

**Class: 10**  
**Subject: Math's**  
**Topic: Surface areas and volumes**  
**No. of Questions: 25**

- Q.1 Two cubes each of volume  $64 \text{ cm}^3$  are joined end to end. Find the surface area and volume of the resulting cuboid.
- Q.2 The diameter of a metallic sphere is 6 cm. The sphere is melted and drawn into a wire of uniform cross-section. If the length of the wire is 36 cm, find its radius.  
(CBSE-2013)
- Q.3 If the diameter of cross-section of a wire is decreased by 5%. How much percent will the length be increased so that the volume remains the same?
- Q.4 A metallic sphere of radius 4.2 cm is melted and recast into the shape of a cylinder of radius 6 cm. Find the height of the cylinder.
- Q.5 A solid sphere of radius 3 cm is melted and then cast into small spherical balls each of diameter 0.6 cm. Find the number of balls thus obtained.
- Q.6 A right circular cone is 3.6 cm high and radius of its base is 1.6 cm. It is melted and recast into a right circular cone with radius of its base as 1.2 cm. Find its height.
- Q.7 A conical vessel whose internal radius is 5 cm and height 24 cm is full of water. The water is emptied into a cylindrical vessel with internal radius 10 cm. Find the height to which the water rises.
- Q.8 The dimensions of a metallic cuboid are:  $100 \text{ cm} * 80 \text{ cm} * 64 \text{ cm}$ . It is melted and recast into a cube. Find the surface area of the cube.
- Q.9 A glass cylinder with diameter 20 cm has water to a height of 9 cm. A metal cube of 8 cm edge is immersed in it completely. Calculate the height by which water will rise in the cylinder. (Take  $\pi = 3.142$ )
- Q.10 A cylindrical pipe has inner diameter of 7 cm and water flows through it at 192.5 liters per minute. Find the rate of flow in kilometers per hour.  
(CBSE-2013)

- Q.11 Water is flowing at the rate of 3km/hr through a circular pipe of 20 cm internal diameter into a circular cistern of diameter 10 m and depth 2 m. In how much time will the cistern be filled?  
(CBSE-2008)
- Q.12 Water is flowing at the rate of 7 m per second through a circular pipe whose internal diameter is 2 cm into a cylindrical tank the radius of whose base is 40 cm. Determine the increase in the water level in 1/2 hour.  
(CBSE-2013)
- Q.13 The rain water from a roof of 22 m \* 20 m drains out into a cylindrical vessel having diameter of base 2 m and height 3.5 m. if the vessel is just full, find the rain fall in cm.  
(CBSE-2010)
- Q.14 Water in a canal, 30 dm wide and 12 dm deep is flowing with velocity of 10km/hr. How much area will it irrigate in 30 minutes, If 8 cm of standing water is required for irrigation?
- Q.15 The cost of painting the total outside surface of a closed cylindrical oil tank at 60 paise per sq. dm is Rs. 237.60. the height of the tank is 6 times the radius of the base of the tank. Find its volume correct to two decimal places.
- Q.16 Determine the ratio of the volume of a cube to that of a sphere which will exactly fit inside the cube.
- Q.17 Two solid right circular cones have the same height. The radii of their bases are  $r_1$  and  $r_2$ . They are melted and recast into a cylinder of same height. Show that the radius of the base of the cylinder is  $\sqrt{(r_1^2 + r_2^2)}/3$ .
- Q.18 A circular tent is cylindrical upto a height of 3 m and conical above it. If the diameter of the base is 105 m and the slant height of the conical part is 53 m, find the total canvas used in making the tent.  
(CBSE-2004)
- Q.19 Find the volume of the largest right circular cone that can be cut out of a cube whose edge is 9 cm.
- Q.20 A solid wooden toy is in shape of a right circular cone mounted on a hemisphere. If the radius of the hemisphere is 4.2 cm and the total height of the toy is 10.2 cm, find the volume of the wooden toy.  
(CBSE-2012)
- Q.21 A solid toy is in the form of a right circular cylinder with a hemispherical shape at one end and a cone at the other end. Their common diameter is 4.2 cm and the height of the cylindrical and conical portions are 12 cm and 7 cm respectively. Find the volume of the solid toy.  
(CBSE- 2002)

- Q.22 From a right circular cylinder with height 10 cm and radius of the base 6 cm, a right circular cone of the same height and same base is removed. Find the volume of the remaining solid. Also, find the whole surface area.  
(CBSE-2009)
- Q.23 A decorative block is made up of two solids- a cube and a hemisphere. The base of the block is cube with edge 5 cm, and the hemisphere fixed on the top has a diameter 4.2 cm. Find the total surface area of the block.  
(CBSE-2009)
- Q.24 If the radii of the circular ends of a conical bucket which is 45 cm high, are 28 cm and 7 cm, find the capacity of the bucket.  
(CBSE-2004)
- Q.25 A bucket is in the form of a frustum of a cone and holds 28.490 liters of water. The radii of the top and bottom are 28 cm and 21 cm respectively. Find the height of the bucket.  
(CBSE-2012)