<p align="center">Algebra I Skills List</p>

The following list outlines the specific **skills** and problem-solving **strategies** we expect Algebra I graduates to have before they proceed to our next course.

The **skills** are broken down by topic and sub-topic. **Strategies** are listed at the end, with the understanding that they will be developed continuously during the study of Algebra I as they are incorporated into various units and assignments.

__SKILLS__

The Real Number System
- Be able to recognize, give examples, and use . . .
- Properties of real numbers (Commutative, associative, distributive)
- Subsets of real numbers (natural, whole, integer, rational, irrational)

Algebraic expressions
- Substitution and evaluation (with and without calculator), including use of formulas
- Order of operations
- Represent - verbal and algebraic models
- Simplify

Linear Equations
- Solve linear equations (including 2 or more transformations and non-integral solutions)
- Set up and solve word problems of various kinds
- Solve literal equations

Graphing in the Cartesian coordinate system
- Point plotting
- Graph 1 and 2 variable equations
- Create a table of values and graph
- Horizontal & vertical lines
- Intercept method graphing
- Slope-intercept method graphing
- Slopes
  - Calculate from coordinates
  - Plot lines with given slopes
  - Determine slope from graphed line
  - Slope-intercept graphing
  - Point-slope graphing
- Write equations to fit lines
  - Given slope & intercept
  - Given slope & point
  - Given 2 points
  - Given both intercepts
- Transform equations from one form to another
- Fit lines to data
  - By visual approximation from scatter plot
- Read and interpret information from graphs
- Solve problems using Linear Models
  - Construct appropriate equations
  - Evaluate dependent variable given independent variable value
  - Evaluate independent variable given dependent variable value

Systems of Linear Equations
- Solve by any of these methods:
  - Graphing
  - Substitution
  - Linear Combination
- Consistent, inconsistent, dependent systems
  - Parallel & coincident lines
- Applications & word problems (set up & solve)

Inequalities
    Single variable inequalities
        Solve algebraically & graph on a number line
        Write inequalities from a number line graph
    Single variable compound inequalities
        Solve and graph conjunctions & disjunctions
        Write inequalities from a graph
    Perform problem solving using inequalities
    Graph two variable linear inequalities on the xy-plane
    Graph two variable compound linear inequalities on the xy-plane

Powers and Exponents
    Perform operations using Product, Quotient, and Power properties
    Scientific Notation
    Negative & Zero Exponents

Polynomials
    Add & subtract
    Multiply
    Divide polynomial by monomial (in fraction form)
    Factor
        GCF
        Difference of two squared
        Quadratics trinomial

Quadratic Equations
    Solve by factoring
    Applications

Rational Expressions (both numerical and algebraic)
    Simplify fractions
    Multiply and divide
    Add and subtract
    Write and solve simple rational equations
    Write and solve proportions
    Write and solve percent problems

STRATEGIES

Read, understand, and follow directions accurately
Representation
    Translate expressions and equations from words to algebraic symbols
    Construct expressions and equations from given information
Interpretation
Problem Solving – plan, represent, solve, check/look back
Organizing data & information
    Make a chart
    List information
    Find a pattern
    Draw a diagram
Re-state the problem/look at it a different way
Brainstorm
Identify cases
Guess and test
Checking answers for reasonableness
Checking expressions and calculations for accuracy