INDIAN SCHOOL NIZWA - WORKSHEET

MATHEMATICS

CH:11.Surface area and Volume

Name: _____ Date:_____ Class: IX Sec: ____

1. If volume and surface area of a sphere is numerically equal, then its radius is
(a) 2 units (b) 3 units (c) 4 units (d) 5 units

2. Ratio of the volume of a cone and a cylinder of same radius of base and same height is
(a) 1 : 1 (b) 1 : 2 (c) 1 : 3 (d) 1 : 4

3. A conical tent is to accommodate 11 persons. Each person requires 4 square metres of the space on the ground and 20 cubic metres of air to breath, then the height of the cone is
(a) 10 m (b) 12 m (c) 15 m (d) 18 m

4. If surface area of a sphere is $676\ \pi\ cm^2$, then its radius is equal to

(a) 12 cm (b) 13 cm (c) 9 cm (d) 8 cm

5. The diameter of a sphere is decreased by 25%, by what percentage its volume decreases?
(a) 25% (b) 57.81% (c) 53.50% (d) 50%

6. 100 jugs full of water are emptied in a conical flask. The height of the water level is 75 cm, the diameter of the water level, when each jug contains 3850 cm^3 of water is
(a) 70 cm (b) 35 cm (c) 140 cm (d) 210 cm

7. The radius of a hemispherical balloon increases from 6 cm to 12 cm as air is being pumped into it. The ratios of the surface areas of the balloon in the two cases is
(a) 1 : 4 (b) 1 : 3 (c) 2 : 3 (d) 2 : 1

8. 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. The diameter of sphere is
(a) 4.2 cm (b) 2.1 cm (c) 2.4 cm (d) 1.6 cm

9. (a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

Assertion (A): The total surface area of a cone whose radius is r/2 and slant height $2l$ is $\pi r\left(l+\frac{r}{4}\right)$.

Reason (R): Total surface area of cone is $\pi r(l + r)$ where r is radius and l is the slant height of the cone.

10. **Assertion (A):** An edge of a cube measures r cm. If the largest possible right circular cone is cut out of this cube, then the volume of the cone is $\frac{1}{6}\pi r^3$.

Reason (R): Volume of the cone is given by $\frac{1}{3}\pi r^2 h$, where r is the radius of the base and h is the

11. A solid sphere of radius 3 cm is melted and then recast into small spherical balls each of diameter 0.6 cm. Find the number of small balls thus obtained.

12. Curved surface area of a cone is 308 cm^2 and its slant height is 14 cm. Find its total surface area.

13. How many square metres of canvas is required for a conical tent whose height is 3.5 m and the radius of whose base is 12 m?

14. The diameters of two cones are equal. If their slant heights are in the ratio 7:4, find the ratio of their curved surface area.

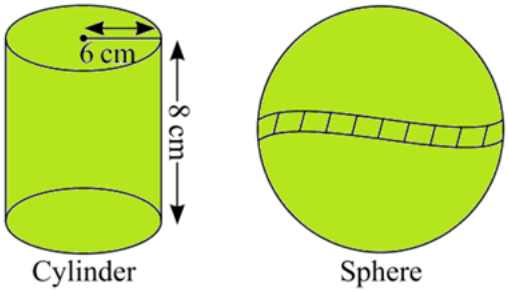
15. The radius and height of a cone are in the ratio 4 : 3. The area of the base is 154 cm^2. Find the area of the curved surface. (Use $\pi = \frac{22}{7}$)

16. How many metres of cloth, 2.5 m wide, will be required to make a conical tent whose base radius is 7 m and height 24 m?

17. The circumference of the base of 10 m high conical tent is 44 m. Calculate the length of canvas used in making the tent, if width of canvas is 2 m.

18. The volumes of two spheres are in the ratio 64 : 27. Find their radii, if the sum of their radii is 21 cm.

19. Mr. Kumar, a Mathematics teacher brings some green coloured clay in the classroom to teach the topic 'mensuration'. First, he forms a cylinder of radius 6 cm and height 8 cm with the clay. Then, he moulds that cylinder into a sphere similarly, he moulds the sphere in other different shapes. Answer the following questions: (use $\pi = 3.14$)



(i) What is the volume of the cylindrical shape? (2)
(ii) Find the radius of the sphere. (2)

20. Mathematics teacher of a school took his 10th standard students to show Taj Mahal. It was a part of their Educational trip. The teacher had interest in history as well. He narrated the facts of Taj Mahal to the students. Then the teacher said in this monument one can find combination of solid figures. There are 4 pillars which are cylindrical in shape. Also, 2 domes at the back side which are hemispherical. 1 big domes at the centre. It is the finest example of the symmetry. (Use $\pi = 22/7$)



(i) How much cloth material will be required to cover 2 small domes each of radius 4.2 metres?
(ii) Write the formula to find the volume of one pillar (including hemispherical dome)
(iii) Find the volume of the hemispherical dome at the centre if base radius is 7 m
(iv) What is the lateral surface area of all 4 pillars if height of the each pillar is 14 m and base radius is 1.4 m (without dome)?