Geometry

Big Idea: Extending to Three Dimensions

Topic: Volume Formulas and Problem Solving

Task: Glasses

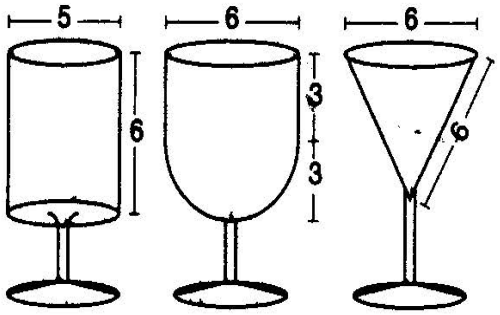
This diagram shows three glasses (not drawn to scale).

The measurements are all in centimeters.

The volume of a cylinder $= \pi r^2 h$

The volume of a sphere $= \frac{4\pi r^3}{3}$

The volume of a cone $= \frac{\pi r^2 h}{3}$



The bowl of glass 1 is cylindrical. The diameter is 5 cm and the height is 6 cm.

The bowl of glass 2 is a cylinder with a hemispherical bottom. The diameter is 6 cm and the height of the cylinder is 3 cm.

The bowl of glass 3 is an inverted cone. The diameter is 6 cm and the slant height is 6 cm.

1. Find the vertical height of the bowl of glass 3. Show your work.

_____ cm.

2. Calculate the volume of the bowl of each of these glasses. Show your work.

a. Glass 1

_____ cm3

b. Glass 2

_____ cm3

c. Glass 3

_____ cm3

3. Find the height of liquid in Glass 2 when it is half full. Show your calculations.

_____ cm