



OUR OWN HIGH SCHOOL, AL WARQA'A, DUBAI

GRADE: X - SURFACE AREA AND VOLUMES

ASSIGNMENT: 1

1. A solid wooden toy is in the form of a cone mounted on a hemisphere. If the radius of the hemisphere and that of the based of the cone be 4.2 cm and the total height of the toy is 10.2 cm, find the volume of the wood used in the toy. (Ans: 266.11 cm^3)
2. A circus tent is made of canvas, and is in the form of a right circular cylinder and a right circular cone above it. The diameter and height of the cylindrical part of the tent are 126 m and 5 m respectively. The total height of the tent is 21 m. Find the total cost of the tent if the canvas used costs Rs.12 per m^2 . (Ans: Rs.178200)
3. A toy is in the shape of a right circular cylinder with a hemisphere on one end and a cone on the other. The radius and height of the cylindrical part are 5 cm and 13 cm respectively. The radii of the hemispherical and conical parts are the same as that of the cylindrical part. Find the surface area of the toy, if the total height of the toy is 30 cm. (Ans: 770 cm^2)
4. The diameters of the internal and external surfaces of a hollow spherical shell are 10 cm and 6 cm respectively. If it is melted and recast into a solid cylinder of height $2\frac{2}{3}$ cm, find the diameter of the cylinder.(Ans: 14 cm)

ASSIGNMENT: 2

1. A sphere of radius 6 cm is dropped in a right circular cylindrical vessel partly filled with water. The diameter of the cylindrical vessel is 12 cm. If the sphere is completely submerged in water, find the rise of water level in the cylindrical vessel. (Ans: 8 cm)
2. A solid cylinder of diameter 12 cm and height 15 cm is melted and recast into 12 toys in the shape of a right circular cone mounted on a hemisphere. Find the radius of the hemisphere and total height of the toy if height of the cone is three times its radius.(Ans: $r = 3 \text{ cm}$, $h = 12 \text{ cm}$)
3. A bucket has top and bottom diameter of 40 and 20 cm respectively. Find the volume of the bucket if its depth is 12 cm. Also find the cost of tin sheet used for making the bucket at the rate of Rs.1.20 per dm^2 .(Ans: 8800 cm^3 , Rs. 21.44)
4. The difference between the outside and inside surface of a cylindrical metallic pipe 14 cm long is 44 sq. cm. If the pipe is made of 99 cu. cm of metal, find the outer and inner radii of the pipe.(Ans: 2.5 cm, 2 cm)

5. A right triangle, whose sides are 15 cm and 20 cm is made to revolve about its hypotenuse. Find the volume and the surface area of the double cone so formed. (use $\pi = 3.14$)(Ans: 3768 cm^3 , 1318.8 cm^2)
6. A solid is composed of a cylinder with hemispherical ends. If the whole length of the solid is 108 cm and the radius of the hemispherical ends is 18 cm, find the cost of polishing the surface at the rate of 7 paise per sq. cm. (Ans: Rs. 855.36)
7. The diameter of a copper sphere is 6 cm. The sphere is melted and is drawn in to a long wire of uniform circular cross section. If the length of the wire is 36 cm, find its radius. (Ans: 1 cm)

ASSIGNMENT: 3

1. A solid toy is in the form of a hemisphere surmounted by a right circular cone. Height of the cone is 2 cm and the diameter of the base is 4 cm. If a right circular cylinder circumscribes the solid, find how much more space it will cover. (Ans: 25.14 cm^3)
2. A cylindrical bucket 32 cm high and 18 cm of radius of the base, is filled with sand. The bucket is emptied on the ground and a conical heap of sand is formed. If the height of the conical heap is 24 cm, find the radius and slant height of the heap. (Ans: 36 cm, 43.27 cm)
3. The total surface area of a solid right circular cylinder is 231 cm^2 . Its curved surface is $\frac{2}{3}$ rd of the total surface. Determine the radius of its base and height. (Ans: 3.5 cm, 7 cm)
4. A rectangular reservoir is 120 m long and 75 m wide. At what speed per hour must water flow into it through a square pipe of 20 cm wide so that the water rises by 2.4 m in 18 hours? (Ans: 30 km/hr)
5. A bucket made up of metal sheet is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends as 8 cm and 20 cm respectively. Find the cost of the bucket if the cost of the metal sheet is Rs. 15 per 100 cm^2 .(use $\pi = 3.14$) (Ans: Rs. 293.90)
6. A cylindrical tub of radius 5 cm and height 9.8 cm is full of water. A solid in the form of a right circular cone mounted on a hemisphere is immersed in to the tub. If the radius of the hemisphere is 3.5 cm and height of cone outside the hemisphere is 5 cm, find the volume of water left in the tub.(Ans: 616 cm^3)
7. If the radii of the ends of a bucket, 45 cm high are 28 cm and 7 cm. Determine the capacity and total surface area of the bucket. (Ans: 48510 cm^3 , 5616.6 cm^2)
