

**Teaching Unit: *Integers***

**Essential Understandings**

- Integers and absolute value-see PG 76E in text
- Adding Integers-see PG 76E in text
- Subtracting Integers-see PG 77E in text
- Multiplying Integers-see PG 77E in text
- Dividing Integers-see PG 77E in text.

**Sub Topic:**

**Knowledge and Skills**

- Compare and order integers
- Find the absolute value of an expression
- Add two integers
- Add more than two integers
- Subtract integers
- Evaluate expressions containing variables
- Multiply integers
- Simplify Algebraic expressions
- Divide Integers

**Teaching Unit: *Coordinate System***

**Essential Understandings**

- Ordered Pairs and Relations
- The coordinate system
- Representing Linear Functions
- Slope
- Prediction Equations
- Transformations on the Coordinate Plane.

**Sub Topic:**

**Knowledge and Skills**

- Use ordered pairs to locate points.
  - Use table and graphs to represent relations.
  - Graph points on a coordinate plane
  - Graph algebraic relationships
  - Graph linear equations using ordered pairs
  - Find the slope of a line
  - Determine slopes and y-intercepts of lines
  - Graph linear equations using slope and y-intercept
  - Draw lines of best fit for sets of data
  - Use lines of fit to make predictions about data.
  - Draw translations, reflections, and dilations on a coordinate plane.
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Teaching Unit: **Properties**

Essential Understandings

Identities and Equality properties can be used to justify each step when evaluating expressions and solving equations.

The distributive property can be used to evaluate numerical expressions and simplify algebraic expressions.

The commutative and associative properties can be applied to expressions containing addition and multiplication. They do not apply to subtractions and division because order and grouping affect their difference or quotient.

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Teaching Unit: **Algebra**

Essential Understandings

- The Distributive Property-see PG 122E in text
- Simplifying Algebraic Expressions-see PG 122E in text
- Solving Equations by Adding or Subtracting-see PG 122E in text
- Solving Equations by Multiplying or Dividing-see PG 122E in text
- Solving two-step equations-see PG 122E in text
- Writing two-step equations-see PG 122E in text
- Solving equations with Variable on each side-see PG 416E in text
- Solving equations with grouping symbols-see PG 416E in text
- Write inequalities-see PG 416E in text
- Solve inequalities by Multiplying or dividing by a positive or a negative number-see PG 416E in text
- Solve inequalities that involve more than one operation-see PG 416E in text
- Solving equations with rational numbers-see PG 226E in text.

Sub Topic:

Knowledge and Skills

Recognize the properties of identity, equality, commutative, associative and distributive.

Use the properties of identity equality, commutative, associative and distributive. Follow the Order of Operations.

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Sub Topic:

Knowledge and Skills

- Use the Distributive property to write equivalent numerical expressions.
  - Use the Distributive property to write equivalent algebraic expressions.
  - Use the Distributive property to simplify algebraic expressions.
  - Solve equations by using the Subtraction Property of Equality.
  - Solve equations by using the Multiplication Property of Equality.
  - Solve two-step equations
  - Write verbal sentences as two-step equations
  - Solve verbal problems by writing and solving two-step equations.
  - Solve equations with variables on each side.
  - Solve equations that involve grouping symbols
  - Identify equations that have no solution or an infinite number of solutions.
  - Write inequalities.
  - Solve inequalities by using the Addition and Subtraction properties of Inequality.
  - Solve inequalities by multiplying or dividing by a positive or a negative number.
  - Solve inequalities that involve more than one operation.
  - Solve equations containing rational numbers.
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Teaching Unit: **Exponents**

Essential Understandings

- Power and Exponents-see PG 178E in text
- Prime Factorization-see PG 178E in text
- Greatest Common Factor-see PG 178E in text
- Scientific Notation-see PG 179E in text
- Negative Exponents-see PG 179E in text.

Sub Topic:

Knowledge and Skills

- Write expressions using exponents.
- Evaluate expressions containing exponents.
- Write the prime factorizations of composite numbers.
- Factor monomials
- Find the greatest common factor of two or more numbers or monomials.
- Use the distributive property to factor algebraic expressions.
- Simplify fractions using the GCF
- Simplify algebraic fractions
- Write expressions using negative exponents
- Evaluate numerical expressions containing negative exponents
- Express numbers in standard form and in scientific notation.
- Compare and order numbers written in scientific notation.

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Teaching Unit: **Sequences**

Essential Understandings

- Sequences and Equations.

Sub Topic:

Knowledge and Skills

- Describe sequences using words and symbols.
- Find terms of arithmetic sequences.

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Teaching Unit: **Ratios/Proportions/Percents**

Essential Understandings

Solving equations is more than finding the values of the variables that make an equations a true statement.

Sub Topic:

Knowledge and Skills

Determine whether two ratios form a proportion  
Solve proportions.  
Find percents of increase and decrease  
Solve problems involving percents of change.

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Teaching Unit: ***Dimensional Figures -2&3***

Essential Understandings

Describe the angle relationships formed when lines intersect.  
What is the difference between similar figures and congruent figures?  
Are figures congruent or similar when translated? reflected? dilated?  
How do you find missing angles measures in a quadrilateral?  
How do you find the area of a composite figure?

Sub Topic:

Knowledge and Skills

Line and angle relationships  
Congruent triangles  
Transformations on the coordinate plane  
Quadrilaterals  
Polygons  
Area: Parallelograms, Triangles and Trapezoids  
Circles: Circumference and Area  
Area: Composite figures

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Teaching Unit: ***Rational Numbers***

Essential Understandings

What is the difference between a terminating and repeating decimal?  
How do you write a repeating decimal as a fraction?  
Why would you want to simplify a fraction before multiplying instead of after?  
What is the dimensional analysis?  
Under what circumstances would you want to find the least common multiple?  
How is solving an equation with rational numbers similar to solving equations with integers?  
Is the mean, median, or mode most influenced by an outlier or extreme value?

Sub Topic:

Knowledge and Skills

Write fractions as decimals.  
Write terminating and repeating decimals as fractions  
Multiply, divide, add, subtract fractions.  
Least common multiple.  
Solving equations with rational numbers.  
Measures of central tendencies.

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Teaching Unit: ***Statistics***

Essential Understandings

What method can you use to ensure the data is entered correctly into a plot?  
Which is more affected by extreme values, the range or the inter quartile range of data?  
If a line runs through the middle of the box in a box-and-whiskers plot, what does it mean?  
If a histogram has a rectangle that is taller than the rest, how would this be interpreted?  
If you had two sets of data which to compare, that type of graph would you select?

Sub Topic:

Knowledge and Skills

Stem-and-Leaf plots.  
Measures of variation  
Box-and-Whiskers Plots  
Histograms  
Misleading Graphs

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Teaching Unit: ***Probability***

Essential Understandings

Essential Understandings -

- Calculate relative frequencies or probabilities in situations with a finite number of equally likely outcomes.
- Find probabilities involving geometric regions.

Sub Topic:

Knowledge and Skills

Count outcomes using a tree diagram and the Fundamental Counting Principle.  
Determine probabilities using Permutations and Combinations.  
Find the probability of two independent events or dependent events.  
Find the probability of two mutually exclusive or inclusive events.  
Use random variable to compute probability.  
Use probability distributions to solve real-world problems.  
Perform probability simulations to model real-world situations involving uncertainty.

Teaching Unit: ***Polynomials***

Essential Understandings

Many situations in the real world cannot be modeled with first-degree equations. they require the use of functions that are not linear.

Sub Topic:

Knowledge and Skills

Add, Subtract, Multiply & Divide monomials.  
Simplify expressions involving powers of monomials.  
Find degree of polynomial.  
Arrange polynomial terms in ascending/descending order .  
Solve equations involving polynomials.  
Multiplying two binomials.  
Factoring polynomials.  
Solving trinomials by factoring.  
Solve by using difference of squares methods.