

SECTION – A

Questions 1 to 6 carry 1 mark each.

1. The areas of two circles are in the ratio 49 : 36. The ratio of their circumferences is
 (a) 7 : 6 (b) 6 : 7 (c) 3 : 2 (d) 2 : 3

Ans: (a) 7 : 6

$$\frac{\pi r_1^2}{\pi r_2^2} = \frac{49}{36} \Rightarrow \left(\frac{r_1}{r_2}\right)^2 = \left(\frac{7}{6}\right)^2 \Rightarrow \frac{r_1}{r_2} = \frac{7}{6}$$

2. The area of a circle is $9\pi \text{ cm}^2$. Its circumference is
 (a) $6\pi \text{ cm}$ (b) $36\pi \text{ cm}$ (c) $9\pi \text{ cm}$ (d) $36\pi^2 \text{ cm}$

Ans: (a) $6\pi \text{ cm}$

$$\text{Area of circle} = 9\pi \text{ cm}^2$$

$$\Rightarrow \pi r^2 = 9\pi \Rightarrow r = 3 \text{ cm}$$

$$\text{Circumference of the circle} = 2\pi r = 2\pi \times 3 = 6\pi \text{ cm}$$

3. The area of a parallelogram is 100 cm^2 . If the base is 25 cm, then the corresponding height is
 (a) 4 cm (b) 6 cm (c) 10 cm (d) 5 cm

Ans: Let b = 25 cm and h be the base and the corresponding height of the parallelogram. Then

$$\text{Area of parallelogram} = b \times h$$

$$\Rightarrow 100 = 25 \times h \Rightarrow h = 4 \text{ cm}$$

Hence, the correct option is (a).

4. The base of a parallelogram is twice of its height. If its area is 512 cm^2 , then the length of base is
 (a) 16 cm (b) 32 cm (c) 48 cm (d) 64 cm

Ans: Let b and h be the base and height, then $b = 2h$.

$$\text{Area of parallelogram} = b \times h$$

$$\Rightarrow 512 = 2h \times h$$

$$\Rightarrow 2h^2 = 512 \Rightarrow h^2 = 256 \Rightarrow h = 16 \text{ cm}$$

$$\Rightarrow b = 2 \times 16 = 32 \text{ cm}$$

Hence, the correct option is (b).

5. A circle is inscribed in a square of side 14 m. The ratio of the area of the circle and that of the square is

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

Ans: Let a and r be the side of the square and radius of the circle respectively.

Here, the diameter of the circle is equal to the side of the square. So

$$\text{Diameter of circle} = 2r = a$$

$$\text{Therefore, } \frac{\text{Area of circle}}{\text{Area of square}} = \frac{\pi r^2}{a^2} = \frac{\pi \times r^2}{(2r)^2} = \frac{\pi}{4}$$

Hence, the correct option is (b).

6. The minute hand of a clock is 14 cm long. How far does the tip of the minute hand move in 60 minutes?

(a) 22 cm (b) 44 cm (c) 33 cm (d) 88 cm

Ans: Length of minute hand = 14 cm

$$\text{Distance covered by minute hand in one round} = 2\pi r = 2 \times \frac{22}{7} \times 14 = 88 \text{ cm}$$

Thus, the minute hand move 88 cm in 60 minutes.

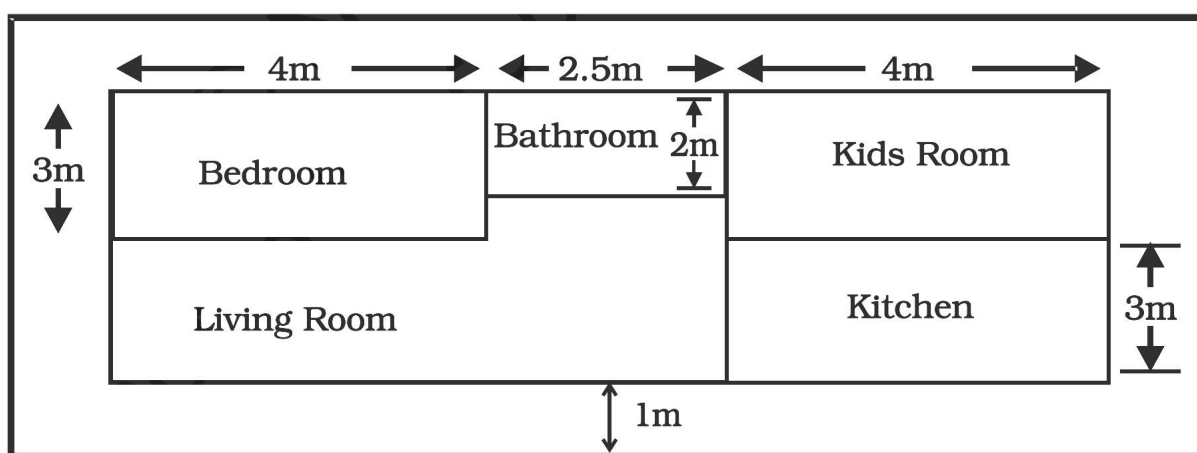
Hence, the correct option is (d).

SECTION – B(CCT Questions)

Questions 7 to 10 carry 1 mark each.

CCT Question

Mr. Kumar purchased a land for constructing independent house. He consulted with Architect to prepare the design for his independent house. The architect prepared the plan and measurement for his house as given below figure. The house is surrounded by a path 1m wide.



Answer the following questions based on the above information:

7. Find the Cost of paving the path with bricks at rate of Rs. 120 per m².

(a) Rs. 2440 (b) Rs. 3440 (c) Rs. 4440 (d) Rs. 5440

Ans: (c) Rs. 4440

$$\begin{aligned} \text{Area of path} &= \text{Area of outer rectangle} - \text{Area of inner rectangle} \\ &= (4 + 2.5 + 4 + 1 + 1) \times (3 + 3 + 1 + 1) - (4 + 2.5 + 4) \times (3 + 3) \\ &= 12.5 \times 8 - 10.5 \times 6 \\ &= 37 \text{ m}^2 \end{aligned}$$

$$\text{Cost of paving the path with bricks} = \text{cost per unit m}^2 \times \text{Total area of path} = 120 \times 37 = \text{Rs. } 4440$$

8. The area of living room is

(a) 39 m² (b) 27 m² (c) 22 m² (d) 12 m²

Ans: Area of living room = Area of rectangle – Area of Bedroom – Area of Bathroom

$$\begin{aligned} &= (4 + 2.5) \times (3 + 3) - 4 \times 3 - 2.5 \times 2 \\ &= 39 - 12 - 5 = 22 \text{ m}^2 \end{aligned}$$

Correct option is (c)

9. The area of house except bathroom is

(a) 63 m² (b) 58 m² (c) 22 m² (d) 27 m²

Ans: Area of house except bathroom = Area of house – Area of bathroom

$$= (4 + 2.5 + 4) \times (3 + 3) - 2.5 \times 2 = 63 - 5 = 58 \text{ m}^2$$

Correct option is (b)

10. The Cost of wooden flooring inside the house except the bathroom at the cost of Rs. 1200 per m^2 is

- (a) Rs. 69600 (b) Rs. 69000 (c) Rs. 79000 (d) Rs. 79600

Ans: Area of house except bathroom = $58m^2$

Cost of flooring = cost per unit $m^2 \times$ Total area

$$= 1200 \times 58 = \text{Rs. } 69600$$

Correct option is (a)

SECTION – C

Questions 11 to 13 carry 2 marks each.

11. The circumference of a circle is 3.14 m, find its area.

Ans: Circumference of the circle = 3.14 m = $2\pi r$

$$\Rightarrow 3.14 = 2 \times \frac{22}{7} \times r \Rightarrow r = \frac{3.14 \times 7}{2 \times 22} = \frac{1}{2} \text{ m}$$

Area of the circle (A) = πr^2

$$\Rightarrow A = \frac{22}{7} \times \left(\frac{1}{2}\right)^2 \text{ m}^2$$

$$\Rightarrow A = \left(\frac{22}{7} \times \frac{1}{2} \times \frac{1}{2}\right) \text{ m}^2 = \left(\frac{22}{28}\right) \text{ m}^2 = 0.785 \text{ m}^2$$

12. Find the area of a right angled triangle whose sides containing the right angle are of lengths 20.8 m and 14.7 m.

Ans: In a right-angled triangle,

The sides containing the right angles are of lengths 20.8 m and 14.7 m.

Let the base be 20.8 m and the height be 14.7 m.

Then, Area of a triangle = $\frac{1}{2}$ (Base \times Height)

$$= \frac{1}{2} (20.8 \times 14.7) = 152.88 \text{ m}^2$$

13. One side of a parallelogram is 18 cm long and its area is 153 cm^2 . Find the distance of the given side from its opposite side.

Ans: Base of the parallelogram = 18 cm

Area of the parallelogram = 153 cm^2

\therefore Area of the parallelogram = Base \times Height

$$\Rightarrow \text{Height} = \frac{\text{Area of the parallelogram}}{\text{Base}} = \frac{153}{18} \text{ cm} = 8.5 \text{ cm}$$

Hence, the distance of the given side from its opposite side is 8.5 cm.

SECTION – D

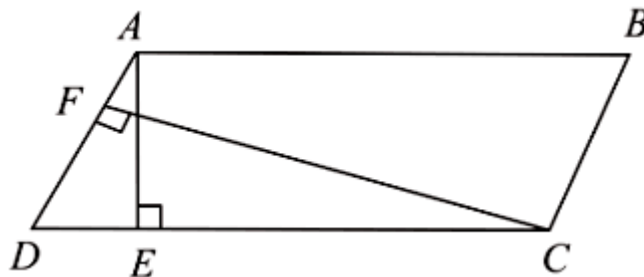
Questions 14 to 17 carry 3 marks each.

14. Two sides of a parallelogram are 20 cm and 25 cm. If the altitude corresponding to the sides of length 25 cm is 10 cm, find the altitude corresponding to the other pair of sides.

Ans: We have, ABCD is a parallelogram with longer side AB = 25 cm and altitude AE = 10 cm.

As ABCD is a parallelogram, hence AB = CD (opposite sides of parallelogram are equal)

The shorter side is AD = 20 cm and the corresponding altitude is CF.



Area of a parallelogram = Base \times Height

We have two altitudes and two corresponding bases.

$$\Rightarrow AD \times CF = CD \times AE$$

$$\Rightarrow 20 \times CF = 25 \times 10$$

$$\therefore CF = 12.5 \text{ cm}$$

Hence, the altitude corresponding to the other pair of the side AD is 12.5 cm.

15. The area of a triangle, whose base and the corresponding altitude are 15 cm and 7 cm, is equal to area of a right triangle whose one of the sides containing the right angle is 10.5 cm. Find the other side of this triangle.

Ans: For the first triangle, we have,

Base = 15 cm and altitude = 7 cm

Thus, area of a triangle = $\frac{1}{2} \times \text{Base} \times \text{Altitude}$

$$= \frac{1}{2} \times 15 \times 7 = 52.5 \text{ cm}^2$$

It is given that the area of the first triangle and the second triangle are equal.

Area of the second triangle = 52.5 cm^2

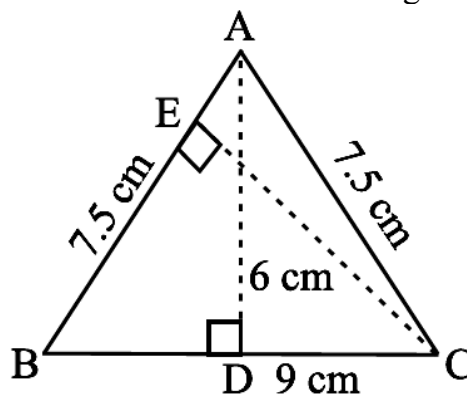
One side of the second triangle = 10.5 cm

Therefore, The other side of the second triangle = $2 \times \text{Area} / \text{One side of a triangle}$

$$= 2 \times 52.5 / 10.5 = 10 \text{ cm}$$

Hence, the other side of the second triangle will be 10 cm.

16. ΔABC is isosceles with $AB = AC = 7.5 \text{ cm}$ and $BC = 9 \text{ cm}$ (Fig 11.26). The height AD from A to BC is 6 cm. Find the area of ΔABC . What will be the height from C to AB, i.e., CE?



Ans: From the question, it is given that $AB = AC = 7.5 \text{ cm}$, $BC = 9 \text{ cm}$, $AD = 6 \text{ cm}$

Then, Area of $\Delta ABC = \frac{1}{2} \times \text{Base} \times \text{Height}$

$$= \frac{1}{2} \times BC \times AD = \frac{1}{2} \times 9 \times 6 = 1 \times 9 \times 3 = 27 \text{ cm}^2$$

Now, Area of $\Delta ABC = \frac{1}{2} \times \text{Base} \times \text{Height}$

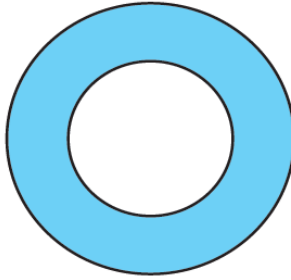
$$\Rightarrow 27 = \frac{1}{2} \times AB \times CE$$

$$\Rightarrow 27 = \frac{1}{2} \times 7.5 \times CE$$

$$\Rightarrow (27 \times 2) / 7.5 = CE$$

$$\Rightarrow CE = 54 / 7.5 \Rightarrow CE = 7.2 \text{ cm}$$

17. A gardener wants to fence a circular garden of diameter 21m. Find the length of the rope he needs to purchase, if he makes 2 rounds of the fence. Also, find the cost of the rope, if it costs ₹ 4 per meter. (Take $\pi = 22/7$)



Ans: From the question, it is given that Diameter of the circular garden = 21 m
 We know that radius (r) = $d/2 = 21/2 = 10.5$ m
 Then, Circumference of the circle = $2\pi r$
 $= 2 \times (22/7) \times 10.5 = 462/7 = 66$ m
 So, the length of rope required = $2 \times 66 = 132$ m
 Cost of 1 m rope = ₹ 4 [given]
 \therefore Cost of 132 m rope = ₹ 4 \times 132 = ₹ 528

SECTION – E

Questions 18 to 20 carry 4 marks each.

18. A wire of 5024 m length is in the form of a square. It is cut and made a circle. Find the ratio of the area of the square to that of the circle.

Ans: It is given that, Perimeter of the square = 5024 m
 $\Rightarrow 4 \times \text{side} = 5024 \Rightarrow \text{Side} = 5024/4 \Rightarrow \text{Side} = 1256$ m
 The same wire is converted into the form of a circle. Therefore,
 Circumference of the circle = Perimeter of the square
 $\Rightarrow 2\pi r = 5024 \Rightarrow 2 \times \pi \times r = 5024$
 $\Rightarrow r = 2512/\pi$
 We know that area of the square: Area of the circle = $(\text{side})^2 : \pi r^2$
 Area of square/ area of circle = $(\text{side})^2 / \pi r^2$
 Area of square/ area of circle = $(1256 \times 1256) / [\pi \times (2512/\pi) \times (2512/\pi)]$
 $= (1256 \times 1256 \times 22) / (2512 \times 2512 \times 7) = 11/14$
 Area of the square: Area of the circle = 11: 14

19. A circular flower garden has an area of 314 m². A sprinkler at the centre of the garden can cover an area that has a radius of 12 m. Will the sprinkler water the entire garden? (Take $\pi = 3.14$)

Ans: From the question, it is given that Area of the circular flower garden = 314 m²
 The sprinkler at the centre of the garden can cover an area that has a radius = 12 m
 Area of the circular flower garden = πr^2
 $\Rightarrow 314 = 3.14 \times r^2 \Rightarrow 314/3.14 = r^2 \Rightarrow r^2 = 100 \Rightarrow r = \sqrt{100} \Rightarrow r = 10$ m
 \therefore Radius of the circular flower garden is 10 m.
 The sprinkler can cover an area of a radius of 12 m.
 Hence, the sprinkler will water the whole garden.

20. A circular flower bed is surrounded by a path 4 m wide. The diameter of the flower bed is 66 m. What is the area of this path? ($\pi = 3.14$)

Ans: From the question, it is given that Diameter of the flower bed = 66 m
 Then, Radius of the flower bed = $d/2 = 66/2 = 33$ m
 Area of flower bed = $\pi r^2 = 3.14 \times 33^2 = 3.14 \times 1089 = 3419.46$ m

Now, we have to find the area of the flower bed and path together.

So, the radius of the flower bed and path together = $33 + 4 = 37$ m

Area of the flower bed and path together = $\pi r^2 = 3.14 \times 37^2 = 3.14 \times 1369$
= 4298.66 m

Finally, Area of the path = Area of the flower bed and path together – Area of the flower bed
= $4298.66 - 3419.46 = 879.20$ m²

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