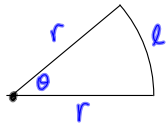
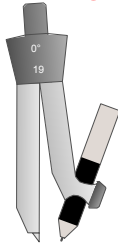


Q.1

If the area of a sector of a circle is  $48 \text{ cm}^2$ , and its perimeter is  $28 \text{ cm}$ , find the length of the radius.



Area =  $48 \text{ cm}^2$      $P = 28 \text{ cm}$      $r = ?$

$$A = \frac{\theta}{360} \pi r^2 = 48 \quad \text{①}$$

$l = \frac{\theta}{360} (2\pi r)$     and     $P = 2r + l$

$$\Rightarrow 28 = 2r + \frac{\theta}{360} (2\pi r) \quad \text{②}$$

get 2 equations

from ①  $\Rightarrow \frac{\theta}{360} = \frac{48}{\pi r^2}$

combine to get equation in r

Sub into ②  $\Rightarrow 28 = 2r + 2\pi r \left(\frac{48}{\pi r^2}\right) \Rightarrow 28 = 2r + 96/r$

Multiply by r  $\Rightarrow 28r = 2r^2 + 96$

$$2r^2 - 28r + 96 = 0$$

$$r^2 - 14r + 48 = 0$$

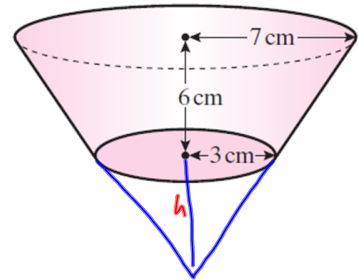
$$(r - 6)(r - 8) = 0$$

$$r = 6 \text{ or } 8 \text{ cm}$$

Solve the quadratic

Q2

Find, correct to 1 place of decimals, the volume of this rubber stopper.



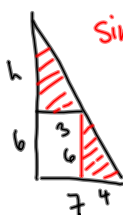
$$V_{\text{frustum}} = V_{\text{Big Cone}} - V_{\text{Small Cone}}$$

$$V_{\text{cone}} = \frac{\pi r^2 h}{3}$$

$$= \frac{\pi (7)^2 (6+h)}{3} - \frac{\pi (3)^2 h}{3}$$

$$= \frac{\pi}{3} [49(6+h) - 9(h)] = \frac{\pi}{3} [249h - 9h]$$

$$= \frac{\pi}{3} [240h] = 80\pi h$$



Similar triangles

$$\frac{h}{3} = \frac{6}{4} \Rightarrow h = \frac{6(3)}{4} = \frac{9}{2}$$

$$\Rightarrow V_{\text{frustum}} = 80\pi \left(\frac{9}{2}\right) = 496.4 \text{ cm}^3$$