

IITJEE Foundation Practice paper

SURFACE AREAS AND VOLUMES

class-9-Mathematics Number of Questions: 50

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1

A cuboid has _____ rectangular faces, _____ edges and _____ vertices.

- 8, 12, 16 6, 12, 8 6, 8, 12 8, 8, 12

2

Find the total surface area of a cuboid which is 10 m long, 8 m wide and 3.5 m high.

- 305 m² 205 m² 286 m² 196 m²

3

Find the volume of the cuboid whose dimensions are 24 cm × 15 cm × 7.5 cm.

- 1980 cm² 3100 cm² 1590 cm² 2700 cm²

4

A cuboid is 14 cm long, 11 cm bread and 7 cm high. The lateral surface area of the cuboid is

- 350 cm² 385 cm² 329 cm² 390 cm²

5

A field is 90 m long and 55 m broad. In one corner of the field, a pit which is 15 m long, 12 m broad and 9 m deep, has been dug out. The earth taken out of it is evenly spread over the remaining part of the field. Find the rise in the level of the field.

- 24.24 cm 33.96 cm 35.61 cm 38 cm

6

Find the length of the diagonal of the cube whose edge measures 19 cm.

- 24.862 cm 19.732 cm 32.908 cm 20.416 cm

7

If the lateral surface area of the cube is 2916 cm^2 , find its volume and total surface area.

- Volume = 18720 cm^3 , Total surface area = 4864 cm^2
 Volume = 18694 cm^3 , Total surface area = 4900 cm^2
 Volume = 19729 cm^3 , Total surface area = 5371 cm^2
 Volume = 19683 cm^3 , Total surface area = 4374 cm^2

8

An open rectangular cistern when measured from outside is 1.35 m long, 1.08 m broad and 90 cm deep. It is made up of iron, which is 2.5 cm thick. Find the capacity of the cistern and the volume of the iron used.

- Capacity = 1171625 cm^3 , Volume = 140575 cm^3
 Capacity = 13112200 cm^3 , Volume = 1171625 cm^3
 Capacity = 140575 cm^3 , Volume = 1171625 cm^3
 Capacity = 321076 cm^3 , Volume = 2479621 cm^3

9

The volume of a cuboid is 3600 m^3 . Its breadth is 25 m, and its length and height are in the ratio 4:1. Find the length and height of the cuboid.

- length = 28 m, height = 7 m length = 16 m, height = 10 m
 length = 24 m, height = 6 m None of the above

10

In a shower 7 cm of rain falls. Find the volume of water that falls on 4 hectares of ground.

- 280 m^3 2800 m^3 28000 m^3 28 m^3

11

How many persons can be accommodated in a dining hall of dimensions (

$26\text{ m} \times 14\text{ m} \times 6.5\text{ m}$), assuming that each person requires 7 cubic metres of air.

- 288 296 342 338

12

If the radius of a cylinder is doubled and its height is halved, the surface area of the cylinder will

- remain same increase decrease Can't be determined

13

Match the following

(a) Volume of a cylinder	(i) $\frac{4}{3} \pi r^3$
(b) Volume of a cone	(ii) $\frac{2}{3} \pi r^3$
(c) Volume of a sphere	(iii) $\frac{1}{3} \pi r^2 h$
(d) Volume of hemisphere	(iv) $\pi r^2 h$

- (a) - (iii), (b) - (iv), (c) - (ii), (d) - (i)
 (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii) (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
 (a) - (iv), (b) - (iii), (c) - (ii), (d) - (i) (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)

14

If the curved surface area of a cylinder of height 30 cm is 2640 cm^2 , then find the volume of the cylinder.

- 18480 cm^3 14680 cm^3 18080 cm^3 16480 cm^3

15

A well of inner diameter 14 m is dug to a depth of 15 m Earth taken out of it has been evenly spread all around it to a width of 7 m to form an embankment. Find the height of the embankment so formed.

- 6.5 m 7 m 5 m 8 m

16

The external diameter of an iron pipe is 32 cm and its length is 28 cm. If the thickness of the pipe is 2 cm, find the total surface area of the pipe.

- 5657.14 cm^2 5983.36 cm^2 5143.91 cm^2 5396.52 cm^2

17

The radii of two cylinders are in the ratio 3:2 and their heights are in the ratio 3:5. Calculate the ratio of their volumes.

- 9:10 10:9 20:27 27:20

18

A powder tin has a square base with side 14 cm and height 18 cm. Another is cylindrical with diameter of its base 14 cm and height 18 cm. Which has more capacity and by how much?

- rectangular tin, 567 cm^3 rectangular tin, 756 cm^3 cylindrical tin, 567 cm^3
 cylindrical tin, 756 cm^3

19

2 cm^3 of silver is drawn into a wire 0.4 mm in diameter. Find the length of the wire.

- 1.590 m 1590.90 m 15.90 m 159.90 m

20

The barrel of a fountain pen, cylindrical in shape, is 7 cm long and 5 mm in diameter. A full barrel of ink in the pen will be used up on writing 440 words on an average. How many words would use up a bottle of ink containing two-fifth of a litre?

- 128000 words 100000 words 141000 words 115000 words

21

The sum of the height and radius of the base of a solid cylinder is 20 cm. If the total surface area of the cylinder be 880 cm^2 , find its volume.

- 2200 cm^3 2020 cm^3 2002 cm^3 2202 cm^3

22

The length of the longest rod that can be placed in a room of dimensions $(10 \text{ m} \times 8 \text{ m} \times 6 \text{ m})$ is _____

- 10 m $10\sqrt{2}$ m $10\sqrt{3}$ m $2\sqrt{10}$ m

23

Three cubes of metal with edges 3 cm, 4 cm and 5 cm respectively are melted to form a single cube. Find the total surface area of the new cube formed.

- 124 cm² 36 cm² 216 cm² 216 cm³

24

A cone and a hemisphere have equal bases and equal volumes. The ratio of their heights is _____

- 1:2 2:1 $\sqrt{2}:1$ $1:\sqrt{2}$

25

How many metres of cloth, 8 m wide, will be required to make a conical tent, the radius of whose base is 9 m and height is 40 m?

- 168.29 m 152.83 m 144.96 m 128.42 m

26

If the height of two cones are in the ratio 1:3 and the radii of their bases in the ratio 3:1, find the ratio of their volumes.

- 3:1 1:3 2:3 3:2

27

A cylinder and a cone have a equal radii of their bases and equal heights if their curved surface areas are in the ratio 8:5, then the ratio of the radius and height of the each is _____

- 4:5 2:3 4:3 3:4

28

Find the volume of the cone having radius of the base 28 cm and slant height 53 cm.

- 35840 cm² 36960 cm² 34260 cm² 38175 cm²

29

The radius and the height of a right circular cone are in the ratio of 5:12

and its volume is 107800 cm^3 . Find the curved surface area and the total surface area of the cone.

- Curved surface area = 10321 cm^2 , Total surface area = 12340 cm^2
- Curved surface area = 11012 cm^2 , Total surface area = 14240 cm^2
- Curved surface area = 10010 cm^2 , Total surface area = 13860 cm^2
- None of the above

30

An iron pillar consists of a cylindrical portion 2.8 m high and 20 cm in diameter and a cone 42 cm high is surmounting it. Find the weight of the pillar, given that 1 cm^3 of iron weighs 7.5 g.

- 693 kg
- 639 kg
- 369 kg
- 587 kg

31

Find the surface area of the sphere whose volume is 38808 cm^3

- 5454 cm^2
- 5544 cm^2
- 4455 cm^2
- 4545 cm^2

32

How many spherical bullets can be made out of a solid cube of lead whose edge measures 88 cm, each bullet being 8 cm in diameter ?

- 2451
- 2154
- 2145
- 2541

33

The internal and external diameters of a hollow hemispherical vessel are 20 cm and 28 cm respectively. Find the cost of painting the vessel all over at 35 paise per cm^2

- Rs. 765.6
- Rs. 567.8
- Rs. 756.8
- Rs. 652.7

34

A sphere of diameter 15.6 cm is melted and cast into a right circular cone of height 31.2 cm. Find the diameter of the base of the cone.

- 15.6 cm
- 7.8 cm
- 6.4 cm
- 16.5 cm

35

A hollow spherical shell is made of metal of density 4.5 g per cm^3 . If

its internal and external radii are 8 cm and 9 cm respectively, find the weight of the shell.

- 9.024 kg 5.292 kg 4.092 kg 2.094 kg

36

The surface areas of two spheres are in the ratio 1:4. Find the ratio of their volumes.

- 1:4 1:8 8:1 4:1

37

If each side of a cube is doubled, then its volume

- is doubled becomes 4 times becomes 6 times becomes 8 times

38

The radius of a wire is decreased to one-third, if volume remains the same, the length will become ____

- 2 times 4 times 3 times 9 times

39

If each edge of a cube is increased by 50%, then the percentage increase in its surface area is ____

- 75% 100% 125% 150%

40

A cylindrical tub of radius 12 cm contains water to a depth of 20 cm. A spherical iron ball is dropped into the tub and thus the level of water is raised by 6.75 cm. What is the radius of the ball?

- 5 cm 9 cm 7 cm 8 cm

41

The length of a cinema hall is 20 m and breadth is 16 m. The sum of the areas of floor and flat roof is equal to the area of four walls. Find the height and volume of the hall.

- height = 8.9 m, volume = 2848 m³ height = 9.8 m, volume = 2488 m³
 height = 7.8 m, volume = 2884 m³ height = 8.6 m, volume = 2648 m³

42

Find the surface area of a sphere whose radius is 7.7 cm.

- 678.69 cm² 852.24 cm² 700.84 cm² 745.36 cm²

43

The radius of the sphere is $2r$, then its volume will be

- $\frac{4}{3}\pi r^3$ $4\pi r^3$ $\frac{8\pi r^3}{3}$ $\frac{32}{3}\pi r^3$

44

The total surface area of a cone whose radius is $\frac{r}{2}$ and slant height $2l$ is

- $2\pi r(l + r)$ $\pi r(l + \frac{r}{4})$ $\pi r(l + r)$ $2\pi rl$

45

The radius of a Spherical balloon increases from 6 cm to 12 cm as air being pumped into it. The ratios of the surface areas of the balloon in the two cases is _____

- 1:4 2:3 1:3 2:1

46

Two cubes each of volume 64 cm³ are joined end-to-end. Find the total surface area of the resulting cuboid.

- 220 cm² 240 cm² 160 cm² 120 cm²

47

The height of a cone is 30 cm. A small cone is cut off at the top by a plane parallel to its base. If its volume be $\frac{1}{27}$ of the volume of the given cone, at what height above the base is the section made.

- 10 cm 20 cm 30 cm 40 cm

48

The volumes of two spheres are in the ratio 64 : 27. Then the ratio of their surface areas is:

- 16 : 9 9 : 16 4 : 3 3 : 4

49

A hollow sphere of internal and external radii are 4 cm and 8 cm respectively is melted and cast into a cone of base radius 8 cm then the height of the cone is ____

- 14 cm 21 cm 28 cm 7 cm

50

Find the ratio of the volumes of a cube and a sphere which can be exactly fit inside the cube.

- $10 : \pi$ $6 : \pi$ $64 : \pi$ $8 : \pi^2$

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