Class 10 Mathematics · Chapter 12: Surface Areas and Volumes

Worksheet · 20 marks · about 40 minutes · based on NCERT

Name _____ Class and section _____ Date _____

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1. A solid is a cylinder of radius r and height h with a hemisphere of radius r fixed at each end. Its total surface area is [1]

(a) $\pi r(2h + 6r)$
(b) $\pi r(2h + 4r)$
(c) $\pi r(2h + 2r)$
(d) $\pi r(h + 4r)$

2. A toy is made by fixing a cone on a hemisphere so that the join is smooth. The base radius of the cone must be [1]

(a) twice the radius of the hemisphere
(b) equal to the height of the cone
(c) half the radius of the hemisphere
(d) equal to the radius of the hemisphere

3. Asha works out the paint needed to cover a toy and writes her answer as 550 cm^3. What does the unit tell you? [1]

(a) Her answer is correct, since paint fills the toy.
(b) cm^3 is the unit of curved surface area.
(c) She has found a volume, but paint covers a surface, so the answer must be in cm^2.
(d) cm^3 and cm^2 mean the same for a combined solid.

4. The volume of a solid hemisphere of radius 21 cm is (Take $\pi = 22/7$) [1]

(a) 38808 cm^3
(b) 9702 cm^3
(c) 2772 cm^3
(d) 19404 cm^3

5. The curved surface area of a hemisphere of radius 14 cm is (Take $\pi = 22/7$) [1]

(a) 616 cm^2
(b) 2464 cm^2
(c) 1232 cm^2
(d) 1848 cm^2

6. On one face of a cube of edge 21 cm is fixed a hemisphere of diameter 14 cm. Take $\pi = 22/7$. Find the total surface area of the solid. [2]

7. A solid made of a cone of radius 3 cm and height 4 cm on a hemisphere of radius 3 cm is lowered fully into a cylindrical vessel of radius 5 cm containing water. By how much does the water level rise? [2]

8. A solid toy is a cone of radius 7 cm and height 7 cm fixed on a hemisphere of the same radius. Take $\pi = 22/7$. Find the volume of the toy. [2]

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9. A lane-marker float for a swimming pool is a hemisphere of radius 9 cm with a cone on its flat face. The float is 21 cm tall. The cone is painted red and the hemisphere white. Take π = 3.14. Which colour covers the larger area, and by how much? [3]

10. From a solid cube of edge 14 cm, a cone of radius 7 cm and depth 6 cm is hollowed out of the top face. Take π = 22/7. Find the volume of wood left. [3]

11. A paperweight is a cuboid 10 cm × 8 cm × 6 cm with a hemisphere of radius 3.5 cm fixed on its top face. Take π = 22/7. Find the total surface area of the paperweight. [3]

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