

## X Elite work-13 (Areas Related to Circles)

- 1) The radius of a circle whose circumference is equal to the sum of the circumferences of the two circles of diameters 36cm and 20cm is  
(a) 56cm (b) 42cm (c) 28cm (d) 16cm
- 2) The diameter of a circle whose area is equal to the sum of the areas of the two circles of radii 24cm and 7cm is:  
(a) 31cm (b) 25cm (c) 62cm (d) 50cm
- 3) If the perimeter of a semi-circular protractor is 36cm, then its diameter is:  
(a) 8cm (b) 12cm (c) 14cm (d) 18cm
- 4) If the radius of a circle is 3.5cm, then the perimeter of the semi-circle is:  
(a) 10cm (b) 15cm (c) 18cm (d) 20cm
- 5) The perimeter of a quadrant of a circle of radius  $\frac{7}{2}$  is  
(a) 6.5cm (b) 12.5cm (c) 8.5cm (d) 4.5cm
- 6) The diameters of two circles are 38cm and 18cm. Then, the diameter of the circle having circumference equal to the sum of circumferences of the two circles is  
(a) 56cm (b) 50cm (c) 48cm (d) 52cm
- 7) If the circumference of a circle exceeds its diameter by 16.8cm, then the radius of the circle is:  
(a) 3.92cm (b) 6cm (c) 5.5cm (d) 3.82cm
- 8) If the difference between the circumference and radius of a circle is 37cm, then circumference (in cm) of the circle is  
(a) 155 (b) 44 (c) 10 (d) 14
- 9) The distance (in metres) covered by a wheel of diameter 35cm, in one revolution is  
(a) 2.2 (b) 1.1 (c) 9 (d) 8.2
- 10) If the circumference of a circle is 44cm, then, the area of the circle is  
(a)  $270\text{cm}^2$  (b)  $48\text{cm}^2$  (c)  $170\text{cm}^2$  (d)  $154\text{cm}^2$

Elite work - 13 (Area Related to Circles - Answers)

1)  $r_1 = \frac{36}{2} = 18 \text{ cm}$

$r_2 = \frac{20}{2} = 10 \text{ cm}$

Let  $r$  be the radius of the required circle

ATQ,  $2\pi r = 2\pi r_1 + 2\pi r_2$

$\Rightarrow r = r_1 + r_2 = 18 + 10 = 28 \text{ cm (c)}$

2)  $r_1 = 24 \text{ cm}$

$r_2 = 7 \text{ cm}$

Let  $r$  is the radius of the required circle.

ATQ,  $\pi r^2 = \pi r_1^2 + \pi r_2^2$

$\Rightarrow r^2 = r_1^2 + r_2^2 = 24^2 + 7^2 = 576 + 49 = 625$

$\therefore r = \sqrt{625} = 25 \text{ cm}$

Then, diameter =  $2r = 2 \times 25 = 50 \text{ cm (d)}$

3)



$2r + \pi r = 36$

$\Rightarrow r \times \frac{36}{7} = 36$

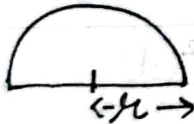
$\Rightarrow r(2 + \pi) = 36$

$\Rightarrow r(2 + \frac{22}{7}) = 36$

$\therefore r = \frac{36 \times 7}{36} = 7 \text{ cm}$

Then, diameter =  $2r = 2 \times 7 = 14 \text{ cm (c)}$

4)  $r = 3.5 \text{ cm}$

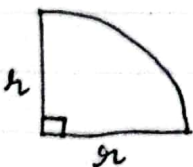


perimeter of the semi-circle =  $2r + \pi r$

$= r(2 + \pi) = \frac{7}{2} (2 + \frac{22}{7}) = \frac{7}{2} \times \frac{36}{7}$

$= 18 \text{ cm (c)}$

5)  $r = \frac{7}{2} \text{ cm}$



perimeter of a quadrant =  $2r + \frac{2\pi r}{4}$

$= 2r(1 + \frac{\pi}{4}) = 2 \times \frac{7}{2} (1 + \frac{22}{7 \times 4})$

$= 7 \times \frac{50}{28} = 12.5 \text{ cm (b)}$

$$6) r_1 = \frac{38}{2} = 19 \text{ cm}$$

$$r_2 = \frac{18}{2} = 9 \text{ cm}$$

$$2\pi r = 2\pi r_1 + 2\pi r_2$$

$$\Rightarrow 2r = 2r_1 + 2r_2 = 2(r_1 + r_2)$$

$$\therefore 2r = 2(19 + 9) = 2 \times 28 = 56 \text{ cm (a)}$$

$$7) \text{ ATQ, } 2\pi r - 2r = 16.8$$

$$\Rightarrow 2r(\pi - 1) = 16.8$$

$$\Rightarrow 2r\left(\frac{22}{7} - 1\right) = 16.8$$

$$\Rightarrow 2r \times \frac{15}{7} = 16.8$$

$$\therefore r = \frac{16.8 \times 7}{15 \times 2}$$

$$= 3.92 \text{ cm (a)}$$

$$8) 2\pi r - r = 37$$

$$\Rightarrow r(2\pi - 1) = 37$$

$$\Rightarrow r\left(2 \times \frac{22}{7} - 1\right) = 37$$

$$\Rightarrow r\left(\frac{37}{7}\right) = 37$$

$$\therefore r = \frac{37 \times 7}{37}$$

$$= 7 \text{ cm}$$

$$\text{Then, Circumference, } 2\pi r = 2 \times \frac{22}{7} \times 7$$

$$= 44 \text{ cm (b)}$$

9) distance covered by the wheel

= Circumference of the wheel  $\times$  no. of revolutions

$$= 2\pi r \times 1 = 2 \times \frac{22}{7} \times \frac{35}{2} = 110 \text{ cm} = 1.1 \text{ m (b)}$$

$$10) \text{ ATQ, } 2\pi r = 44$$

$$r = \frac{44 \times 7}{2 \times 22} = 7 \text{ cm}$$

$$\text{Then, area} = \pi r^2 = \frac{22}{7} \times 7 \times 7 = 154 \text{ cm}^2 \text{ (d)}$$