Fully-Worked Solutions

PRACTICE 5

Section A

1 *Answer*: **C**

2 *Answer*: **B**

3 Diameter $= 9 + 25$
$= 34$ cm
Radius $= 17$ cm
$OQ = 8$ cm, $AQ = 15$ cm
$AB = 15 + 15$
$= 30$ cm
Answer: **D**

4 $PQ = QR = 12$ cm
$OQ = 5$ cm
$SOQ = OS + OQ$
$= 13 + 5$
$= 18$ cm
Answer: **B**

5 $KL = LM = 12$ cm
$OK^2 = 5^2 + 12^2$
$= 169$
$OK = 13$ cm
$OJ = 13$ cm
Answer: **A**

6 Circumference $= 2\pi r$
$= 2 \times \frac{22}{7} \times 10.5$
$= 66$ cm
Answer: **A**

7 Circumference $= 2\pi r$
$= 2 \times \frac{22}{7} \times 4.2$
$= 26.4$ cm
Answer: **C**

8 $2\pi r = 94.26$
$2 \times 3.142 \times r = 94.26$
$r = \frac{94.26}{6.284} = 15$
Answer: **D**

9 Area $= \frac{22}{7} \times 8.4^2$
$= 221.76$ cm^2
Answer: **A**

10 Area $= \frac{22}{7} \times 17.5^2$
$= 962.5$ cm^2
Answer: **B**

11 $\pi r^2 = 1\,386$
$\frac{22}{7} \times r^2 = 1\,386$
$r^2 = 1\,386 \times \frac{7}{22}$
$\sqrt{r^2} = \sqrt{441}$
$r = 21$ cm
Answer: **C**

12 $2\pi r = 88$
$2 \times \frac{22}{7} \times r = 88$
$r = 88 \times \frac{7}{44}$
$= 14$ cm
Area $= \frac{22}{7} \times 14^2$
$= 616$ cm^2
Answer: **D**

13 $\pi r^2 = 124.74$
$\frac{22}{7} \times r^2 = 124.74$
$r^2 = 124.74 \times \frac{7}{22}$
$\sqrt{r^2} = \sqrt{39.69}$
$r = 6.3$ cm
Circumference $= 2 \times \frac{22}{7} \times 6.3$
$= 39.6$ cm
Answer: **A**

14 Length of arc PQ
$= \frac{63°}{360°} \times 2 \times \frac{22}{7} \times 12$
$= 13.2$ cm
Answer: **B**

15 $RS = \frac{279°}{360°} \times 2 \times \frac{22}{7} \times 28$
$= 136.4$ cm
Answer: **D**

16 Length of arc $AB = 44$ cm
$\frac{144°}{360°} \times 2 \times \frac{22}{7} \times r = 44$
$r = 44 \times \frac{35}{88}$
$= 17.5$ cm
Answer: **B**

17 Area of sector $= \frac{216°}{360°} \times \frac{22}{7} \times 17.5^2$
$= 577.5$ cm^2
Answer: **C**

18 Length of arc PQ
$= \frac{60°}{360°} \times 2 \times \frac{22}{7} \times 7$
$= 7.33$ cm

Perimeter = 7.33 + 3 + 10 + 3
= 23.33 cm
Answer: **A**

19 Area of shaded region

$= (28 \times 14) - 2\left(\frac{90°}{360°} \times \frac{22}{7} \times 14^2\right)$

$= 392 - 308$

$= 84 \text{ cm}^2$

Answer: **B**

20 Area of shaded region

$= \frac{72°}{360°} \times \pi \times 8^2 - \frac{72°}{360°} \times \pi \times 3^2$

$= \frac{72°}{360°}\pi(8^2 - 3^2)$

$= \frac{22}{35}(64 - 9)$

$= 34.57 \text{ cm}^2$

Answer: **D**

Section B

1 *a*: Diameter
b: Arc
c: Sector
d: Chord

2 (a) (i) ✓
(ii) ✓

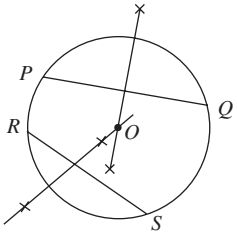
(b) (i) $\frac{x°}{360°} \times 2\pi r$

(ii) $\frac{x°}{360°} \times \pi r^2$

3 (a) FALSE
(b) TRUE
(c) TRUE
(d) FALSE

Section C

1 (a)



(b) Area of $PQRS = 20 \times 16$
$= 320 \text{ m}^2$

Area of $TSW = \frac{1}{2} \times 10 \times 14$
$= 70 \text{ m}^2$

Area of $QUV = \frac{90°}{360°} \times \frac{22}{7} \times 10^2$
$= 78.57 \text{ m}^2$

Area of shaded region
$= 320 - 70 - 78.57$
$= 171.43 \text{ cm}^2$

(c) Angle of major sector

$= \frac{7}{9} \times 360°$

$= 280°$

Area of major sector

$= \frac{280°}{360°} \times \frac{22}{7} \times 10.5^2$

$= 269.5 \text{ cm}^2$

2 (a) Length of arc *RS*

$= \frac{48°}{360°} \times 2 \times \frac{22}{7} \times 5$

$= 4.1905 \text{ cm}$

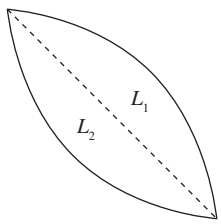
Length of arc *PQ*

$= \frac{48°}{360°} \times 2 \times \frac{22}{7} \times 12$

$= 10.0571 \text{ cm}$

Perimeter of shaded region
$= 4.1905 + 10.0571 + 7 + 7$
$= 28.2476 \text{ cm}$
$= 28.25 \text{ cm}$

(b)



$L_1 = L_2$

$L_1 = \left(\frac{90°}{360°} \times \frac{22}{7} \times 14^2\right) - \left(\frac{1}{2} \times 14 \times 14\right)$

$= 154 - 98$

$= 56 \text{ cm}^2$

$L_2 = 56 \text{ cm}^2$

Area of shaded region = Area of $PQRS - 2 \times L_1$
$= 14 \times 14 - 2(56)$
$= 196 - 112$
$= 84 \text{ cm}^2$

(c) Length of arc *ST*

$= \frac{90°}{360°} \times 2 \times \frac{22}{7} \times 7$

$= 11 \text{ cm}$

$PR^2 = 12^2 + 16^2$

$\sqrt{PR^2} = \sqrt{400}$

$PR = 20 \text{ cm}$

Perimeter of shaded region
$= 11 + 5 + 20 + 9$
$= 45 \text{ cm}$