

MATHEMATICS

CLASS 10

Topic : SURFACE AREAS OF SOLIDS

Worksheet- 1

Special Topic Worksheet: Surface Areas of Combination of Solids (50 MCQs with Answer Key)

Q1. The total surface area of a cube of edge 'a' is:

- (a) $4a^2$ (b) $6a^2$
(c) a^2 (d) $12a^2$

Q2. The lateral surface area of a cube of edge 'a' is:

- (a) $6a^2$ (b) $4a^2$
(c) $2a^2$ (d) $8a^2$

Q3. The curved surface area of a right circular cylinder of base radius r and height h is:

- (a) $2\pi rh$ (b) πrh
(c) $2\pi r(r + h)$ (d) $\pi r^2 h$

Q4. The total surface area of a solid cylinder of radius r and height h is:

- (a) $2\pi rh$ (b) $2\pi r(r + h)$
(c) $\pi r(r + h)$ (d) $2\pi r^2 h$

Q5. The curved surface area of a cone of radius r and slant height l is:

- (a) $\pi r^2 l$ (b) $2\pi rl$
(c) πrl (d) $\pi r(r + l)$

Q6. The total surface area of a solid cone of radius r and slant height l is:

- (a) πrl (b) $\pi r(l + r)$
(c) $2\pi r(l + r)$ (d) $\pi r^2 l$

Q7. The surface area of a sphere of radius r is:

- (a) $2\pi r^2$ (b) $3\pi r^2$
(c) $4\pi r^2$ (d) $\frac{4}{3}\pi r^2$

Q8. The curved surface area of a hemisphere of radius r is:

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

Q9. The total surface area of a solid hemisphere of radius r is:

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

Q10. If two cubes each of volume 64 cm^3 are joined end to end, the edge of each cube is:

- (a) 2 cm (b) 4 cm
(c) 8 cm (d) 16 cm

Q11. Two cubes each of edge 4 cm are joined end to end. The surface area of the resulting cuboid is:

- (a) 160 cm^2 (b) 140 cm^2
(c) 128 cm^2 (d) 96 cm^2

Q12. Two cubes each of edge 5 cm are joined end to end. The surface area of the resulting cuboid is:

- (a) 250 cm^2 (b) 300 cm^2
(c) 200 cm^2 (d) 225 cm^2

Q13. A toy is in the form of a cone mounted on a hemisphere of same radius 3.5 cm. Total height of toy is 15.5 cm. Height of cone is:

- (a) 12 cm (b) 15.5 cm
(c) 3.5 cm (d) 19 cm

Q14. In a toy formed by a cone mounted on a hemisphere of radius 3.5 cm and height of cone 12 cm, the slant height of cone is:

- (a) 12.5 cm (b) 13 cm
(c) 15 cm (d) 14 cm

Q15. A toy is in the shape of a cone mounted on a hemisphere of radius 3.5 cm and slant height 12.5 cm. Its total surface area is ($\pi = 22/7$):

- (a) 214.5 cm^2 (b) 137.5 cm^2
(c) 77 cm^2 (d) 314.5 cm^2

Q16. A solid is in the shape of a hemisphere surmounted by a cone. The surface area of the solid exposed is:

- (a) CSA of cone + CSA of hemisphere (b) TSA of cone + TSA of hemisphere
(c) CSA of cone + TSA of hemisphere (d) TSA of cone + CSA of hemisphere

Q17. A medicine capsule is in the shape of a cylinder with two hemispheres stuck to each of its ends. The surface area of capsule is:

- (a) CSA of cylinder + $2 \times$ CSA of hemisphere (b) TSA of cylinder + $2 \times$ CSA of hemisphere
(c) CSA of cylinder + TSA of hemisphere (d) $2 \times$ CSA of cylinder + CSA of hemisphere

Q18. If the total length of a medicine capsule is 14 mm and diameter is 5 mm, length of cylindrical part is:

- (a) 14 mm (b) 9 mm
(c) 11.5 mm (d) 5 mm

Q19. Surface area of a medicine capsule of total length 14 mm and diameter 5 mm is (approx):

- (a) 220 mm^2 (b) 110 mm^2
(c) 440 mm^2 (d) 330 mm^2

Q20. A wooden article was made by scooping out a hemisphere from each end of a solid cylinder. Its surface area is:

- (a) CSA of cylinder + $2 \times$ CSA of hemisphere (b) TSA of cylinder - $2 \times$ CSA of hemisphere
(c) CSA of cylinder - $2 \times$ CSA of hemisphere (d) TSA of cylinder + $2 \times$ CSA of hemisphere

Q21. If height of a solid cylinder is 10 cm and base radius is 3.5 cm, and two hemispheres are scooped out from its ends, total surface area is:

- (a) 374 cm^2 (b) 220 cm^2
(c) 154 cm^2 (d) 440 cm^2

Q22. A cubical block of side 7 cm is surmounted by a hemisphere. The maximum diameter the hemisphere can have is:

- (a) 3.5 cm (b) 7 cm
(c) 14 cm (d) $7\sqrt{2} \text{ cm}$

Q23. Surface area of a solid formed by surmounting a hemisphere of radius r on top of a cube of edge ' a ' ($a = 2r$) is:

- (a) $6a^2 + \pi r^2$ (b) $6a^2 + 2\pi r^2$
(c) $6a^2 + \pi r^2$ (d) $6a^2 + 3\pi r^2$

Q24. A cubical block of side 7 cm is surmounted by a hemisphere of diameter 7 cm. Total surface area of solid is:

- (a) 332.5 cm^2 (b) 294 cm^2
(c) 370.5 cm^2 (d) 217 cm^2

Q25. A hemispherical depression is cut out from one face of a cubical wooden block of edge l. Surface area of remaining solid is:

- (a) $l^2/4 (24 + \pi)$ (b) $l^2/2 (24 + \pi)$
(c) $l^2 (6 + \pi)$ (d) $6l^2 + \pi l^2$

Q26. If the radius of a sphere is doubled, its surface area becomes:

- (a) 2 times (b) 3 times
(c) 4 times (d) 8 times

Q27. If the radius of a sphere is tripled, its surface area increases by a factor of:

- (a) 3 (b) 6
(c) 9 (d) 27

Q28. If the radius of a sphere is halved, its surface area becomes:

- (a) $1/2$ of original (b) $1/4$ of original
(c) $1/8$ of original (d) $1/3$ of original

Q29. Ratio of total surface area of a solid hemisphere to its curved surface area is:

- (a) 3 : 2 (b) 2 : 3
(c) 4 : 1 (d) 2 : 1

Q30. If curved surface area of a cylinder is equal to its total surface area, then height is:

- (a) Equal to radius (b) Equal to diameter
(c) 0 (d) Not possible for non-zero radius

Q31. If height and radius of a solid cylinder are equal to r, its total surface area is:

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

Q32. If radius of a cone is r and slant height is 2l, its total surface area is:

- (a) $2\pi rl$ (b) $\pi r(l + r)$
(c) $\pi r(2l + r)$ (d) $2\pi r(l + r)$

Q33. Formula for slant height l of a cone with radius r and height h is:

- (a) $\sqrt{r^2 + h^2}$ (b) $\sqrt{r^2 - h^2}$
(c) $r^2 + h^2$ (d) $h^2 - r^2$

Q34. If the radius of a cone is 3 cm and height is 4 cm, its curved surface area is:

- (a) $15\pi \text{ cm}^2$ (b) $12\pi \text{ cm}^2$
(c) $20\pi \text{ cm}^2$ (d) $24\pi \text{ cm}^2$

Q35. If slant height of a cone is 13 cm and radius is 5 cm, its height is:

- (a) 12 cm (b) 8 cm
(c) 10 cm (d) 14 cm

Q36. Curved surface area of a cone of height 24 cm and base radius 7 cm is:

- (a) 550 cm^2 (b) 700 cm^2
(c) 350 cm^2 (d) 154 cm^2

Q37. Ratio of surface areas of two spheres of radii 2 cm and 3 cm is:

- (a) 2 : 3 (b) 4 : 9
(c) 8 : 27 (d) 16 : 81

Q38. If surface areas of two spheres are in ratio 16 : 25, the ratio of their radii is:

- (a) 4 : 5 (b) 16 : 25
(c) 2 : 5 (d) 64 : 125

Q39. A tent is in the shape of a cylinder surmounted by a conical top. Total surface area of canvas required is:

- (a) CSA of cylinder + CSA of cone (b) TSA of cylinder + TSA of cone
(c) CSA of cylinder + TSA of cone (d) TSA of cylinder + CSA of cone

Q40. In a conical tent of height 8 m and radius 6 m, slant height of tent is:

- (a) 10 m (b) 14 m
(c) 12 m (d) 2 m

Q41. Area of canvas required to make a conical tent of radius 7 m and slant height 10 m is:

- (a) 220 m^2 (b) 154 m^2
(c) 440 m^2 (d) 308 m^2

Q42. Surface area of a sphere of diameter 14 cm is:

- (a) 616 cm^2 (b) 154 cm^2
(c) 308 cm^2 (d) 1232 cm^2

Q43. Curved surface area of a hemisphere of diameter 14 cm is:

- (a) 308 cm^2 (b) 616 cm^2
(c) 462 cm^2 (d) 154 cm^2

Q44. Total surface area of a solid hemisphere of diameter 14 cm is:

- (a) 462 cm^2 (b) 308 cm^2
(c) 616 cm^2 (d) 154 cm^2

Q45. Total surface area of a hollow hemisphere of outer radius R and inner radius r is:

- (a) $2\pi R^2 + 2\pi r^2 + \pi(R^2 - r^2)$ (b) $2\pi R^2 + 2\pi r^2$
(c) $3\pi R^2 + \pi r^2$ (d) $2\pi(R^2 + r^2)$

Q46. Curved surface area of a hollow cylinder of outer radius R, inner radius r and height h is:

- (a) $2\pi h(R + r)$ (b) $2\pi h(R - r)$
(c) $2\pi(R^2 - r^2)$ (d) $\pi h(R + r)$

Q47. Total surface area of a hollow cylinder open at both ends with outer radius R, inner radius r and height h is:

- (a) $2\pi h(R + r) + 2\pi(R^2 - r^2)$ (b) $2\pi h(R - r) + 2\pi(R^2 - r^2)$
(c) $2\pi h(R + r)$ (d) $2\pi(R^2 - r^2)$

Q48. If radius of base of a cylinder is doubled and height is halved, its curved surface area:

- (a) Remains same (b) Is doubled
(c) Is halved (d) Becomes 4 times

Q49. If radius of base of a cone is doubled and height is kept same, its new curved surface area compared to original (for small r/h):

- (a) Increases (b) Decreases
(c) Remains same (d) Becomes double

Q50. Surface area of a solid formed by joining two identical solid hemispheres of radius r along their bases is:

(a) $4\pi r^2$

(b) $6\pi r^2$

(c) $3\pi r^2$

(d) $2\pi r^2$

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ANSWER KEY & SOLUTIONS GUIDE

Q.No - Ans	Q.No - Ans	Q.No - Ans	Q.No - Ans	Q.No - Ans
Q1: (b) $6a^2$	Q11: (a) 160 cm^2	Q21: (a) 374 cm^2	Q31: (c) $4\pi r^2$	Q41: (a) 220 m^2
Q2: (b) $4a^2$	Q12: (a) 250 cm^2	Q22: (b) 7 cm	Q32: (c) $\pi r(2l + r)$	Q42: (a) 616 cm^2
Q3: (a) $2\pi rh$	Q13: (a) 12 cm	Q23: (c) $6a^2 + \pi r^2$	Q33: (a) $\sqrt{r^2 + h^2}$	Q43: (a) 308 cm^2
Q4: (b) $2\pi r(r + h)$	Q14: (a) 12.5 cm	Q24: (a) 332.5 cm^2	Q34: (a) $15\pi \text{ cm}^2$	Q44: (a) 462 cm^2
Q5: (c) πrl	Q15: (a) 214.5 cm^2	Q25: (a) $l^2/4 (24 + \pi)$	Q35: (a) 12 cm	Q45: (a) $2\pi R^2 + 2\pi r^2 + \pi(R^2 - r^2)$
Q6: (b) $\pi r(l + r)$	Q16: (a) CSA of cone + CSA of hemisphere	Q26: (c) 4 times	Q36: (a) 550 cm^2	Q46: (a) $2\pi h(R + r)$
Q7: (c) $4\pi r^2$	Q17: (a) CSA of cylinder + $2 \times$ CSA of hemisphere	Q27: (c) 9	Q37: (b) $4 : 9$	Q47: (a) $2\pi h(R + r) + 2\pi(R^2 - r^2)$
Q8: (c) $2\pi r^2$	Q18: (b) 9 mm	Q28: (b) $1/4$ of original	Q38: (a) $4 : 5$	Q48: (a) Remains same
Q9: (b) $3\pi r^2$	Q19: (a) 220 mm^2	Q29: (a) $3 : 2$	Q39: (a) CSA of cylinder + CSA of cone	Q49: (a) Increases
Q10: (b) 4 cm	Q20: (a) CSA of cylinder + $2 \times$ CSA of hemisphere	Q30: (d) Not possible for non-zero radius	Q40: (a) 10 m	Q50: (a) $4\pi r^2$