

Ex. 27.21

$$\begin{aligned}
 1. \quad \text{Vol of Cone A} &= \frac{1}{3} \times \text{base area} \times \text{height} \\
 &= \frac{1}{3} \times \pi \times 5^2 \times \sqrt{15^2 - 5^2} \\
 &= 370.29 \text{ cm}^3
 \end{aligned}$$

Base circumference of B = 60 cm (given)

$$2\pi r = 60 \text{ cm}$$

$$r = \frac{60}{2\pi} = 9.55 \text{ cm}$$

$$\begin{aligned}
 \text{Vol. of B} &= 370.29 \text{ (given)} \\
 \frac{1}{3} \pi \times 9.55^2 \times h &= 370.29
 \end{aligned}$$

$$h = \frac{370.29 \times 3}{9.55^2 \times \pi}$$

$$= \underline{\underline{3.88 \text{ cm}}}$$

2.

$$a) \quad \text{Base circumference} = \frac{\theta}{360} \times 2\pi r$$

$$= \frac{210}{360} \times 2\pi \times 9$$

$$= 32.99$$

$$= \underline{\underline{33 \text{ cm}}}$$

$$b) \quad 2\pi r = 33$$

$$r = \frac{33}{2\pi}$$

$$= \underline{\underline{5.25 \text{ cm}}}$$

$$\begin{aligned}
 c) \quad h &= \sqrt{l^2 - r^2} = \sqrt{9^2 - 5.25^2} \\
 &= \underline{\underline{7.3 \text{ cm}}}
 \end{aligned}$$

$$d. \text{ volume} = \frac{1}{3} \times \text{base area} \times \text{height}$$

$$= \frac{1}{3} \times \pi \times 5.25^2 \times 7.3$$

$$= \underline{\underline{3211 \text{ cm}^3}}$$

$$3.a) \text{ volume} = lbh$$

$$= 12 \times 12 \times 16$$

$$= \underline{\underline{2304 \text{ cm}^3}}$$

$$b \text{ vol. of cone} = \frac{1}{3} \times \pi \times 6^2 \times 16$$

$$= \underline{\underline{603.3 \text{ cm}^3}}$$

$$c. \text{ Vol. of the cuboid not occupied by the cone}$$

$$= 2304 - 603.3$$

$$= \underline{\underline{1700.7 \text{ cm}^3}}$$

$$4.a) C = \frac{\theta}{360} \times 2\pi r$$

$$= \frac{260}{360} \times 2\pi \times 6$$

$$= 27.23$$

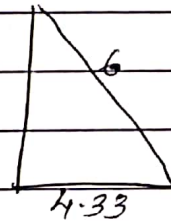
$$2\pi r = 27.23$$

$$r = \frac{27.23}{2\pi}$$

$$= 4.33 \text{ cm}$$

$$\text{Vol} = \frac{1}{3} \times \pi \times 4.33^2 \times \sqrt{6^2 - 4.33^2}$$

$$= \underline{\underline{81.6 \text{ cm}^3}}$$



$$b. C = \frac{260}{360} \times 2\pi \times 9$$

$$= 40.846$$

$$\text{vol} = \left(\frac{9}{6}\right)^3 \times 81.6 = 275.4$$

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$$2\pi r = 40.846$$

$$r = \frac{40.846}{2\pi}$$

$$= 6.5 \text{ cm}$$

$$\text{Vol} = \frac{1}{3} \times \pi \times 6.5^2 \times \sqrt{9^2 - 6.5^2}$$

$$= \underline{275.4 \text{ cm}^3}$$

c. vol. small sphere : vol. of larger cone = $81.6 : 275.4$
 $- 8 : 27$