MATHS

BOOKS - ARIHANT PUBLICATION

BIHAR

VOLUME AND SURFACE AREA

Example

1. The number of 6m cubes can be cut from a cuboid measuring $36m \times 15m \times 8m$ is equal

to

A. 10

B. 15

C. 20

D. 25

Answer: C

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2. The volume of a cylinder is 448 πcm^3 and height 7 cm. Then, Its lateral surface area and total surface area Is

A. $352cm^2, 754.286cm^2$

B. $252cm^2, 755.286cm^2$

C. $259cm^2, 457.206cm^2$

D. None of the above

Answer: A

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3. The radius and vertical height of a cone are 5 cm and 12 cm, s respectively. Then, its lateral surface area

A. $204.3cm^2$

B. $205.4cm^2$

C. $200.3cm^2$

D. None of these

Answer: A

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4. The number of balls each of radius 2 cm can be made by melting a big ball whose radius is 8 cm is equal to

A. 60

B. 64

C. 70

D. 74

Answer: B

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5. The height of a right prism is 10 cm. Its base is a triangle with sides measuring 10cm, 17 cm and 9 cm. Then, the volume of the prism is

A. $360cm^3$

B. $260cm^3$

C. $450cm^3$

D. $300cm^3$

Answer: A

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1. If the surface area of a cube is 486 sq m, then its volume is

A. $729m^3$

B. $781m^3$

C. $625m^3$

D. $879m^3$

Answer: A

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2. The volume of a rectangular box whose areas of three adjacent faces are $50cm^2$, $30cm^2$ and $20cm^2$ is

A. $600cm^3$

B. $1500cm^3$

C. $173cm^3$

D. $371cm^3$

Answer: C

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3. If the surface area of a cuboid is $3328m^2$. Its dimensions are in the ratio $4:3:2$, then the volume of the cuboid is

A. $12288m^3$

B. $11288m^3$

C. $12882m^3$

D. $18388m^3$

Answer: A

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4. If the volume of a cuboid is $440cm^3$, the area of its base is $88cm^2$, then its height is

A. 5 cm

B. 10 cm

C. 11 cm

D. 6 cm

Answer: A

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5. If the sum of the length, breadth and depth of a cuboid is 20 cm and its diagonal is $4\sqrt{5}$ cm, then its surface area is

A. $400cm^2$

B. $420cm^2$

C. $300cm^2$

D. $320cm^2$

Answer: D

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6. A metal cube of edge 12 cm, is melted and casted into three small cubes. If the edges of two small cubes be 6 cm and 8 cm, then the edge of the third small cube is

A. 9 cm

B. 25 cm

C. 20 cm

D. 10 cm

Answer: D

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7. If each side of a cube is doubled then its volume

A. becomes 4 times

B. becomes 8 times

C. is doubled

D. becomes 6 times

Answer: B

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8. A solid cube of side 12 cm is cut into eight cubes of equal volume. What will be the side of the new cube?

A. 6 cm

B. 7 cm

C. 9 cm

D. 5 cm

Answer: A

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9. The breadth of a room is twice its height and half its length and its volume is 1000 m^3 Its dimensions are

A. $20m \times 10m \times 5m$

B. $10m \times 10m \times 1m$

C. $40m \times 5m \times 5m$

D. None of these

Answer: A

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10. Three equal cubes are placed adjacently in a row. Find the ratio of total surface area of the new cuboid to that of the sum of the surface areas of the three cubes.

A. $3:1$

B. $6:5$

C. $7:9$

D. $6:7$

Answer: C

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11. The total surface area of a right circular cylinder whose height is 15 cm and the radius of the base is 7 cm, is

A. $968cm^2$

B. $2310cm^2$

C. $488cm^2$

D. $1860cm^2$

Answer: A

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

A. $17.6m^3$

B. $17.9m^3$

C. $15.6m^3$

D. $15.5m^3$

Answer: A

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13. A metal pipe in 77 cm long. If the inner diameter ofa cross section is 4 cm and the

outer diameter being 4.4 cm. Then, its outer curved surface area is

A. $1164.8cm^2$

B. $1440.8cm^2$

C. $123.8cm^2$

D. $1064.8cm^2$

Answer: D

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14. If the curved surface area of a cylinder is 1320 cm^2 and its base has diameter 21 cm, then the height of the cylinder is

A. 10 cm

B. 20 cm

C. 22 cm

D. 25 cm

Answer: B

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15. If a right circular cylinder tunnel of diameter 2 m and length 40 m is to be instructed from a sheet of iron. Then, the area of iron sheet required (in m^2) is

(a) 40π

(b) 60π

(c) 80π

(d) 100π

A. 40π

B. 60π

C. 80π

D. 100π

Answer: C

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16. A conical tent of a diameter 24 m at the base and its height 16 m. The canvas required to make it is

A. $\frac{5280}{7}m^2$

B. $\frac{5180}{7}m^2$

C. $\frac{4180}{7}m^2$

D. $\frac{3480}{7}m^3$

Answer: A

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17. A right angled $\triangle$ ABC with sides 5 cm, 12 cm and 13 cm is revolved about the side 12 cm. The volume of the solid so obtained is

A. $200\pi cm^3$

B. $211\pi cm^3$

C. $100\pi cm^3$

D. $101\pi cm^3$

Answer: C

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18. The radius and height of a right circular cone are in the ratio of 5 : 12 and its volume is 2512 cm^3 . The slant height of the cone is

A. 24 cm

B. 25 cm

C. 26 cm

D. 27 cm

Answer: C

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19. If the height of a cone is doubled then its volume is increased by

A. $100\ \%$

B. $200\ \%$

C. $300\ \%$

D. $400\ \%$

Answer: A

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20. If the height and the radius of a cone are doubled, the volume of the cone becomes

A. 2 times

B. 4 times

C. 6 times

D. 8 times

Answer: D

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21. If the ratio of volumes of two spheres is 1 : 8, then the ratio of their surface areas is

A. $1:2$

B. $1:4$

C. $1:6$

D. $1:8$

Answer: B

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22. A spherical ball of lead 3cm in diameter is melted and recast into three spherical balls. If

the diameters of two balls be $\frac{3}{2}cm$ and 2cm, find the diameter of the third ball.

A. 3.5 cm

B. 2.5 cm

C. 2.59 cm

D. 3.59 cm

Answer: B

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23. A copper sphere of radius 3 cm is beaten and drawn into a wire of diameter 0.2 cm. The length of the wire is :

A. 9 m

B. 18 m

C. 27 m

D. 36 m

Answer: D

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24. The dimensions of a cinema hall are 100m, 50m and 18m. How many persons can sit in the hall, if each person requires $150m^3$ of air?

A. 500

B. 350

C. 600

D. 150

Answer: C

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25. A class room is $7\,m\ long,\ 6.5\,m\ wide\ and\ 4\,m\ high$. It has one door $3m\ x\ 1.4m$ and three windows, each measuring $2m\ x\ 1\,m.$ The interior wall are to be colour washed. The contractor charge $Rs.5.25\ per\ sq\dot{m}.$ Find the cost of colour washing.

A. Rs. 97.8

B. Rs. 513.45

C. Rs. 5.25

D. None of these

Answer: B

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26. How many bricks each measuring 25 cm $\times$ 15 cm $\times$ 8 cm will be required to build a wall 10 m $\times \frac{4}{10}$ m $\times$ 5 m when $\frac{1}{10}$ of its volume is occupied by mortar?

A. 600

B. 6000

C. 3200

D. None of these

Answer: B

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27. One cubic metre piece of copper is melted and recast into a square cross- section bar , 36 m long. An exact cube is cut off from this bar.

If cubic metre of copper cost Rs. 108 , then the cost of this cube is :

A. Rs. 0.50

B. Rs. 0.17

C. Rs. 0.004

D. None of these

Answer: A

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28. Two cylinder cans have bases of the same size. The diameter of each is 14cm. One of the canes is 10cm high and the other is 20cm high. Find the ratio of their volumes.

A. $1:2$

B. $1:3$

C. $2:1$

D. None of these

Answer: A

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29. A solid cylinder has a total surface area of $231\ cm^2$. Its curved surface area is $\frac{2}{3}$ of the total surface area. Find the volume of the cylinder.

A. $269m^3$

B. $269\frac{1}{2}m^3$

C. $539m^3$

D. None of these

Answer: B

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30. The volume of a metallic cylindrical pipe is $784cm^3$. Its length is 14 cm and its external radius is 9 cm. Find its thickness

A. 1 cm

B. 2 cm

C. 81 cm

D. 17 cm

Answer: A

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31. Given a solid cylinder of radius 10 cm and length 1000 cm a cylinder hold is made into it to obtain a cylindrical shell of uniform thickness and having a volume equal to one-fourth of original volume. The thickness of the cylindrical shell is:

a. $\sqrt{5} - 2$ cm

b. $5\sqrt{5}$ cm

c. $4\left(\sqrt{5}-2\right)$ cm

d. $5\left(2-\sqrt{3}\right.$ cm

A. $\left(\sqrt{5}-2\right)cm$

B. $5\sqrt{5}cm$

C. $4\left(\sqrt{5}-2\right)cm$

D. $5\left(\sqrt{5}-2\right)cm$

Answer: D

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32. The radius and slant height of a cone are in the ratio of 4:7. If its curved surface area is $792cm^2$, find its radius. $\left(Use\pi = \frac{22}{7}\right)$

A. 3 cm

B. 4 cm

C. 12 cm

D. 5 cm

Answer: C

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33. How many metres of cloth 50 m wide will be required to make a conical tent, the radius of whose base is 7m and whose height is 24 m ?

A. 11 m

B. 50 m

C. 550 m

D. None of these

Answer: A

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34. A sector containing an angle of 90° is cut from a circle of radius 42 cm and folded into a cone. Then, the curved surface area of cone is

A. $138cm^2$

B. $1386cm^2$

C. $32cm^2$

D. $42cm^2$

Answer: B

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35. If the area of the base of a cone is $770cm^2$ and the area of the curved surface is $814cm^2$, then its volume (in cm^3) is :

A. $616cm^3$

B. $616\sqrt{5}cm^3$

C. $616\sqrt{5}m^3$

D. None of these

Answer: B

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36. A hollow sphere of internal and external diameters 4 cm and 8 cm respectively is melted into a cone of base diameter 8 cm. Calculate the height of the cone.

A. 16 cm

B. 14 cm

C. 32 cm

D. None of these

Answer: B

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37. A solid metallic cylinder of base 3 cm and height 5 cm is melted to make n solid cones of height 1 mm and base radius 1 mm. Then, is the value of n is

A. 1350

B. 13500

C. 45

D. None of these

Answer: B

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38. A solid consists of a circular cylinder with an exact fitting right circular cone placed at the top. The height of the cone is h . If the total volume of the solid is 3 times the volume of the cone, then the height of the circular cylinder is $2h$ (b) $\frac{2h}{3}$ (c) $\frac{3h}{2}$ (d) $4h$

A. $\frac{2}{3}h$

B. $\frac{1}{3}h$

C. $\frac{1}{2}h$

D. None of these

Answer: A

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39. The radius of the internal and external surface of a hollow spherical shell are 3cm and 5cm respectively. If it is melted and recast into

a solid cylinder of height $2\frac{2}{3}cm$. Find the diameter of the cylinder.

A. 12 cm

B. 7 cm

C. 14 cm

D. None of these

Answer: C

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40. The height of a right prism is 15 cm. Its base is a triangle with sides measuring 10 cm, 17 cm and 9 cm. The volume of the prism is

A. $360cm^3$

B. $540cm^3$

C. $540m^3$

D. None of these

Answer: B

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41. The base of a prism is a right angled triangle, the length of whose hypotenuse is 10 cm. If the lateral surface area of the prism be 384 cm^2 and its height be 16 cm. The other two sides of its base is

A. 8 cm, 6 cm

B. 12 cm, 14 cm

C. 12 cm, 12 cm

D. None of the above

Answer: A

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42. A vessel in the form of a hemisphere surrounded by a cylinder (open at the other end) of same radius is full of liquid of whose volume is 432 π cm^3. If water is filled into a level which is 1 cm below the top of vessel the volume of the water is 396 πcm^3 The radius of the circular end is

A. 16 cm

B. 36 cm

C. 6 cm

D. 396 cm

Answer: C

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