

The surface area of a sphere.

$$\text{Surface area of sphere} = 4\pi r^2$$

Ex: 27.16

Calculate the surface area.

1) $r = 6 \text{ cm}$

$$\begin{aligned} \text{Surface Area} &= 4\pi r^2 \\ &= 4\pi \times 6^2 \\ &= \underline{\underline{452.4 \text{ cm}^2}} \end{aligned}$$

d. $r = \frac{1}{\sqrt{\pi}} \text{ cm}$

$$\begin{aligned} SA &= 4\pi r^2 \\ &= 4 \times \pi \times \left(\frac{1}{\sqrt{\pi}}\right)^2 \\ &= 4 \times \pi \times 1 \\ &= \underline{\underline{4 \text{ cm}^2 \pi}} \end{aligned}$$

2. Calculate the radius.

a) $A = 50 \text{ cm}^2$

$$4\pi r^2 = 50$$

$$r = \frac{\sqrt{50}}{\sqrt{4\pi}}$$

$$= 1.99 \text{ cm}$$

$$= \underline{\underline{2.0 \text{ (dp)}}}$$

c. $A = 120 \text{ mm}^2$
 $4\pi r^2 = 120$

$$r = \sqrt{\frac{120}{4\pi}}$$

$$= \underline{\underline{3.1 \text{ mm}}}$$

3. SA of A : SA of B
 $4\pi r_1^2 : 4\pi r_2^2$

$$8^2 : 16^2$$

$$\text{or S.f} = \frac{8}{16} = \frac{1}{2}$$

$$64 : 256$$

$$\underline{\underline{1 : 4}}$$

$$\text{ratio} = \left(\frac{1}{2}\right)^2 = \frac{1}{4}$$

$$\underline{\underline{1 : 4}}$$

4.

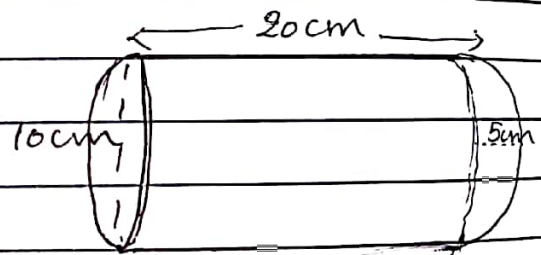
a) S.A of hemisphere

$$= 2\pi r^2$$

$$= 2\pi \times 5^2 \quad (r = 5 \text{ cm})$$

$$= 50\pi$$

$$= \underline{\underline{157.1 \text{ cm}^2}}$$



b) Length of the cylinder = $20 - 5 = \underline{\underline{15 \text{ cm}}}$

c. Surface area of the shape = Area of circle + Area of B + Area of hemisphere

$$= \pi \times 5^2 + 2\pi \times 5 \times 15 + 157.1$$

$$= \underline{\underline{706.95 \text{ cm}^2}}$$

Date: ___/___/___

5. a) Radius of the sphere = $\frac{16}{2} = 8 \text{ cm}$.

$$\begin{aligned} SA &= 4\pi r^2 \\ &= 4\pi \times 8^2 \\ &= 804.3 \text{ cm}^2. \end{aligned}$$

b) SA of cylinder = SA of sphere (given)

$$2\pi r(r+h) = 804.3$$

$$2\pi r(r+16) = 804.3$$

$$r(r+16) = \frac{804.3}{2\pi}$$

$$r^2 + 16r = 128.$$

$$r^2 + 16r - 128 = 0$$

$$a=1, b=16, c=-128$$

$$r = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-16 \pm \sqrt{16^2 - 4 \times 1 \times (-128)}}{2}$$

$$= \frac{-16 \pm 27.7}{2}$$

$$= 5.85 \text{ cm} \quad -21.85$$

$$\text{Radius} = \underline{\underline{5.85 \text{ cm}}}$$