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Sphere

Total Surface area of Sphere = $4\pi r^2$

Hemisphere

Total Surface area of Hemisphere = $3\pi r^2$

13.4

① Find the Surface area of a sphere of radius

(i) 10.5 cm

$$\Rightarrow \text{Total surface area} = 4\pi r^2 \\ = 4 \times \frac{22}{7} \times 10.5 \times 10.5$$

$$= 4 \times \frac{22}{7} \times \overset{15}{\cancel{105}} \times \overset{105}{\cancel{105}} \\ = 4 \times 22 \times \overset{15}{\cancel{10}} \times \overset{21}{\cancel{10}} \\ = 4 \times 22 \times 15 \times 21 \\ = 10 \times 10 \times 21 \\ = 2100$$

Sulekha

$$= 2 \times 22 \times 3 \times 21$$

$$2 \times 21$$

$$= 2 \times 11 \times 3 \times 21$$

$$= 1386 \text{ cm}^2$$

② Find the surface area of a sphere of diameter

→ 5.6 cm

$$= \text{Total surface area} = 4\pi r^2$$

$$= 4 \times \frac{22}{7} \times 5.6 \times 5.6$$

$$= 4 \times \frac{22}{7} \times \frac{56}{10} \times \frac{56}{10}$$

$$= \frac{4 \times 22 \times 4 \times 28}{5 \times 5}$$

$$= \frac{4 \times 22 \times 4 \times 28}{25}$$

$$= \frac{88 \times 32}{25}$$

$$= \frac{2816}{25} = 112.24 \text{ cm}^2$$



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Q. 11
→

14 cm

Total Surface Area = $4\pi r^2$

$$= \frac{4 \times 22 \times 14^2 \times 14}{7}$$

$$= 4 \times 22 \times 2 \times 14$$

$$= 88 \times 28$$

$$= 2464 \text{ cm}^2$$

Q. 12 Find the surface area of a sphere of diameter.

→ (i) 14 cm

→ $r = 7 \text{ cm}$

Total Surface area of Sphere = $4\pi r^2$

$$= \frac{4 \times 22 \times 7 \times 7}{7}$$

$$= 4 \times 22 \times 7$$

$$= 616 \text{ cm}^2$$

Q. 13

21 cm

$$r = \frac{21}{2} = 10.5 \text{ cm}$$

Total surface area of Sphere = $4\pi r^2$

$$= 4 \times 22 \times 10.5 \times 10.5$$

Sulabh

$$\frac{4 \times 22 \times 105 \times 105}{71 \times 102 \times 102}$$

$$= \frac{2 \times 11 \times 3 \times 21}{2 \times 21}$$

$$= 2 \times 11 \times 3 \times 21$$

$$= 42 \times 33$$

$$= 1386 \text{ cm}^2$$

(18)

$$3.5 \text{ m}$$

$$r = \frac{3.5}{2}$$

$$\begin{aligned} \text{Total Surface area} &= 4\pi r^2 \\ &= \frac{4 \times 22 \times 3.5 \times 3.5}{7 \times 2 \times 2} \\ &= \frac{4 \times 11 \times 35 \times 3.5}{71 \times 10 \times 2} \\ &= \frac{2 \times 11 \times 5 \times 35}{10 \times 21} \\ &= \frac{2 \times 11 \times 5 \times 35}{10 \times 10} \\ &= \frac{12 \times 11 \times 5 \times 35}{100} \\ &= 50 \end{aligned}$$



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$$= \frac{11 \times 5 \times 35 \times 7}{50 + 100}$$

$$= \frac{11 \times 7}{2}$$
$$= \frac{77}{2}$$

$$= 38.5 \text{ cm}^2$$

③ Find the total surface area of a hemisphere of radius 10 cm ($\pi = 3.14$)

$$r = 10 \text{ cm}$$

$$\pi = 3.14$$

Total surface area of hemisphere

$$= 3\pi r^2$$

$$= 3 \times 3.14 \times 10 \times 10$$

$$= 9.42 \times 100$$

$$= 942 \text{ cm}^2$$

④ The radius of a spherical balloon increases from 7 cm to 14 cm as air being pumped into it. Find the ratio of surface

Areas of the balloon in the two cases.

= When $r = 7 \text{ cm}$

$$\begin{aligned}\text{Surface area} &= 4\pi r^2 \\ &= 4 \times \frac{22}{7} \times 7 \times 7 \\ &= 4 \times 22 \times 7\end{aligned}$$

When $R = 14 \text{ cm}$

$$\begin{aligned}\text{Surface area} &= 4\pi R^2 \\ &= 4 \times \frac{22}{7} \times 14 \times 14 \\ &= 4 \times 22 \times 14\end{aligned}$$

Required ratio of the surface areas of the balloon.

$$= \frac{4 \times 22 \times 7}{4 \times 22 \times 14} = \frac{1}{2}$$