# CLASS IX – MATHEMATICS – CHAPTER 13

# SURFACE AREA AND VOLUME

Name: Date:

**01**. If the perimeter of one of the faces of a cube is 40 cm ,them its volume is

(a). 6000 cu cm (b). 1600 cu cm (c). 1000 cu cm (d). 600 cu cm

**02**. A cuboids having surface areas of 3 adjacent faces as a,b and c has the volume

(a). $3\sqrt{(abc)}$ (b). $\sqrt{(abc)}$ (c). abc (d). a3b3c3

**03**. The diameter of a right circular cylinder is 21 cm and its height is 8 cm. The Volume of the cylinder is

(a). 528 cu cm (b). 1056 cu cm (c). 1386 cu cm (d). 2772 cu cm

**04**. Each edge of a cube is increased by 40%. The % increase in the surface area is

(a). 40 (b). 96 (c). 160 (d). 240

**05**. Find the curved (lateral) surface area of each of the following right circular cylinders:

(a). $2\pi rh$ (b). $\pi rh$ (c). $2\pi r(r + h)$ (d). None of these

**06**. The radius and height of a right circular cylinder are each increased by 20%. The volume of cylinder is increased by-

(a). 20% (b). 40% (c). 54% (d). 72.8%

**07**. A well of diameter 8 meters has been dug to the depth of 21m. the volume of the earth dug out is

(a). 1056cu m (b). 352cu m (c). 1408cu m (d). 4224cu m

**08**. The radius of a cylinder is doubled which the height remains the same. The ratio between the volumes of the new cylinder and the original cylinder is

(a). 1:2 (b). 1:3 (c). 1:4 (d). 1:8

**09**. Length of diagonals of a cube of side a cm is

(a). $\sqrt{2}$a cm (b). $\sqrt{3}$ a cm (c). $\sqrt{3}$a cm (d). 1 cm

**10**. Surface area of sphere of diameter 14 cm is

(a). 616 $cm^2$ (b). 516 $cm^2$ (c). 400$cm^2$ (d). 2244 $cm^2$

**11**. Surface area of bowl of radius r cm is

(a). $4\pi r^2$ (b). $2\pi r^2$ (c). $3\pi r^2$ (d). $\pi r^2$

**12**. Volume of a sphere whose radius 7 cm is

(a). $1437\frac{1}{3}$ $cm^2$ (b). $1337\frac{1}{3}$ $cm^2$ (c). 1430 $cm^2$ (d). 1447 $cm^2$

**13**. The CSA of a right circular cylinder of height 14cm is 88$cm^2$. Find the diameter of the base of the cylinder

(a). 1 cm (b). 2 cm (c). 3 cm (d). 4 cm

**14**. Volume of spherical shell

(a). $\frac{2}{3}\pi r^2$ (b). $\frac{3}{4}\pi r^2$ (c). $\frac{4}{3}\pi[R^3 - r^3]$ (d). none of these

**15**. The area of the three adjacent faces of a cuboid are x, y, z. Its volume is V, then

(a). V = xyz (b). $V^2 = xyz$ (c). $V = x^2y^2z^2$ (d). none of these

**16**. A conical tent is 10 m high and the radius of its base is 24 m then slant height of the tent

(a). 26 (b). 27 (c). 28 (d). 29

**17**. Volume of hollow cylinder

(a). $\pi(R^2 - r^2)\, h$ (b). $\pi R^2 h$ (c). $\pi r^2 h$ (d). $\pi r^2(h_1 - h_2)$

**18**. Diameter of the base of a cone is 10.5 cm and its slant height is 10 cm. then CSA is

(a). $155cm^2$ (b). $165cm^2$ (c). $150cm^2$ (d). none of these

**19**. The height and the slant height of a cone are 21 cm and 28 cm respectively then volume of cone

(a). 7556 $cm^3$ (b). 7646 $cm^3$ (c). 7546 $cm^3$ (d). none of these

**Q01**. CSA of a right circular cylinder is 4.4 $m^2$. if the radius of the base of the cylinder is 0.7 m find its height.

**Q02**. The circumference of the trunk of a tree (cylindrical), is 44dm. Find the volume of the timber obtained from the trunk if the length of the trunk is 5 m. ( $\pi$ =22/7).

**Q03**. If the areas of three adjacent faces of a cuboids are X, Y and Z. If its volume is V, prove that $V^2 = XYZ$.

**Q04**. Find the volume of an ion has in the shape of cuboids whose length, breadth and height measure 25 cm. 18 cm and 6 cm respectively. Find also its weight in kilograms if 1 $cm^3$ of iron weight 100 grams.

**Q05**. The SA of cuboids is 3328 $m^2$; its dimensions are in the ratio 4:3:2. Find the volume of the cuboids.

**Q06**. The volume of a rectangular slower of stone is 10368 $dm^3$ and is dimensions are in the ratio of 3:2:1.

(a). Find the dimensions

(b). Find the cost of polishing its entire surface @ Rs. 2 per $dm^2$.

**Q07**. In a cylindrical drum of radius 4.2 m and height 3.5 m, how many full bags of wheat can be emptied if the space required for each bag is 2.1 cu m.

**Q08**. The inner diameter of a cylindrical wooden tripe is 24 cm. and its outer diameter is 28 cm. the length of wooden tripe is 35 cm. find the mass of the tripe, if cu cm of wood has a man of 0.6 g.

**Q09**. The difference between outside and inside surface of a cylindrical metallic tripe 14 cm. long is 44 $cm^2$. If the tripe is made of 99 cu cm. of metal, find the outer and inner radius of the tripe.

**Q10**. A rectangular piece of paper is 22cm long and 12cm wide. A cylinder is farmed by rolling the paper along its length. Find the volume of the cylinder.

**Q11**. If the radius of the base of a right circular cylinder is halved, keeping the height same, find the ratio of the volume of the reduced cylinder to that of original cylinder.

**Q12**. A rectangle take measuring 5 m by 4.5 m by 2.1 m is dug in the centre of a field 25 m by 13.5 m. The earth dug out is spread evenly over the remaining portion of the field. How much is the level of the field raised?

**Q13**. A village having a population of 4000 requires 150litres of water per head per day. It has a water tank measuring 20mx15mx6m which is full of water. For how many days will the water tank last?

**Q14**. A patient in a hospital is given soup daily in a cylindrical bowl of a diameter7cm. If the bowl is filled with soup to height of 4cm. How much soup the hospital has to prepare daily to serve 250 patients?

**Q15**. The diameter of a roller is 84cm and its length is 120cm. It takes 500 complete revolutions to move once over to level a playground.

(a). Find the area of playground in sq m.

(b). Determine the cost of leveling the playground at the rate of Rs1.75 per sq m.

**Q16**. A metal cube of edge 12cm is melted and farmed into three similar cubes. If the edge of two smaller cubes is 6cm and 8cm, find the edge of the 3rd smaller cube (Assume-no loss metal during melting).

**Q17**. How many bricks, each measuring 18cm by 12cm by 10cm will be required to build a wall 15m long 6dm wide and 6.5m high when 1/10 of its volumes occupied by mistri? Please find the cost of the bricks to the nearest rupees, at Rs 1100 per 1000 bricks.

**Q18**. The ratio between the radius of the base and height of a cylinder is 2:3. find the total surface area of the cylinder if its volume is 1617 $cm^3$.

**Q19**. Find the CSA of a right circular cone whose slant height is 10 cm and base radius is 7 cm.

**Q20**. Find (a). CSA and (b). Total surface area of a hemisphere of radius 21 cm

**Q21**. The circumference of the base of a cylindrical vessel is 132 cm and its height is 25 cm. How many litres of water can it hold? [1000 $cm^3$ = 1L]

**Q22**. A cubical box has each edge 10 cm and another cuboidal box is 12.5 cm long, 10 cm wide and 8 cm high. Which box has the greater lateral surface area and by how much?

**Q23**. A river 3 m deep and 40 m wide is flowing at the rate of 2 km per hour. How much will fall into the sea in a minute?

**Q24**. If the lateral surface of a cylinder is 94.2 $cm^2$ and its height is 5 cm. then find
(a). radius of its bare (b). its volume [$\pi = 3.14$]

**Q25**. A shot put is a metallic sphere of radius 4.9 cm It the density of the metal is 7.8 g per $cm^3$ Find the mass of the shot put.

**Q26**. The capacity of a hemispherical tank is 155.232 l . Find its radius.

**Q27**. Twenty seven solid iron spheres, each of radius r and surface are S are melted to form a sphere with surface area S' find the
(a). radius r' of the new sphere (b). ratio of S and S '

**Q28**. A Godown measures 40 m x 25 m x 10 m. Find the maximum number of wooden crates each measuring 10 m x 1.25 m x 0.5 m that can be stored in the go down

**Q29**. A conical pit of top diameter 3.5 m is 12 m deep. What is its capacity in kilolitres. [2]

**Q30**. The diagonals of a cube is 30 cm, find its volume

**Q31**. A cylindrical tank has a capacity of 6160 m3 find its depth if the diameter of the base is 28 m

**Q32**. What length of tarpaulin 3 m wide will required to make conical tent of height 8m and base radius 6 m? Assume that the extra length of material that will be required for stitching margins and wastage in cutting is approximately 20 m [$\pi = 3.14$]

**Q33**. A capsule of medicine is in the shape of a sphere of diameter 3.5 mm How much medicine ( in $mm^3$) is needed to fill this capsule?

**Q34**. A wall of length 10 m was to be built across an open ground. The height of wall is 4 m and thickness of the wall is 34 cm. If this wall is to be built up with bricks whose dimensions are 24cmx12cmx8cm. How many bricks would be required.

**Q35**. The pillars of a temple are cylindrically shaped if each pillar has a circular base of radius 20 cm and height 10 m. How much concrete mixture would be required to build 14 such pillars?

**Q36**. Shanti sweets stall was placing an order for making cardboard boxes for packing their sweets two sizes of boxes were required. The bigger of dimensions 25 cm x 20 cm x 5 cm and the smaller of dimensions 15 cm x 12 cm x 5cm for all the overlaps, 5% of the total surface area is required extra. If the cost of cardboard is Rs 4 for 1000 $cm^2$. Find the cost of cardboard required for supplying 250 boxes of each kind.

**Q37**. A hallow spherical shell is made of a metal of density 9.6g / $cm^3$ . The external diameter of the shell is 10cm and its internal diameter is 9 cm. Find

(a). Volume of the metal contained in the shell

(b). Weight of the shell.

(c). Outer surface area of the shell.

**Q38**. If the volume of a right circular cone of height 9 cm is $48\pi cm^3$ Find the diameter of its base

**Q39**. The volume of a cylinder is 69300 $cm^3$ and its height is 50cm. Find its curved surface area

**Q40**. The volume of a cube is 1000 $cm^3$, Find its total surface area.

**Q41**. A right triangle ABC with sides 5 cm, 12cm, and 13 cm is revolved about the side 12 cm, find the volume of the solid so obtained

**Q42**. The inner diameter of a circular well is 3.5 cm. It is 10 m deep find.

(a). Its inner curved surface area. (b). the cost of plastering this curved rate of Rs 40 per $m^2$