



Park Hill School District

Building Successful Futures • Each Student • Every Day

High School College Algebra A Curriculum

Course Description: The class consists of prerequisite skills for success in College Algebra. This course includes a study of equations, inequalities, exponent rules, polynomial expressions, rational expressions, radical expressions, quadratics, and functions. To receive college credit College Algebra B must be completed.

Scope and Sequence:

Timeframe	Unit	Instructional Topics
12 Blocks	Equations and Inequalities	Topic 1: Linear and Absolute Value Equations Topic 2: Linear and Absolute Value Inequalities
10 Blocks	Linear	Topic 1: Forms of Lines Topic 2: 2-Variable Inequalities Topic 3: Distance and Midpoint Formulas Topic 4: Solve and Apply Systems of Equations & Inequalities
12 Blocks	Exponents and Polynomials	Topic 1: Exponent Rules Topic 2: Polynomial Operations Topic 3: Solve by Factoring
13 Blocks	Rationals	Topic 1: Operations with Rational Expressions Topic 2: Solve and Apply
9 Blocks	Radicals	Topic 1: Radical Simplifying and Operations Topic 2: Solving Radical and Rational Exponent Equations

12 Blocks	Quadratics	Topic 1: Complex Numbers Topic 2: Solve Quadratic Equations and Inequalities Topic 3: Graphing Quadratic Functions
11 Blocks	Functions	Topic 1: Functions and Graphs Topic 2: Function Composition

Curriculum Revision Tracking

Fall, 2022

- Updated course description to align with Metropolitan Community College as a dual credit course for 3 hours of college credit.
- Removed ISTE standards as they are embedded in priority standards and engaging scenarios.

Summer, 2023

- Updated course to include learning targets.
- Reconfigured units 1, 2, and 3 (1-Variable Equations and Inequalities, 2-Variable Equations and Inequalities, and Systems) to create 2 units (Equations and Inequalities and Linear)
- Updated Essential Questions, Enduring Understandings, Vocabulary, Topics, Engaging Experiences, and Engaging Scenarios in each unit.

Unit 1: Equations and Inequalities

Subject: College Algebra A

Grade: 10, 11, 12

Name of Unit: Equations and Inequalities

Length of Unit: 12 blocks

Overview of Unit: In this unit, students will solve linear equations, solve literal equations, solve absolute value equations and inequalities, solve compound inequalities, and solve applications involving equations and inequalities.

Priority Standards for unit:

- A2.REI.A.1: Create and solve equations and inequalities, including those that involve absolute value.

Priority Standard: A2.REI.A.1: Create and solve equations and inequalities, including those that involve absolute value.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will solve linear equations (including fractional and decimal coefficients).	2
	Applying
The student will solve literal equations.	2
	Applying
The student will solve absolute value equations.	2
	Applying
The student will solve absolute value inequalities.	2
	Applying

The student will solve compound inequalities.	3
	Analyzing
The student will solve applications involving equations. Possibilities: Geometric, Integer, Simple Interest, Mixture, Distance, Percentages (ACT types)	3
	Analyzing
The student will solve applications involving inequalities.	3
	Analyzing

Essential Questions:

1. How do you use interval notation to communicate solutions?
2. How do you use the properties of real numbers and order of operations to evaluate expressions and solve equations and inequalities?
3. How do you solve equations and inequalities when absolute values are involved?
4. How do you create your own equation or inequality to model a situation?

Enduring Understanding/Big Ideas:

1. Write solutions from the smallest endpoint to largest endpoint using parentheses or brackets correctly.
2. Mastery of properties of real numbers and order of operations allows the student to decide the most efficient way to proceed with the equation or inequality.
3. Applying the definition of absolute value to split given equations or inequalities into the linear components.
4. Translate key mathematical words into their operations and symbols.

Unit Vocabulary:

- Variable
- Inequality
- Absolute value
- Algebraic expression
- Expression vs. Equation
- Interval Notation
- Inverse Operations

Resources for Vocabulary Development: Textbook

Topic 1: Linear and Absolute Value Equations

Engaging Experience 1

Title: Equation Bank

Suggested Length of Time: 30-45 minutes

Standards Addressed

Priority:

- A2.REI.A.1: Create and solve equations and inequalities, including those that involve absolute value.

Detailed Description/Instructions: Students will be partnered up and have access to a whiteboard. Each pair will draw an equation from a bank (linear and absolute value). The students are encouraged to think and verbalize the problem before solving to get a solution. Each group should get through at least 10 equations, 3 being absolute value.

Bloom's Levels: Create and Apply

Webb's DOK: 3, 2

Topic 2: Linear and Absolute Value Inequalities

Engaging Experience 1

Title: Inequalities from a graphical/numerical perspective

Suggested Length of Time: 15 minutes

Standards Addressed

Priority:

- A2.REI.A.1: Create and solve equations and inequalities, including those that involve absolute value.

Detailed Description/Instructions: Students will be given various problems that provide a more meaningful approach to solving inequalities. These examples will include types that have no solution, encompass all real numbers, and other “non-traditional” problems that lead to students thinking critically about the definitions of inequalities and “and versus or” statements.

Bloom's Levels: Create and Apply

Webb's DOK: 3,

Engaging Scenario

Engaging Scenario (An Engaging Scenario is a culminating activity that includes the following components: situation, challenge, specific roles, audience, product or performance.)
Pass It Around - Students will be divided into groups (ideally four per group with the number of groups for the types of word problems you covered). Each group gets one type of word problem. Person 1 reads the problem and annotates. Person 2 writes the equation(s)/inequality(ies) needed to solve the word problem. Person 3 solves. Person 4 either presents to the class or writes up the work to display in gallery walk format. Modify as needed based on number of people.

Summary of Engaging Learning Experiences for Topics

Topic	Engaging Experience Title	Description	Suggested Length of Time
Linear and Absolute Value Equations	Equation Bank	Students will be partnered up and have access to a whiteboard. Each pair will draw an equation from bank (linear and absolute value). The students are encouraged to think and verbalize the problem before solving to get a solution. Each group should get through at least 10 equations, 3 being absolute value.	30-45 minutes
Linear and Absolute Value Inequalities	Inequalities from a graphical/numerical perspective	Students will be given various problems that provide a more meaningful approach to solving inequalities. These examples will include types that have no solution, encompass all real numbers, solutions that contain a set and one of its subsets, and other “non-traditional” problems that lead to students thinking critically about the definitions of inequalities, and statements, and or statements.	15 minutes

Unit 2: Linear

Subject: College Algebra A

Grade: 10, 11, 12

Name of Unit: Linear

Length of Unit: 10 blocks

Overview of Unit: In this unit students will graph and write linear equations. They will work with equations in standard form, point-slope form, and slope-intercept form. In addition, they will find equations that are parallel and perpendicular. Students will also graph two-variable linear inequalities and absolute value inequalities. They will solve systems of equations (graphically and algebraically) and inequalities (graphically). The students will derive and use the distance and midpoint formula. They will also review simplifying square roots.

Priority Standards for unit:

- A2.IF.A.1: Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.
- A2.IF.A.2: Translate between equivalent forms of functions.
- A2.REI.B.3: Create and solve systems of equations that may include non-linear equations and inequalities.
- A2.REI.A.1: Create and solve equations and inequalities, including those that involve absolute value.

Priority Standard: A2.IF.A.1: Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.

Learning Targets	Webb's DOK Level
	Bloom's Level
The student will graph linear equations, including vertical and horizontal lines.	2
	Applying
The student will graph 2-variable linear inequalities. *Include examples like $\text{abs}(2x-3y) < 5$	2
	Applying

Priority Standard: A2.IF.A.2: Translate between equivalent forms of functions.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will write equations of linear functions in slope-intercept form.	2
	Applying
The student will write equations of linear functions in point-slope form.	2
	Applying
The student will write equations of linear functions in standard form.	2
	Applying

Priority Standard: A2.REI.B.3: Create and solve systems of equations that may include non-linear equations and inequalities.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will solve linear systems of equations graphically and algebraically.	2
	Applying
The student will solve 2-variable linear systems of inequalities graphically.	2
	Applying

Priority Standard: A2.REI.A.1: Create and solve equations and inequalities, including those that involve absolute value.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will derive and use the distance formula from the Pythagorean Theorem.	3
	Analyzing
The student will derive and use the midpoint formula.	3
	Analyzing

Essential Questions:

1. How do we use given information to write the equation or construct a graph of a linear equation?
2. How is the graph of a linear equation different from the graph of a linear inequality?
3. How do you graphically interpret the solution types to linear systems?
4. How do you apply the Pythagorean Theorem to generate the distance formula?

Enduring Understanding/Big Ideas:

1. Write and graph linear equations in Point-Slope, Standard, and Slope-Intercept forms.
2. Linear equations contain the set of all solutions to an equation while linear inequalities contain the set of all solutions that satisfy an inequality.
3. Analyze the slopes of lines to determine if lines intersect to know if there is a single solution, no solution or infinite solutions.
4. Create a right triangle from the two points given and apply the Pythagorean Theorem.

Unit Vocabulary:

- Two-Variable
- Slope
- Intercept
- Rate of Change
- Intersection
- Linear
- Coordinate plane
- Vertical vs. Horizontal
- Parallel
- Perpendicular
- Point-Slope Form
- Slope-Intercept Form
- Standard Form
- Opposite Reciprocal
- Consistent vs Inconsistent systems
- Dependent Systems

Resources for Vocabulary Development: Textbook

Topic 1: Forms of Lines

Engaging Experience 1

Title: Writing Equations of Lines Line-Up

Suggested Length of Time: 15-20 minutes

Standards Addressed

Priority:

- A2.IF.A.2: Translate between equivalent forms of functions

Detailed Description/Instructions: Students will be given a card that has given information about their line. This might be a point and a slope, two points, or information about a parallel/perpendicular line. Students will find the equation of their line, written in slope-intercept form. Afterwards, they will line up from smallest y-intercept to largest y-intercept. Count the number of mistakes (if any) and have students complete the problem of the person standing next to them to check for accuracy.

Bloom's Levels: Analyze

Webb's DOK: 3

Engaging Experience 2

Title: [Marbleslides Lines in Desmos](#)

Suggested Length of Time: 45-60 minutes

Standards Addressed

Priority:

- A2.IF.A.1: Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.

Detailed Description/Instructions: Students will follow prompts in a Desmos activity (link on title) that allows them to construct lines that intersect various “stars.” Students will need to create multiple functions to make the scenario work and also keep mindful about domain restrictions, although they do not need to be fluent with the concept of domain at this point in time.

Bloom's Levels: Analyze

Webb's DOK: 3

Topic 2: 2-Variable Inequalities

Engaging Experience 1

Title: Inequality Circuit

Suggested Length of Time: 45-60 min

Standards Addressed

Priority:

- A2.IF.A.1: Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.

Detailed Description/Instructions: 10 to 20 cards with 2-variable inequalities will be posted around the room/hall. Each card will have a problem to graph and a solution to a different problem around the room. Students will graph the inequality that is on a card and then search for the correct answer on a different card. If students do the activity correctly, they will have gone through all cards in the circuit.

Bloom's Levels: Apply

Webb's DOK: 2

Topic 3: Distance and Midpoint Formulas

Engaging Experience 1

Title: Deriving formulas for distance and midpoint

Suggested Length of Time: 20 minutes

Standards Addressed

Priority Standards for unit:

- A2.REI.A.1: Create and solve equations and inequalities, including those that involve absolute value.

Detailed Description/Instructions: Instead of giving students the formulas they will need for distance and midpoint, we will prove them using the Pythagorean Theorem and averages.

Bloom's Levels: Analyze

Webb's DOK: 3

Topic 4: Solve and Apply Systems of Equations and Inequalities

Engaging Experience 1

Title: The Tortoise and Hare Activity

Suggested Length of Time: 60 minutes

Standards Addressed

Priority:

- A2.REI.B.3: Create and solve systems of equations that may include non-linear equations and inequalities.
- A2.IF.A.1: Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.

Detailed Description/Instructions: The Tortoise and the Hare finally have their long-awaited rematch. The Tortoise gets a 1,000-foot lead and runs at 9 inches per second. The Hare begins at the starting line and runs at a rate of 6 feet per second. There is also a rat in this race. The Rat starts 1,200 feet ahead of the Hare and runs back towards the starting line at a rate of 2 feet per second.

In this problem, students extract data from a story in order to write, manipulate, and graph systems of equations. It offers students a context to understand the relationships among data, equations, graphs and solutions.

Bloom's Levels: Create and Apply

Webb's DOK: 3, 2

Engaging Scenario

Engaging Scenario (An Engaging Scenario is a culminating activity that includes the following components: situation, challenge, specific roles, audience, product or performance.)

Link For Teachers : [HERE](#)

Students will work through 3 different application problems of linear systems. The link above is for the full walkthrough. Teachers can group students into 3 groups and allow each group to work one scenario. Have the students create a display (poster or digital) of the problem, system used, solution(s) and key importances of the problem. Students will present their findings to the class.

Summary of Engaging Learning Experiences for Topics

Topic	Engaging Experience Title	Description	Suggested Length of Time
Forms of Lines	Writing Equations of Lines Line-Up	Students will be given a card that has given information about their line. This might be a point and a slope, two points, or information about a parallel/perpendicular line. Students will find the equation of their line, written in slope-intercept form. Afterwards, they will line up from smallest y-intercept to largest y-intercept. Count the number of mistakes (if any) and have students complete the problem of the person standing next to them to check for accuracy.	15-20 minutes
Forms of Lines	Marbleslides Lines in Desmos	Students will follow prompts in a Desmos activity that allows them to construct lines that intersect various “stars.” Students will need to create multiple functions to make the scenario work and also keep mindful about domain restrictions, although they do not need to be fluent with the concept of domain at this point in time.	30 minutes
2-Variable Inequalities	Inequality Circuit	10 to 20 cards with 2-variable inequalities will be posted around the room/hall. Each card will have a problem to graph and a solution to a different problem around the room. Students will graph the inequality that is on a card and then search for the correct answer on a different card. If students do the activity correctly they will have gone through all cards in the circuit.	45-60 minutes
Distance and Midpoint Formula	Deriving formulas for distance and midpoint using the Pythagorean Theorem	Instead of giving students the formulas they will need for distance and midpoint, we will prove them using the Pythagorean Theorem, which students remember from Geometry.	20 minutes

Solve and Apply Systems of Equations and Inequalities	The Tortoise and the Hare Activity	The Tortoise and the Hare finally have their long-awaited rematch. The Tortoise gets a 1,000-foot lead and runs at 9 inches per second. The Hare begins at the starting line and runs at a rate of 6 feet per second. There is also a rat in this race. The Rat starts 1,200 feet ahead of the Hare and runs back towards the starting line at a rate of 2 feet per second. In this problem, students extract data from a story in order to write, manipulate, and graph systems of equations. It offers students a context to understand the relationships among data, equations, graphs and solutions	60 min
---	------------------------------------	---	--------

Unit 3: Exponents and Polynomials

Subject: College Algebra A

Grade: 10, 11, 12

Name of Unit: Exponents and Polynomials

Length of Unit: 12 blocks

Overview of Unit: In this unit students will simplify expressions using the rules of exponents, simplify polynomials through addition, subtraction and multiplication, factor expressions, solve by factoring, and solve applications using factoring.

Priority Standards for unit:

- A1.SSE.A.2: Analyze the structure of polynomials to create equivalent expressions or equations.

Supporting Standards for unit:

- A2.FM.A.1: Create functions and use them to solve applications of quadratic and exponential function model problems.

Priority Standard: A1.SSE.A.2: Analyze the structure of polynomials to create equivalent expressions or equations.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will use exponent rules to simplify expressions.	2
	Applying
The student will simplify polynomials with addition, subtraction, and multiplication.	2
	Applying
The student will factor expressions.	2
	Applying
The student will solve by factoring.	2
	Applying

The student will solve applications that involve factoring.	3
	Analyzing

Essential Questions:

1. How do you simplify expressions using exponents?
2. How do you simplify polynomial expressions?
3. How do you write a polynomial in completely factored form?
4. What is the zero-factor property and how do you use it to solve polynomial equations?

Enduring Understanding/Big Ideas:

1. Use the properties of exponents.
2. Use the distributive property and combine like terms.
3. Use various strategies of factoring including: GCF, difference of squares, perfect square trinomials, trinomials, and sum/difference of cubes.
4. When the product of two real numbers is zero, at least one of them is zero. This can be used to solve for when each factor equals zero.

Unit Vocabulary:

- Simplest form
- Factor
- Polynomial
- Base
- Degree
- Monomial
- Binomial
- Trinomial
- Perfect Square Trinomial
- Greatest Common Factor
- FOIL
- Prime
- Zero-Product Property
- Properties/rules/laws
- Coefficient

Resources for Vocabulary Development: Textbook

Topic 1: Exponent Rules

Engaging Experience 1

Title: Kahoot/Quizizz/Blooket

Suggested Length of Time: 30-45 min

Standards Addressed

Priority:

- A1.SSE.A.2: Analyze the structure of polynomials to create equivalent expressions or equations.

Detailed Description/Instructions: Find/create an online quiz practice competition for the class to practice exponent rules and deepen mastery.

Bloom's Levels: Analyze

Webb's DOK: 3

Topic 2: Polynomial Operations

Engaging Experience 1

Title: Polynomial Operation Mix-And-Match Activity

Suggested Length of Time: 30 minutes

Standards Addressed

Priority:

- A1.SSE.A.2: Analyze the structure of polynomials to create equivalent expressions or equations.

Detailed Description/Instructions: Students will be given a note card with a polynomial expression on it, and they will be expected to analyze the degree, number of terms, and leading coefficient. In the first round, students will organize themselves into groups by degree, answering questions involving adding and subtracting polynomials. In the second round, students will organize themselves by number of terms and will multiply polynomials. In the third round, students will find groups based on the leading coefficient and will simplify expressions of mixed forms.

Bloom's Levels: Analyze

Webb's DOK: 3

Topic 3: Solve by Factoring

Engaging Experience 1

Title: Factoring Using Algebra Tiles

Suggested Length of Time: 15 minutes

Standards Addressed

Priority:

- A1.SSE.A.2: Analyze the structure of polynomials to create equivalent expressions or equations.

Supporting:

- A2.FM.A.1: Create functions and use them to solve applications of quadratic and exponential function model problems.

Detailed Description/Instructions: Students will be given the task of creating a rectangle given algebra tiles or creating their own tiles using Smart Notebook. For example, the expression $x^2+8x+15$ would be represented by one blue square, 8 green “rows of x ” and 15 green single tiles. Using those tiles, students will attempt to create a rectangle. In this activity, students will see the relationship between factoring and FOILing and start to learn what it means to both be a perfect square trinomial and complete the square.

Bloom’s Levels: Analyze

Webb’s DOK: 3

Engaging Scenario

Engaging Scenario (An Engaging Scenario is a culminating activity that includes the following components: situation, challenge, specific roles, audience, product or performance.)

Students will pair up to design a swimming pool complex using specific guidelines and a budget. Students will be required to multiply polynomials, factor, and solve quadratics by factoring in a real-world scenario.

Summary of Engaging Learning Experiences for Topics

Topic	Engaging Experience Title	Description	Suggested Length of Time
Exponent Rules	Kahoot/Quizizz/Blooket	Find/create an online quiz practice competition for the class to practice exponent rules and deepen mastery.	30-45 minutes
Polynomial Operations	Polynomial Operation Mix-And-Match Activity	Students will be given a note card with a polynomial expression on it, and they will be expected to analyze the degree, number of terms, and leading coefficient. In the first round, students will organize themselves into groups by degree, answering questions involving adding and subtracting polynomials. In the second round, students will organize themselves by number of terms and will multiply polynomials. In the third round, students will find groups based on the leading coefficient and will simplify expressions of mixed forms.	30 minutes
Solve by Factoring	Factoring Using Algebra Tiles	Students will be given the task of creating a rectangle given algebra tiles or creating their own tiles using Smart Notebook. For example, the expression $x^2+8x+15$ would be represented by one blue square, 8 green “rows of x” and 15 green single tiles. Using those tiles, students will attempt to create a rectangle. In this activity, students will see the relationship between factoring and FOILing and start to learn what it means to both be a perfect square trinomial and complete the square	15 minutes

Unit 4: Rationals

Subject: College Algebra A

Grade: 10, 11, 12

Name of Unit: Rationals

Length of Unit: 13 Blocks

Overview of Unit: In this unit students will simplify, add, subtract, multiply, and divide (long and synthetic) rational functions, including complex fractions. Students will determine the domain and solve rational equations. They will also solve applications and literal equations involving rationals.

*If needed, review simplifying, adding, subtracting, multiplying, and dividing fractions.

Priority Standards for unit:

- A2.APR.A.4: Add, subtract, multiply and divide rational expressions.
- A2.REI.A.2: Solve rational equations where numerators and denominators are polynomials and where extraneous solutions may result.

Supporting Standards for unit:

- A2.APR.A.2: Understand the Remainder Theorem and use it to solve problems.
- A2.APR.A.3: Find the least common multiple of two or more polynomials.

Priority Standard: A2.APR.A.4: Add, subtract, multiply and divide rational expressions.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will add and subtract rational expressions, including those with unlike denominators.	2
	Applying
The student will multiply and divide (long and synthetic) rational expressions.	2
	Applying
The student will simplify expressions with complex fractions.	2
	Applying

The student will give final answers without common factors in the numerators and denominators.	2
	Applying
The student will determine the domain of rational expressions.	2
	Applying

Priority Standard: A2.REI.A.2: Solve rational equations where numerators and denominators are polynomials and where extraneous solutions may result.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will solve rational equations by various methods.	2
	Applying
The student will check solutions and identify those that are extraneous.	3
	Analyzing
The student will solve applications and literal equations involving rationals.	3
	Analyzing

Essential Questions:

1. How do you simplify rational expressions?
2. Why is the domain affected by rational functions?
3. Why are the domain restrictions in rational equations important?
4. How do you solve rational equations and use them to model real-world applications?

Enduring Understanding/Big Ideas:

1. Add, subtract, multiply, and divide using the cancellation property and common denominators.
2. A domain restriction occurs when there are values for x that make the function undefined. Rational functions have undefined values because they make the denominator equal to zero.
3. Domain restrictions create potentially extraneous solutions.
4. Find the domain restrictions, multiply by the LCD, and solve for the variable. Check for extraneous solutions by analyzing the domain restrictions.

Unit Vocabulary:

- Domain restrictions
- Complex fractions
- Least Common Denominator
- Least Common Divisor
- Extraneous
- Cancellation Property
- Isolate Variable

Resources for Vocabulary Development: Textbook

Topic 1: Operations with Rational Expressions

Engaging Experience 1

Title: Quadrant Partners Activity

Suggested Length of Time: 20 minutes

Standards Addressed

Priority:

- A2.APR.A.4: Add, subtract, multiply and divide rational expressions.

Supporting:

- A2.APR.A.3: Find the least common multiple of two or more polynomials.

Detailed Description/Instructions: Students will find four partners around the room (a different individual for each of their quadrants). In their partnership, students will work together to solve a problem, put the solution in an online document such as the collaboration space on One Note, and the teacher will ensure each group has the correct solution, addressing any misconceptions as they arise. This process will be repeated for each of the four quadrant partners.

Bloom's Levels: Apply

Webb's DOK: 2

Engaging Experience 2

Title: RallyCoach Activity

Suggested Length of Time: 20 minutes

Standards Addressed

Priority:

- A2.APR.A.4: Add, subtract, multiply and divide rational expressions.

Supporting:

- A2.APR.A.3: Find the least common multiple of two or more polynomials.

Detailed Description/Instructions: Students will find a partner and complete four problems. Two of the problems will be completed by Partner A, with Partner B checking for accuracy. Similarly, two problems will be completed by Partner B, with Partner A checking for accuracy. This accountability piece will hold each partner accountable, even if he or she is not currently working a problem.

Bloom's Levels: Analyze

Webb's DOK: 3

Topic 2: Solve and Apply

Engaging Experience 1

Title: Round Table Activity

Suggested Length of Time: 45 minutes

Standards Addressed

Priority:

- A2.REI.A.2: Solve rational equations where numerators and denominators are polynomials and where extraneous solutions may result.

Supporting:

- A2.APR.A.2: Understand the Remainder Theorem and use it to solve Problems.

Detailed Description/Instructions: Students will be placed in groups of four by the teacher and presented with a problem involving modeling a real-world scenario using rational equations. Each student will have one of four unique roles. He or she will either define the variables/ provide a diagram, set up the equation, solve the equation, or effectively communicate the solution to the problem. This process will be repeated four times so that each team member can experience each role in the group, with the teacher checking the solution before providing the next problem to each group.

Bloom's Levels: Analyze

Webb's DOK: 3

Engaging Scenario

Engaging Scenario (An Engaging Scenario is a culminating activity that includes the following components: situation, challenge, specific roles, audience, product or performance.)

Students will be given the choice of a task (work out simple math problems, shoot baskets, stack blocks, etc.). Students will then individually complete their task and record the time it took for them to complete the given task. Students will then pair up and, based on their individual times, calculate how long it would take them to complete the task together. Students will then complete the task together, record the time it took for them to complete the given task together and compare their results.

Summary of Engaging Learning Experiences for Topics

Topic	Engaging Experience Title	Description	Suggested Length of Time
Simplify Rational Expressions	Quadrant Partners Activity	Students will find four partners around the room (a different individual for each of their quadrants). In their partnership, students will work together to solve a problem put the solution in an online document such as the collaboration space on One Note, and the teacher will ensure each group has the correct solution, addressing any misconceptions as they arise. This process will be repeated for each of the four quadrant partners.	20 minutes
Simplify Rational Expressions	RallyCoach Activity	Students will find a partner and complete four problems. Two of the problems will be completed by Partner A, with Partner B checking for accuracy. Similarly, two problems will be completed by Partner B, with Partner A checking for accuracy. This accountability piece will hold each partner accountable, even if he or she is not currently working on a problem.	20 minutes
Solve and Apply	Round Table Activity	Students will be placed in groups of four by the teacher and presented with a problem involving modeling a real-world scenario using rational equations. Each student will have one of four unique roles. He or she will either define the variables/ provide a diagram, set up the equation, solve the equation, or effectively communicate the solution to the problem. This process will be repeated four times so that each team member can experience each role in the group, with the teacher checking the solution before providing the next problem to each group.	45 minutes

Unit 5: Radicals

Subject: College Algebra A

Grade: 10, 11, 12

Name of Unit: Radicals

Length of Unit: 9 blocks

Overview of Unit: In this unit students will simplify and perform operations with radicals, including rationalizing the denominator. They will convert between radicals and rational exponents. And students will solve equations with radicals and rational exponents.

Priority Standards for unit:

- A2.NQ.A.1: Extend the system of powers and roots to include rational exponents.
- A2.NQ.A.2: Create and recognize equivalent expressions involving radical and exponential forms of expressions.
- A2.NQ.A.3: Add, subtract, multiply and divide radical expressions.
- A2.NQ.A.4: Solve equations involving rational exponents and/or radicals and identify situations where extraneous solutions may result.

Supporting Standards for unit:

- A2.IF.A.2: Translate between equivalent forms of functions.

Priority Standard: A2.NQ.A.3: Add, subtract, multiply and divide radical expressions.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will simplify, add, subtract, and multiply radicals.	2
	Applying
The student will divide radicals, including rationalizing the denominator.	2
	Applying

Priority Standard: A2.NQ.A.1: Extend the system of powers and roots to include rational exponents.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will apply the rules of exponents to expressions that include rational exponents.	2
	Applying
The student will simplify expressions using rational exponents.	2
	Applying

Priority Standard: A2.NQ.A.2: Create and recognize equivalent expressions involving radical and exponential forms of expressions.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will be able to convert from radical form to rational exponent form.	2
	Applying
The student will be able to convert from rational exponent form to radical form.	2
	Applying
The student will recognize that radical form and rational exponent forms are equivalent.	2
	Applying

Priority Standard: A2.NQ.A.4: Solve equations involving rational exponents and/or radicals and identify situations where extraneous solutions may result.

Learning Targets	Webb's DOK Level
	Bloom's Level
The student will solve equations involving rational exponents.	2
	Applying
The student will solve equations involving radical expressions.	2
	Applying
The student will check for and identify extraneous solutions.	3
	Analyzing

Essential Questions:

1. How do you simplify radicals?
2. How do you combine radicals using the basic operations?
3. How do you rewrite radicals using rational exponents?
4. How do you solve equations involving radicals and rational exponents?

Enduring Understanding/Big Ideas:

1. You can simplify radicals by rewriting in groups of perfect squares, cubes, etc., including the proper use of absolute values.
2. Add and subtract like radicals, multiply and divide within radicands, including rationalizing denominators.
3. Rewriting a radical using the index of the radical and power of the radicand to become the numerator and denominator of the exponent.
4. Isolate the radical or rational exponent term, then apply inverse operation (reciprocal power), checking for extraneous solutions.

Unit Vocabulary:

- | | |
|----------------------|-------------|
| • Radical | • Conjugate |
| • Rational Exponents | • Radicand |
| • Rationalize | • Index |
| • Extraneous | • Root |

Resources for Vocabulary Development: Textbook

Topic 1: Radical Simplifying and Operations

Engaging Experience 1

Title: Guided Practice

Suggested Length of Time: 15-30 minutes

Standards Addressed

Priority:

- A2.NQ.A.1: Extend the system of powers and roots to include rational exponents.
- A2.NQ.A.2: Create and recognize equivalent expressions involving radical and exponential forms of expressions.
- A2.NQ.A.3: Add, subtract, multiply and divide radical expressions.

Supporting:

- A2.IF.A.2: Translate between equivalent forms of functions.

Detailed Description/Instructions: Students will review the process of simplifying radicals by performing various examples of simplifying and operations on radicals on a personal whiteboard (or using their laptop as a whiteboard).

Bloom's Levels: Understand, Apply, Analyze

Webb's DOK: 1-3

Topic 2: Solving Radical & Rational Exponent Equations

Engaging Experience 1

Title: Who is Right?

Suggested Length of Time: 15-20 minutes

Standards Addressed

Priority:

- A2.NQ.A.4: Solve equations involving rational exponents and/or radicals and identify situations where extraneous solutions may result.

Detailed Description/Instructions: Give students a problem ($\sqrt{x} = -3$). Show two students solutions - Carlos says the answer is 9 because you are supposed to square both sides, Andrea says there is no solution, have students discuss who is right and why - be sure to emphasize the importance of checking for extraneous solutions. Then move on to a more difficult example ($6 = x + \sqrt{x}$). Have students solve them and compare their solutions with a partner.

Bloom's Levels: Analyze, Evaluate

Webb's DOK: 3

Engaging Scenario

Engaging Scenario (An Engaging Scenario is a culminating activity that includes the following components: situation, challenge, specific roles, audience, product or performance.)

Students will access the graphing calculator features on Desmos. They will input various n th roots of the n th powers to notice patterns ($\sqrt[n]{x^n}$). Through discussion and collaboration, we will determine when the graphs are strictly located above the x -axis. Then, we will reverse the process to see when extraneous solutions are needed $(\sqrt[n]{x})^n$.

Summary of Engaging Learning Experiences for Topics

Topic	Engaging Experience Title	Description	Suggested Length of Time
Simplifying Radicals	Guided Practice	Students will review the process of simplifying radicals by performing various examples of simplifying and performing operations on radicals on a personal whiteboard (or using their laptop as a whiteboard).	15-30 minutes
Solving Radical Equations	Who is Right?	Give students a problem ($\sqrt{x} = -3$). Show two students solutions - Carlos says the answer is 9 because you are supposed to square both sides, Andrea says there is no solution, have students discuss who is right and why - be sure to emphasize the importance of checking for extraneous solutions. Then move on to a more difficult example ($6 = x + \sqrt{x}$). Have students solve them and compare their solutions with a partner.	15-20 minutes

Unit 6: Quadratics

Subject: College Algebra A

Grade: 10, 11, 12

Name of Unit: Quadratics

Length of Unit: 12 Blocks

Overview of Unit: In this unit students will solve quadratic (and quadratic type) equations including complex solutions, analyze the graph of a quadratic function in standard form, and solve one-variable quadratic inequalities.

Priority Standards for unit:

- A2.NQ.B.6: Add, subtract, multiply and divide complex numbers
- A2.REI.A.1: Create and solve equations and inequalities, including those that involve absolute value
- A2.IF.A.2: Translate between equivalent forms of functions.
- A2.IF.A.1: Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.

Supporting Standards for unit:

- A2.FM.A.1: Create functions and use them to solve applications of quadratic and exponential function model problems.
- A1.SSE.A.3: Choose and produce equivalent forms of a quadratic expression or equations to reveal and explain properties.
 - A1.SSE.A.3.a: Find the zeros of a quadratic function by rewriting it in factored form.
 - A1.SSE.A.3.b: Find the maximum or minimum value of a quadratic function by completing the square.

Priority Standard: A2.NQ.B.6: Add, subtract, multiply and divide complex numbers	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will add, subtract, and multiply complex numbers.	2
	Applying

The student will divide complex numbers, including rationalizing the denominator.	2
	Applying

Priority Standard: A2.REI.A.1: Create and solve equations and inequalities, including those that involve absolute value	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will solve quadratic equations by factoring, completing the square, and quadratic formula.	2
	Applying
The student will solve one-variable quadratic inequalities.	2
	Applying

Priority Standard: A2.IF.A.2: Translate between equivalent forms of functions.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will solve rational and radical equations that convert into quadratic equations.	2
	Applying

Priority Standard: A2.IF.A.1: Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will graph quadratic functions from standard form.	2
	Applying

Essential Questions:

1. How do you perform operations with complex numbers?
2. How do you solve a quadratic equation?
3. How do you graph a quadratic function?
4. How do you solve a one-variable quadratic inequality?

Enduring Understanding/Big Ideas:

1. Use polynomial operations to simplify into a + bi form, reducing any powers of i and rationalizing as necessary.
2. Solve a quadratic equation using a variety of techniques including factoring, the quadratic formula, and completing the square.
3. Use key features, such as finding the vertex, axis of symmetry, max/min, and x - and y -intercepts.
4. Solve a quadratic inequality with various methods—graphing the quadratic function using x -intercepts with the graph to decide solution intervals or making a sign chart with zeros.

Unit Vocabulary:

- Quadratic
- Discriminant
- Quadratic inequalities
- Factoring
- Parabola
- Vertex
- Roots, Zeros, x -intercepts
- Axis of Symmetry
- Maximum/Minimum
- Intercepts

Resources for Vocabulary Development: Textbook

Topic 1: Complex Numbers

Engaging Experience 1

Title: Who is Right?

Suggested Length of Time: 10-15 minutes

Standards Addressed

Priority:

- A2.NQ.B.6: Add, subtract, multiply and divide complex numbers

Detailed Description/Instructions: After reviewing the definition of a complex number present students with the following problem: $\sqrt{-4} \times \sqrt{-4} = 4$. Discuss as a class or in small groups whether this is correct or incorrect and why. Then go on to explain, if necessary, that if $\sqrt{3} \times \sqrt{3} = 3$, shouldn't the $\sqrt{-4} \times \sqrt{-4} = -4$? using complex numbers to show why this works.

Bloom's Levels: Analyze, Evaluate

Webb's DOK: 3

Topic 2: Solve Quadratic Equations and Inequalities

Engaging Experience 1

Title: Generate the quadratic formula by completing the square

Suggested Length of Time: 10 minutes

Standards Addressed

Priority:

- A2.IF.A.2: Translate between equivalent forms of functions.

Detailed Description/Instructions: Students can complete this on a white board: Have the students write out a quadratic equation in standard form (with values for a, b, and c where a does not equal 1). Have them solve this equation by completing the square. Now have them write out $ax^2 + bx + c = 0$ and solve this by completing the square. If they do it correctly, they should generate the quadratic formula.

Bloom's Levels: Understand, Analyze

Webb's DOK: 2, 3

Engaging Experience 2

Title: Making a connection

Suggested Length of Time: 30 minutes

Standards Addressed

Priority:

- A2.REI.A.1: Create and solve equations and inequalities, including those that involve absolute value.

Detailed Description/Instructions: Give the students a quadratic inequality and have them graph it on their graphing calculator (or use Desmos), demonstrate the solution using interval notation. Give them a few more examples with a variety of solution types and a variety of types of quadratic functions (some in factored form). Discuss what conclusions can be made about the solutions (they should notice that the critical points come from the roots of the quadratic equations). Now demonstrate the test-point method as another way of solving a quadratic inequality without graphing on a coordinate plane.

Bloom's Levels: Understand, Analyze

Webb's DOK: 2, 3

Topic 3: Graphing Quadratic Functions

Engaging Experience 1

Title: [Desmos Activities](#)

Suggested Length of Time: 30-45 minutes

Standards Addressed

Priority:

- A2.IF.A.1: Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.

Supporting:

- A2.FM.A.1: Create functions and use them to solve applications of quadratic and exponential function model problems.
- A1.SSE.A.3: Choose and produce equivalent forms of a quadratic expression or equations to reveal and explain properties.
 - A1.SSE.A.3.a: Find the zeros of a quadratic function by rewriting it in factored form.
 - A1.SSE.A.3.b: Find the maximum or minimum value of a quadratic function by completing the square.

Detailed Description/Instructions: Explore the Desmos parabolas link above to find a good fit for your class. We recommend looking into the Polygraph Parabolas or Two Truths and a Lie.

Bloom's Levels: Understand, Analyze

Webb's DOK: 2, 3

Engaging Scenario

Engaging Scenario (An Engaging Scenario is a culminating activity that includes the following components: situation, challenge, specific roles, audience, product or performance.)

Students will be grouped up to perform the following task. Students will use a catapult to create a parabolic equation for the path of the projectile. Students will use key features and heights at different times to create the equation.

Method 1: Provide students a table of heights and times found by the projectile.

Method 2: Students create a catapult and create their own table. [LINK](#)

Summary of Engaging Learning Experiences for Topics

Topic	Engaging Experience Title	Description	Suggested Length of Time
Complex Numbers	Who is right?	After reviewing the definition of a complex number present students with the following problem: $\sqrt{-4} \times \sqrt{-4} = 4$. Discuss as a class or in small groups whether this is correct or incorrect and why. Then go on to explain, if necessary, that if $\sqrt{3} \times \sqrt{3} = 3$, shouldn't the $\sqrt{-4} \times \sqrt{-4} = -4$? Using complex numbers show why this works.	10-15 minutes
Solve Quadratic Equations and Inequalities	Generate the quadratic formula by completing the square	Students can complete this on a white board: Have the students write out a quadratic equation in standard form (with values for a, b, and c where a does not equal 1). Have them solve this equation by completing the square. Now have them write out $ax^2 + bx + c = 0$ and solve this by completing the square. If they do it correctly, they should generate the quadratic formula.	10 minutes
Solve Quadratic Equations and Inequalities	Making a connection	Give the students a quadratic inequality and have them graph it on their graphing calculator (or use Desmos), demonstrate the solution using interval notation. Give them a few more examples with a variety of solution types and a variety of types of quadratic functions (some in factored form). Discuss what conclusions can be made about the solutions (they should notice that the critical points come from the roots of the quadratic equations). Now demonstrate the test-point method as another way of solving a quadratic inequality without graphing on a coordinate plane.	30 minutes

Graphing Quadratic Functions	Desmos Activities	Explore the Desmos parabolas link above to find a good fit for your class. We recommend looking into the Polygraph Parabolas or Two Truths and a Lie.	30-45 minutes
------------------------------	-----------------------------------	---	---------------

Unit 7: Functions

Subject: College Algebra A

Grade: 10, 11, 12

Name of Unit: Functions

Length of Unit: 11 Blocks

Overview of Unit: Students will understand the definition and notation of functions. They will graph a variety of parent functions and their transformations, noting their domain and range. Students will graph piecewise functions. They will use function notation to compose functions.

* If time, students will find inverses to a function algebraically, graphically, and numerically and study variation.

Priority Standards for unit:

- A2.IF.A.1: Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.
- A2.BF.A.1: Create new functions by applying the four arithmetic operations and composition of functions (modifying the domain and range as necessary).
- A2.BF.A.3: Describe the effects of transformations algebraically and graphically, creating vertical and horizontal translations, vertical and horizontal reflections and dilations (expansions/compressions) for linear, quadratic, cubic, square and cube root, absolute value, exponential and logarithmic functions.

Priority Standard: A2.IF.A.1: Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will understand the definition of a function.	2
	Applying
The student will use function notation.	2
	Applying
The student will identify and graph parent functions, denoting the domain and range.	2
	Applying

The student will graph and evaluate piecewise functions.	2
	Applying

Priority Standard: A2.BF.A.1: Create new functions by applying the four arithmetic operations and composition of functions (modifying the domain and range as necessary).	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will compose two or more functions to create a new function.	2
	Applying

Priority Standard: A2.BF.A.3: Describe the effects of transformations algebraically and graphically, creating vertical and horizontal translations, vertical and horizontal reflections and dilations (expansions/compressions) for linear, quadratic, cubic, square and cube root, absolute value, exponential and logarithmic functions.	
Learning Targets	Webb's DOK Level
	Bloom's Level
The student will transform parent functions, denoting the new domain and range.	2
	Applying

Essential Questions:

1. How do you transform a graph?
2. How do you graph piecewise functions?
3. How do you compose functions?
4. * *If time*: How do you find the inverse of a function?
5. * *If time*: How are different forms of variation modeled?

Enduring Understanding/Big Ideas:

1. Transform a graph or describe transformations to a graph that is linear, quadratic, cubic, absolute-value, square root or cube root using vertical and horizontal translations, reflections, and dilations.
2. Make a table of values using the domain and then use those points in conjunction with the parent function shapes to graph.
3. Use the definition of composition to put one function into another.
4. * *If time*: Use the key idea of switching inputs and outputs to generate an inverse function.
5. * *If time*: Direct variation involves multiplication by a constant, inverse involves a constant which is divided by another variable, and joint includes combinations of direct and inverse.

Unit Vocabulary:

- Function
- Independent & Dependent Variable
- Parent Function
- Piecewise Function
- Evaluate
- Composition
- Transformations
- Translate
- Reflection
- Dilation
- Stretching/Shrinking
- *One to One
- *Inverse
- *Variation (Direct, Inverse, Joint)

Resources for Vocabulary Development: Textbook

Topic 1: Functions and Graphs

Engaging Experience 1

Title: Cell Phone Activity

Suggested Length of Time: 30 minutes

Standards Addressed

Priority:

- A2.IF.A.1: Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.

Detailed Description/Instructions: After being introduced to the idea of a piecewise function students will be given a cell phone scenario with 2-3 different plans (for example plan A: \$30 monthly fee, 450 anytime minutes, \$.45 for each additional minute, plan B: \$45 monthly fee, 900 anytime minutes, \$.30 for each additional minute). Students will be given a task to create a piecewise function to represent each scenario, then answer questions about which is the best plan if you use 400 minutes each month, 475,600, etc., verifying this both graphically and algebraically.

Bloom's Levels: Understand, Analyze

Webb's DOK: 2, 3

Engaging Experience 2

Title: Transformations exploration

Suggested Length of Time: 30 minutes

Standards Addressed

Priority:

- A2.IF.A.1: Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.
- A2.BF.A.3: Describe the effects of transformations algebraically and graphically, creating vertical and horizontal translations, vertical and horizontal reflections and dilations (expansions/compressions) for linear, quadratic, cubic, square and cube root, absolute value, exponential and logarithmic functions.

Detailed Description/Instructions: Review the basic families of functions and their associated graphs. Then students will graph several with vertical shifting, drawing their own conclusions about what causes the graph to shift and by how much. Same scenario with horizontal shifting, reflections about the x-axis, and reflections about the y-axis. To tie everything together students will be given a graph with multiple transformations. Without graphing, using their previous findings, they will determine what kind of transformation has occurred. They can check their findings by graphing on their calculator (or in Desmos).

Bloom's Levels: Understand, Analyze

Webb's DOK: 2, 3

Topic 2: Function Composition

Engaging Experience 1

Title: Chain Reaction

Suggested Length of Time: 15 minutes

Standards Addressed

Priority:

- A2.BF.A.1: Create new functions by applying the four arithmetic operations and composition of functions (modifying the domain and range as necessary).

Detailed Description/Instructions: Students will be divided into groups of 4 or 5 and labeled with a number 1-5 (for groups of 4 one person will go twice). The teacher will prepare 5 functions (using a variety of ones discussed) and print these same 5 functions on note cards for each of the groups in the class. Each group will receive the set of 5 functions and distribute them to their group members in random order. The teacher will then call out a number, for example -1. The 1 student in each group will evaluate his/her function at that value, the 2 students will then evaluate his/her function at the answer to student 1's function. This will continue on until all 5 functions have been evaluated. Answers will be checked, and students will then have an opportunity to go back and fix their chain if they were wrong. This is a good lead into discussing the composition of functions.

Bloom's Levels: Apply

Webb's DOK: 3

Engaging Scenario

Engaging Scenario (An Engaging Scenario is a culminating activity that includes the following components: situation, challenge, specific roles, audience, product or performance.)

“Match My Curve!” activity on Desmos. In this activity, students develop their understanding of standard, factored, and vertex forms of quadratic functions by matching parabolas (as closely as they can) to curves in images from the real world.

Summary of Engaging Learning Experiences for Topics

Topic	Engaging Experience Title	Description	Suggested Length of Time
Functions and Graphs	Cell Phone Activity	After being introduced to the idea of a piecewise function students will be given a cell phone scenario with 2-3 different plans (for example plan A: \$30 monthly fee, 450 anytime minutes, \$.45 for each additional minute, plan B: \$45 monthly fee, 900 anytime minutes, \$.30 for each additional minute). Students will be given a task to create a piecewise function to represent each scenario, then answer questions about which is the best plan if you use 400 minutes each month, 475,600, etc., verifying this both graphically and algebraically.	30 minutes
Functions and Graphs	Transformations exploration	Review the basic families of functions and their associated graphs. Then students will graph several with vertical shifting, drawing their own conclusions about what causes the graph to shift and by how much. Same scenario with horizontal shifting, reflections about the x-axis, and reflections about the y-axis. To tie everything together students will be given a graph with multiple transformations. Without graphing, using their previous findings, they will determine what kind of transformation has occurred. They can check their findings by graphing on their calculator (or in Desmos).	30 minutes
Function Composition	Chain Reaction	Students will be divided into groups of 4 or 5 and labeled with a number 1-5 (for groups of 4 one person will go twice). The teacher will prepare 5 functions (using a variety of ones discussed) and print these same 5 functions on note cards for each of the groups in the class. Each group will receive the set of 5 functions and distribute them to their group members in random order. The	15 minutes

		teacher will then call out a number, for example -1. The 1 student in each group will evaluate his/her function at that value, the 2 students will then evaluate his/her function at the answer to student 1's function. This will continue on until all 5 functions have been evaluated. Answers will be checked, and students will then have an opportunity to go back and fix their chain if they were wrong. This is a good lead into discussing the composition of functions.	
--	--	---	--

Unit of Study Terminology

Appendices: All Appendices and supporting material can be found in this course's shell course in the District's Learning Management System.

Assessment Leveling Guide: A tool to use when writing assessments in order to maintain the appropriate level of rigor that matches the standard.

Big Ideas/Enduring Understandings: Foundational understandings teachers want students to be able to discover and state in their own words by the end of the unit of study. These are answers to the essential questions.

Engaging Experience: Each topic is broken into a list of engaging experiences for students. These experiences are aligned to priority and supporting standards, thus stating what students should be able to do. An example of an engaging experience is provided in the description, but a teacher has the autonomy to substitute one of their own that aligns to the level of rigor stated in the standards.

Engaging Scenario: This is a culminating activity in which students are given a role, situation, challenge, audience, and a product or performance is specified. Each unit contains an example of an engaging scenario, but a teacher can substitute with the same intent in mind.

Essential Questions: Engaging, open-ended questions that teachers can use to engage students in the learning.

Priority Standards: What every student should know and be able to do. These were chosen because of their necessity for success in the next course, the state assessment, and life.

Supporting Standards: Additional standards that support the learning within the unit.

Topic: These are the main teaching points for the unit. Units can have anywhere from one topic to many, depending on the depth of the unit.

Unit of Study: Series of learning experiences/related assessments based on designated priority standards and related supporting standards.

Unit Vocabulary: Words students will encounter within the unit that are essential to understanding. Academic Cross-Curricular words (also called Tier 2 words) are those that can be found in multiple content areas, not just this one. Content/Domain Specific vocabulary words are those found specifically within the content.

Unit of Study Terminology

Appendices: All Appendices and supporting material can be found in this course's shell course in the District's Learning Management System.

Assessment Leveling Guide: A tool to use when writing assessments in order to maintain the appropriate level of rigor that matches the standard.

Big Ideas/Enduring Understandings: Foundational understandings teachers want students to be able to discover and state in their own words by the end of the unit of study. These are **Unit of Study Terminology**

Appendices: All Appendices and supporting material can be found in this course's shell course in the District's Learning Management System.

Assessment Leveling Guide: A tool to use when writing assessments in order to maintain the appropriate level of rigor that matches the standard.

Big Ideas/Enduring Understandings: Foundational understandings teachers want students to be able to discover and state in their own words by the end of the unit of study. These are answers to the essential questions.

Engaging Experience: Each topic is broken into a list of engaging experiences for students. These experiences are aligned to priority and supporting standards, thus stating what students should be able to do. An example of an engaging experience is provided in the description, but a teacher has the autonomy to substitute one of their own that aligns to the level of rigor stated in the standards.

Engaging Scenario: This is a culminating activity in which students are given a role, situation, challenge, audience, and a product or performance is specified. Each unit contains an example of an engaging scenario, but a teacher has the ability to substitute with the same intent in mind.

Essential Questions: Engaging, open-ended questions that teachers can use to engage students in the learning.

Priority Standards: What every student should know and be able to do. These were chosen because of their necessity for success in the next course, the state assessment, and life.

Supporting Standards: Additional standards that support the learning within the unit.

Topic: These are the main teaching points for the unit. Units can have anywhere from one topic to many, depending on the depth of the unit.

Unit of Study: Series of learning experiences/related assessments based on designated priority standards and related supporting standards.

Unit Vocabulary: Words students will encounter within the unit that are essential to understanding. Academic Cross-Curricular words (also called Tier 2 words) are those that can be found in multiple content areas, not just this one. Content/Domain Specific vocabulary words are those found specifically within the content.
answers to the essential questions.

Engaging Experience: Each topic is broken into a list of engaging experiences for students. These experiences are aligned to priority and supporting standards, thus stating what students should be able to do. An example of an engaging experience is provided in the description, but a teacher has the autonomy to substitute one of their own that aligns to the level of rigor stated in the standards.

Engaging Scenario: This is a culminating activity in which students are given a role, situation, challenge, audience, and a product or performance is specified. Each unit contains an example of an engaging scenario, but a teacher has the ability to substitute with the same intent in mind.

Essential Questions: Engaging, open-ended questions that teachers can use to engage students in the learning.

Priority Standards: What every student should know and be able to do. These were chosen because of their necessity for success in the next course, the state assessment, and life.

Supporting Standards: Additional standards that support the learning within the unit.

Topic: These are the main teaching points for the unit. Units can have anywhere from one topic to many, depending on the depth of the unit.

Unit of Study: Series of learning experiences/related assessments based on designated priority standards and related supporting standards.

Unit Vocabulary: Words students will encounter within the unit that are essential to understanding. Academic Cross-Curricular words (also called Tier 2 words) are those that can be found in multiple content areas, not just this one. Content/Domain Specific vocabulary words are those found specifically within the content.