Area & volume Solved Sums

1. How many cubes of 3 cm edge can be cut out a cube of 18 cm edge ?

A) 36 b) 216 c) 216 d) 412

Answer :

$$=> \frac{large\ side}{smaller\ side}$$

= a^3 / a^3 = > $\frac{18\times18\times18}{3\times3\times3}$ => $6 \times 6 \times 6 = 216$

Ans : 16

2 . Find the volume of a spheare radius 10.5cm

A) 1286 cm^2 b) 4851 cm^2 c) 3657 cm^2 d) 2456 cm^2

Answer :

= > spheare of volume = $\frac{4}{3} X\ \Pi r3$

= > $\frac{4}{3} X \frac{22}{7} X10.5X10.5 => 4851cm3$

Ans : 4851 cm^3

3 . The metallic spheare of radius 12cm is melted into three smallest sphere. iF the radii of two smaller spheare are 6cm and 8cm. the radius of the third spheare is

a) 14cm b) 16cm c) 10 cm d) 12 cm

Answer :

= > $= \frac{4/3\times22/7\times12\times12\times12}{\left(\frac{4}{3}\times\frac{22}{7}\times8\times8\times8\right)+\left(\frac{4}{3}\times\frac{22}{7}\times6\times6\times6\right)+\left(\frac{4}{3}\times\frac{22}{7}\times x\times x\times x\times x\times x\right)}$

$$\frac{4/3 \times 22/7 \times 12 \times 12 \times 12}{\left(\frac{4}{3} \times \frac{22}{7}\right)(512) + (216) + xpower3} = \frac{1728}{728 + xpower3}$$

= x^3 = 1000 = > x = 10cm

Ans : 10cm

4 . For where value of radius of a sphere the volume of the sphere is numerically equal to the surface area of the sphere ?

A) 1 b) 2 c) 3 d) 4

Answer :

⇨ Volume of sphere = surface of sphere

= > $4/3 \times \pi \times r^3 = 4 \times \pi \times r^2$

R = 3

Ans = 3 cm

5 . What is the least number of square marbles required for a terrace of 15.17m long and 9.02m Breath?

Answer :

= > 15.17m = 1517cm ,

= > 9.02m = 902cm ,

⇨ HCF of 1517 and 902 => 41cm

⇨ AREA of tiles = 41 X 41

$$= > \frac{1517 \times 902}{41 \times 41} = 814$$

Ans : 814

6 . The capacity of a cylinder tank is 246.4 litrs. If the weight is 4 metrs what is the diameter of the base ?

A) 1.4m b) 2.8m c) 0.14 m d) 0.28m

Answer :

= > volume of cylinder = $\pi r^2 h$

= > $22/7 \times r^2 \times 4 = 246.4$

⇨ $22/7 \times r^2 \times 400 = 246400$ = > (4m = 400cm)

= r^2 = 196 = > r =1 4 2r = 28cm

28cm = 0.28m

Ans : 0.28m

7 . If side of an equilant triangle is decreased by 20 % its area is decreased by ,

A) 42 % b) 36 % c) 34 % d) 20 %

Answer :

Equilateral triangle $\frac{\sqrt{3}}{4}a^2$

= > Area is not given then take area = 100

= > $100 \times \frac{80}{100} \times \frac{80}{100}$ [a^2 = area => 80 X 80]

= > 64 = > 100 – 64 = 36 %

Ans : 36 %

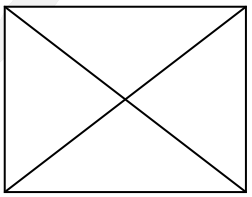
8 . The area of a circle is 220 cm^2 then the area of the square inscribed in the circle is

A) 180 cm^2 b) 140cm^2 c) 135 cm^2 d) 250cm^2

Answer :

Area of circle πr^2 = 220cm^2

R^2 = 70 cm



= > r = ½ (diagonal) --→ diagonal= 2r

= > area of square = ½ (diagonal) ^{2}

= > ½ X $4r^2$ = $2r^2$ = > 2 X 70

Ans : 140cm^2

9 . If the radius of a circle is doubled area is multipled by

A) 3 b) 2 c) 4 d) 8

Answer :

= > radius of circle is = 100

= >. $100X\frac{200}{100}X\frac{200}{100} = 400$

= > 100 to 400 = > 4 times

Ans : 4

10. A square is inscribed in a circle whose radius is 4cm. The area of the portion between the circle and square is

A) $16\pi - 32$ cm^2 b) $32\pi - 27$cm^2 c) $20\pi + 11$cm^2 d) $12\pi - 4$ cm^2

Annswer : R= 4cm

= > area of circle = $\pi r^2 = 16\pi$

R = ½ (diagonal) = > diagonal = 2 R

⇨ Area of square = ½ (diagonal)^2 = ½ (8)^2

= > ½ (64) = 32cm^2

= > circle and square = 16π- 32cm^2

Ans : 16π-32cm^2

11 . If length and breath of a rectangle became half and double respectively, Then what will be the % increase in resultant area ?

A) 0 % b) 65 % c) 75 % d) 80 %

Answer : = > length = 100 % breath = 100 %

$=> 100 \times \frac{50}{100} \times \frac{200}{100} = 100\ \%\ \ => same$

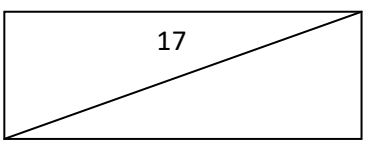
= > Then area = 0 % increase

Ans : 0 %

12. The side of a rectangular field is 15m and one of its diagonal is 17m then the area of its field is ?

A) 32 m^2 b) 120 m^2 c) 2 m^2 d) 60m^2

Answer :



= > (Formula) ^{2} = (page) ^{2} + (page)^2

(17) ^{2} = (15) ^{2} + x ^{2}

= 289 – 225 = 64 = x^2

⇨ x^2 = 64 = > x = 8

= Area of rectangle

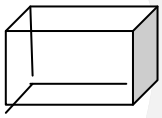
= 15 X 8 = 120cm^2

Ans : 120 cm^2

13 . The perimeter of the four of a cube is 20 cm is a volume be ,

A) 215cm^3 b) 200cm^3 c) 125cm^3 d) 800cm^3

Answer :



⇨ perimeter of cube is , 4a

= > 4a = 20 = > a = 5

- a^3 = 5 X 5 X 5 = 125 cm ^{3}
- volume of cube is = 125cm ^{3}

Ans : 125cm^3

14 . What is the volume of a cube whose diagonal measure is $4\sqrt{3}cm$

A) 30 cm^3 b) 46cm^3 c) 60cm^3 d) 64cm^3

Answer :

= > diagonal of cube $l = \sqrt{3}$ a

= > $4\sqrt{3} = \sqrt{3}$a = > a = 4

⇨ volume of cube = a^3

a^3 = 4 X 4 X 4 = 64cm^3

Ans : $64cm^3$

15 . How many cube of 10 cm edge be put in a cubical box of 1m edge >

A) 200 b) 1000 c) 10 d) 100

Answer :

1m = 100cm ,

⇨ volume of cube = a^3

$$=> \frac{large\ side}{smallerside} = \frac{100 \times 100 \times 100}{10 \times 10 \times 10} = 1000$$

Ans : 1000

16 . How many cubes 30cm edge can be cut out of a cubaid 3cm X 18Cm X 108Cm ?

A) 216 b) 326 c) 36 d) 45

Answer :

$$\frac{large\ side}{smallerside} = \frac{3 \times 18 \times 108}{3 \times 3 \times 3} = 216$$

Ans : 216

17 . The capacity of a tank of dimension (8m X 6m X 2.5m) is

A) 120000 litre b) 100000 litre c) 50000 litre d) 80000 litre

Answer :

= > volume of cuboid = 8 X 6 X 2.5 = 20 metres

⇨ 1 meter = 1000 litre

= > 12 X 1000 = 120000 litre

Ans : 120000 litre .

18 . The ratio of the radii of two cylinder 2 : 3 and the ratio of their heights is 5 : 8 . The ratio of their volumes will be

A) 4 : 9 b) 9 : 4 c) 20 : 27 d 27 : 20

Answer :

=> $R_1 : r^2 = 2 : 3$, $H_1 : H_2 = 5 : 3$

Volume of cylinder $= \Pi r^2 h$

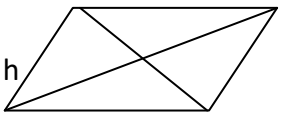
=> Π X 2 X 2 X 5 : Π X 3 X 3 X 3

=> 20 : 27

Ans : 20 : 27

19 . One side of a parallogram is 18cm and its distance from the opposite is is 18cm . The area of the parallogram is

A) $160cm^2$ b) $210cm^2$ c) $144cm^2$ d) $140cm^2$



Answer :

=> area of parrallogram = b X h

=> 18 X 8 = $64cm^2$

Ans : $64cm^2$

20 . Find the length of athe altitude of an equilateral triangle of side $3\sqrt{3}\ cm$

A) 27cm b) $9\sqrt{3}cm$ c) 9 cm d) 4.5 cm

Answer :

=> equilateral side = $3\sqrt{3}cm$

=> area of equilateral triangle = $\frac{\sqrt{3}}{4}a^2$

$= \frac{\sqrt{3}}{4}(3\sqrt{3})^2 => \frac{\sqrt{3}}{4} X (9 X 3) => = \frac{27\sqrt{3}}{7}$

=> ½ X b X h = $\frac{27\sqrt{3}}{4}$[h – altitude]

=> $\frac{1}{2} X 3\sqrt{3} X h = \frac{27}{4}\sqrt{3}$ => h = $\frac{27\sqrt{3}X2}{3\sqrt{3}X4}$

=> h = 4.5 cm

Ans : 4.5 cm

21 . The length of rectangle is increased by 60 % by what percent would the width have to be increased so as to maintain the same area .

A) 37.5 % b) 60 % c) 75 % d) 120 %

Answer :

= > length = 60 % increase = 160 %

$$=> 100X\frac{160}{100}X\frac{x}{100} = 100 \qquad => x = \frac{100X100X100}{100X160}$$

= > x = 62.5 = > 100 – 62.5 % = > 37.5 %

Ans : 37.5%

22 . a cone a hemisphere and a cylinder stands on equal base and have the same height Find the ratio of their volume

A) 3 : 2 : 1 b) 1 : 2: 3 c) 3 : 1 : 2 d) 1 : 3 : 2

Answer :

⇨ Volume of cone = $\frac{1}{3}\Pi r^2 h$

= > volume of hemisphere = $\frac{2}{3}\Pi r^2 h$ R = h

Volume of cylinder = $\Pi r^2 h$

Cone : hemisphere : cylindre

$\frac{1}{3}\Pi r^2 Xr$: $\frac{2}{3}\Pi r^3$: $\Pi r^2 X r$

= > $\frac{1}{3}$: $\frac{2}{3}$: $\frac{1}{1}$

⇨ 1 : 2 : 3 = ratio

Ans : 1 : 2 : 3

23 . AS air is pumped in to a spherical balloon the radius increase from 6 cm to 12cm . The ratio between volume of the balloon in the beginning and the end is

A) 1 : 8 b) 2 : 7 c) 8 : 1 d) 2 : 3

Answer :

= > volume of sphere = $\frac{4}{3}\Pi r^3$

=> $\frac{4}{3}$ X Π X 6 X 6 X 6 : $\frac{4}{3}$ X Π X 12 X 12 x12

=> 1 : 8

Ans : 1 : 8

24 . The difference between two parallel sides of a trapezium is 4cm . The perpendicular distance is 19cm . If the area of the trapezium is 475 cm^2 Find the length of the parallel side

A) 20 cm,16cm b) 27cm , 23cm c) 27cm , 20 cm d) 25cm , 23 cm

Answer :

⇨ Parallel side = a , b => a = a - 4

=> h =19cm,

=> Area of trapezium = $\frac{1}{2}X\ (a+b)$

=> ½ X 19 X [a + (a – 4)] = 475

=> ½ X 19 (2a – 4) = 475 => ½ X 38a – 76 = 475

=> 38a = 1026 => a = 1026/3 => a= 27

B = 27 – 4 = 23

Ans : 27 , 23 cm

25 . The perimeter of two squares are 40cm and 32cm.Find the perimeter of a third square whose area is equal to the difference of the area of two squres.

A) 40cm b) 36cm c) 12cm d) 24cm

Answer:

=> perimeter of square = 4a

=> 4a = 40 a = 10 4a = 32 a = 8

=> area of square = a^2

=> a^2 = 10 X 10 = 100 : a^2 = 8 X 8 = 64

= > 100 – 64 = 36 => a = 6

⇨ Third square 4a = 4 X 6 = 24cm

Ans : 24 cm

26 . A river of 1.5m deep and 36m wide is flowing at the rate of 3.5 km per hour . The amount of water thet runs into the sea per minute is

A) 3150m^3 b) 31500m^3 c) 6300m^3 d) 63000m^3

Answer :

H = 1.5 m deep , b = 36m wide

= > b X h = 1.5 X 3.6 = 54m ,

= > 1km = 1000m , 1 hour = 60 minute

$=> \frac{3.5\times1000}{1\times60} = \frac{3500}{60} = \frac{350}{6} m/min$ = l

= > l X b X h = amount of water

= > $\frac{350}{6} X54 = 3150m^3$

Ans : 3150m^3

27 . The total surface area of a solid hemisphere of a diameter 2cm is equal to ,

A) 12cm^2 b) 12Πcm^2 c) 4Πcm^2 d) 3Πcm^2

Answer :

Diameter 2r = 2cm => r = 1cm

= > total surface area of hemisphere = 3Πr^2

= > 3 X Π X 1 X 1 = 3Πcm^2

Ans : 3Π cm^2

28 . The radius and height of cylinder and cone are equal. If the volume of cylinder is 120 cm ? Then the volume of cone is

A) 90cm^2 b) 30cm^2 c) 30cm^2 d) 100cm^2

Answer :

⇨ Volume of cylinder $= \Pi r^2 h$

$\Pi r^2 h = 120 cm^3$

= > volume of cone = 1 / 3 $\Pi r^2 h$

$\frac{1}{3} X \Pi r^2 h$ = > 1/3 X 120 = $40 cm^3$

Ans : $40 cm^3$

29 . The raddi of two cones are in the ratio 2 : 1 their volumes are equal . Find the ratio of their heights

A)) 1 : 8 b) 1 : 8 c) 2 : 1 d) 4 : 1

Answer :

= > R 1 : R2 = 2 : 1 , volume are equal

$\frac{1}{3} \Pi X 2 X 2 X h_1 : \frac{1}{3} \Pi X 1 x 1 X h_2$

= > $4 h_1 : 1 h_2$

= > $h_1 : h_2 = 1 : 4$

Ans : 1 : 4

30 . the rectangular piece of paper has length 14 Πcm and breath $\frac{10}{\Pi} cm$. A cylinder is formed by one rolling of the paper along its breath, The volume of the cylinder is

A) $980 cm^3$ b) $1960 cm^3$ c) $140 cm^3$ d) $490 cm^3$

Answer :

⇨ Circumprence of circle = $2\Pi r = 14\Pi$

= > r = 7

= > h = $\frac{10}{\Pi} cm$,

= > volume of cylinder = $\Pi r^2 h$

= > $\Pi X (7)^2 X 10 / \Pi = 490 cm^3$

Ans = $490 cm^3$