

Essential Questions/ Focus Questions:

- How do you write expressions, inequalities, and equations?
- Why do we have an order of operations?
- How do you correctly apply the order of operations?
- What are different ways to solve story problems or real life problems?
- How can you represent a function using a graph or a table of values?
- Decipher a function rule given a graph or a table.

Suggested Time Frame: approximately ten 60-minute class periods

Common Core Standards Covered:

- **A.APR.7** Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.
- **A.CED.1** Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.
- **A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.
- **A.REI.3** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
- **A.SSE.1** Interpret expressions that represent a quantity in terms of its context.
- **F.IF.1** Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x . The graph of f is the graph of the equation $y = f(x)$.
- **F.IF.5** Relate the domain of a function to its graph and, to the quantitative relationship it describes, where applicable. For example, if the function $h(n)$ gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.
- **F.LE.2** Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
- **N.Q.1** Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
- **S.ID.6** Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

Materials Used: (textbooks, websites, videos, etc...)

- Holt McDougal Larson Algebra 1, Unit 1 Equations, Expressions, Functions PowerPoint, Smartboard, TI Calculators(TI 82)

Major Themes/ Concepts:

- Write and evaluate expressions, equations, and inequalities.
- Apply order of operations
- Represent functions as rules, tables, and graph.

Assessments:

- Daily homework quizzes
- Section quizzes (1.1-1.4)
- Unit Test

Essential Questions/ Focus Questions:

- How do we classify numbers?
- What are the rules for basic operations with real numbers?
- How to apply the properties of real numbers to evaluate and simplify expressions.
- How do we compare and order real numbers?
- What is an equivalent expression?
- What are conditional statements?
- What is a square root?

Suggested Time Frame: approximately ten 60-minute class periods

Common Core Standards Covered:

- 7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
- 7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
- 7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.
- 8.EE.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.
- 8.EE.7 Solve linear equations in one variable.
- A.REI.2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

Materials Used: (textbooks, websites, videos, etc...)

Holt McDougal Larson Algebra 1, Unit 2 Properties of Real Numbers PowerPoint, Smartboard, TI Calculators(TI 82)

Major Themes/ Concepts:

- Classify real numbers
- Apply Square roots
- Compare and order real numbers
- Apply properties of real numbers to simplify and evaluate
- Use conditional statements and logical reasoning with real numbers

Assessments:

- Daily Homework quizzes
- Section quizzes (2.1-2.5)
- Unit Test

Essential Questions/ Focus Questions:

- How are addition and subtraction related and how are multiplication and division related?
- When an expression involves more than one operation, in what order do you do the operations?
- What are the steps for solving linear equations?
- What are formulas, and how are they used?
- How are ratios and proportions used in real life?
- How do you manipulate percent ratios to solve equations and proportions involving percentages.

Suggested Time Frame: approximately fifteen 60-minute class periods

Common Core Standards Covered:

- N.Q.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
- A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.
- A.CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law $V = IR$ to highlight resistance R .
- A.REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Materials Used: (textbooks, websites, videos, etc...)

- Holt McDougal Larson Algebra 1, Unit 3 Solving Linear Equations PowerPoint, Smartboard, TI Calculators(TI 82)

Major Themes/ Concepts:

- Solving linear equations
- Solving percent problems
- Write and solve proportions and ratios
- Rewriting equations and formulas

Assessments:

- Daily Homework Quizzes
- Section quizzes (3.1-3.3, 3.4-3.6)
- Unit Test