Grade 7 Mathematics
Standards-based Skills Worksheet

Student: _____   **Date:** _____

Completed by (name): _____   **Position:** _____

School Division: _____

1. Review SOL strand for Number and Number Sense (SOL 7.1a-e, 7.2,)	2. **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

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
- ☐ Recognize powers of 10 with negative exponents by examining patterns.
- ☐ Write a power of 10 with a negative exponent in fraction and decimal form.
- ☐ Write a number greater than 0 in scientific notation.
- ☐ Recognize a number greater than 0 in scientific notation.
- ☐ Compare and determine equivalent relationships between numbers larger than 0 written in scientific notation.
- ☐ Represent a number in fraction, decimal, and percent forms.
- ☐ Compare, order, and determine equivalent relationships among fractions, decimals, and percents. Decimals are limited to the thousandths place, and percents are limited to the tenths place. Ordering is limited to no more than 4 numbers.
- ☐ Order no more than 3 numbers greater than 0 written in scientific notation.
- ☐ Determine the square root of a perfect square less than or equal to 400.
- ☐ Demonstrate absolute value using a number line.
- ☐ Determine the absolute value of a rational number

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
- ☐ Analyze arithmetic and geometric sequences to discover a variety of patterns.
- ☐ Identify the common difference in an arithmetic sequence.
- ☐ Identify the common ratio in a geometric sequence.
- ☐ Given an arithmetic or geometric sequence, write a variable expression to describe the relationship between two consecutive terms in the sequence

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

1. Review SOL strand for Computation and Estimation (SOL 7.3 a-b, 7.4,)	2. 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

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
- ☐ Model addition, subtraction, multiplication and division of integers using pictorial representations of concrete manipulatives.
- ☐ Add, subtract, multiply, and divide integers.
- ☐ Simplify numerical expressions involving addition, subtraction, multiplication and division of integers using order of operations.
- ☐ Solve practical problems involving addition, subtraction, multiplication, and division with integers.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
- ☐ Write proportions that represent equivalent relationships between two sets.
- ☐ Solve a proportion to find a missing term.
- ☐ Apply proportions to convert units of measurement between the U.S. Customary System and the metric system. Calculators may be used.
- ☐ Apply proportions to solve practical problems, including scale drawings. Scale factors shall have denominators no greater than 12 and decimals no less than tenths. Calculators may be used.
- ☐ Using 10% as a benchmark, mentally compute 5%, 10%, 15%, or 20% in a practical situation such as tips, tax and discounts.
- ☐ Solve problems involving tips, tax, and discounts. Limit problems to only one percent computation per problem.

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

1. Review SOL strand for Measurement (SOL 7.5a-c, 7.6)	2. 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

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

- ☐ Determine if a practical problem involving a rectangular prism or cylinder represents the application of volume or surface area.
- ☐ Find the surface area of a rectangular prism.
- ☐ Solve practical problems that require finding the surface area of a rectangular prism.
- ☐ Find the surface area of a cylinder.
- ☐ Solve practical problems that require finding the surface area of a cylinder.
- ☐ Find the volume of a rectangular prism.
- ☐ Solve practical problems that require finding the volume of a rectangular prism.
- ☐ Find the volume of a cylinder.
- ☐ Solve practical problems that require finding the volume of a cylinder.
- ☐ Describe how the volume of a rectangular prism is affected when one measured attribute is multiplied by a scale factor. Problems will be limited to changing attributes by scale factors only.
- ☐ Describe how the surface area of a rectangular prism is affected when one measured attribute is multiplied by a scale factor. Problems will be limited to changing attributes by scale factors only.

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

- ☐ Identify corresponding sides and corresponding and congruent angles of similar figures using the traditional notation of curved lines for the angles.
- ☐ Write proportions to express the relationships between the lengths of corresponding sides of similar figures.
- ☐ Determine if quadrilaterals or triangles are similar by examining congruence of corresponding angles and proportionality of corresponding sides.
- ☐ Given two similar figures, write similarity statements using symbols such as $\triangle ABC \sim \triangle DEF$, $\angle A$ corresponds to $\angle D$, and $\overline{AB}$ corresponds to $\overline{DE}$.

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

1. Review SOL strand for **Geometry (SOL 7.7, 7.8)**	2. **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

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

☐ Compare and contrast attributes of the following quadrilaterals: parallelogram, rectangle, square, rhombus, and trapezoid.

☐ Identify the classification(s) to which a quadrilateral belongs, using deductive reasoning and inference

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

☐ Identify the coordinates of the image of a right triangle or rectangle that has been translated either vertically, horizontally, or a combination of a vertical and horizontal translation.

☐ Identify the coordinates of the image of a right triangle or rectangle that has been rotated 90° or 180° about the origin.

☐ Identify the coordinates of the image of a right triangle or a rectangle that has been reflected over the x- or y-axis.

☐ Identify the coordinates of a right triangle or rectangle that has been dilated. The center of the dilation will be the origin.

☐ Sketch the image of a right triangle or rectangle translated vertically or horizontally.

☐ Sketch the image of a right triangle or rectangle that has been rotated 90° or 180° about the origin.

☐ Sketch the image of a right triangle or rectangle that has been reflected over the x- or y-axis.

☐ Sketch the image of a dilation of a right triangle or rectangle limited to a scale factor of $\frac{1}{4}, \frac{1}{2}$, 2, 3 or 4.

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

1. **Review SOL strand for** **Probability and Statistics** **(SOL 7.9, 7-10, 7-11a-b)**	2. **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

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

- ☐ Determine the theoretical probability of an even

- ☐ Determine the experimental probability of an event.

- ☐ Describe changes in the experimental probability as the number of trials increases.

- ☐ Investigate and describe the difference between the probability of an event found through experiment or simulation versus the theoretical probability of that same event.

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

- ☐ Compute the number of possible outcomes by using the Fundamental (Basic) Counting Principle.

- ☐ Determine the probability of a compound event containing no more than 2 events.

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

- ☐ Collect, analyze, display, and interpret a data set using histograms. For collection and display of raw data, limit the data to 20 items.

- ☐ Determine patterns and relationships within data sets (e.g., trends).

- ☐ Make inferences, conjectures, and predictions based on analysis of a set of data.

- ☐ Compare and contrast histograms with line plots, circle graphs, and stem-and-leaf plots presenting information from the same data set..

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

1. **Review SOL strand for** **Patterns, Functions, and Algebra** **(SOL 7.12, 7.13a-b, 7.14a-b, 7.15a-b, 7.16a-e)**	2. **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

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

☐ Describe and represent relations and functions, using tables, graphs, rules, and words. Given one representation, students will be able to represent the relation in another form.

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

☐ Write verbal expressions as algebraic expressions. Expressions will be limited to no more than 2 operations.

☐ Write verbal sentences as algebraic equations. Equations will contain no more than 1 variable term.

☐ Translate algebraic expressions and equations to verbal expressions and sentences. Expressions will be limited to no more than 2 operations.

☐ Identify examples of expressions and equations.

☐ Apply the order of operations to evaluate expressions for given replacement values of the variables. Limit the number of replacements to no more than 3 per expression.

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

☐ Represent and demonstrate steps for solving one- and two-step equations in one variable using concrete materials, pictorial representations and algebraic sentences.

☐ Solve one- and two-step linear equations in one variable.

☐ Solve practical problems that require the solution of a one- or two-step linear equation.

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

☐ Represent and demonstrate steps in solving inequalities in one variable, using concrete materials, pictorial representations, and algebraic sentences.

☐ Graph solutions to inequalities on the number line.

☐ Identify a numerical value that satisfies the inequality.

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

☐ Identify properties of operations used in simplifying expressions.

☐ Apply the properties of operations to simplify expressions.

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