# Tri-District
# Mathematics Curriculum
## 2010
## Algebra I


**Mr. Patrick Fletcher**
**Superintendent**
**River Dell Regional Schools**

**Dr. Maria Nuccetelli**
**Interim Superintendent**
**Oradell Public School**

**Ms. Erika Steinbauer**
**Superintendent**
**River Edge Public Schools**

**Ms. Lorraine Brooks**
**Principal**
**River Dell High School**

**Mr. Scott Ryan**
**Principal**
**Oradell Public School**

**Ms. Denise Heitman**
**Principal**
**Cherry Hill School**

**Mr. Richard Freedman**
**Principal**
**River Dell Middle School**

**Ms. Suzanne Lynch**
**Tri-District Supervisor**
**Curriculum and Instruction**

**Mr. Tony Vouvalides**
**Principal**
**Roosevelt School**

**Tri-District Algebra I Committee**
**Jennifer Ali**
**Kear Halstater**
**Marissa Van Tol**
**William Kleinfelder**

# ALGEBRA I CURRICULUM
# UNIT 1: SIMPLIFYING AND EVALUATING

## STANDARDS

## Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

## *Number and Quantity*

**The Real Number System** **N-RN**

Extend the properties of exponents to rational exponents

1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.
2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.

Use properties of rational and irrational numbers

3. Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.

**Quantities** **N-Q**

Reason quantitatively and use units to solve problems

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.
2. Define appropriate quantities for the purpose of descriptive modeling.
3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

## *Algebra*

**Seeing Structure in Expressions** **A-SSE**

Interpret the structure of expressions

1. Interpret expressions that represent a quantity in terms of its

context.

a. Interpret parts of an expression, such as terms, factors, and coefficients.
b. Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret P(1+r)n as the product of P and a factor not depending on P.

2. Use the structure of an expression to identify ways to rewrite it. For example, see x4 – y4 as (x2)2 – (y2)2, thus recognizing it as a difference of squares that can be factored as (x2 – y2)(x2 + y2).

Write expressions in equivalent forms to solve problems

3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
    c. Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15t can be rewritten as (1.151/12)12t ≈ 1.01212t to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

**Arithmetic with Polynomials and Rational Expressions** **A-APR**

Perform arithmetic operations on polynomials

1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

## *Functions*

**Interpreting Functions** **F-IF**

Understand the concept of a function and use function notation

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).
2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

# BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

## ENDURING UNDERSTANDINGS

Simplifying and evaluating are basic skills required to be an effective learner in any algebraic environment.

## ESSENTIAL QUESTIONS

PRIMARY: What is the difference between simplifying and evaluating an expression?

SECONDARY: How do the rules of algebra apply to the simplification and evaluation of expressions?

## UNIT ASSESSMENT

(see attached)

## LESSON OBJECTIVES

Students will...

- select and use appropriate methods to simplify and evaluate expressions.
- extend understanding and use of operations to real numbers and algebraic procedures.
- understand and apply the properties of exponents to simplify expressions.
- describe the meaning of radical expressions.
- recognize the purpose of function notation.
- apply the laws of exponents to algebraic expressions with integral exponents to rewrite them in different but equivalent forms or to solve problems.
- use the properties of radicals to convert algebraic expressions containing square roots into different but equivalent forms or to solve problems.

## MODULE SKILLS

Students will be able to...

- use properties of number systems within the set of real numbers to verify or refute conjectures or justify reasoning and to classify, order, and compare real numbers.
- use rates, ratios and proportions to solve problems, including measurement problems.
- use the order of operations to evaluate an algebraic or numeric expression.
- use the distributive property while simplifying or evaluating both algebraic and numeric expressions.
- add and subtract polynomials.
- multiply a polynomial by a monomial or binomial.
- divide a polynomial by a monomial.
- evaluate and simplify expressions containing integer exponents.

- simplify radical expressions including addition, subtraction, multiplication, or division (include radical conjugates to rationalize a denominator).
- evaluate a function for a given value of x.

## RESOURCES

Supplies: Scientific or graphing calculator (recommended)
Texts: Holt Algebra I & Prentice Hall Algebra I
Technology: Holt Online Textbooks & Resources; TI-Interactive; Geometer's Sketchpad

# ALGEBRA I CURRICULUM
# UNIT 2: LINEAR EQUATIONS & INEQUALITIES

## STANDARDS

### Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

### *Number and Quantity*

**Quantities** **N-Q**

Reason quantitatively and use units to solve problems.

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.
2. Define appropriate quantities for the purpose of descriptive modeling.
3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

### *Algebra*

**Creating Equations** **A-CED**

Create equations that describe numbers or relationships

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.
2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
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.
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.

**Reasoning with Equations and Inequalities** **A-REL**

Understand solving equations as a process of reasoning and explain the reasoning

1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Solve equations and inequalities in one variable

3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Solve systems of equations

5. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.
6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

Represent and solve equations and inequalities graphically

11. Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.

## *Functions*

**Interpreting Functions** **F-IF**

Understand the concept of a function and use function notation

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).
2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

Interpret functions that arise in applications in terms of the context

6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

Analyze functions using different representations

9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function

and an algebraic expression for another, say which has the larger

maximum.

**Building Functions** **F-BF**

Build a function that models a relationship between two quantities

1. Write a function that describes a relationship between two quantities.
    a. Determine an explicit expression, a recursive process, or steps for calculation from a context.

**Linear, Quadratic, and Exponential Models** **F-LE**

Construct and compare linear, quadratic, and exponential models and solve problems

1. Distinguish between situations that can be modeled with linear functions and with exponential functions.
    a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.
    b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
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).

Interpret expressions for functions in terms of the situation they model

5. Interpret the parameters in a linear or exponential function in terms of a context.

### *Statistics and Probability*

**Interpreting Categorical and Quantitative Data** **S-ID**

Interpret linear models

7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

## BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

## ENDURING UNDERSTANDINGS

Linear equations represent a constant rate of change between an independent and dependent variable.

## ESSENTIAL QUESTIONS

PRIMARY: How are linear relationships represented numerically, graphically, and algebraically?

SECONDARY: How can these relationships provide information to solve real-world problems?

## UNIT ASSESSMENT
(see attached)

## LESSON OBJECTIVES
Students will...

- understand literal equations can be solved for any given variable.
- recognize, describe and represent linear relationships using words, tables, numerical patterns, graphs and equations, then translate among these representations.
- recognize, express and solve problems that can be modeled using single-variable linear equations; one- or two-variable inequalities; or two-variable systems of linear equations. Interpret their solutions in terms of the context of the problem.
- analyze and describe how a change in the independent variable leads to a change in the dependent variable.
- analyze and explain the general properties and behavior of linear functions.
- explain how the slope of a line can be interpreted in real-world situations.
- identify and interpret the intercepts of a given linear equation or function algebraically.
- determine if a system of linear equations is consistent or inconsistent; if consistent is the system coincidental.
- interpret systems of equations and how they relate to real-world situations.

## MODULE SKILLS
Students will be able to...

- solve literal equations for a given variable.
- solve one-variable equations and inequalities and graph the solution set on a number line.
- solve compound inequalities and graph the solution set on a number line.
- state the independent and dependent variables in a linear equation.
- find the slope, or rate of change, given a table of values, graph, or equation.
- find the equation of a line (slope-intercept form, point-slope form, and standard form) given two appropriate pieces of information.
- use linear equations to solve real-world problems given a table, graph, or equation.
- solve absolute value equations (no extraneous solutions).
- solve linear systems using elimination and substitution.

## RESOURCES

Supplies: Scientific or graphing calculator (recommended)
Texts: Holt Algebra I & Prentice Hall Algebra I
Technology: Holt Online Textbooks & Resources; TI-Interactive; Geometer's Sketchpad

# ALGEBRA I CURRICULUM
# UNIT 3: GRAPHING LINEAR EQUATIONS

## STANDARDS

## Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

## *Number and Quantity*

**Quantities** **N-Q**

Reason quantitatively and use units to solve problems.

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.
2. Define appropriate quantities for the purpose of descriptive modeling.
3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

## *Algebra*

**Creating Equations** **A-CED**

Create equations that describe numbers or relationships

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.
2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
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.

Solve systems of equations

6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

Represent and solve equations and inequalities graphically

10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
11. Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.
12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

## *Functions*

### Interpreting Functions F-IF

Interpret functions that arise in applications in terms of the context

4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.
5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. 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.

Analyze functions using different representations

7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
   a. Graph linear and quadratic functions and show intercepts, maxima, and minima.
9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.

### Building Functions F-BF

Build new functions from existing functions

3. Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using

technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.

**Linear, Quadratic, and Exponential Models** **F-LE**

Interpret expressions for functions in terms of the situation they model

5. Interpret the parameters in a linear or exponential function in terms of a context.

### *Statistics and Probability*

**Interpreting Categorical and Quantitative Data** **S-ID**

Interpret linear models

7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

## BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

## ENDURING UNDERSTANDINGS

Graphs provide a visual representation of an equation or inequality.

## ESSENTIAL QUESTIONS

PRIMARY: What is the graphical representation of absolute value and linear functions and relations?

SECONDARY: How can graphs be used to solve real-world situations?

## UNIT ASSESSMENT

(see attached)

## LESSON OBJECTIVES

Students will...

- determine if a table, equation or graph represents a linear function.
- analyze and explain the general properties and behaviors of linear functions, including absolute value functions.
- identify the intercepts of a given linear equation or function graphically and explain the meaning.
- describe, analyze and use key characteristics of linear functions and their graphs.
- graph the absolute value of a linear function and determine and analyze its key characteristics.
- recognize, express and solve problems that can be modeled using linear functions and interpret their solutions in terms of the context of the problem.
- interpret the solutions of a system based on its graph.

- determine if two lines are intersecting, parallel, or perpendicular.
- interpret systems of equations and how they relate to real-world situations.

## MODULE SKILLS

Students will be able to...

- graph a line given an equation or table of values.
- find the x and y-intercepts of a line given the graph or equation.
- graph linear inequalities on the coordinate plane.
- graph absolute value equations and inequalities.
- write the equation of a linear or absolute value function from a given graph.
- given a system of equations determine the nature of the solution (coincidental, parallel, perpendicular or other intersecting).
- solve linear systems of equations or inequalities by graphing.
- interpret systems of equations and how they relate to real - world situations.

## RESOURCES

Supplies: Scientific or graphing calculator (recommended)
Texts: Holt Algebra I & Prentice Hall Algebra I
Technology: Holt Online Textbooks & Resources; TI-Interactive; Geometer's Sketchpad

# ALGEBRA I CURRICULUM
# UNIT 4: NON-LINEAR EXPRESSIONS & EQUATIONS

## STANDARDS

## Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

## *Number and Quantity*

**Quantities** **N-Q**

Reason quantitatively and use units to solve problems.

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.
2. Define appropriate quantities for the purpose of descriptive modeling.
3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

## *Algebra*

**Seeing Structure in Expressions** **A-SSE**

Interpret the structure of expressions

2. Use the structure of an expression to identify ways to rewrite it. For example, see x4 – y4 as (x2)2 – (y2)2, thus recognizing it as a difference of squares that can be factored as (x2 – y2)(x2 + y2).

Write expressions in equivalent forms to solve problems

3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
    a. Factor a quadratic expression to reveal the zeros of the function it defines.
    b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

**Creating Equations** **A-CED**

Create equations that describe numbers or relationships

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.

2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
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.

**Reasoning with Equations and Inequalities** **A-REI**

Solve equations and inequalities in one variable

4. Solve quadratic equations in one variable.
    a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x – p)2 = q$ that has the same solutions. Derive the quadratic formula from this form.
    b. Solve quadratic equations by inspection (e.g., for x2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b.

## *Functions*

**Interpreting Functions** **F-IF**

Interpret functions that arise in applications in terms of the context

6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

Analyze functions using different representations

7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
    a. Graph linear and quadratic functions and show intercepts, maxima, and minima.
8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
    a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.
9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.

**Building Functions** **F-BF**

Build a function that models a relationship between two quantities

1. Write a function that describes a relationship between two quantities.
    a. Determine an explicit expression, a recursive process, or steps for calculation from a context.

Build new functions from existing functions

3. Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.

**Linear, Quadratic, and Exponential Models** **F-LE**

Construct and compare linear, quadratic, and exponential models and solve problems

1. Distinguish between situations that can be modeled with linear functions and with exponential functions.
    a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.
    b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
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).
3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.

Interpret expressions for functions in terms of the situation they model

5. Interpret the parameters in a linear or exponential function in terms of a context.

## *Statistics and Probability*

**Interpreting Categorical and Quantitative Data** **S-ID**

Summarize, represent, and interpret data on a single count or measurement variable

2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

# BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

## ENDURING UNDERSTANDINGS

There are many relationships that do not follow a linear pattern. Quadratic and exponential equations are two non-linear relationships that are utilized to solve real world problems.

## ESSENTIAL QUESTIONS

PRIMARY: How can you determine if the variables in a problem have a quadratic or exponential relationship?
SECONDARY: How can you represent this relationship in a table, a graph, and an equation?

## UNIT ASSESSMENT

(see attached)

## LESSON OBJECTIVES

Students will...

- understand that the process of factoring is breaking a product into possible factors.
- recognize, describe, represent and analyze a quadratic function using words, tables, graphs or equations.
- analyze a table, numerical pattern, graph, equation or context to determine whether a linear, quadratic or exponential relationship could be represented. Or, given the type of relationship, determine elements of the table, numerical pattern or graph.
- recognize and solve problems that can be modeled using a quadratic function. Interpret the solution in terms of the context of the original problem.
- recognize when an expression is the difference of two squares.
- understand that all quadratic equations are parabolas, each with a unique vertex, line of symmetry, and orientation.
- connect the concepts of solving a quadratic equation for zero and finding the x-intercepts of a quadratic function.

## MODULE SKILLS

Students will be able to...

- factor an expression by:
    - factoring out the greatest common factor.
    - factoring trinomials with leading coefficient of 1.
    - factoring trinomials with leading coefficient other than 1.
    - factor by grouping.
- solve quadratic equations through factoring, quadratic formula, and/or square root.
- graph a quadratic equation/function given a table of values or the equation.

- state the vertex, axis of symmetry, orientation, and intercepts of a given quadratic function.
- use knowledge of quadratics to solve real world problems.
- recognize basic exponential graphs and equations.
- solve growth and decay problems using exponential equations.
- interpret and compare linear models for data that exhibit a linear trend including contextual problems.
- use measures of center and spread to compare and analyze data sets.
- evaluate the reliability of reports based on data published in the media.
- use counting principles to determine the number of ways an event can occur. Interpret and justify solutions.
- apply probability concepts to determine the likelihood an event will occur in practical situations.
- analyze real-world data using basic probability and statistics:
    - mean, median, and mode.
    - basic probability.
    - probability of compound events.
    - probability of independent events.
    - counting principle.

## RESOURCES

Supplies: Scientific or graphing calculator (recommended)
Texts: Holt Algebra I & Prentice Hall Algebra I
Technology: Holt Online Textbooks & Resources; TI-Interactive; Geometer's Sketchpad