

1- A rectangular tank can hold 650 litres of milk . if it is 130cm long & 250cm wide , find the height of the tank?

- **A.**10 cm
- **B.**20 cm
- **C.**30 cm
- **D.**40 cm
- **E.**None of these

Answer & Explanation

Answer - **B** (20 cm)

Explanation - Volume of rectangular tank = 650 litres = $650 \times 1000 \text{ cm}^3 = 650000 \text{ cm}^3$

We know that Volume of a cuboid = $l \times b \times h$

$$650000 = 130 \times 250 \times h$$

$$\Rightarrow h = (650000)/(130 \times 250) = 20 \text{ cm}$$

Therefore, height of the tank = 20 cm

2- A hall is of length 16m , breadth 14m & height 5m . Calculate the no of persons that can be accommodated in the hall , assuming 3.5m³ of air is required for each person?

- **A.**240 men
- **B.**280 men
- **C.**320 men
- **D.**360 men
- **E.**None of these

Answer & Explanation

Answer - **C** (320 men)

Explanation - \therefore Volume of the hall = length \times breadth \times height
 $= 16 \times 14 \times 5$
 $= 1120 \text{ m}^3$

Volume occupied by 1 man = 3.5 m^3

3.5 m^3 of air occupied by 1 man

1120 m^3 of air occupied by $(1/3.5) \times 1120 = 320$ men

Therefore, number of men that can be accommodated = 320men

3- A cylinder container with diameter 48cm contains sufficient water to submerge a rectangular solid of iron with dimensions 33cm x 18cm x 12cm. Find the rise in the level of water when solid is completely submerged?

- **A.**2.94 cm
- **B.**3.94 cm
- **C.**4.94 cm
- **D.**5.94 cm
- **E.**None of these

Answer & Explanation

Answer - **B** (3.94 cm)

Explanation - Diameter of cylinder = 48 cm

⇒ Radius of cylinder (r) = 24 cm

Now, when the Cuboid is completely submerged

Then, Volume of cylindrical portion formed by original water level and after increase in water level =
volume of cuboid

$$\Rightarrow \pi r^2 h = 33 \text{ cm} \times 18 \text{ cm} \times 12 \text{ cm}$$

$$22/7 \times 24 \times 24 \times h = 33 \text{ cm} \times 18 \text{ cm} \times 12 \text{ cm}$$

$$h = (33 \text{ cm} \times 18 \text{ cm} \times 12 \text{ cm} \times 7) / 22 \times 24 \times 24 = 3.94 \text{ cm}$$

Hence, the required increase in water level is 3.94 cm

4- The difference between the circumference and radius of a circle is 74 cm. Find the circle diameter?

- **A.**16 cm
- **B.**24 cm
- **C.**28 cm
- **D.**32 cm
- **E.**None of these

Answer & Explanation

Answer - C (28 cm)

Explanation - circumference - radius = 74

$$\pi d - d/2 = 74$$

$$22d/7 - d/2 = 74$$

$$(44d - 7d)/14 = 74$$

$$37d = 74 \times 14$$

$$d = (74 \times 14) / 37$$

$$d = 28 \text{ cm}$$

5- Find the area of the rhombus if the length of each side be 7 cm. and corresponding altitude is 8 cm?

- A. 36 sq mt
- B. 44 sq mt
- C. 56 sq mt
- D. 66 sq mt
- E. None of these

Answer & Explanation

Answer - C (56 sq mt)

Explanation - area of rhombus = base \times height = 7 cm \times 8 cm = 56 sq cm

6- A solid cubical block of fine wood costs rupees 256 at rupees 500/m³. Find its volume and the length of each side?

- A. 50 cm
- B. 60 cm
- C. 70 cm
- D. 80 cm
- E. None of these

Answer & Explanation

Answer - **D** (80 cm)

Explanation - Let the edge of the cubical box be "a" m.

Rs. 500 is the cost of 1 m^3 wood

Rs. 256. is the cost of $1 \times 256 / 500 \text{ m}^3$ wood $= 0.512 \text{ m}^3$

So, Volume of total wood $= 0.512 \text{ m}^3$

$$a \times a \times a = 0.512 \text{ m}^3$$

$$a \times a \times a = 0.8 \times 0.8 \times 0.8$$

The length of each side $= 0.8 \text{ m} = 80 \text{ cm}$

7- What will be the volume of the cylinder in which area of the base is 45 sq.cm and height is 6 cm?

- **A.**210
- **B.**225
- **C.**245
- **D.**270
- **E.**None of these

Answer & Explanation

Answer - **D** (270)

Explanation - The volume of the cylinder $= \text{Area of base} \times \text{height} = 45 \text{ sq.cm} \times 6 \text{ cm}$
 $= 270 \text{ cm}^3$

8- Area of 4 walls of a room is 108 m^2 .If height and length of room is in ratio 2: 5 and height and breadth in ratio 4: 5. Find the area of floor of the room?

- **A.**25 sq mt
- **B.**35 sq mt
- **C.**45 sq mt
- **D.**55 sq mt

- **E.**None of these

Answer & Explanation

Answer - **C** (45 sq mt)

Explanation - Given: $L : H = 5 : 2$ & $H : B = 4 : 5$

$$L : H : B = 20 : 8 : 10$$

Area of four walls of a room is $= 2(l + b) h = 108$ & $(l + b) h = 54$

$$(20x + 10x) \times 8x = 54$$

$$240x^2 = 54$$

$$x^2 = 54 / 240$$

$$x^2 = 0.225$$

The area of floor of the room $= l \times b = l \times b = 20x \times 10x = 200x^2 = 200 \times 0.225 = 45\text{m}^2$

9- If Area of the square inscribed in a semicircle is 2cm^2 . Find the area of the square inscribed in a full circle?

- **A.**1 sq cm
- **B.**3 sq cm
- **C.**4 sq cm
- **D.**5 sq cm
- **E.**None of these

Answer & Explanation

Answer - **D** (5 sq cm)

Explanation - Area of square = 2cm^2

Side of square = square root of 2

Let r be the radius of the circle and adjust it like that it forms a right angle triangle then

$$r^2 = (\text{square root of } 2)^2 + (\text{square root of } 2 / 2)^2$$

$$r^2 = 2 + (2 / 4)$$

$$r^2 = 5 / 2$$

$$r = \text{square root of } (5 / 2)$$

In a full square the diagonal of square will be the diameter of the circle.

$$r = \text{square root of } (5 / 2) \text{ is this so diameter} = 2 \times \text{square root of } (5 / 2)$$

$$\text{Diagonal of square} = \text{side} \times \text{square root of } 2$$

$$\text{side} \times \text{square root of } 2 = 2 \times \text{square root of } 5 / \text{square root of } 2$$

$$\text{side} \times 2 = 2 \times \text{square root of } 5$$

$$\text{side} = \text{square root of } 5$$

$$\text{Area of square} = r^2$$

$$= (\text{square root of } 5)^2$$

$$= 5 \text{ cm}^2$$

10- A cylinder tube open at both ends is made of metal. The internal diameter of the tube is 11.2 cm and its length is 21 cm. The metal everywhere is 0.4 cm thick. Calculate the volume of the metal correct to 1 place of decimal?

- A.306
- B.306.2
- C.406
- D.406.2
- E.None of these

Answer & Explanation

Answer - B (306.2)

Explanation - Internal diameter = 11.2 cm

Internal radius = $11.2/2 = 5.6$ cm Length of the tube = 21 cm

Volume of the internal cylinder $\pi r^2 h = 22 \times 5.6 \times 5.6 \times 21/7 = 2069.76 \text{ cm}^3$

External radius, $R = (5.6 + 0.4)$ cm = 6 cm

Volume of the external cylinder = $\pi R^2 h = 22 \times 6 \times 6 \times 21/7 = 2376 \text{ cm}^3$

Now, volume of the metal = Volume of the external cylinder – Volume of the internal cylinder

$$= (2376 - 2069.76) \text{ cm}^3 = 306.24 \text{ cm}^3 = 306.2 \text{ cm}^3$$