



## STANDARD 8<sup>TH</sup>: CHAPTER 16

### Surface Area and Volume

#### Q1. Select all correct options

1. A cuboid has dimensions  $12\text{ cm} \times 8\text{ cm} \times 6\text{ cm}$ . The ratio of its surface area to its volume is \_\_\_\_\_.
  - a. 1
  - b. 0.75
  - c. 0.50
  - d. 0.25
2. A rectangular pool measures 10 meters in length, 5 meters in width, and 2 meters in depth. The amount of water required to fill the pool is \_\_\_\_\_.
  - a. 100 Liters
  - b. 1000 Liters
  - c. 10000 Liters
  - d. 100000 Liters
3. A cylindrical container has a diameter of 12 cm and a height of 20 cm. The volume of the cylinder is \_\_\_\_\_.
  - a.  $2880\pi\text{ cm}^3$
  - b.  $1440\pi\text{ cm}^3$
  - c.  $720\pi\text{ cm}^3$
  - d.  $360\pi\text{ cm}^3$
4. If a 5-liter molten mixture of khoa and sugar is poured into a tray, filling it to its full capacity, and the tray has a breadth of 40 cm and a height of 2.5 cm, the length of the tray is \_\_\_\_\_.
  - a. 40cm
  - b. 50cm
  - c. 2.5cm
  - d. 0.05cm
5. A cylindrical storage silo with a diameter of 3 meters and a height of 4 meters is to be painted internally and externally, including the top cover. The painting rate is INR 100 per square meter. The total approximate expenditure for painting is INR \_\_\_\_\_.
  - a. INR 5184
  - b. INR 1200
  - c. INR 2400
  - d. INR 5100

6. What is the Euler's Formula?
- Number of Faces + Number of Vertices = Number of Edges + 2
  - Number of Faces - Number of Vertices = Number of Edges + 2
  - Number of Edges + Number of Vertices = Number of Faces + 2
  - Number of Edges - Number of Vertices = Number of Faces + 2
7. A polyhedron has 10 vertices and 15 edges. How many faces does the polyhedron have according to Euler's formula?
- 23
  - 3
  - 7
  - 27
8. A polyhedron has 10 edges and 8 faces. How many vertices does the polyhedron have according to Euler's formula?
- 4
  - 4
  - 0
  - None of the above
9. A cylindrical tank has a diameter of 8 meters and a height of 15 meters. What is the volume of water in the tank if it is filled to 75% of its capacity?
- $60\pi m^3$
  - $720\pi m^3$
  - $240\pi m^3$
  - $180\pi m^3$
10. What is the total surface area of a cylinder with a radius of 60 centimeters and a height of 1 meters?
- $120\pi m^2$
  - $1.2\pi m^2$
  - $120\pi cm^2$
  - $1200\pi m^2$

**Q2. Solve the followings:**

- A zinc sheet measures 3.3 meters in length and 3 meters in breadth. From this sheet, how many open ended pipes with a length of 30 centimeters and a radius of 3.5 centimeters can be produced?
- Calculate the total surface area of a closed cylindrical tank if its diameter is 60 centimeters and height is 55 centimeters. (Take  $\pi = 3.14$ )

3. What volume of petrol can be stored in a cylindrical tank with an interior diameter of 1.2 meters and a depth of 0.9 meters? (Take  $\pi = 3.14$ )
4. What is the capacity of a container if its interior diameter is 2.2 meters and its height is 1.9 meters?
5. What is the maximum number of discs, each with a diameter of 1.5 cm and a thickness of 0.2 cm, that can be produced by melting down a solid copper cylinder with a radius of 5 cm and a height of 16 cm?
6. A steel cylinder has a radius of 5.6 cm and a height of 20 cm. How many discs with a diameter of 2.8 cm and a thickness of 0.4 cm can be produced by melting this cylinder?
7. A cylindrical container has a diameter of 10 meters and a height of 12 meters. If it is filled to 60% of its capacity, what volume of liquid does it contain?
8. Using the Euler's Formula, fill the blanks

Number of Faces	11	?	19
Number of Edges	23	17	?
Number of Vertices	?	13	29

9. For a cube, prove the Euler's Formula.
10. For a shape of a triangular prism, prove the Euler's Formula.