

EduFest Academy Junior, Pune

9th Maths Surface Areas And Volumes

Very-very Short Answer Questions (1 Mark)

- If the volume of a sphere is numerically equal to its surface area. Then radius of sphere is.
(a) 1 unit (b) 3 unit (c) 2 unit (d) 6 unit
- The height of cone of diameter 10 cm and slant height 13 cm, is
(a) 12 cm (b) 13 cm (c) $\sqrt{69}$ cm (d) $\sqrt{194}$ cm
- The radius of a sphere is $2r$, then its volume will be.
(a) $\frac{32}{3}\pi r^3$ (b) $4\pi r^3$ (c) $\frac{4}{3}\pi r^3$ (d) $\frac{8\pi r^3}{3}$
- If the radius of a sphere is increased by 10% then its volume will be increased by
(a) 11.1% (b) 22.1% (c) 33.1% (d) 44.1%
- If the radius of a sphere is doubled then the ratio of their volume is _____
- The diameter of sphere whose surface area is 55.44 m^2 is _____
- Total surface area of a cone whose radius is $P/2$ and slant height is $2l$ is _____
- Volume of a cone $V = \frac{1}{3}\pi (\text{radius})^2 \times \text{height}$
- The radius of a hemispherical balloon increases from 6 cm to 12 cm as air is being pumped into it. Find the ratio of the surface area of the balloon in the two cases.
- If the radius of a sphere is $2r$, then find its volume.

Very Short Answer type Questions (2 Marks)

- Three spheres of radii 3 cm, 4 cm and 5 cm are melted together to form a single sphere. Find the radius of new sphere.
- What is the volume of the largest cone that can be inscribed completely in a hollow hemisphere of radius 7 cm?
- A cone is 8.4 cm high and the radius of its base is 2.1 cm. It is melted and recast into a sphere. Find the radius of the sphere.
- Find the ratio of total surface area of a sphere and a hemisphere of same radius.
- A cone and a hemisphere have equal base and equal volumes. Find the ratio of their heights.

Short Answer type Questions (3 Marks)

- A hemispherical bowl is to be painted from inside at the rate of 20. per 100 m^2 . The total cost of painting is 30.80. Find the inner surface area of the bowl.
- The diameter of a hemisphere is decreased by 30%. What will be the percentage change in its total surface area?
- The radius of a sphere is 10 cm. If the radius is increased by 1cm then prove that volume of the sphere is increased by 33.1%.
- The volume of a sphere is 4851 cm^3 . How much should its radius be reduced so that its volume becomes $\frac{4312}{3}\text{ cm}^3$?
- A semicircular sheet of paper of diameter 14 cm is bent to form an open conical cup. Find the capacity of the cup.

Long Answer type Questions (5 Marks)

- A right circular cone is 5.4 cm high and radius of its base is 2 cm. It is melted and recast into another right circular one with radius of base as 1.5 cm. Find the height of the cone.

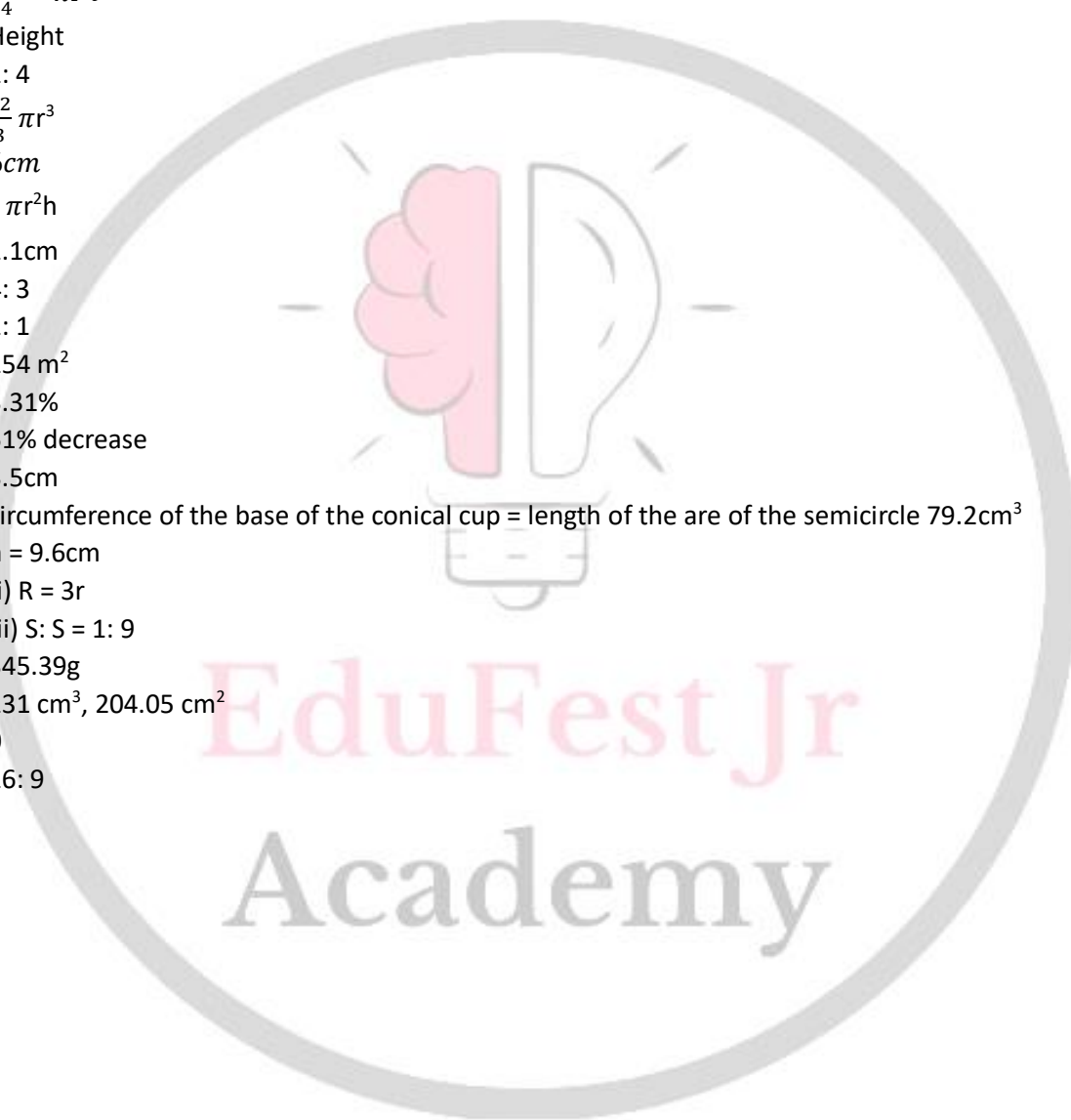
22. Twenty-Seven solid iron spheres each of radius r and surface area S are melted to form sphere with surface areas'. Find the (i) radius R of the new sphere. (ii) Ratio of S and S'
23. The diameter of a metallic ball is 4.2 cm. What is the mass of the ball, if the density of the metal is 8.9 g per cm^3 .
24. A toy in the form of a cone mounted on a hemisphere of diameter 7 cm. the total height of the toy is 14.5 cm. Find the volume and the total surface are of the toy. (Take $\pi = \frac{22}{7}$)
25. If h , c and v respectively, are the height, the curved surface and volume of the cone, prove that $3\pi v h^3 - c^2 h^2 + 9v^2 = 0$
26. The volumes of the two spheres are in the ratio 64: 27. Find the ratio of their surface areas.



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Answers

1. (b) 3 unit
2. (a) 12 cm
3. (a) $\frac{32}{3}\pi r^3$
4. (c) 33.1%
5. 1: 8
6. 2.1m
7. $\frac{\pi P^2}{4} + \pi Pl$
8. Height
9. 1: 4
10. $\frac{32}{3}\pi r^3$
11. 6cm
12. $\frac{1}{3}\pi r^2 h$
13. 2.1cm
14. 4: 3
15. 2: 1
16. 154 m²
17. 3.31%
18. 51% decrease
19. 3.5cm
20. circumference of the base of the conical cup = length of the arc of the semicircle 79.2cm³
21. h = 9.6cm
22. (i) R = 3r
(ii) S: S = 1: 9
23. 345.39g
24. 231 cm³, 204.05 cm²
25. 0
26. 16: 9



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