MATHEMATICS
Curriculum Unit Overview
PRINCIPLES OF ALGEBRA

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## Unit 1 - Algebraic Expressions

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| | | | |
|---|---|---|---|
| **Course Title**: PRINCIPLES of ALGEBRA | **Course Author:** Ryan Shevitz | **Grade Level(s):** 9 | **Time/Duration:** 43min/20 periods |
| **Course Summary**: The Principles of Algebra course is designed to reinforce algebra foundations for 9th graders who were not ready to take on the weight and rigor of Algebra 1. | | | |
| **Unit Name:** Algebraic Expression | **Unit Number:** 1 | **Created: Spring 2023** | **Revised:** TBD |

**Standards Addressed:**

- CC.2.2.7.B.1 Apply properties of operations to generate equivalent expressions.

## Stage 1 Desired Results: Enduring Understandings & Essential Questions

***What are the overarching takeaways and big ideas for students?***

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**Big Ideas**:
Write, simplify, and evaluate algebraic expressions.

### *Transfer*

*Students will be able to independently use their learning to...*

1. Write algebraic expressions and evaluate the using the order of operations
2. Identify properties of and use them to simplify an expression.
3. Combine like terms and use the distributive property to simplify algebraic expressions.

### *Meaning*

**UNDERSTANDINGS**

*Students will understand that…*

1. Algebraic expressions consist of terms that are added or subtracted.
2. Only like terms can be combined (added or subtracted).
3. Once an unknown or variable is known, it's value can be plugged in, and the resulting numerical expression can be simplified by way of the order of operations.

**ESSENTIAL QUESTIONS**

1. What are like terms?
2. Will you always/sometimes/never have a single value when an expression is simplified?
3. Can you combine like terms inside parenthesis with terms outside parentheses?
4. What does it mean to "PLug N Chug"?

## Stage 1: Essential Content, Concepts & Skills

***What do we want students to know and be able to do?***

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***Acquisition***

**KNOWLEDGE**

**Students will know…**

1. How to simplify algebraic expressions by distributing when there are parentheses and combining like terms.
2. How to evaluate an algebraic expression given the value of an unknown by “Plug N Chug”.

**SKILLS**

**Students will be skilled at (be able to do)...**

1. Simplifying algebraic expressions.
2. Evaluating algebraic expressions.

## Stage 2: Assessments/Evidence of Learning

***What are the formative (informal) and summative (formal) assessments used to measure learning and growth?***
***How will you know that they did it?***

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| Evaluative Criteria | Assessment Evidence |
|---|---|
| 1. End of unit test to be completed independently in 1 class period.<br>2. Test will contain at least one problem utilizing strategies/procedures demonstrated in the unit. | PERFORMANCE TASK(S)/Think GRASPS:<br>1. Warm up questions done individually/partnered/grouped.<br>2. Daily discussion, Q/A, and practice.<br>3. Get More Math practice.<br>4. Quiz partially through the unit.<br>5. Unit test. |
| | OTHER EVIDENCE: |

| | |
|---|---|
| | 1. Teacher observed evidence of student understanding during guided practice. |

## Stage 3: Learning Plan

***What are the differentiated instructional strategies, activities, lesson plans that support the enduring understandings and essential questions for all students?***
***This section provides a summary of the Key Learning Events and Instruction***

***Teachers may summarize the topics within lessons or may utilize Laurel UbD Lesson Plan Template***

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*Summary of Key Learning Events and Instruction*

Instructional days focus on new skills and will include:

1. Review and explanation of examples
2. Guided practice
3. Independent practice
4. Practice application problems
5. Question/answer time

Instruction throughout the unit will be guided by essential questions as it develops. Continual checking for understanding through formative assessment will dictate tempo.

RESOURCES: Teacher-provided worksheets and practice, Kuta software (Infinite Algebra), and GetMoreMath

## Unit 2 - Solving Equations

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| | | | |
|---|---|---|---|
| **Course Title**: PRINCIPLES of ALGEBRA | **Course Author:** Ryan Shevitz | **Grade Level(s):** 9 | **Time/Duration:** 43min/30 periods |
| **Course Summary**: | | | |
| **Unit Name:** Solving Equations | **Unit Number:** 2 | **Created: Spring 2023** | **Revised:** TBD |

**Standards Addressed:**

- CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.
- A1.1.2.1.1 Write, solve, and/or apply a linear equation
- A1.1.2.1.2 Use and/or identify an algebraic property to justify any step in an equation-solving process(linear equations only).
- A1.1.2.1.3 Interpret solutions to problems in the context of the problem situation(linear equations only).

## Stage 1 Desired Results: Enduring Understandings & Essential Questions

***What are the overarching takeaways and big ideas for students?***

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**Big Ideas**:
Write, solve, and interpret linear equations in one variable.

***Transfer***

*Students will be able to independently use their learning to...*

1. Decide on properties needed to solve an equation
2. Decide if the solution will have one value, no solution, or infinitely many.
3. Evaluate any possible solution value to prove if it is a solution or not.

***Meaning***

**UNDERSTANDINGS**

*Students will understand that…*

1. Solving equations uses mathematical properties and has a procedure that needs followed
2. Opposite operations are known as inverse operations.
3. Balancing an equation means keeping both sides equal.

**ESSENTIAL QUESTIONS**

1. SOLVING
   - Does the equation have parenthesis?
   - Does the equation have like terms to combine?
   - Does the equation have “x” terms on opposite sides of the equal sign?
   - Does the equation have constants on opposite sides of the equal sign?
2. WRITING
   - How do I identify the meaning of the variable?
   - Is there a rate I need to multiply?
   - Is there a constant to add/subtract?
   - Is there a total identified?
   - Is there a specific shape with any given measures?

## Stage 1: Essential Content, Concepts & Skills

***What do we want students to know and be able to do?***

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***Acquisition***

**KNOWLEDGE**

**Students will know…**

1. Steps to isolate the variable in an equation.
2. Format for writing a linear equation in one variable.
3. What it means when the variable cancels out of an equation in the solving process.
4. What a solution to an equation means.
5. How to check their solutions.

**SKILLS**

**Students will be skilled at (be able to do)...**

1. Applying the solving process to equations in one variable.
2. Solving a linear equation in one variable.
3. Explain each step of solving an equation.
4. Write equations in one variable and use them to solve problems.
5. Analyzing an incorrect solution to find the error in the solving process.
6. Giving examples of equations with one, no, or infinitely many solutions.

## Stage 2: Assessments/Evidence of Learning

***What are the formative (informal) and summative (formal) assessments used to measure learning and growth?***
***How will you know that they did it?***

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| Evaluative Criteria | Assessment Evidence |
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| | OTHER EVIDENCE:<br>1. Teacher observed evidence of student understanding during guided practice. |

## Stage 3: Learning Plan

***What are the differentiated instructional strategies, activities, lesson plans that support the enduring understandings and essential questions for all students?***
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*Summary of Key Learning Events and Instruction*

Instructional days focus on new skills and will include:

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3. Independent practice
4. Practice application problems
5. Question/answer time

Instruction throughout the unit will be guided by essential questions as it develops. Continual checking for understanding through formative assessment will dictate tempo.

RESOURCES: Teacher-provided worksheets and practice, Kuta software (Infinite Algebra), and GetMoreMath

## Unit 3 - Inequalities

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| | | | |
|---|---|---|---|
| **Course Title**: PRINCIPLES of ALGEBRA | **Course Author:** Ryan Shevitz | **Grade Level(s):** 9 | **Time/Duration:** 43min/25 periods |
| **Course Summary**: (optional) [Type Here] | | | |
| **Unit Name:** Inequalities | **Unit Number:** 3 | **Created:** Spring 23 | **Revised:** TBD |

**Standards Addressed:**

- A1.1.3.1.2 Identify or graph the solution set to a linear inequality on a number line.
- A1.1.3.1.3 Interpret solutions to problems in the context of the problem situation for linear inequalities only.

## Stage 1 Desired Results: Enduring Understandings & Essential Questions

***What are the overarching takeaways and big ideas for students?***

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**Big Ideas**:
Identify an inequality given in a math statement or verbal statement.
Solve and graph inequality solutions.
Write and solve equations/inequalities given a real world problem.

### *Transfer*

*Students will be able to independently use their learning to...*

1. Identify solutions on a graph or in a statement.
2. Identify special cases such as infinitely many solutions or no solutions.
3. Identify and give examples of solutions that do and do not satisfy the inequality.
4. Provide mathematical proof to support answers.

### *Meaning*

**UNDERSTANDINGS**

*Students will understand that…*

1. Solutions to inequalities may include more than one value typically, infinitely many values or no values.
2. Solutions to inequalities can be visually represented by graphing.
3. Inequalities are solved with the same process as equations. (when multiplying or dividing both sides of an inequality by a negative in the solving process, you must flip the inequality)

**ESSENTIAL QUESTIONS**

1. Is the statement given an inequality or equation?
2. Do I need to represent the solutions on a graph?
3. Do I use “greater than”, “less than”, greater than or equal to”, or “less than or equal to” according to the word description?
4. Does my graph need open or closed endpoints, and what direction should the graph point?
5. Does my answer make sense?

## Stage 1: Essential Content, Concepts & Skills

***What do we want students to know and be able to do?***

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***Acquisition***

**KNOWLEDGE**

**Students will know…**

1. When to graph with an open or closed circle endpoint.
2. To shade on a graph to show where solutions are included.
3. How to identify solutions as special cases.
4. How to solve an inequality.
5. How to prove/disprove points as solutions or not part of the solution set.

**SKILLS**

**Students will be skilled at (be able to do)...**

1. Identify the solution area on a graph
2. Solve inequalities.
3. Recognize and transfer verbal statements to mathematical statements.
4. Use solutions to answer real world problems.

## Stage 2: Assessments/Evidence of Learning

***What are the formative (informal) and summative (formal) assessments used to measure learning and growth?***
***How will you know that they did it?***

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| Evaluative Criteria | Assessment Evidence |
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| 1. End of unit test to be completed independently in 1 class period.<br>2. Test will contain at least one problem utilizing strategies/procedures demonstrated in the unit. | PERFORMANCE TASK(S)/Think GRASPS:<br>1. Warm up questions done individually/partnered/grouped.<br>2. Daily discussion, Q/A, and practice.<br>3. Get More Math practice.<br>4. Quiz partially through the unit.<br>5. Unit test. |
| | OTHER EVIDENCE:<br>1. Teacher observed evidence of student understanding during guided practice. |

## Stage 3: Learning Plan

***What are the differentiated instructional strategies, activities, lesson plans that support the enduring understandings and essential questions for all students?***
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*Summary of Key Learning Events and Instruction*

Instructional days focus on new skills and will include:

1. Review and explanation of examples
2. Guided practice
3. Independent practice
4. Practice application problems
5. Question/answer time

Instruction throughout the unit will be guided by essential questions as it develops. Continual checking for understanding through formative assessment will dictate tempo.

RESOURCES: Teacher-provided worksheets and practice, Kuta software (Infinite Algebra), and GetMoreMath

## Unit 4 - Intro to Functions

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| | | | |
|---|---|---|---|
| **Course Title**: PRINCIPLES of ALGEBRA | **Course Author:** Ryan Shevitz | **Grade Level(s):** 9 | **Time/Duration:** 43min/25 periods |
| **Course Summary**: (optional) [Type Here] | | | |
| **Unit Name:** Intro to Functions | **Unit Number:** 4 | **Created:** Spring 23 | **Revised:** TBD |

**Standards Addressed:**

- CC.2.2.8.C.1 Define, evaluate, and compare functions.
- CC.2.2.8.C.2 Use concepts of functions to model relationships between quantities.
- A1.2.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.
- A1.2.1.1.2 Determine whether a relation is a function, given a set of points or a graph.
- A1.2.1.1.3 Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table).

## Stage 1 Desired Results: Enduring Understandings & Essential Questions

***What are the overarching takeaways and big ideas for students?***

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**Big Ideas**:
A relation is a function if for every input(domain) there is exactly one output (range).
Functions can be defined, evaluated, and compared algebraically, graphically, or numerically in tables.

### *Transfer*

*Students will be able to independently use their learning to...*

1. Determine if a mathematical relation is a function or not.
2. Identify key components of a function and a relation.
3. Represent and compare functions & relations in equation, table or graphical form.
4. Evaluate functions based on a given input

### *Meaning*

**UNDERSTANDINGS**

*Students will understand that…*

1. A function is a relation, but a relation may not be a function.
2. Functions can be given in equation form, a table of values, and/or a graphical form.
3. Values in a table can be used as ordered pairs to be graphed.
4. Graphical forms of functions must pass a “vertical line test”.
5. Functions can be evaluated given an input or “x” value with notation f(x) = .

**ESSENTIAL QUESTIONS**

1. Is the relation a function, or is it just a relation?  Do all of my inputs have exactly one output?
2. Does my relation in graphical form pass a “vertical line test” to be a function?

## Stage 1: Essential Content, Concepts & Skills

***What do we want students to know and be able to do?***

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***Acquisition***

**KNOWLEDGE**

**Students will know…**

1. How to classify a relation as a function or not.
2. HJow to use the vertical line test to show if a graph is a function or not.
3. How to interpret a table of values/mapping diagram to determine a function or not.
4. How to graph a function using an input/output table.
5. How to evaluate a function when given in function notation f(x).

**SKILLS**

**Students will be skilled at (be able to do)...**

1. Classifying relations as functions or not.
2. Graphing functions by making an input/output table.
3. Evaluating functions given an input.

## Stage 2: Assessments/Evidence of Learning

***What are the formative (informal) and summative (formal) assessments used to measure learning and growth?***
***How will you know that they did it?***

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| Evaluative Criteria | Assessment Evidence |
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| 1. End of unit test to be completed independently in 1 class period.<br>2. Test will contain at least one problem utilizing strategies/procedures demonstrated in the unit. | PERFORMANCE TASK(S)/Think GRASPS:<br>1. Warm up questions done individually/partnered/grouped.<br>2. Daily discussion, Q/A, and practice.<br>3. Get More Math practice.<br>4. Quiz partially through the unit.<br>5. Unit test. |
| | OTHER EVIDENCE:<br>1. Teacher observed evidence of student understanding during guided practice. |

## Stage 3: Learning Plan

***What are the differentiated instructional strategies, activities, lesson plans that support the enduring understandings and essential questions for all students?***
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*Summary of Key Learning Events and Instruction*

Instructional days focus on new skills and will include:

1. Review and explanation of examples
2. Guided practice
3. Independent practice
4. Practice application problems
5. Question/answer time

Instruction throughout the unit will be guided by essential questions as it develops. Continual checking for understanding through formative assessment will dictate tempo.

RESOURCES: Teacher-provided worksheets and practice, Kuta software (Infinite Algebra), and GetMoreMath

## Unit 5 - Slope

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| | | | |
|---|---|---|---|
| **Course Title**: PRINCIPLES of ALGEBRA | **Course Author:** Ryan Shevitz | **Grade Level(s):** 9 | **Time/Duration:** 43min/25 periods |
| **Course Summary**: (optional) [Type Here] | | | |
| **Unit Name:** Slope | **Unit Number:** 5 | **Created:** Spring 23 | **Revised:** TBD |

**Standards Addressed:**

- A1.2.2.1.1 Identify, describe, and/or use constant rates of change.
- A1.2.2.1.2 Apply the concept of linear rate of change (slope) to solve problems.
- A1.2.2.1.3 Write or identify a linear equation when given; the graph of the line, two points on the line, or the slope and a point on the line. Note: Linear equations may be in point slope, **standard**, and/or **slope-intercept form**.
- A1.2.2.1.4 Determine the slope and/or y-intercept represented by a linear equation or graph.

## Stage 1 Desired Results: Enduring Understandings & Essential Questions

***What are the overarching takeaways and big ideas for students?***

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**Big Ideas**:
Understanding the concept of rate of change as related to linear situations.

***Transfer***

*Students will be able to independently use their learning to...*

1. Interpret the meaning of slope to a real world situation.
2. Describe how a linear relation is changing.
3. Model a situation with a linear equation.
4. Create graphs/tables/equations to predict cost and amounts for a situation.

***Meaning***

**UNDERSTANDINGS**

*Students will understand that…*

1. Slope is a ratio used with linear functions to describe the rate of change of that situation.
2. Slope values can be used to describe increasing/decreasing/no change/undefined in a relation.
3. Slope is a rate of change used to describe real world change.
4. Slope is a constant change found by writing a ratio of dependent vs independent variables.
5. Slope can be found using only 2 points from any linear situation
6. Steepness is used to describe the value of a rate of change.
7. The equation used to model a linear situation has a general form that uses slope and y-intercept values.
8. Equations can be used to calculate missing values for a real world situation.

**ESSENTIAL QUESTIONS**

1. Is the equation given in slope-intercept form?
2. Which point on the graph is the y-intercept and which is the x-intercept?
3. Is the slope positive (increasing line) or negative (decreasing line)?
4. Is the slope 0 (horizontal line) or undefined (vertical line)?
5. Which values in the scenario represent the independent (x) variable and which represent the dependent (y) variable?
6. Which line is steeper when comparing 2 different slopes of 2 different lines?

## Stage 1: Essential Content, Concepts & Skills

***What do we want students to know and be able to do?***

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***Acquisition***

**KNOWLEDGE**

**Students will know…**

1. How to identify and write the ordered pairs for the x & y intercepts of a graph.
2. How to identify slope and y-intercept given a graph and given a linear equation in slope intercept form.
3. How to calculate slope given 2 points on a line, given a graph of a line, or given a table of points for a line.
4. How to rewrite an equation to get slope intercept form.
5. JHow to classify a relation as increasing/decreasing/no change using the slope value.

| SKILLS |
|---|
| **Students will be skilled at (be able to do)...**<br>1. Identifying slope and y-intercept from an equation, graph or table.<br>2. Writing ordered pairs of x & y intercepts.<br>3. Calculating slope given 2 points, a table of points, or a graph.<br>4. Writing an equation in slope intercept form.<br>5. Comparing slopes to determine steepness.<br>6. Using solving skills to rewrite an equation in slope intercept form. |

## Stage 2: Assessments/Evidence of Learning

***What are the formative (informal) and summative (formal) assessments used to measure learning and growth?***
***How will you know that they did it?***

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| Evaluative Criteria | Assessment Evidence |
|---|---|
| 1. End of unit test to be completed independently in 1 class period.<br>2. Test will contain at least one problem utilizing strategies/procedures demonstrated in the unit. | PERFORMANCE TASK(S)/Think GRASPS:<br>1. Warm up questions done individually/partnered/grouped.<br>2. Daily discussion, Q/A, and practice.<br>3. Get More Math practice.<br>4. Quiz partially through the unit.<br>5. Unit test. |
| | OTHER EVIDENCE:<br>1. Teacher observed evidence of student understanding during guided practice. |

## Stage 3: Learning Plan

***What are the differentiated instructional strategies, activities, lesson plans that support the enduring understandings and essential questions for all students?***
***This section provides a summary of the Key Learning Events and Instruction***

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*Summary of Key Learning Events and Instruction*

Instructional days focus on new skills and will include:

1. Review and explanation of examples
2. Guided practice
3. Independent practice
4. Practice application problems
5. Question/answer time

Instruction throughout the unit will be guided by essential questions as it develops. Continual checking for understanding through formative assessment will dictate tempo.

RESOURCES: Teacher-provided worksheets and practice, Kuta software (Infinite Algebra), and GetMoreMath

# Unit 6 - Laws of Exponents

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| | | | |
|---|---|---|---|
| **Course Title**: PRINCIPLES of ALGEBRA | **Course Author:** Ryan Shevitz | **Grade Level(s):** 9 | **Time/Duration:** 43min/15 periods |
| **Course Summary**: (optional) [Type Here] | | | |
| **Unit Name:** Laws of Exponents | **Unit Number:** 6 | **Created:** Spring 23 | **Revised:** TBD |

**Standards Addressed:**

- CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions.
- A1.1.1.3.11 Simplify/evaluate expressions involving **properties/laws of exponents**, roots, and or absolute values to solve problems. Note: Exponents should be integers from -10 to 10.

## Stage 1 Desired Results: Enduring Understandings & Essential Questions

***What are the overarching takeaways and big ideas for students?***

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**Big Ideas**:

Understand the different rules of exponents and to which operations they are applicable.
Represent and use expressions and equations to solve problems involving radicals and integer exponents.
Understand how to simplify monomials using the rules of exponents.

### *Transfer*

*Students will be able to independently use their learning to...*

1. Apply properties of integer exponents to generate equivalent numerical expressions without a calculator (final answers with positive exponents).
2. Apply rules of exponents to simplify monomials that are being multiplied.
3. Apply rules of exponents to simplify monomials that are being divided.
4. Apply rules of exponents to simplify monomials that are being raised to a power.
5. Rewrite any negative exponent as a positive exponent.

| *Meaning* |
| --- |
| **UNDERSTANDINGS**<br><br>*Students will understand that…*<br>1. Properties of exponents can only be used when the bases of the powers are the same.<br>2. Identifying the operation (multiply, divide, or power of a power) must be done before applying any rules of exponents.<br>3. Final answers must be written with positive exponents. |
| **ESSENTIAL QUESTIONS**<br>1. What operation is occurring between the monomials?<br>2. Do the monomials have the same base?<br>3. Does the final answer have all positive exponents? |

## Stage 1: Essential Content, Concepts & Skills

***What do we want students to know and be able to do?***

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| *Acquisition* |
| --- |
| **KNOWLEDGE** |
| **Students will know…**<br>1. How to use the properties of integer exponents.<br>2. How to apply the rules of exponents.<br>3. When to add exponents.<br>4. When to subtract exponents.<br>5. When to multiply exponents.<br>6. When to keep the base or evaluate it.<br>7. How to make negative exponents positive. |
| **SKILLS** |
| **Students will be skilled at (be able to do)...**<br>1. Apply properties of integer exponents to generate equivalent expressions and compare them.<br>2. Condense like bases that are being multiplied by adding exponents. |

3. Condense like bases that are being divided by subtracting exponents.
4. Condense any power of a power by multiplying the exponents.
5. Rewrite a monomial that has negative exponents as positive.

## Stage 2: Assessments/Evidence of Learning

***What are the formative (informal) and summative (formal) assessments used to measure learning and growth?***
***How will you know that they did it?***

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| Evaluative Criteria | Assessment Evidence |
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| | OTHER EVIDENCE:<br>1. Teacher observed evidence of student understanding during guided practice. |

## Stage 3: Learning Plan

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*Summary of Key Learning Events and Instruction*

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1. Review and explanation of examples
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RESOURCES: Teacher-provided worksheets and practice, Kuta software (Infinite Algebra), and GetMoreMath

## Unit 7 - Revisit (Simplifying & Solving)

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| | | | |
|---|---|---|---|
| **Course Title**: PRINCIPLES of ALGEBRA | **Course Author:** Ryan Shevitz | **Grade Level(s):** 9 | **Time/Duration:** 43min/15 periods |
| **Course Summary**: (optional) [Type Here] | | | |
| **Unit Name:** Revisit (Simplifying & Solving) | **Unit Number:** 7 | **Created:** Spring 23 | **Revised:** TBD |

**Standards Addressed:**

- CC.2.2.7.B.1 Apply properties of operations to generate equivalent expressions.
- CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.
- A1.1.2.1.1 Write, solve, and/or apply a linear equation
- A1.1.2.1.2 Use and/or identify an algebraic property to justify any step in an equation-solving process(linear equations only).
- A1.1.2.1.3 Interpret solutions to problems in the context of the problem situation(linear equations only).

## Stage 1 Desired Results: Enduring Understandings & Essential Questions

***What are the overarching takeaways and big ideas for students?***

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**Big Ideas**: See units 1 & 2

***Transfer***

*Students will be able to independently use their learning to...*

See units 1 & 2

***Meaning***

**UNDERSTANDINGS**

| |
|---|
| *Students will understand that…*<br>See units 1 & 2 |
| **ESSENTIAL QUESTIONS**<br>See units 1 & 2 |

## Stage 1: Essential Content, Concepts & Skills

***What do we want students to know and be able to do?***

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| ***Acquisition*** |
|---|
| **KNOWLEDGE** |
| **Students will know…**<br>See units 1 & 2 |
| **SKILLS** |
| **Students will be skilled at (be able to do)...**<br>See units 1 & 2 |

## Stage 2: Assessments/Evidence of Learning

***What are the formative (informal) and summative (formal) assessments used to measure learning and growth?***

***How will you know that they did it?***

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| Evaluative Criteria | Assessment Evidence |
|---|---|

| | |
|---|---|
| See units 1 & 2 | PERFORMANCE TASK(S)/Think GRASPS:<br>See units 1 & 2 |
| | OTHER EVIDENCE:<br>See units 1 & 2 |

## Stage 3: Learning Plan

***What are the differentiated instructional strategies, activities, lesson plans that support the enduring understandings and essential questions for all students?***
***This section provides a summary of the Key Learning Events and Instruction***

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*Summary of Key Learning Events and Instruction*

See units 1 & 2

## Unit 8 - Revisit (Functions & Slope)

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| | | | |
|---|---|---|---|
| **Course Title**: PRINCIPLES of ALGEBRA | **Course Author:** Ryan Shevitz | **Grade Level(s):** 9 | **Time/Duration:** 43min/15 periods |
| **Course Summary**: (optional) The Principles of Algebra course is designed to reinforce algebra foundations for 9th graders who were not ready to take the weight of Algebra 1. | | | |
| **Unit Name:** Revisit (Functions & Slope) | **Unit Number:** 8 | **Created: Spring 2023** | **Revised:** TBD |

**Standards Addressed:**

- CC.2.2.8.C.1 Define, evaluate, and compare functions.
- CC.2.2.8.C.2 Use concepts of functions to model relationships between quantities.
- A1.2.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.
- A1.2.1.1.2 Determine whether a relation is a function, given a set of points or a graph.
- A1.2.1.1.3 Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table).
- A1.2.2.1.1 Identify, describe, and/or use constant rates of change.
- A1.2.2.1.2 Apply the concept of linear rate of change (slope) to solve problems.
- A1.2.2.1.3 Write or identify a linear equation when given; the graph of the line, two points on the line, or the slope and a point on the line. Note: Linear equations may be in point slope, **standard**, and/or **slope-intercept form**.
- A1.2.2.1.4 Determine the slope and/or y-intercept represented by a linear equation or graph.

## Stage 1 Desired Results: Enduring Understandings & Essential Questions

***What are the overarching takeaways and big ideas for students?***

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**Big Ideas**:
See units 4 & 5

***Transfer***

*Students will be able to independently use their learning to...*

See units 4 & 5

***Meaning***

**UNDERSTANDINGS**

*Students will understand that…*

See units 4 & 5

**ESSENTIAL QUESTIONS**

See units 4 & 5

## Stage 1: Essential Content, Concepts & Skills

***What do we want students to know and be able to do?***

**Jump to Table of Contents**

***Acquisition***

**KNOWLEDGE**

**Students will know…**

See units 4 & 5

**SKILLS**

**Students will be skilled at (be able to do)...**

See units 4 & 5

## Stage 2: Assessments/Evidence of Learning

***What are the formative (informal) and summative (formal) assessments used to measure learning and growth?***
***How will you know that they did it?***

**Jump to Table of Contents**

| Evaluative Criteria | Assessment Evidence |
|---|---|
| See units 4 & 5 | PERFORMANCE TASK(S)/Think GRASPS:<br>See units 4 & 5 |
| | OTHER EVIDENCE:<br>See units 4 & 5 |

## Stage 3: Learning Plan

***What are the differentiated instructional strategies, activities, lesson plans that support the enduring understandings and essential questions for all students?***
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**Jump to Table of Contents**

*Summary of Key Learning Events and Instruction*

See units 4 & 5

## Unit 9 - Intro to Systems of Equations

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| | | | |
|---|---|---|---|
| **Course Title**: PRINCIPLES of ALGEBRA | **Course Author:** Ryan Shevitz | **Grade Level(s):** 9 | **Time/Duration:** Time permitting. 43min/10 periods |
| **Course Summary**: (optional) [Type Here] | | | |
| **Unit Name:** Intro to Systems of Equations (if time permits) | **Unit Number:** 9 | **Created:** Spring 23 | **Revised:** TBD |

**Standards Addressed:**

- A1.1.2.2 Write, solve, and/or graph systems of linear equations using various methods.
- A1.1.2.2.1 Write and/or solve a system of linear equations using graphing, substitution, and/or elimination methods. Note: Limit systems to 2 linear equations.

## Stage 1 Desired Results: Enduring Understandings & Essential Questions

***What are the overarching takeaways and big ideas for students?***

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**Big Ideas**:
Understanding the relation between 2 linear functions.

***Transfer***

*Students will be able to independently use their learning to...*

1. Identify a solution point given a system of equations.
2. Describe the solution of a system of equations.
3. Interpret the meaning of a graphed system of equations.

***Meaning***

**UNDERSTANDINGS**

*Students will understand that…*

1. A “system” of equations refers to 2 or more equations.
2. A solution to a system of equations means (x, y) values must work for BOTH equations.
3. Systems of equations can have 1 solution, no solution, or infinitely many solutions.
4. Systems of equations can be solved graphically or algebraically.

**ESSENTIAL QUESTIONS**

1. When graphing, do the lines intersect at 1 point, run parallel, or are they identical.
2. When solving a system of equations algebraically, do the equations lend themselves to be solved using the Elimination Method or Substitution Method?

## Stage 1: Essential Content, Concepts & Skills

***What do we want students to know and be able to do?***

**Jump to Table of Contents**

***Acquisition***

**KNOWLEDGE**

**Students will know…**

1. How to read a graph of a system of equations to find the solution.
2. How to use algebraic methods to solve a system of equations.
3. How to check a solution to see if in fact it is the solution to the system of equations.

**SKILLS**

**Students will be skilled at (be able to do)...**

1. Identify the solution given a graph of a system of equations.
2. Graph a system of equations and use it to find the solution.
3. Use algebra skills to solve a system of equations.
4. Verify a solution point using algebra.

## Stage 2: Assessments/Evidence of Learning

***What are the formative (informal) and summative (formal) assessments used to measure learning and growth?***
***How will you know that they did it?***

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| Evaluative Criteria | Assessment Evidence |
|---|---|
| 1. End of unit test to be completed independently in 1 class period.<br>2. Test will contain at least one problem utilizing strategies/procedures demonstrated in the unit. | PERFORMANCE TASK(S)/Think GRASPS:<br>1. Warm up questions done individually/partnered/grouped.<br>2. Daily discussion, Q/A, and practice.<br>3. Get More Math practice.<br>4. Quiz partially through the unit.<br>5. Unit test. |
| | OTHER EVIDENCE:<br>1. Teacher observed evidence of student understanding during guided practice. |

## Stage 3: Learning Plan

***What are the differentiated instructional strategies, activities, lesson plans that support the enduring understandings and essential questions for all students?***
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*Summary of Key Learning Events and Instruction*

Instructional days focus on new skills and will include:

1. Review and explanation of examples
2. Guided practice
3. Independent practice
4. Practice application problems

5. Question/answer time

Instruction throughout the unit will be guided by essential questions as it develops. Continual checking for understanding through formative assessment will dictate tempo.

RESOURCES: Teacher-provided worksheets and practice, Kuta software (Infinite Algebra), and GetMoreMath