# Grade 4: 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: Number and Number Sense (SOL 4.1a-c, 4.2a-c, 4.3a-d)

The student will:

* Read nine-digit whole numbers, presented in standard form and represent the same number in written form. (a)
* Write nine-digit whole numbers in standard form when the numbers are presented orally or in written form. (a)
* Identify and communicate, orally and in written form, the place and value for each digit in a nine-digit whole number. (a)
* Compare two whole numbers expressed through millions, using the words *greater than, less than, equal to,* and *not equal to* or using the symbols >, <, =, or ≠. (b)
* Order up to four whole numbers expressed through millions. (b)
* Round whole numbers expressed through millions to the nearest thousand, ten thousand, and hundred thousand place. (c)
* Identify the range of numbers that round to a given thousand, ten thousand, and hundred thousand. (c)
* Compare and order no more than four fractions having like and unlike denominators of 12 or less, using concrete and pictorial models. (a)
* Use benchmarks (e.g., 0, $\frac{1}{2}$ or 1) to compare and order no more than four fractions having unlike denominators of 12 or less. (a)
* Compare and order no more than four fractions with like denominators of 12 or less by comparing number of parts (numerators) (e.g., $\frac{1}{5}$ < $\frac{3}{5}$). (a)
* Compare and order no more than four fractions with like numerators and unlike denominators of 12 or less by comparing the size of the parts (e.g., $\frac{3}{9}$ < $\frac{3}{5}$). (a)
* Compare and order no more than four fractions (proper or improper), and/or mixed numbers, having denominators of 12 or less. (a)
* Use the symbols >, <, =, and ≠ to compare fractions (proper or improper) and/or mixed numbers having denominators of 12 or less. (a)
* Represent equivalent fractions through twelfths, using region/area models, set models, and measurement/length models. (b)
* Identify the division statement that represents a fraction with models and in context (e.g., $\frac{3}{5}$ means the same as 3 divided by 5 or $\frac{3}{5}$ represents the amount of muffin each of five children will receive when sharing 3 muffins equally). (c)
* Read and write decimals expressed through thousandths, using base-ten manipulatives, drawings, and numerical symbols. (a)
* Represent and identify decimals expressed through thousandths, using base-ten manipulatives, pictorial representations, and numerical symbols (e.g., relate the appropriate drawing to 0.05). (a)
* Investigate the ten-to-one place value relationship for decimals through thousandths, using base-ten manipulatives (e.g., place value mats/charts, decimal squares, and base-ten blocks). (a)
* Identify and communicate, both orally and in written form, the position and value of a decimal through thousandths (e.g., given 0.385, the 8 is in the hundredths place and has a value of 0.08. (a)
* Round decimals expressed through thousandths to the nearest whole number. (b)
* Compare two decimals expressed through thousandths, using symbols (>, <, =, and ≠) and/or words (*greater than, less than, equal to,* and *not equal to*). (c)
* Order a set of up to four decimals, expressed through thousandths, from least to greatest or greatest to least. (c)
* Represent fractions for halves, fourths, fifths, and tenths as decimals through hundredths, using concrete objects. (d)
* Relate fractions to decimals, using concrete objects (e.g., 10-by-10 grids, meter sticks, number lines, decimal squares, decimal circles, money). (d)
* Write the decimal and fraction equivalent for a given model (e.g., $\frac{1}{4}$ = 0.25 or 0.25 = $\frac{1}{4}$; 1.25 = $\frac{5}{4}$ or 1$\frac{1}{4}$). (d)

### Strand: Computation and Estimation (SOL 4.4 a-d, 4.5a-c, 4.6a-b)

The student will:

* Demonstrate fluency with multiplication through 12 × 12, and the corresponding division facts. (a)
* Estimate whole number sums, differences, products, and quotients, with and without context. (b, c)
* Apply strategies, including place value and the properties of addition to determine the sum or difference of two whole numbers, each 999,999 or less. (b)
* Apply strategies, including place value and the properties of multiplication and/or addition, to determine the product of two whole numbers when both factors have two digits or fewer. (b)
* Apply strategies, including place value and the properties of multiplication and/or addition, to determine the quotient of two whole numbers, given a one-digit divisor and a two- or three-digit dividend, with and without remainders. (c)
* Refine estimates by adjusting the final amount, using terms such as *closer to, between*, and *a little more than*. (b, c)
* Create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication with whole numbers. (d)
* Create and solve single-step practical problems involving division with whole numbers. (d)
* Use the context in which a practical problem is situated to interpret the quotient and remainder. (d)
* Determine common multiples and common factors of numbers. (a)
* Determine the least common multiple and greatest common factor of no more than three numbers. (a)
* Determine a common denominator for fractions, using common multiples. Common denominators should not exceed 60. (b)
* Estimate the sum or difference of two fractions. (b, c)
* Add and subtract fractions (proper or improper) and/or mixed numbers, having like and unlike denominators limited to 2, 3, 4, 5, 6, 8, 10, and 12, and simplify the resulting fraction. (Subtraction with fractions will be limited to problems that do not require regrouping). (b)
* Solve single-step practical problems that involve addition and subtraction with fractions (proper or improper) and/or mixed numbers, having like and unlike denominators limited to 2, 3, 4, 5, 6, 8, 10, and 12, and simplify the resulting fraction. (Subtraction with fractions will be limited to problems that do not require regrouping). (c)
* Estimate sums and differences of decimals. (a)
* Add and subtract decimals through thousandths, using concrete materials, pictorial representations, and paper and pencil. (a)
* Solve single-step and multistep practical problems that involve adding and subtracting with decimals through thousandths. (b)

### **Strand: Measurement and Geometry** (SOL 4.7, 4.8a-d, 4.9, 4.10a-b, 4.11, 4.12)

The student will

* Determine the perimeter of a polygon with no more than eight sides, when the lengths of the sides are given, with diagrams.
* Determine the perimeter and area of a rectangle when given the measure of two adjacent sides, with and without diagrams.
* Determine the perimeter and area of a square when the measure of one side is given, with and without diagrams.
* Solve practical problems that involve determining perimeter and area in U.S. Customary and metric units.
* Determine an appropriate unit of measure (inch, foot, yard, mile, millimeter, centimeter, and meter) to use when measuring length in both U.S. Customary and metric units. (a)
* Estimate and measure length in U.S. Customary and metric units, measuring to the nearest part of an inch (, , ), and to the nearest foot, yard, millimeter, centimeter, or meter, and record the length including the unit of measure (e.g., 24 inches). (a)
* Compare estimates of the length with the actual measurement of the length. (a)
* Determine an appropriate unit of measure (ounce, pound, gram, and kilogram) to use when measuring the weight/mass of everyday objects in both U.S. Customary and metric units. (b)
* Estimate and measure the weight/mass of objects in both U.S. Customary and metric units (ounce, pound, gram, or kilogram) to the nearest appropriate measure, using a variety of measuring instruments. (b)
* Record the weight/mass of an object with the unit of measure (e.g., 24 grams). (b)
* Given the equivalent measure of one unit, identify equivalent measures between units within the U.S. Customary system for:
	+ length (inches and feet, feet and yards, inches and yards); yards and miles;
	+ weight/mass (ounces and pounds); and
	+ liquid volume (cups, pints, quarts, and gallons). (c)
* Solve practical problems that involve length, weight/mass, and liquid volume in U.S. Customary units. (d)
* Solve practical problems related to elapsed time in hours and minutes, within a 12-hour period (within a.m., within p.m., and across a.m. and p.m.):
	+ when given the beginning time and the ending time, determine the time that has elapsed;
	+ when given the beginning time and amount of elapsed time in hours and minutes, determine the ending time; or
	+ when given the ending time and the elapsed time in hours and minutes, determine the beginning time.
* Identify and describe points, lines, line segments, rays, and angles, including endpoints and vertices. (a)
* Use symbolic notation to name points, lines, line segments, rays, and angles. (a)
* Identify parallel, perpendicular, and intersecting line segments in plane and solid figures. (b)
* Identify practical situations that illustrate parallel, intersecting, and perpendicular lines. (b)
* Use symbolic notation to describe parallel lines and perpendicular lines. (b)
* Identify concrete models and pictorial representations of solid figures (cube, rectangular prism, square pyramid, sphere, cone, and cylinder).
* Identify and describe solid figures (cube, rectangular prism, square pyramid, and sphere) according to their characteristics (number of angles, vertices, edges, and by the number and shape of faces).
* Compare and contrast plane and solid figures (circle/sphere, square/cube, triangle/square pyramid, and rectangle/ rectangular prism) according to their characteristics (number of sides, angles, vertices, edges, and the number and shape of faces).
* Develop definitions for parallelograms, rectangles, squares, rhombi, and trapezoids.
* Identify properties of quadrilaterals including parallel, perpendicular, and congruent sides.
* Classify quadrilaterals as parallelograms, rectangles, squares, rhombi, and/or trapezoids.
* Compare and contrast the properties of quadrilaterals.
* Identify parallel sides, congruent sides, and right angles using geometric markings to denote properties of quadrilaterals.

### Strand: Probability and Statistics (SOL 4.13a-c, 4.14a-c)

The student will:

* Model and determine all possible outcomes of a given simple event where there are no more than 24 possible outcomes, using a variety of manipulatives (e.g., coins, number cubes, and spinners). (a)
* Determine the outcome of an event that is least likely to occur or most likely to occur where there are no more than 24 possible outcomes. (a)
* Write the probability of a given simple event as a fraction, where there are no more than 24 possible outcomes. (b)
* Determine the likelihood of an event occurring and relate it to its whole number or fractional representation (e.g., impossible or zero; equally likely; certain or one). (a, b)
* Create a model or practical problem to represent a given probability. (c)
* Collect data, using, for example, observations, measurement, surveys, scientific experiments, polls, or questionnaires. (a)
* Organize data into a chart or table. (a)
* Represent data in bar graphs, labeling one axis with equal whole number increments of one or more (numerical data) (e.g., 2, 5, 10, or 100) and the other axis with categories related to the title of the graph (categorical data) (e.g., swimming, fishing, boating, and water skiing as the categories of “Favorite Summer Sports”). (a)
* Represent data in line graphs, labeling the vertical axis with equal whole number increments of one or more and the horizontal axis with continuous data commonly related to time (e.g., hours, days, months, years. Line graphs will have no more than 10 identified points along a continuum for continuous data. (a)
* Title the graph or identify an appropriate title. Label the axes or identify the appropriate labels. (a)
* Interpret data by making observations from bar graphs and line graphs by describing the characteristics of the data and the data as a whole (e.g., the time period when the temperature increased the most, the category with the greatest/least, categories with the same number of responses, similarities and differences, the total number). One set of data will be represented on a graph. (b)
* Interpret data by making inferences from bar graphs and line graphs. (b)
* Interpret the data to answer the question posed, and compare the answer to the prediction (e.g., “The summer sport preferred by most is swimming, which is what I predicted before collecting the data.”). (b)
* Write at least one sentence to describe the analysis and interpretation of the data, identifying parts of the data that have special characteristics, including categories with the greatest, the least, or the same. (b)
* Compare two different representations of the same data (e.g., a set of data displayed on a chart and a bar graph; a chart and a line graph; a pictograph and a bar graph). (c)

### Strand: Patterns, Functions, and Algebra (SOL 4.15, 4.16)

*The student will:*

* Identify and describe patterns, using words, objects, pictures, numbers, and tables.
* Create patterns using objects, pictures, numbers, and tables.
* Extend patterns, using objects, pictures, numbers, and tables.
* Solve practical problems that involve identifying, describing, and extending single-operation input and output rules, limited to addition, subtraction, and multiplication of whole numbers and addition and subtraction of fractions with like denominators of 12 or less.
* Identify the rule in a single-operation numerical pattern found in a list or table, limited to addition, subtraction, and multiplication of whole numbers.
* Write an equation to represent the relationship between equivalent mathematical expressions (e.g., 4 × 3 = 2 × 6; 10 + 8 = 36 ÷ 2; 12 × 4 = 60 − 12).
* Identify and use the appropriate symbol to distinguish between expressions that are equal and expressions that are not equal, using addition, subtraction, multiplication, and division (e.g., 4 × 12 = 8 × 6 and 64 ÷ 8 ≠ 8 × 8).