

## SELF ASSESSMENT TEST SOLUTIONS

1. Given,  $\frac{\theta}{360^\circ} \times \pi r^2 = 54\pi$   
 $\Rightarrow (36^2) \times \frac{\theta}{360^\circ} = 54$   
 $\Rightarrow \theta = \frac{54 \times 360}{36 \times 36} = 15^\circ$

Now, length of the arc,

$$l = 2\pi r \times \frac{\theta}{360^\circ} = 2\pi(36) \times \frac{15}{360} = 3\pi \text{ cm}$$

2. Let a be the side of triangle,

then  $\frac{\sqrt{3} a^2}{4} = 121\sqrt{3}$   
 $\Rightarrow a = 22 \text{ cm}$

$\therefore$  Length of wire =  $3 \times 22 = 66 \text{ cm}$ .

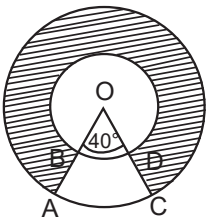
$$\Rightarrow 2\pi r = 66$$

$$\Rightarrow 2 \times \frac{22}{7} \times r = 66 \quad r = \frac{21}{2} \text{ cm}$$

$\therefore$  Area of enclosed circle =  $\pi r^2$

$$= \frac{22}{7} \times \frac{21}{2} \times \frac{21}{2} = 346.5 \text{ cm}^2$$

3. Shaded area =  $\pi(R^2 - r^2) \times \frac{\theta}{360}$

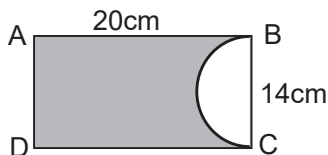


$$= \pi(14^2 - 7^2) \times \frac{320}{360}$$

$$= \frac{22}{7} \times 147 \times \frac{8}{9}$$

$$= \frac{1232}{3} = 410.67 \text{ cm}^2$$

4. Area of the shaded region



= Area of rectangle - Area of semicircle

$$= l \times b - \frac{\pi r^2}{2} = 20 \times 14 - \frac{\pi \times 7 \times 7}{2}$$

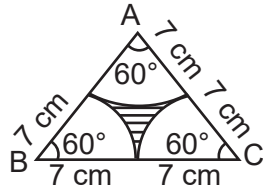
$$= 280 - \frac{22}{7} \times \frac{7 \times 7}{2} = 280 - 77 = 203 \text{ cm}^2$$

5. Given,  $\frac{\sqrt{3}}{4} a^2 = 49\sqrt{3}$

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$$\Rightarrow a^2 = 49 \times 4$$

$$\Rightarrow a = 14 \text{ cm}$$



Area of triangle not included in circle

= Area of triangle - Area of 3 quadrant

$$= 49\sqrt{3} - 3 \times \frac{60^\circ}{360^\circ} \times \frac{22}{7} \times 7 \times 7$$

$$= 49 \times 1.73 - 77 = 7.77 \text{ cm}^2$$

6. Let side of square be 'a' cm

$$\therefore a^2 + a^2 = (6\sqrt{2})^2$$

$$2a^2 = 72$$

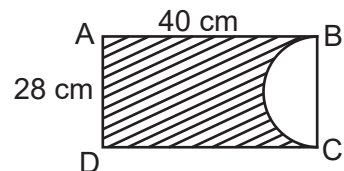
$$a^2 = 36 \Rightarrow a = 6 \text{ cm}$$

$\therefore$  Area of shaded region

$$= \pi r^2 \frac{90}{360} - a^2 = \frac{22}{7} \times (6\sqrt{2})^2 \cdot \frac{1}{4} - 36$$

$$= \frac{396 - 252}{7} = \frac{144}{7} \text{ cm}^2 = 20.57 \text{ cm}^2$$

7. Area of rectangle ABCD =  $40 \times 28 = 1120 \text{ cm}^2$



$$\text{Area of semi circular portion} = \frac{1}{2} \pi r^2$$

$$= \frac{1}{2} \times \frac{22}{7} \times 14 \times 14 = 308 \text{ cm}^2$$

Area of remaining sheet of paper

$$= 1120 - 308 = 812 \text{ cm}^2$$

8. Area of the square =  $a^2 = 14 \times 14 = 196 \text{ cm}^2$

$$\text{Area of middle circle} = \pi r^2 = \frac{22}{7} \times 4 \times 4 = 50.28 \text{ cm}^2$$

$$\text{Area of four quadrants} = 4 \times \frac{1}{4} \pi r^2$$

$$= 4 \times \frac{1}{4} \times \frac{22}{7} \times 3.5 \times 3.5 = 38.5 \text{ cm}^2$$

Hence, Area of Remaining part of square

$$= 196 - (50.28 + 38.5) = 107.22 \text{ cm}^2$$