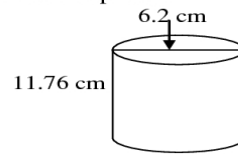


Surface Area and Volume Applications Worksheet

Acme Packaging Company produces 12 ounce aluminum cans for Pepsi, Coke, and all other major bottlers. Cost analysis engineers have recently become concerned about the increasing cost of making the cylindrical aluminum cans. They have decided to investigate the cost of producing alternative containers for the 12 ounce soda products.

Below is a lab in which you are asked to calculate and make models for several alternative possibilities to contain the soda. Show all work as you work through the lab.

1. Calculate the surface area of a typical can ( you can assume that it is a perfect cylinder)



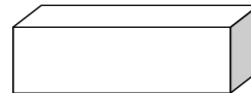
Surface Area =

NOW CONSIDER THE FOLLOWING SHAPES:  
SQUARE PYRAMID, CONE, SPHERE, RECTANGULAR PRISM.

For each shape you must find the dimensions that would allow the container to hold the 12 ounces(355cc) of liquid, but minimize the amount of aluminum to build the container (minimize the surface area). Do all of your work for each shape on a single sheet of lined paper. One piece of paper will be used for each shape with the name of the shape at the top of the paper. Staple all four of the sheets to the back of this worksheet. Then below write your final answers for each shape in the spaces provided.

REMEMBER, YOU MUST SHOW ALL WORK FOR EACH SHAPE ON A SEPARATE SHEET OF PAPER WITH A TITLE!!

2. **Rectangular Prism:** Select a length, width and height, but keep the volume the same:



Length = \_\_\_\_\_ Width = \_\_\_\_\_ Height = \_\_\_\_\_

Volume =  $l \cdot w \cdot h = 355$

Surface Area =  $2lh + 2wh + 2lw =$  \_\_\_\_\_