting value), and ordered pairs.
- A quadratic equation has a vertex, y-intercept, x-intercept/s, and ordered pairs, depending on what form it is in.
- An exponential equation has a multiplier, initial value, and ordered pairs.
- Writing a one-variable equation means the input or output is provided. Writing a two-variable equation means neither is provided.
- To graph equations, they will need important characteristics (slope, x-intercepts, y-intercepts, vertex, points, etc.) of the graph. Students can also use graphing technology.
- The equation or inequality will provide solutions to a problem but sometimes the solutions do not make sense based on the context of the problem.
- To be able to solve for a variable in an equation they will use inverse operations.

Essential Questions:

- What important information is needed when creating a linear equation?
- What important information is needed when creating a quadratic equation?
- What important information is needed when creating an exponential equation?
- What is the difference between a one-variable equation and a two-variable equation?
- How can I graph linear, quadratic, and exponential equations?
- How can the solutions of equations and inequalities be interpreted in real-world contexts?
- Why is it important to be able to solve an equation for a certain variable?

Unit 3 Standards	
STANDARD CODE	**STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:**
A1.CED.A.1	• I can create linear equations in one variable and use them to model and solve problems given a scenario. • I can create exponential equations in one variable and use them to model and solve problems given a scenario. • I can model exponential growth using a one variable model. • I can model exponential decay using a one-variable model • I can create quadratic equations in one variable and use them to model and solve problems given a scenario. • I can create linear inequalities in one variable and use them to model and solve problems given a scenario.
A1.CED.A.2	• I can create a linear equation with two variables given a scenario, graph, and table. • I can create a quadratic equation in standard form with two variables given a vertex. • I can create an exponential equation with two variables given a scenario, graph, and table. • I can graph a linear equation on the coordinate plane and create the labels and scales. • I can graph a quadratic equation on the coordinate plane and create the labels and scales. • I can graph an exponential equation on the coordinate plane and create the labels and scales.
A1.CED.A.3	• I can represent constraints with an equation or inequality within a modeling context. • I can represent constraints with a system of equations and/or inequalities within a modeling context. • I can interpret data points to determine if they are a solution or non-solution within a modeling context.
A1.CED.A.4	• I can solve literal equations and formulas for a specified variable that highlights a quantity of interest.

Unit 4: Reasoning with Equations and Inequalities

Timeframe: ***see current scope and sequence***

Unit Description: Understand solving equations as a process, and solve equations and inequalities in one variable. Solve systems of equations. Represent and solve linear and exponential equations and inequalities graphically.

Enduring Understandings:

- Solving equations and inequalities can be done by using inverse properties.
- The steps to the solving process produce equivalent representations of the equations or inequalities.
- Completing the square on a quadratic equation creates an equivalent quadratic equation in vertex form.
- There are multiple ways to solve a quadratic equation including: inspection, square root property, completing the square, quadratic formula, graphing, and factoring.
- Mathematical fluency is about using an appropriate strategy and knowing multiple processes.
- Systems of equations can be solved algebraically or graphically.
- The solution to an equation with two variables is all of its solutions on the coordinate plane.
- The solution to a system of linear inequalities is where the graphs share common order pairs.
- Equations and inequalities can be used to solve real-world problems and support decision-making processes.

Essential Questions:

- What techniques can be utilized to solve equations and inequalities?
- How are the equations related in each step of the solving process?
- How can you rewrite a quadratic equation in vertex form?
- What ways are there to solve a quadratic equation?
- What is the most efficient method to solve a quadratic equation?
- How can you find the solution to a system of equations?
- What are the solutions to a two-variable equation?
- How can you identify the solutions to a system of linear inequalities?
- How can equations and inequalities be used to model mathematical relationships?
- How can equations and inequalities be used to solve real-world problems to make informed decisions?

Unit 4 Standards

STANDARD CODE	STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:
A1.REI.A.1	• I can explain how each step taken when solving an equation in one variable creates an equivalent equation that has the same solution(s) as the original.

priority standards indicated in* ***bold*

	• I can explain how each step taken when solving an inequality in one variable creates an equivalent inequality that has the same solution(s) as the original.

A1.REI.A.2	• **I can solve a quadratic equation using the appropriate method(s):**
	  ○ **Completing the Square**
	  ○ **Factoring**
	  ○ **Inspection**
	  ○ **Square Root Property**
	  ○ **Quadratic Formula**

A1.REI.B.3	• **I can solve a system of linear equations graphically.** • **I can solve a system of linear equations algebraically. (e.g., substitution, elimination)**
A1.REI.B.4	• I can solve a system consisting of a linear equation and a quadratic equation graphically. • I can solve a system consisting of a linear equation and a quadratic equation algebraically.
A1.REI.B.5	• I can justify that the technique of linear combination produces an equivalent system of equations.
A1.REI.C.6	• I can explain why an ordered pair is a solution to a linear function. • I can explain why an ordered pair is a solution to an exponential function.
A1.REI.C.7	• I can graph the solution to a linear inequality in two variables.
A1.REI.C.8	• I can explain the solution of a system of inequalities in the context of a real-world situation. • I can solve a system of linear inequalities by graphing. • I can explain if an ordered pair is a solution to a system of linear inequalities.
A2.REI.A.2	• I can solve a rational equation, including when the numerator and denominator are polynomials. • I can check my solutions to see if they are extraneous.

Unit 5: Arithmetic with Polynomials and Rational Expressions

Timeframe: ***see current scope and sequence***

Unit Description: Perform operations on polynomials.	
Enduring Understandings: ● Polynomials can be simplified by using addition, subtraction, or multiplication. ● The properties of polynomials are essential in making mathematical connections and recognizing equivalent forms. ● Long division of polynomials relates to division of numbers. ● Synthetic division is not always applicable. ● Polynomial division can be used to simplify polynomials when factoring techniques can not be used.	**Essential Questions:** ● What operations can be used to simplify polynomials? ● How can polynomial operations be used to identify equivalent forms? ● Why is it important to simplify rational expressions? ● How can you tell if a polynomial will have complex roots?

Unit 5 Standards	
STANDARD CODE	**STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:**
A1.APR.A.1	● I can add polynomials. ● I can subtract polynomials. ● I can multiply polynomials.
A1.APR.A.2	● I can divide a polynomial by a monomial.
A2.APR.A.2	● I can divide polynomials with long division given a factor. ● I can divide polynomials with synthetic division with a given factor. ● I can determine that a divisor is not a factor if the remainder is not 0. ● I can write the result as a quotient with a remainder. ● ** technology can be used at teacher discretion*
A2.APR.A.3	● I can determine the least common multiple for two or more polynomials.
A2.APR.A.4	● I can add and subtract rational expressions, including problems with polynomial numerators and denominators as well as problems with unlike denominators. ● I can multiply and divide rational expressions, including problems with polynomial

	numerators and denominators. ● I can simplify my answers so that the numerator and denominator have no common factors.

Unit 6: Interpreting Functions

Timeframe: ***see current scope and sequence***

Unit Description: Understand the concept of a function and use function notation. Interpret linear, quadratic and exponential functions in terms of the context. Analyze linear, quadratic and exponential functions using different representations.

Enduring Understandings:

- A function is a relation where each element of the domain corresponds to exactly one element of the range.
- Functions can be represented using *f*, but also commonly used are *g* and *h*.
- All of the ordered pairs on the graph of a function labeled *g* are solutions to *g(x)* such that $y = g(x)$.
- Function notation is another way to name a specific type of equation, where the input is *x.*
- The key characteristics of a function include: slope, x-intercept, y-intercept, intervals where the function is increasing, decreasing or constant, intervals where the function output is positive, negative or zero, relative maximum or minimum, and end behavior.
- The domain and range are important when graphing a function.
- The average rate of change is the slope between two points on a graph. (linear, exponential, quadratic)
- Graphing a function provides the characteristics of a given function.
- Tables, graphs, equations, and verbal descriptions are all ways to represent functions.

Essential Questions:

- What is a function?
- How can functions be represented and interpreted using different mathematical representations?
- How can you evaluate a function in function notation?
- What key characteristics can be included on a linear, exponential, or quadratic function?
- How can you interpret the characteristics of a function?
- Why is it important to identify the domain and range of a function?
- How is the average rate of change related to the graph over a specific interval?
- How do you find the key characteristics of a function when graphing?
- What methods can be used to compare functions?

Unit 6 Standards	
STANDARD CODE	**STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:**
A1.IF.A.1	• I can represent a function using function notation $f(x)$. • I understand that a function is a relation in which every input has exactly one output.
A1.IF.A.2	• I can evaluate functions in function notation. • I can interpret statements that use function notation in terms of a context.

A1.IF.B.3	• I can interpret key features of a linear function using tables, graphs, and verbal descriptions.
	  ○ Slope/Rate of Change
	  ○ x-intercept & y-intercept
	• I can interpret key features of an exponential function using tables, graphs, and verbal descriptions.
	  ○ x-intercepts & y-intercepts
	  ○ increasing/decreasing
	  ○ Multiplier
	• I can interpret key features of a quadratic function using tables, graphs, and verbal descriptions.
	  ○ x-intercepts & y-intercepts
	  ○ increasing/decreasing
	  ○ Vertex
	  ○ Axis of symmetry
	  ○ Maximum/minimum

A1.IF.B.4	• I can relate the domain and range of a function to its graph. • I can describe how the domain and range within the context of a situation affect the characteristics of the graph of the function.
A1.IF.B.5	• I can determine the average rate of change of a function over a specified interval. • I can interpret the meaning of the average rate of change over a specified interval in a given context.
A1.IF.B.6	• I can interpret the parameters of a linear and exponential function in terms of the context.

A1.IF.C.7	● **I can graph, identify, and interpret key features of a linear equation.** ○ **Slope/Rate of Change** ○ **x-intercept & y-intercept** ● **I can graph, identify, and interpret key features of an exponential equation.** ○ **x-intercepts & y-intercepts** ○ **increasing/decreasing** ○ **Multiplier** ● **I can graph, identify, and interpret key features of a quadratic equation.** ○ **x-intercepts & y-intercepts** ○ **increasing/decreasing intervals** ○ **Vertex** ○ **Axis of symmetry** ○ **Maximum/minimum**
A1.IF.C.8	● I can translate between different but equivalent forms of a function to reveal and explain different properties of the function and interpret these in terms of a context.
A1.IF.C.9	● I can compare two functions given a table, graph, equation, or verbal description.
A2.IF.A.1	● I can identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.

Unit 7: Building Functions

Timeframe: ***see current scope and sequence***

Unit Description: Build new functions from existing functions (linear, quadratic and exponential).	
Enduring Understandings: ● The transformations of a function include vertical and horizontal translations, vertical dilations (stretch, compress), and reflections. ● The transformed function can be rewritten by applying the transformations to the original function. ● Mathematical reasoning and critical thinking are essential in constructing and analyzing translated functions.	**Essential Questions:** ● How can you analyze the effect of translations and scale changes on functions? ● How can you identify the new function given the transformations to the original function? ● How do mathematical reasoning and critical thinking play a role in constructing and analyzing functions?

Unit 7 Standards	
STANDARD CODE	**STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:**
A1.BF.A.1	● I can analyze the effect of translations and scale changes on functions. ● I can create a quadratic equation in vertex form from a verbal description of translations from the parent function. ● I can state how a quadratic given in vertex form is different from the parent function. ● I can look at the graph of a parabola and use its differences from the parent function to write an equation in vertex form.
A2.BF.A.1	● I can add functions to create new functions. ○ I can determine the domain and range of the new functions. ● I can subtract functions to create new functions. ○ I can determine the domain and range of the new functions. ● I can multiply functions to create new functions. ○ I can determine the domain and range of the new functions. ● I can divide functions to create new functions. ○ I can determine the domain and range of the new functions. ● I can compose functions. ○ I can determine the domain and range of the new functions. ** technology can be used at teacher discretion*

A2.BF.A.3	Quadratic ● I can describe the transformations algebraically using a, h, and k. ● I can describe the transformations graphically using the terms: ○ Horizontal or vertical stretch (expansion) or shrink (compression), reflection, horizontal and vertical translation, and dilation. ● I can create new equations from parent functions for specific transformations. ● I can graph new equations from parent functions for specific transformations.

Unit 8: Linear, Quadratic, and Exponential Models

Timeframe: ***see current scope and sequence***

Unit Description: Construct and compare linear, quadratic and exponential models and solve problems. Use arithmetic and geometric sequences.	
Enduring Understandings: ● Linear functions grow at a constant rate and exponential functions grow at a constant percent rate. ● Exponential functions eventually exceed a quantity increasing linearly or quadratically. ● Equations, tables, graphs, and verbal descriptions can be used to model functions. ● There are two types of sequences; arithmetic and geometric. ● Sequences can be written in explicit or recursive form. ● A sequence is a function, whose domain is the subset of the set of integers.	**Essential Questions:** ● How can you determine the difference between situations that are linear or exponential? ● What do we know about exponential functions as they grow compared to quadratic and linear functions? ● What representations are used to model functions? ● What types of sequences are there? ● How are sequences written? ● How are sequences related to equations?

Unit 8 Standards	
STANDARD CODE	**STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:**
A1.LQE.A.1	● I can show that the slope of a linear function is constant between any two points. ● I can recognize situations in which one quantity changes at a constant rate per unit interval relative to another. ● I can recognize exponential situations in which a quantity grows or decays by a constant percent rate per unit interval. ● I can show that exponential functions change by equal factors over equal intervals.
A1.LQE.A.2	● I can describe using tables and graphs that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.

A1.LQE.A.3	• I can construct a linear equation given a graph, verbal description and a table. • I can construct an exponential equation given a graph, verbal description, and a table. • I can construct a quadratic equation with a leading coefficient of 1 given rational x-intercepts given a graph, verbal description, and a table.
A1.LQE.B.4	• I can write an arithmetic sequence in recursive and explicit form given graphs, verbal descriptions, or tables. • I can write a geometric sequence in recursive and explicit form given graphs, verbal descriptions, or tables. • I can translate between explicit and recursive forms of arithmetic and geometric sequences.
A1.LQE.B.5	• I can write arithmetic sequences in recursive and explicit forms given graphs, verbal descriptions, or tables. • I can connect arithmetic sequences to linear functions. • I can model situations with arithmetic sequences. • I can write geometric sequences in recursive and explicit forms given graphs, verbal descriptions, or tables. • I can connect geometric sequences to exponential functions. • I can model situations with geometric sequences.
A1.LQE.B.6	• I can find the term of a general sequence given an explicit or recursive formula.