# Algebra 1: Standards-Based Skills Worksheet

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The skills inventory worksheets are designed to assist with data analysis and goal writing for standards-based IEPs. They are based on the [Virginia SOL Curriculum Frameworks](http://www.doe.virginia.gov/testing/sol/standards_docs/index.shtml). Go to [Standards-Based IEP](http://www.doe.virginia.gov/special_ed/iep_instruct_svcs/stds-based_iep/) for the *Standards-based Individualized Education Program (IEP) A Guide for School Divisions* for additional information on the process for creating standards-based IEPs.

## Directions

### **Step 1**

Go to [Standards-Based IEP](http://www.doe.virginia.gov/special_ed/iep_instruct_svcs/stds-based_iep/) for to print the appropriate PDF file **Skills Worksheet** that will match the projected (or current if mid-year) grade level for the student.

### **Step 2**

Gather and analyze data to identify how the student has performed in each of the strands included in the curriculum. **Review data on student performance** and indicate all data sources analyzed to assess performance in this strand:

* Present Level of Performance (PLOP)
* Prior SOL data
* Standardized test data
* Classroom assessments
* Teacher observations

### **Step 3**

Based on prior performance, predict what level of instruction ***will be*** necessary for the student to successfully master upcoming curriculum in each of the strands using the following worksheets. Check the areas that specially designed instruction and/or supports may be critical to meeting the standard.

### **Step 4**

After completing the Worksheet, based on data and your knowledge of the student as discussed in the present level of academic and functional performance (PLOP), determine if a goal(s) is/are needed to address the specific skill(s). Guiding Question:  **Is/Are standard-based goal(s) needed?**

* **YES** Address areas of need in PLOP
* **NO Check one or more justifications:** 
  + Accommodations Available (specify):
  + Area of Strength in PLOP
  + New Content
  + Other (Specify):

### **Step 5**

Additional space is provided under each strand for comments or notes on data analysis

## Essential Knowledge and Skills

### Strand: Expressions and Operations (A.1 a-b, A.2 a-c, A.3 a-c)

*The student will:*

* Translate between verbal quantitative situations and algebraic expressions and equations. (a)
* Represent practical situations with algebraic expressions in a variety of representations (e.g., concrete, pictorial, symbolic, verbal). (a)
* Evaluate algebraic expressions, using the order of operations,   
  which include absolute value, square roots, and cube roots for given replacement values to include rational numbers, without rationalizing the denominator. (b)
* Simplify monomial expressions and ratios of monomial expressions in which the exponents are integers, using the laws of exponents. (a)
* Model sums, differences, products, and quotients of polynomials with concrete objects and their related pictorial and symbolic representations. (b)
* Determine sums and differences of polynomials. (b)
* Determine products of polynomials. The factors should be limited to five or fewer terms (i.e., (4*x* + 2)(3*x* + 5) represents four terms and   
  (*x* + 1)(2*x*2 + *x* + 3) represents five terms). (b)
* Determine the quotient of polynomials, using a monomial or binomial divisor, or a completely factored divisor. (b)
* Factor completely first- and second-degree polynomials in one variable with integral coefficients. After factoring out the greatest common factor (GCF), leading coefficients should have no more than four factors. (c)
* Factor and verify algebraic factorizations of polynomials with a graphing utility. (c)
* Express the square root of a whole number in simplest form. (a)
* Express the principal square root of a monomial algebraic expression in simplest form where variables are assumed to have positive values. (a)
* Express the cube root of an integer in simplest form. (b)
* Simplify a numerical expression containing square or cube roots. (c)
* Add, subtract, and multiply two monomial radical expressions limited to a numerical radicand. (c)

### Strand: Equations and Inequalities (A.4 a-e, A.5 a-d, A.6 a-c)

*The student will:*

* Determine whether a linear equation in one variable has one, an infinite number, or no solutions. (a)
* Apply the properties of real numbers and properties of equality to simplify expressions and solve equations. (a, b)
* Solve multistep linear equations in one variable algebraically. (a)
* Solve quadratic equations in one variable algebraically. Solutions may be rational or irrational. (b)
* Solve a literal equation for a specified variable. (c)
* Given a system of two linear equations in two variables that has a unique solution, solve the system by substitution or elimination to identify the ordered pair which satisfies both equations. (d)
* Given a system of two linear equations in two variables that has a unique solution, solve the system graphically by identifying the point of intersection. (d)
* Solve and confirm algebraic solutions to a system of two linear equations using a graphing utility. (d)
* Determine whether a system of two linear equations has one, an infinite number, or no solutions. (d)
* Write a system of two linear equations that models a practical situation. (e)
* Interpret and determine the reasonableness of the algebraic or graphical solution of a system of two linear equations that models a practical situation. (e)
* Solve practical problems involving equations and systems of equations. (e)
* Solve multistep linear inequalities in one variable algebraically and represent the solution graphically. (a)
* Apply the properties of real numbers and properties of inequality to solve multistep linear inequalities in one variable algebraically. (a)
* Represent the solution of a linear inequality in two variables graphically. (b)
* Solve practical problems involving linear inequalities. (c)
* Determine whether a coordinate pair is a solution of a linear inequality or a system of linear inequalities. (c)
* Represent the solution of a system of two linear inequalities graphically. (d)
* Determine and verify algebraic solutions using a graphing utility.   
  (a, b, c, d)
* Determine the slope of the line, given the equation of a linear function. (a)
* Determine the slope of a line, given the coordinates of two points on the line. (a)
* Determine the slope of a line, given the graph of a line. (a)
* Recognize and describe a line with a slope or rate of change that is positive, negative, zero, or undefined. (a)
* Write the equation of a line when given the graph of a line. (b)
* Write the equation of a line when given two points on the line whose coordinates are integers. (b)
* Write the equation of a line when given the slope and a point on the line whose coordinates are integers. (b)
* Write the equation of a vertical line as *x* = *a*. (b)
* Write the equation of a horizontal line as *y* = *c*. (b)
* Write the equation of a line parallel or perpendicular to a given line through a given point. (b)
* Graph a linear equation in two variables, including those that arise from a variety of practical situations. (c)
* Use the parent function *y* = *x* and describe transformations defined by changes in the slope or *y*-intercept. (c)

### Strand: Functions (A.7 a-f)

*The student will:*

* Determine whether a relation, represented by a set of ordered pairs, a table, a mapping, or a graph is a function. (a)
* Identify the domain, range, zeros, and intercepts of a function presented algebraically or graphically. (b, c, d)
* Use the *x*-intercepts from the graphical representation of a quadratic function to determine and confirm its factors. (c, d)
* For any value, *x,* in the domain of *f*, determine *f*(*x*). (e)
* Represent relations and functions using verbal descriptions, tables, equations, and graph. Given one representation, represent the relation in another form. (f)
* Investigate and analyze characteristics and multiple representations of functions with a graphing utility. (a, b, c, d, e, f)

### Strand: Statistics (A.8, A.9)

*The student will:*

* Given a data set or practical situation, determine whether a direct variation exists.
* Given a data set or practical situation, determine whether an inverse variation exists.
* Given a data set or practical situation, write an equation for a direct variation.
* Given a data set or practical situation, write an equation for an inverse variation.
* Given a data set or practical situation, graph an equation representing a direct variation.
* Determine an equation of a curve of best fit, using a graphing utility, given a set of no more than twenty data points in a table, a graph, or a practical situation.
* Make predictions, using data, scatterplots, or the equation of the curve of best fit.
* Solve practical problems involving an equation of the curve of best fit.
* Evaluate the reasonableness of a mathematical model of a practical situation.