

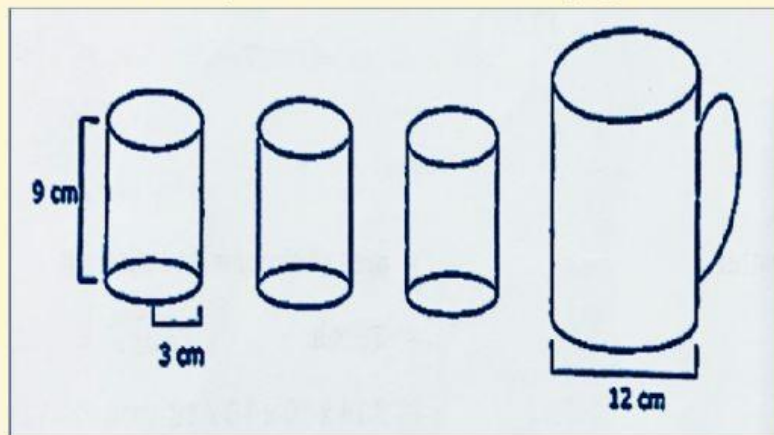
MATHEMATICS GRADE 9

Name: _____ No. ____ Grade 9/____

MATHEMATICAL SKILLS INVOLVING AREAS AND VOLUMES

Solve the problem. Show the solution.

Three identical cylindrical glasses of 9 cm high and 3 cm base radius are completely filled with water. Their contents are poured into a cylindrical jug with a diameter of 12 cm. How deep is the water in the jug?



Solution

$$\begin{aligned}
 \text{a. Volume of a cylinder} &= \text{area of circular end} \times \text{height} \\
 &= \text{area of a circle} \times \text{height} \\
 &= \pi r^2 \times h \\
 &= (3.14)(3)^2 \times 9 \text{ cm} \\
 &= 28.26 \text{ cm}^2 \times 9 \text{ cm} \\
 &= 254.34 \text{ cm}^3
 \end{aligned}$$

$$\text{Volume of the 3 identical glasses} = 254.34 \text{ cm}^3 \times 3 = 763.02 \text{ cm}^3$$

$$\begin{aligned}
 \text{b. Volume of water} &= \text{area of circular end} \times \text{height} \\
 &= \pi r^2 \times h \\
 &= \pi r^2 \times h \\
 763.02 \text{ cm}^3 &= 3.14(6)^2 \times h \\
 763.02 \text{ cm}^3 &= (3.14)(36) \times h \\
 763.02 \text{ cm}^3 &= 113.04 \times h \\
 \frac{763.02 \text{ cm}^3}{113.04 \text{ cm}} &= \frac{113.04 \text{ cm}}{113.04 \text{ cm}} \\
 h &= 6.75 \text{ cm}
 \end{aligned}$$

∴ The water jug is 6.75 cm