FORM 2
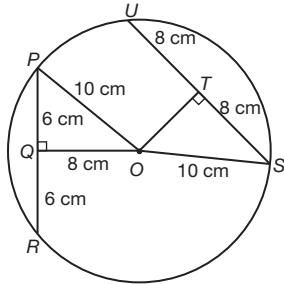
CHAPTER 5

Summative Practice

Section A

1

$OT = \sqrt{10^2 - 8^2} = 6$ cm

Answer: **A**

2 Radius, $r = \dfrac{1}{2} \times 42$

$= 21$ cm

Length of arc $PQ = \dfrac{140°}{360°} \times 2 \times \dfrac{22}{7} \times 21$

$= 51 \dfrac{1}{3}$ cm

Answer: **C**

3 Length of arc $PQR = \dfrac{210°}{360°} \times 2 \times \pi \times 8$

$= \dfrac{28}{3} \pi$ cm

Perimeter of shaded region $= 8 + 8 + \dfrac{28}{3} \pi$

$= \dfrac{28}{3} \pi + 16$

Answer: **D**

4
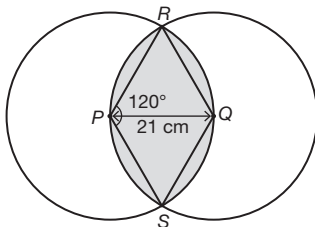
Length of arc RQS

$= \dfrac{120°}{360°} \times 2 \times \dfrac{22}{7} \times 21$

$= 44$ cm

Perimeter of shaded region $= 44 + 44$

$= 88$ cm

Answer: **C**

5
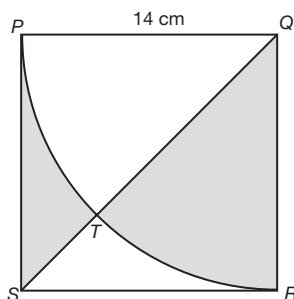
Area of RTS = Area of PTS

Area of shaded region $= \dfrac{1}{2} \times$ area of square $PQRS$

$= \dfrac{1}{2} \times 14 \times 14$

$= 98$ cm^2

Answer: **A**

6
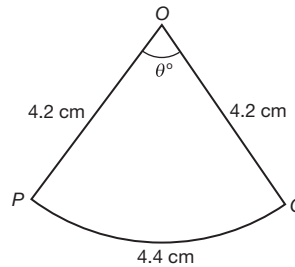
$\dfrac{\theta°}{360°} \times 2 \times \dfrac{22}{7} \times 4.2 = 4.4$

$\theta = 60°$
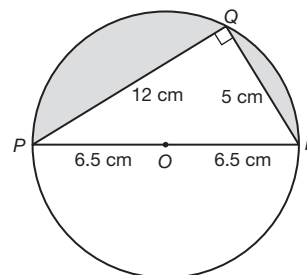
Answer: **B**

7 Area of shaded region = Area of semicircle PQR + Area of semicircle PSO + Area of semicircle RTO

$= \left(\dfrac{1}{2} \times \dfrac{22}{7} \times 14^2 \right) + \left(\dfrac{1}{2} \times \dfrac{22}{7} \times 7^2 \right) + \left(\dfrac{1}{2} \times \dfrac{22}{7} \times 7^2 \right)$

$= 462$ cm^2

Answer: **B**

8

Area of shaded region

$= \left(\dfrac{1}{2} \times \pi \times 6.5^2 \right) - \left(\dfrac{1}{2} \times 12 \times 5 \right)$

$= \left(21 \dfrac{1}{8} \pi - 30 \right)$ cm^2

Answer: **C**

Section B

1 (a) Line OR = Radius

   (b) Line PQ = Chord

   (c) Shaded region X = Segment

   (d) Shaded region Y = Sector

2 (a) The perpendicular bisectors of two non-parallel chords meet at the centre of the circle. (✔)

   (b) Equal chords or chords of the same length produce arc of the same length. (✔)

   (c) Chords which are equidistant from the centre of the circle are equal in length.(✔)

   (d) The area of sector is 4 times when the angle of the sector is double. (✗)

3 (a) Area of a circle $= \pi r^2$

Circumference $= \pi d = 2\pi r$

(i) $A = \pi p^2$

Area $= \pi (2p)^2$

$= 4\pi p^2$

$= 4A$

(ii) $C = 2\pi p$

Circumference $= 2\pi(2p)$

$= 2(2\pi p)$

$= 2C$

(b) (i) The area of a sector with a radius of 3 cm with an angle of sector $60° <$ the area of a sector with a radius of 6 cm with an area of sector $30°$.

(ii) The length of arc of a sector of radius 3 cm with an angle of sector $60° =$ the length of arc of a sector of radius 6 cm with an angle of sector $30°$.

Section C

1 (a) $\pi r^2 = 154$

$\dfrac{22}{7} r^2 = 154$

$r^2 = 154 \times \dfrac{7}{22}$

$r^2 = 49$

$r = \sqrt{49}$

$= 7$ cm

Circumference $= 2\pi r$

$= 2 \times \dfrac{22}{7} \times 7$

$= 44$ cm

(b) (i) Length of arc BC

$= \dfrac{\theta}{360°} \times 2\pi r$

$= \dfrac{120°}{360°} \times 2 \times \dfrac{22}{7} \times 14$

$= \dfrac{88}{3}$ cm

Perimeter of the whole diagram

$= \dfrac{88}{3} + 14 \times 3$

$= 71\dfrac{1}{3}$ cm

(ii) Area of ΔOAB

$= \dfrac{1}{2} \times 14 \times 12.12$

$= 84.84$ cm^2

Area of sector OBC

$= \dfrac{\theta}{360°} \times \pi r^2$

$= \dfrac{120°}{360°} \times \dfrac{22}{7} \times 14^2$

$= 205.33$ cm^2

Area of whole diagram

$= 84.84 + 205.33$

$= 290.2$ cm^2

2 (a) $CD = 6$ cm

$OC = \sqrt{4^2 + 3^2}$

$= 5$ cm

Thus, the radius of the circle is 5 cm.

(b) (i) Area of shaded region

$=$ Area of sector $OPQR -$

Area of semicircle

$= \left(\dfrac{240°}{360°} \times \dfrac{22}{7} \times 14^2 \right) -$

$\left(\dfrac{1}{2} \times \dfrac{22}{7} \times 7^2 \right)$

$= 410\dfrac{2}{3} - 77$

$= 333\dfrac{2}{3}$ cm^2

(ii) Length of arc PQR

$= \dfrac{240°}{360°} \times 2 \times \dfrac{22}{7} \times 14$

$= 58\dfrac{2}{3}$ cm

Length of arc OSR

$= \dfrac{180°}{360°} \times 2 \times \dfrac{22}{7} \times 7$

$= 22$ cm

Perimeter of shaded region

$= 58\dfrac{2}{3} + 22 + 14$

$= 94\dfrac{2}{3}$ cm