WORKSHEET ①

1. The shape of a glass (*tumbler*) is usually in the form of
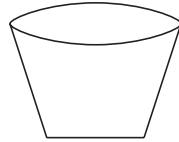
Glass

   (*a*) a cylinder　　　　　　　　(*b*) frustum of a cone
   (*c*) a cone　　　　　　　　　　(*d*) a sphere

2. If each edge of a cube is increased by 50%, the percentage increase in the surface area is
   (*a*) 25%　　　(*b*) 105%　　　(*c*) 125%　　　(*d*) 200%

3. Total surface area of a cube is 216 cm², its volume is
   (*a*) 144 cm³　　　(*b*) 196 cm³　　　(*c*) 212 cm³　　　(*d*) 216 cm³

4. If a solid right circular cone of height 24 cm and base radius 6 cm is melted and recast in the shape of a sphere, then the radius of the sphere is
   (*a*) 6 cm　　　(*b*) 4 cm　　　(*c*) 8 cm　　　(*d*) 12 cm

5. If the volume of a hemisphere is 19404 cm³, then the total surface area of the hemisphere is
   (*a*) 4168 cm²　　　(*b*) 4062 cm²　　　(*c*) 4000 cm²　　　(*d*) 4158 cm²

6. The ratio between volumes of two spheres is 8 : 27. What is the ratio between their surface area?
   (*a*) 4 : 9　　　(*b*) 5 : 6　　　(*c*) 8 : 5　　　(*d*) 9 : 4

7. The length of the diagonal of a cube is $6\sqrt{3}$ cm. Its total surface area is
   (*a*) 216 cm²　　　(*b*) 150 cm²　　　(*c*) 188 cm²　　　(*d*) 66 cm²

8. Find the volume of the largest right circular cone that can be cut out from a cube of edge 4.2 cm.

9. A heap of rice is in the form of a cone of diameter 9 m and height 3.5 m. Find the volume of the rice. How much canvas cloth is needed to just cover the heap?

10. Prove that the surface area of a sphere is equal to the curved surface area of the circumscribed cylinder.

11. A solid metallic sphere of diameter 21 cm is melted and recast into a number of smaller cones, each of diameter 7 cm and height 3 cm. Find the number of cones so formed.

12. A toy is in the form of a cone mounted on a hemisphere of radius 3.5 cm. The total height of the toy is 15.5 cm. Find the total surface area and volume of the toy.

13. The height of a cone is 30 cm. A small cone is cut off at the top by a plane parallel to the base. It is volume be $\frac{1}{27}$ of the volume of the given cone, at what height above the base is the section made?

14. Three solid metallic spheres of radii 3 cm, 4 cm and 5 cm respectively are melted to form a single solid sphere. Find the diameter of the resulting sphere.

15. A wooden article was made by scooping out a hemisphere from each ends of a solid cylinder. If the height of the cylinder is 20 cm, and radius of the base is 3.5 cm, find the total surface area of the article.

Name: ....　　　　Teacher's signature: ....

Class: ....X.................................　　　　Date: ....
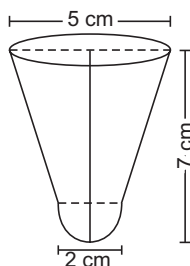
16. How many spherical bullets can be made out of a solid cube of lead whose edge measures 44 cm, each bullet being 4 cm in diameter?

17. Find the volume of frustum of cone, the area of whose ends are 40 m^2 and 10 m^2 and height is 9 metres.

18. An open metal bucket is in the shape of a frustum of a cone, mounted on a hollow cylindrical base made of the same metallic sheet. The diameters of two circular ends of the bucket are 45 cm and 25 cm, the total vertical height of the bucket is 30 cm and that of the cylindrical base is 6 cm. Find the area of the metallic sheet used to make the bucket. Also find the volume of water the bucket can hold. [Do not take into account the handle of the bucket]
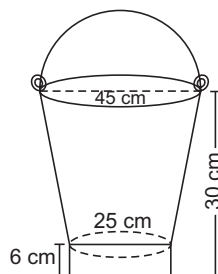
19. A tent consists of frustum of a cone, surmounted by a cone. If the diameters of the upper and lower circular ends of the frustum be 14 m and 26 m respectively, the height of the frustum be 8 m and the slant height of the surmounted conical portion be 12 m, find the area of the canvas required to make the tent. (Assume that the radii of the upper circular end of the frustum and the base of surmounted conical portion are equal)

20. A shuttlecock used for playing badminton has the shape of a frustum of a cone mounted on a hemisphere as shown in the figure. The external diameters of the frustum are 5 cm and 2 cm and the height of the entire shuttlecock is 7 cm. Find its external surface area.

ANSWERS

WORKSHEET 1

1. (*b*) Frustum of a cone   2. (*c*) 125%   3. (*d*) 216 cm^3 4. (*a*) 6 cm   5. (*d*) 4158 cm^2

6. (*a*) 4 : 9   7. (*a*) 216 cm^2 8. 19.4 cm^3 9. 74.25 m^3, 80.61 m^2 11. 126   12. 214.5 cm^2

13. 20 cm   14. 12 cm   15. 544 cm^2 16. 2541   17. 210 m^3 18. 3822.5 cm^2, 23.73 L (approx.)

19. $\dfrac{6248}{7}$ m^2 20. 74.26 cm^2 (approx.)