# SURFACE AREAS AND VOLUMES

MCQs & A and R WORK SHEET

**Test / Exam Name: Surface Areas And Volumes** **Standard: 10th** **Subject: Mathematics**

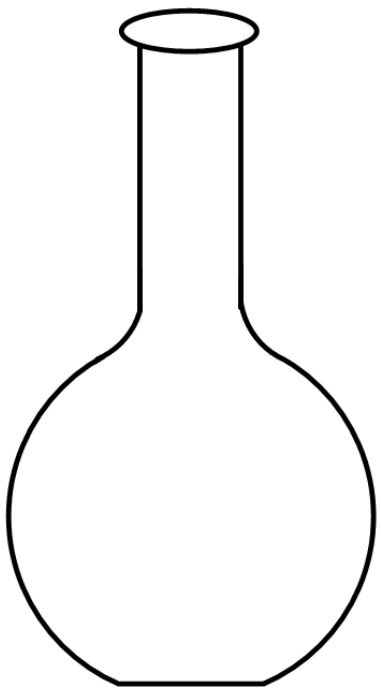
**Student Name:** ..... **Section:** ..... **Roll No.:** .....

**Questions: 40** **Time: 01:00 hh:mm** **Negative Marks: 0** **Marks: 40**

## Instructions

1. MULTIPLE CHOICE QUESTIONS.

**Q1.** A surahi is a combination of: **1 Mark**



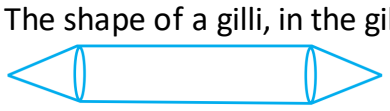
Surahi

**A** A sphere and a cylinder. **B** A hemisphere and a cylinder. **C** A cylinder and a cone.

**D** Two hemispheres.

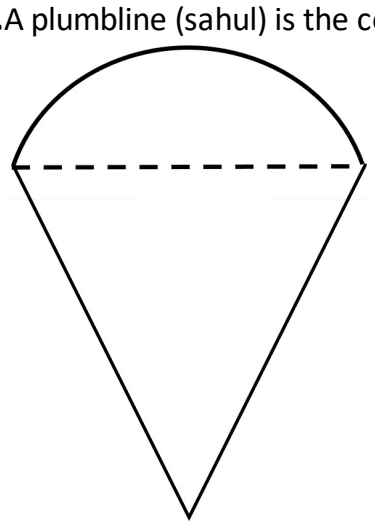
**Q2.** Choose the correct answer from the given four options: **1 Mark**

The shape of a gilli, in the gilli-danda game see Fig. is a combination of:



**A** Two cylinders. **B** A cone and a cylinder. **C** Two cones and a cylinder. **D** Two cylinders and a cone.

**Q3.** A plumbline (sahul) is the combination of: **1 Mark**



1. A hemisphere and a cylinder
2. A hemisphere and a cone
3. A sphere and a cylinder
4. A cone and a cylinder

**A** A hemisphere and a cylinder **B** A hemisphere and a cone **C** A sphere and a cylinder

**D** A cone and a cylinder

**Q4.** A shoe box is a 15cm long, 10cm broad and 9cm high. The volume of the box is: **1 Mark**

**A** 1500 cu. cm **B** 1200 cu. cm **C** 1000 cu. cm **D** 1350 cu. cm

**Q5.** In a right circular cone, the cross-section made by a plane parallel to the base is a: **1 Mark**

**A** Circle. **B** Frustum of a cone. **C** Sphere. **D** Hemisphere.

**Q6.** Volumes of two spheres are in the ratio 64 : 27. The ratio of their surface areas is: **1 Mark**

**A** 3 : 4 **B** 4 : 3 **C** 9 : 16 **D** 16 : 9

**Q7.** The radius of a sphere (in cm) whose volume is $12\pi \text{ cm}^3$, is: **1 Mark**

**A** $3$ **B** $3\sqrt{3}$ **C** $3^{\frac{2}{3}}$ **D** $3^{\frac{1}{3}}$

**Q8.** The volume of a cube is 2744cm$^2$. Its surface area is: **1 Mark**

**A** 196cm$^2$ **B** 1176cm$^2$ **C** 784cm$^2$ **D** 588cm$^2$

**Q9.** The length of the longest pole that can be kept in a room (12m × 9m ×8m) is: **1 Mark**

**A** 29m **B** 21m **C** 19m **D** 17m

**Q10.** The radii of two cylinders are in the ratio 2 : 3 and their heights are in the ratio 5 : 3. The ratio of their volumes is: **1 Mark**

**A** 27 : 20 **B** 20 : 27 **C** 4 : 9 **D** 9 : 4

**Q11.** A solid is hemispherical at the bottom and conical above. If the surface areas of the two parts are equal, then the ratio of its radius and the height of its conical part is: **1 Mark**

**A** $1:3$ **B** $1:\sqrt{3}$ **C** $1:1$ **D** $\sqrt{3}:1$

**Q12.** A solid is hemispherical at the bottom and conical (of same radius) above it. If the surface areas of the two parts are equal, then the ratio of its radius and the slant height of the conical part is: **1 Mark**

**A** 1 : 2 **B** 2 : 1 **C** 1 : 4 **D** 4 : 1

**Q13.** If the radius of the base of a right circular cylinder is halved, keeping the height the same, then the ratio of the volume of the cylinder thus obtained to the volume of original cylinder is: **1 Mark**

**A** 1 : 2 **B** 2 : 1 **C** 1 : 4 **D** 4 : 1

**Q14.** A right triangle with sides 3cm, 4cm and 5cm is rotated about the side of 3cm to form a cone. The volume of the cone so formed is: **1 Mark**

**A** $12\pi\text{cm}^3$ **B** $15\pi\text{cm}^3$ **C** $16\pi\text{cm}^3$ **D** $20\pi\text{cm}^3$

**Q15.** The radii of two cylinders are in the ratio 3 : 5. If their heights are in the ratio 2 : 3, then the ratio of their curved surface areas is: **1 Mark**

**A** 2 : 5 **B** 5 : 2 **C** 2 : 3 **D** 3 : 5

**Q16.** The maximum volume of a cone that can be carved out of a solid hemisphere of radius r is: **1 Mark**

**A** $3\pi r^2$ **B** $\frac{\pi r^3}{3}$ **C** $\frac{\pi r^2}{3}$ **D** $3\pi r^3$

**Q17.** The area of the base of a right circular cone is 154cm$^2$ and its height is 14cm. Its curved surface area is: **1 Mark**

**A** $154\sqrt{5}\text{cm}^2$ **B** $154\sqrt{7}\text{cm}^2$ **C** $77\sqrt{7}\text{cm}^2$ **D** $77\sqrt{5}\text{cm}^2$

**Q18.** Choose the correct answer from the given four options: **1 Mark**

A medicine-capsule is in the shape of a cylinder of diameter 0.5cm with two hemispheres stuck to each of its ends. The length of entire capsule is 2cm. The capacity of the capsule is:

**A** 0.36cm$^3$ **B** 0.35cm$^3$ **C** 0.34cm$^3$ **D** 0.33cm$^3$

**Q19.** A solid right circular cone is cut into two parts at the middle of its height by a plane parallel to its base. The ratio of the volume of the smaller cone to the whole cone is: **1 Mark**

**A** 1 : 2 **B** 1 : 4 **C** 1 : 6 **D** 1 : 8

**Q20.** On increasing the radii of the base and the height of a cone by 20%, its volume will increase by: **1 Mark**

**A** 20% **B** 40% **C** 60% **D** 72.8%

**Q21.** The cost of painting a cubical box of side 3m at the rate of Rs. 2 per sq. m is: **1 Mark**

**A** Rs. 120 **B** Rs. 125 **C** Rs. 112 **D** Rs. 108

**Q22.** The diameter of a cylinder is 28cm and its height is 20cm. The total surface area of the cylinder is: **1 Mark**

**A** 2993cm$^2$ **B** 2992cm$^2$ **C** 2292cm$^2$ **D** 2229cm$^2$

**Q23.** How many bags of grain can be stored in a cuboidal granary (8m × 6m × 3m), if each bag occupies a space of 0.64m$^3$? **1 Mark**

**A** 8256 **B** 90 **C** 212 **D** 225

**Q24.** The volumes of two cubes are in the ratio 1 : 27. The ratio of their surface area is: **1 Mark**

**A** 1 : 3 **B** 1 : 8 **C** 1 : 9 **D** 1 : 18

**Q25.** A medicine capsule is in the shape of a cylinder of diameter 0.5cm with a hemisphere tucked at each end. The length of the entire capsule is 2cm. The capacity of the capsule is: **1 Mark**

**A** 0.33 cm$^2$ **B** 0.34 cm$^2$ **C** 0.35 cm$^2$ **D** 0.36 cm$^2$

**Q26.** The area of the base of a rectangular tank is 6500cm$^2$ and the volume of water contained in it is 2.6m$^3$. The depth of water in the tank is: **1 Mark**

**A** 3.5m **B** 4m **C** 5m **D** 8m

**Q27.** A circus tent is cylindrical to a height of 4m and conical above it. If its diameter is 105m and its slant height is 40m, the total area of the canvas required in m$^2$ is: **1 Mark**

**A** 1760 **B** 2640 **C** 3960 **D** 7920

**Q28.** If the radius of a sphere becomes 3 times, then its volume will become: **1 Mark**

**A** 3 times **B** 6 times **C** 9 times **D** 27 times

**Q29.** The volumes of two spheres are in the ratio 64 : 27. The ratio of their surface areas is: **1 Mark**

**A** 9 : 16 **B** 16 : 9 **C** 3 : 4 **D** 4 : 3

**Q30.** The curved surface area of a cylinder is $264m^2$ and its volume is $924m^3$. The ratio of its diameter to its height is: **1 Mark**

**A** 3 : 7 **B** 7 : 3 **C** 6 : 7 **D** 7 : 6

**Q31.** The diameter of the base of a cylinder is 4cm and its height is 14cm. The volume of the cylinder is: **1 Mark**

**A** $176cm^3$ **B** $196cm^3$ **C** $276cm^3$ **D** $352cm^3$

**Q32.** The curved surface are of a cylinder is $1760cm^2$ and its base radius is 14cm. The height of the cylinder is: **1 Mark**

**A** 10cm **B** 15cm **C** 20cm **D** 40cm

**Q33.** A rectangular sheet of paper 40cm × 22cm, is rolled to form a hollow cylinder of height 40cm. The radius of the cylinder (in cm) is: **1 Mark**

**A** 3.5 **B** 7 **C** $\frac{80}{7}$ **D** 5

**Q34.** A cubical block of side 7cm is surmounted by a hemisphere. The greatest diameter of the hemisphere is: **1 Mark**

**A** 14cm **B** 10.5cm **C** 3.5cm **D** 7cm

**Q35. Directions:** In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as: **1 Mark**

**Assertion:** The radii of two cones are in the ratio 2 : 3 and their volumes in the ratio 1 : 3. Then the ratio of their heights is 3 : 2.

**Reason:** Volume of the cone $= \frac{1}{3}\pi r^2.h$

**A** Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

**B** Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

**C** Assertion (A) is true but reason (R) is false. **D** Assertion (A) is false but reason (R) is true.

**Q36. Directions:** In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as: **1 Mark**

**Assertion:** If the radius of a cone is halved and volume is not changed, then height remains same.

**Reason:** If the radius of a cone is halved and volume is not changed then height must become four times of the original height.

**A** Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

**B** Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

**C** Assertion (A) is true but reason (R) is false. **D** Assertion (A) is false but reason (R) is true.

**Q37. Directions:** In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as: **1 Mark**

**Assertion:** If the areas of three adjacent faces of a cuboid are x, y, z respectively then the volume of the cuboid is $\sqrt{xyz}$

**Reason:** Volume of a cuboid whose edges are l, b and h is lbh units.

**A** Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

**B** Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

**C** Assertion (A) is true but reason (R) is false. **D** Assertion (A) is false but reason (R) is true.

**Q38. Directions:** In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as: **1 Mark**

**Assertion:** Total surface area of the cylinder having radius of the base 14cm and height 30cm is $3872cm^2$

**Reason:** If r be the radius and h be the height of the cylinder, then total surface area $(2\pi rh + 2\pi r^2)$

**A** Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

**B** Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

**C** Assertion (A) is true but reason (R) is false. **D** Assertion (A) is false but reason (R) is true.

**Q39.Directions:** In the following questions, a statement of assertion (A) is followed by a statement of reason (R).Mark the correct choice as: **1 Mark**

**Assertion:** The number of coins 1.75cm in diameter and 2mm thick is formed from a melted cuboid 10cm × 5.5cm × 3.5cm is 400.

**Reason:** Volume of a cylinder $= \pi r^2$ cubic units and area of cuboid $= (1 \times b \times h)$ cubic units.

**A** Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

**B** Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

**C** Assertion (A) is true but reason (R) is false.

**D** Assertion (A) is false but reason (R) is true.

**Q40.Directions:** In the following questions, a statement of assertion (A) is followed by a statement of reason (R).Mark the correct choice as: **1 Mark**

**Assertion:** The volume of a hall, which is 5 times as high as it is broad and 8 times as long as it is high, is 12.8$m^3$.The breadth of the hall is 25cm.

**Reason:** The total surface area of a cuboid of length (l), breadth (b) and height (h) is 2[lb + bh + lh]

**A** Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

**B** Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

**C** Assertion (A) is true but reason (R) is false.

**D** Assertion (A) is false but reason (R) is true.