# Problem Solving with Measurement

For problems 1-7:

- Read the problem and determine if the problem is asking for SURFACE AREA or VOLUME.
- Circle the correct word to indicate the problem type based on the question.
- Write down the correct formula.
- Find the needed dimensions from the problem or by measuring with the ruler from your STAAR Grade 8 Reference Materials. Use 3.14 for $\pi$; round your answers to the nearest hundredth.
- Calculate the surface area or volume. Keep your work neat and organized.
- Write a complete sentence to answer the question. Include the correct units of measure in your answer.

1. Before this tissue box was opened, the opening in the top was filled with cardboard. Deanna is going to wrap an empty tissue box like this to use for a ballot box in the Junior High Spring Fling Sweetheart Contest. How much gift-wrapping paper does Deanna need to wrap the entire tissue box?

   Circle: Surface Area or Volume  Formula: _____


2. When this vanilla scented candle was new, it was 1 foot tall and the distance across the top of the candle through the wick, which was centered, was 8 inches. How many cubic inches of wax was used to form this candle?

   Circle: Surface Area or Volume  Formula: _____

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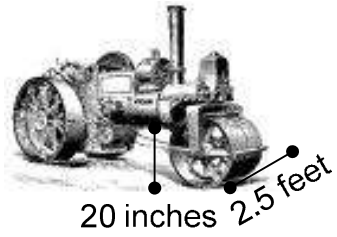
3. This type of tractor was used to pack road surfaces in the mid 1900's. Look at the front wheel of the tractor and determine the approximate amount of road surface that came in contact with the front wheel in one complete rotation.

   Circle: Surface Area or Volume  Formula: _____




4. Holly works in the Product Analysis division of Fun in Sun Sporting Equipment, Inc. The tent shown below includes a material floor. As part of Holly's cost analysis, she needs to determine the amount of material used to make the tent. Use the dimensions in the picture to calculate the amount of material used to make this tent. Round your answer to the nearest hundredth.
   Hint: There is a missing dimension you will need to calculate using the Pythagorean Theorem.

   Circle: Surface Area or Volume  Formula: _____

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5. As part of cross-curricular applications, students must tie their research project in Language Arts to all four core subjects. As one part of the relation to math, Nick is going to find out how much paper it took to fill this English-Japanese dictionary in terms of cubic feet. Use the dimensions in the picture for your calculations.

   Circle: Surface Area or Volume  Formula: _____


6. There is a large cylindrical aquarium in the center of the new bank. The aquarium's diameter is 120 inches and its height extends from the floor to the 12-foot ceiling. What is the approximate capacity of the aquarium in terms of feet? Round your answer to the nearest hundredth.

   Circle: Surface Area or Volume  Formula: _____

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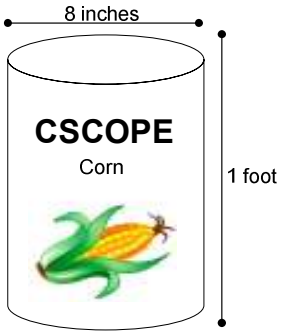
7. Mrs. Kirkland is opening a giant can of corn to make a casserole for a family reunion. She wonders how much paper was used to make the label for the can. Represent your response in terms of inches. Round your answer to the nearest hundredth.

   Circle: Lateral Surface Area or Volume  Formula: _____




8. Describe how you calculate the volume of a tennis ball. Write the formula and indicate what measurements you would use to calculate the volume.

   Formula: _____

9. Describe how you calculate the volume of a snow cone cup. Write the formula and indicate what measurements you would use to calculate the volume. For this special snow cone cup, the height is the same length as the radius.

   Formula: _____

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10. Gary is installing a seawater aquarium in his home. The aquarium is shaped like a rectangular prism with the following dimensions: length of 4.5 feet, width of 2 feet, and a height of 2.5 feet. The tank is filled with water. Gary needs to constantly monitor the salinity of the water; therefore, he needs to know how many gallons of water are in the tank. Use this information to answer the questions below.

    a) If 231 cubic inches is equivalent to 1 gallon of water, how many gallons of water are in the aquarium if the water line is 3 inches below the top of the tank?

    b) All the information Gary uses to adjust the levels of salinity in the aquarium uses liters and kilograms. How many liters of water are in the aquarium if 1 gallon is equivalent to 3.79 liters?

    c) Gary buys 4 pound bags of salt pellets to adjust the salinity levels in the aquarium. How many kilograms is equivalent to 4 pounds if 2.2 pounds is equivalent to 1 kilogram?

    d) Gary wants to cover the lateral faces of the aquarium with a special coating to help maintain the water temperature of the aquarium. The sheets needed to cover the lateral faces are sold by square meters. How many square meters of the covering does Gary need for the lateral faces?