

Algebra I Curriculum 2010-2011

ALGEBRAIC EXPRESSIONS

Understand the vocabulary of variable, coefficient, exponent, base, term, like term.

Use algebraic expressions to write expressions

Evaluate algebraic expressions following Order of Operations

Simplify algebraic expressions following the Distributive Property and by Combining Like Terms

Compare algebraic expression using evaluation

SOLVING LINEAR EQUATIONS AND INEQUALITIES

Understand what a solution of an equation is

Solve linear equation by Guess & Check

Solve equations using graphs

Model and solve word problems by writing and solving linear equations

Solve linear equations using the properties of equality

Solve linear equations with variables on both sides

Solve one-variable inequalities using the properties of inequality

Set-up and solve problems

Solve percent statements using proportions

PATTERNS & ALGEBRAIC EXPRESSIONS

Recognize patterns in sequences and make conjectures based on the pattern

Recognize visual patterns (tile and toothpick) and then expressing the patterns numerically and algebraically

Express visual patterns in written form

Explain the connection of each part of the original algebraic expression with the original visual pattern

Develop meaning of a variable and simplify algebraic expression

Identify the independent and dependent variables in the pattern expression.

Use the algebraic rule to evaluate the pattern for various n-values

Explore process for determining the n-value when given a total number of toothpicks or tiles in the visual pattern.

Apply the patterning process to other types of visual patterns

Determine if the algebraic expression for the patterns is linear or non-linear by point plotting

Understand slope as a rate of change; constant or not constant

Use patterns in word problems, express the problem algebraically and work backwards

GRAPHING INTRODUCTION

Understand the difference between constant and variable quantities

Decide whether change between values are associated positively, negatively or not at all ($m = +/-$)

Understand the Cartesian coordinate system and use the vocabulary of Coordinate, Origin, Quadrant, and Axes

Use scatter plots to determine whether two quantities are related and to make predictions about their values

Graph real data in a coordinate plane and look for an association

Use tables and linear equations to express relationships between quantities and identify dependent vs. independent variables

Graph relationships between quantities

LINEAR GRAPHING

Correctly use Rectangular Coordinate System Vocabulary (horizontal axis, vertical axis, quadrants I, II, III, and IV, ordered pair)

Set up a graph (label axis, number axis, etc.)

Plot points on the rectangular Coordinate System using ordered pairs

Identify a linear equation

Brainstorm values which when paired would be solutions of an equation

Determine whether or not an ordered pair is a solution of an equation by substituting the ordered pair values into the equation

Use T-Table (or chart) Method to determine at least three ordered pair solutions for an equation in various forms, $ax + by = c$, $ax = by + c$, $x = ay + c$, $ay = c - bx$, $y = c$, $x = c$ etc.), with rational coefficients and constants. (Encourage the use of 0's for x and y without mentioning "intercepts")

Plot the ordered pairs generated by the T-Table Method and understand why drawing a line is necessary

Determine the x-intercept and y-intercept and relate it to points plotted using the T-Table Method

Determine two other points when the intercepts are at the origin

Graph equations with only one variable using the intercept and two other points

Determine the slope of all kinds of lines by counting boxes to find the rise and the run

Determine the slope of all kinds of lines by using the slope formula with two ordered pairs

Identify slope of line as positive or negative and use the terms rise and run in describing slopes

Identify the slope and y-intercept when a linear equation is in the $y = mx + b$ form

Graph equations in the form of $y = mx + b$ by using the slope and the y-intercept

Accurately rewrite equations in the $y = mx + b$ form

Write linear equation given a) two points b) one point and slope c) slope and y-intercept.

Write a linear equation for horizontal and vertical lines

Solve word problems in which two ordered pairs can be determined and used to write a linear equation

Understand that the slope is the rate of change of one quantity relative to another.

Understand the importance of scale in graphing linear functions.

Graph and interpret linear inequalities.

SYSTEMS OF EQUATIONS

Solve a system of two linear equations graphically.

Interpret the solution of a system of linear equations.

Apply the graphical solution of a system of equations.

Solve systems of equations using linear combinations (substitution and elimination)

Determine if points are solutions for application.

Graph and interpret linear inequalities.

POLYNOMIALS

Use the vocabulary associated with polynomial expressions (term and degree)

Add and subtract monomials and polynomial expressions

Multiply and divide monomials

Multiply a monomial by polynomial

Multiply two polynomials using repeated distribution (avoid FOIL)

Factor polynomials using greatest common factors

Factor polynomials which are differences of perfect squares, trinomials, and perfect square trinomials.

Introduce Zero Product Property

Apply Zero Product Property to application problems.

RADICAL EXPRESSIONS

Simplify square roots & cube roots (numerical and algebraic)

Rationalize denominator of fraction

Add, subtract, and multiply radical expressions

Use Pythagorean Theorem in applications

Determine to which set of numbers square roots and cube roots belong and placement of them on the number line.

NOTE:

Questions, comments, and suggestions may be directed towards Michelle Fields @ mfields@rsu1.org.