

Grade 8 Mathematics Standards-based Skills Worksheet

Student: _____

Date: _____

Completed by (name): _____

Position: _____

School Division: _____

<p>1. Review SOL strand for</p> <p>Number and Number Sense (SOL 8.1a-b, 8.2)</p>	<p>2. Review data on student performance and indicate all data sources analyzed to assess performance in this strand:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Present Level of Performance (PLOP) <input type="checkbox"/> Prior SOL data <input type="checkbox"/> Standardized test data <input type="checkbox"/> Classroom assessments <input type="checkbox"/> Teacher observations
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3. Check the areas that will require specially designed instruction critical to meeting the standard.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Simplify numerical expressions containing: 1) exponents (where the base is a rational number and the exponent is a positive whole number); 2) fractions, decimals, integers and square roots of perfect squares; and 3) grouping symbols (no more than 2 embedded grouping symbols). Order of operations and properties of operations with real numbers should be used.
- Compare and order no more than five fractions, decimals, percents, and numbers written in scientific notation using positive and negative exponents. Ordering may be in ascending or descending order.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Describe orally and in writing the relationships among the sets of natural or counting numbers, whole numbers, integers, rational numbers, irrational numbers, and real numbers.
- Illustrate the relationships among the subsets of the real number system by using graphic organizers such as Venn diagrams. Subsets include rational numbers, irrational numbers, integers, whole numbers, and natural or counting numbers.
- Identify the subsets of the real number system to which a given number belongs.
- Determine whether a given number is a member of a particular subset of the real number system, and explain why.
- Describe each subset of the set of real numbers and include examples and nonexamples.

<p>4. Is/Are standard-based goal(s) needed?</p> <p><input type="checkbox"/> YES Address areas of need in PLOP</p>	<p><input type="checkbox"/> NO Check one or more justifications:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Accommodations Available (specify): <input type="checkbox"/> Area of Strength in PLOP <input type="checkbox"/> New Content <input type="checkbox"/> Other (Specify):
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5. Notes Supporting Data Analysis

<p>1. Review SOL strand for</p> <p>Computation and Estimation (SOL 8.3 a-b, 8.4, 8.5a-b)</p>	<p>2. Review data on student performance and indicate all data sources analyzed to assess performance in this strand:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Present Level of Performance (PLOP) <input type="checkbox"/> Prior SOL data <input type="checkbox"/> Standardized test data <input type="checkbox"/> Classroom assessments <input type="checkbox"/> Teacher observations
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3. Check the areas that will require specially designed instruction critical to meeting the standard.

<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> <input type="checkbox"/> Write a proportion given the relationship of equality between two ratios. <input type="checkbox"/> Solve practical problems by using computation procedures for whole numbers, integers, fractions, percents, ratios, and proportions. Some problems may require the application of a formula. <input type="checkbox"/> Maintain a checkbook and check registry for five or fewer transactions. <input type="checkbox"/> Compute a discount or markup and the resulting sale price for one discount or markup. <input type="checkbox"/> Compute the percent increase or decrease for a one-step equation found in a real life situation. <input type="checkbox"/> Compute the sales tax or tip and resulting total. <input type="checkbox"/> Substitute values for variables in given formulas. For example, use the simple interest formula $I = prt$ to determine the value of any missing variable when given specific information. <input type="checkbox"/> Compute the simple interest and new balance earned in an investment or on a loan for a given number of years <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> <input type="checkbox"/> Substitute numbers for variables in algebraic expressions and simplify the expressions by using the order of operations. Exponents are positive and limited to whole numbers less than 4. Square roots are limited to perfect squares. <input type="checkbox"/> Apply the order of operations to evaluate formulas. Problems will be limited to positive exponents. Square roots may be included in the expressions but limited to perfect squares. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify the perfect squares from 0 to 400. <input type="checkbox"/> Identify the two consecutive whole numbers between which the square root of a given whole number from 0 to 400 lies (e.g., $\sqrt{57}$ lies between 7 and 8 since $7^2 = 49$ and $8^2 = 64$). <input type="checkbox"/> Define a perfect square. <input type="checkbox"/> Find the positive or positive and negative square roots of a given whole number from 0 to 400. (Use the symbol $\sqrt{\quad}$ to ask for the positive root and $-\sqrt{\quad}$ when asking for the negative root.)

<p>4. Is/Are standard-based goal(s) needed?</p> <p><input type="checkbox"/> YES Address areas of need in PLOP</p>	<p><input type="checkbox"/> NO Check one or more justifications:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Accommodations Available (specify): <input type="checkbox"/> Area of Strength in PLOP <input type="checkbox"/> New Content <input type="checkbox"/> Other (Specify):
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5. Notes Supporting Data Analysis

<p>1. Review SOL strand for</p> <p>Measurement (SOL8.6a-b, 8.7a-b)</p>	<p>2. Review data on student performance and indicate all data sources analyzed to assess performance in this strand:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Present Level of Performance (PLOP) <input type="checkbox"/> Prior SOL data <input type="checkbox"/> Standardized test data <input type="checkbox"/> Classroom assessments <input type="checkbox"/> Teacher observations
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<p>3. Check the areas that will require specially designed instruction critical to meeting the standard.</p>	
<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p>	
<ul style="list-style-type: none"> <input type="checkbox"/> Measure angles of less than 360° to the nearest degree, using appropriate tools. <input type="checkbox"/> Identify and describe the relationships between angles formed by two intersecting lines. <input type="checkbox"/> Identify and describe the relationship between pairs of angles that are vertical. <input type="checkbox"/> Identify and describe the relationship between pairs of angles that are supplementary. <input type="checkbox"/> Identify and describe the relationship between pairs of angles that are complementary. <input type="checkbox"/> Identify and describe the relationship between pairs of angles that are adjacent. 	
<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p>	
<ul style="list-style-type: none"> <input type="checkbox"/> Distinguish between situations that are applications of surface area and those that are applications of volume. <input type="checkbox"/> Investigate and compute the surface area of a square or triangular pyramid by finding the sum of the areas of the triangular faces and the base using concrete objects, nets, diagrams and formulas. <input type="checkbox"/> Investigate and compute the surface area of a cone by calculating the sum of the areas of the side and the base, using concrete objects, nets, diagrams and formulas. <input type="checkbox"/> Investigate and compute the surface area of a right cylinder using concrete objects, nets, diagrams and formulas. <input type="checkbox"/> Investigate and compute the surface area of a rectangular prism using concrete objects, nets, diagrams and formulas. <input type="checkbox"/> Investigate and compute the volume of prisms, cylinders, cones, and pyramids, using concrete objects, nets, diagrams, and formulas. <input type="checkbox"/> Solve practical problems involving volume and surface area of prisms, cylinders, cones, and pyramids. <input type="checkbox"/> Compare and contrast the volume and surface area of a prism with a given set of attributes with the volume of a prism where one of the attributes has been increased by a factor of 2, 3, 5 or 10. 	

<p>4. Is/Are standard-based goal(s) needed?</p> <p><input type="checkbox"/> YES Address areas of need in PLOP</p>	<p><input type="checkbox"/> NO Check one or more justifications:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Accommodations Available (specify): <input type="checkbox"/> Area of Strength in PLOP <input type="checkbox"/> New Content <input type="checkbox"/> Other (Specify):
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5. Notes Supporting Data Analysis

<p>1. Review SOL strand for Geometry (SOL 8.8a-b, 8.9, 8.10a-b, 8.11)</p>	<p>2. Review data on student performance and indicate all data sources analyzed to assess performance in this strand:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Present Level of Performance (PLOP) <input type="checkbox"/> Prior SOL data <input type="checkbox"/> Standardized test data <input type="checkbox"/> Classroom assessments <input type="checkbox"/> Teacher observations
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<p>3. Check the areas that will require specially designed instruction critical to meeting the standard.</p>	
<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> <input type="checkbox"/> Demonstrate the reflection of a polygon over the vertical or horizontal axis on a coordinate grid. <input type="checkbox"/> Demonstrate 90°, 180°, 270°, and 360°clockwise and counterclockwise rotations of a figure on a coordinate grid. The center of rotation will be limited to the origin. <input type="checkbox"/> Demonstrate the translation of a polygon on a coordinate grid. <input type="checkbox"/> Demonstrate the dilation of a polygon from a fixed point on a coordinate grid. <input type="checkbox"/> Identify practical applications of transformations including, but not limited to, tiling, fabric, and wallpaper designs, art and scale drawings. <input type="checkbox"/> Identify the type of transformation in a given example. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> <input type="checkbox"/> Construct three-dimensional models, given the top or bottom, side, and front views. <input type="checkbox"/> Identify three-dimensional models given a two-dimensional perspective. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify the parts of a right triangle (the hypotenuse and the legs). <input type="checkbox"/> Verify a triangle is a right triangle given the measures of its three sides. <input type="checkbox"/> Verify the Pythagorean Theorem, using diagrams, concrete materials, and measurement. <input type="checkbox"/> Find the measure of a side of a right triangle, given the measures of the other two sides. <input type="checkbox"/> Solve practical problems involving right triangles by using the Pythagorean Theorem. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> <input type="checkbox"/> Subdivide a figure into triangles, rectangles, squares, trapezoids and semicircles. Estimate the area of subdivisions and combine to determine the area of the composite figure. <input type="checkbox"/> Use the attributes of the subdivisions to determine the perimeter and circumference of a figure. <input type="checkbox"/> Apply perimeter, circumference and area formulas to solve practical problems 	

<p>4. Is/Are standard-based goal(s) needed?</p> <p><input type="checkbox"/> YES Address areas of need in PLOP</p>	<p><input type="checkbox"/> NO Check one or more justifications:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Accommodations Available (specify): <input type="checkbox"/> Area of Strength in PLOP <input type="checkbox"/> New Content <input type="checkbox"/> Other (Specify):
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5. Notes Supporting Data Analysis

<p>1. Review SOL strand for</p> <p>Probability and Statistics (SOL 8.12, 8.13a-b)</p>	<p>2. Review data on student performance and indicate all data sources analyzed to assess performance in this strand:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Present Level of Performance (PLOP) <input type="checkbox"/> Prior SOL data <input type="checkbox"/> Standardized test data <input type="checkbox"/> Classroom assessments <input type="checkbox"/> Teacher observations
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<p>3. Check the areas that will require specially designed instruction critical to meeting the standard.</p>	
<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> <input type="checkbox"/> Determine the probability of no more than three independent events. <input type="checkbox"/> Determine the probability of no more than two dependent events without replacement. <input type="checkbox"/> Compare the outcomes of events with and without replacement. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> <input type="checkbox"/> Collect, organize, and interpret a data set of no more than 20 items using scatterplots. Predict from the trend an estimate of the line of best fit with a drawing. <input type="checkbox"/> Interpret a set of data points in a scatterplot as having a positive relationship, a negative relationship, or no relationship. 	

<p>4. Is/Are standard-based goal(s) needed?</p> <p><input type="checkbox"/> YES Address areas of need in PLOP</p>	<p><input type="checkbox"/> NO Check one or more justifications:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Accommodations Available (specify): <input type="checkbox"/> Area of Strength in PLOP <input type="checkbox"/> New Content <input type="checkbox"/> Other (Specify):
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5. Notes Supporting Data Analysis

<p>1. Review SOL strand for</p> <p>Patterns, Functions, and Algebra (SOL 8.14, 8.15a-c, 8.16, 8.17)</p>	<p>2. Review data on student performance and indicate all data sources analyzed to assess performance in this strand:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Present Level of Performance (PLOP) <input type="checkbox"/> Prior SOL data <input type="checkbox"/> Standardized test data <input type="checkbox"/> Classroom assessments <input type="checkbox"/> Teacher observations
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3. Check the areas that will require specially designed instruction critical to meeting the standard.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Graph in a coordinate plane ordered pairs that represent a relation.
- Describe and represent relations and functions, using tables, graphs, words, and rules. Given one representation, students will be able to represent the relation in another form.
- Relate and compare different representations for the same relation.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Solve two- to four-step linear equations in one variable using concrete materials, pictorial representations, and paper and pencil illustrating the steps performed.
- Solve two-step inequalities in one variable by showing the steps and using algebraic sentences.
- Graph solutions to two-step linear inequalities on a number line.
- Identify properties of operations used to solve an equation from among:
 - the commutative properties of addition and multiplication;
 - the associative properties of addition and multiplication;
 - the distributive property;
 - the identity properties of addition and multiplication;
 - the zero property of multiplication;
 - the additive inverse property; and
 - the multiplicative inverse property.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Construct a table of ordered pairs by substituting values for x in a linear equation to find values for y .
- Plot in the coordinate plane ordered pairs (x, y) from a table.
- Connect the ordered pairs to form a straight line (a continuous function).

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Apply the following algebraic terms appropriately: *domain*, *range*, *independent variable*, and *dependent variable*.
- Identify examples of domain, range, independent variable, and dependent variable.
- Determine the domain of a function.
- Determine the range of a function.
- Determine the independent variable of a relationship.
- Determine the dependent variable of a relationship.

4. 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):

5. Notes Supporting Data Analysis