

Fully-Worked Solutions

PRACTICE 6

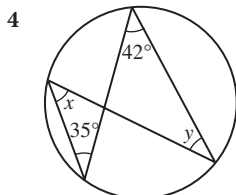
Formative Practice

- 1
- (a)  Angle at the circumference subtended by arc AD.
- (b)  Angle at the centre subtended by arc AD.
- (c)  Angle at the circumference subtended by arc AC.
- (d)  Angle at the circumference subtended by arc BC.

- 2 A Correct
B Wrong
C Correct
D Correct

Answer: B

- 3 (a) θ is the angle at the centre subtended by the minor arc PQ.
- (b) (i) Angles subtended by the minor arc PQ at the circumference are $\angle PRQ$ and $\angle PSQ$.
(ii) Angles subtended by the minor arc RS at the circumference are $\angle RPS$ and $\angle RQS$.
- (c) (i) $\theta = 2 \times \angle PRQ$
(ii) $\angle PSQ = \frac{1}{2} \times \theta$
(iii) $\angle RPS = \angle RQS$



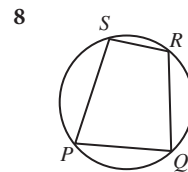
$$x = 42^\circ, y = 35^\circ$$

- 5 (a) ✓ (b) ✓ (c) ✗

- 6 A Wrong
B Wrong
C Correct
D Wrong

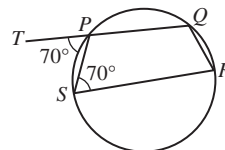
Answer: C

- 7 (a) $\angle BAD = 90^\circ$
 $x + 38^\circ = 90^\circ$
 $x = 52^\circ$
(b) $y + 25^\circ = 38^\circ$
 $y = 13^\circ$
(c) $\angle BOC = 180^\circ - 25^\circ - 25^\circ$
 $= 130^\circ$
 $z = \frac{1}{2} \times 130^\circ$
 $= 65^\circ$



Answer: B

- 9 (a) ACDE is the cyclic quadrilateral.
(b) $s + u = 180^\circ$
 $t + v = 180^\circ$
- 10 (a) $a + d = 180^\circ$
(b) $b + f = 180^\circ$
(c) $c + d \neq 180^\circ$
(d) $h + f \neq 180^\circ$
- 11 (a) $140^\circ + 40^\circ = 180^\circ$ [✓]
(b)



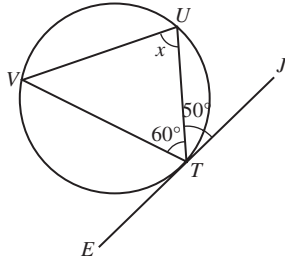
$$\angle TPS = \angle QRS$$

$$\angle TPS = \angle PSR \quad [\text{✗}]$$

- 12 $\angle PRQ = 43^\circ$
 $\angle QPS + \angle QRS = 180^\circ$
 $(55^\circ + x) + (35^\circ + 43^\circ) = 180^\circ$
 $x = 47^\circ$

- 13 $x + 57^\circ = 180^\circ$
 $x = 123^\circ$
 $2y = 74^\circ$
 $y = 37^\circ$

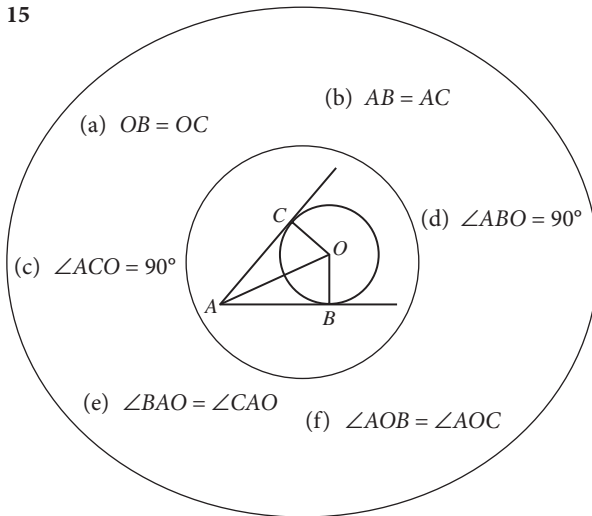
14



$$\begin{aligned}\angle ETV &= 180^\circ - 60^\circ - 50^\circ \\ &= 70^\circ \\ x &= 70^\circ\end{aligned}$$

Answer: A

15



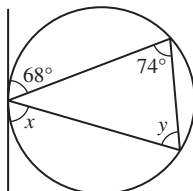
16 Tangents to the circle are CD and GH.

17 (a)

Angle between tangent and chord	Angle in alternate segment subtended by chord
(i) a	d
(ii) b	c

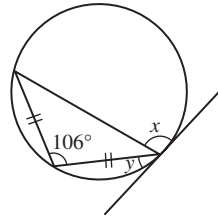
(b) (i) $a = d$ (ii) $b = c$

18 (a)



- (i) $x = 74^\circ$ [✓]
(ii) $y = 68^\circ$ [✓]

(b)



(i) $x = 106^\circ$ [✓]

$$\begin{aligned}\text{(ii) } y &= \frac{1}{2}(180^\circ - 106^\circ) \\ &= 37^\circ \quad [\text{X}]\end{aligned}$$

19 (a) $2x = 32^\circ$

$x = 16^\circ$

(b) $y + 50^\circ = 62^\circ$

$y = 12^\circ$

20 (a) $\angle HKL = 90^\circ - 58^\circ$

$x = 32^\circ$

(b) $\angle KLP = \angle LKP = 58^\circ$

$y + 58^\circ + 58^\circ = 180^\circ$

$y + 116^\circ = 180^\circ$

$y = 64^\circ$

21 $\angle PRQ = 180^\circ - 150^\circ$

$= 30^\circ$

$x = 25^\circ + 30^\circ$

$= 55^\circ$

Reflex angle POQ

$= 360^\circ - 150^\circ$

$= 210^\circ$

$\angle PSQ = \frac{1}{2} \times 210^\circ$

$= 105^\circ$

$\angle OPS = 90^\circ - 25^\circ$

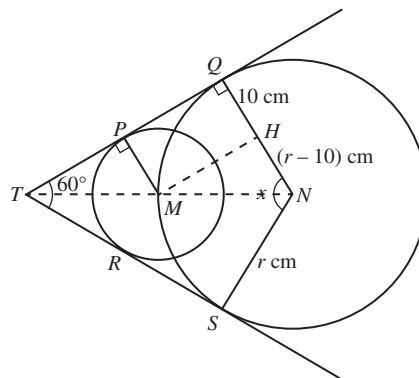
$= 65^\circ$

$y + 105^\circ + 65^\circ + 150^\circ = 360^\circ$

$y + 320^\circ = 360^\circ$

$y = 40^\circ$

22



(a) $x + 60^\circ = 180^\circ$

$x = 120^\circ$

(b) $\angle MNQ = 60^\circ$

$HQ = MP = 10 \text{ cm}$

$$\cos \angle MNQ = \frac{HN}{MN}$$

$$\cos 60^\circ = \frac{r - 10}{r}$$

$$\frac{1}{2} = \frac{r - 10}{r}$$

$$r = 2(r - 10)$$

$$r = 2r - 20$$

$$r = 20$$

The radius of the circle with centre N is 20 cm.

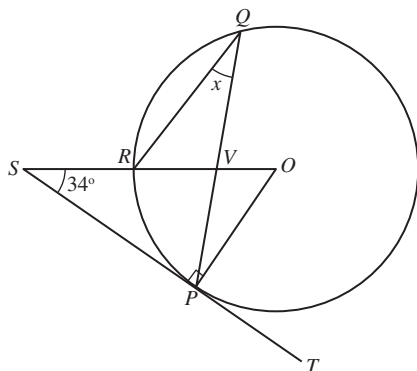
(c) $\tan \angle TNQ = \frac{QT}{NQ}$

$$\tan 60^\circ = \frac{QT}{20}$$

$$QT = 20 \times \tan 60^\circ$$

$$= 34.64 \text{ cm}$$

23



$$\angle POS = 90^\circ - 34^\circ$$

$$= 56^\circ$$

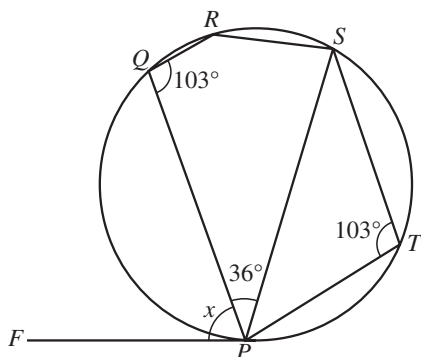
$$\angle PQR = \frac{1}{2} \times \angle POS$$

$$x = \frac{1}{2} \times 56^\circ$$

$$= 28^\circ$$

Answer: C

24



(a) $\angle FPS = \angle PTS$

$$x + 36^\circ = 103^\circ$$

$$x = 67^\circ$$

(b) $\angle PSR = 180^\circ - 103^\circ$

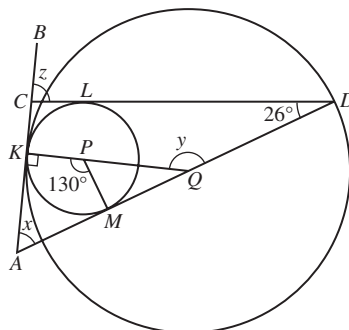
$$= 77^\circ$$

$$\angle FPS + \angle PSR = 103^\circ + 77^\circ$$

$$= 180^\circ$$

$\therefore FP$ is parallel to RS .

25



$$x + 130^\circ = 180^\circ$$

$$x = 50^\circ$$

$$y = x + 90^\circ$$

$$= 50^\circ + 90^\circ$$

$$= 140^\circ$$

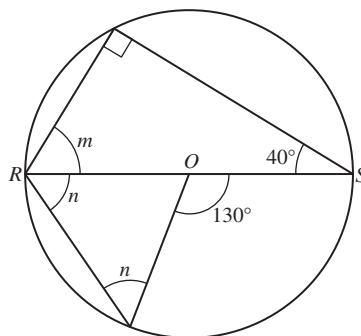
$$z = x + 26^\circ$$

$$= 50^\circ + 26^\circ$$

$$= 76^\circ$$

Summative Practice

1



$$m + 40^\circ = 90^\circ$$

$$m = 50^\circ$$

$$n = \frac{1}{2} \times 130^\circ$$

$$= 65^\circ$$

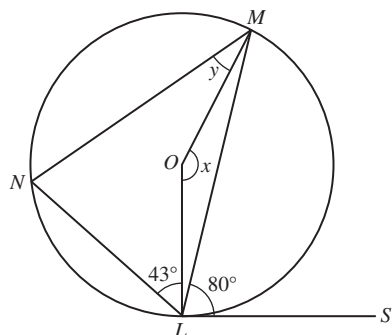
$$m + n = 50^\circ + 65^\circ$$

$$= 115^\circ$$

Answer: B

$$\begin{aligned}
 \text{(b) } x + 100^\circ &= 180^\circ \\
 x &= 80^\circ \\
 (y + 20^\circ) + 110^\circ &= 180^\circ \\
 y + 130^\circ &= 180^\circ \\
 y &= 50^\circ \\
 \angle ADE &= \angle ABE \\
 z &= 20^\circ \\
 w + 100^\circ &= 180^\circ \\
 w &= 80^\circ
 \end{aligned}$$

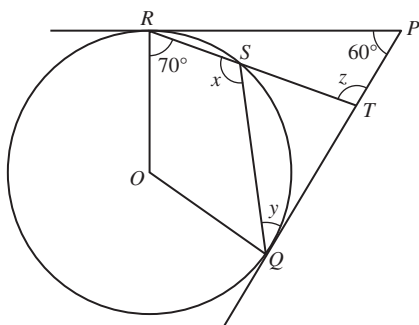
7



$$\begin{aligned}
 \angle LNM &= 80^\circ \\
 \angle LOM &= 2 \times \angle LNM \\
 x &= 2 \times 80^\circ \\
 &= 160^\circ \\
 \angle OLM &= \angle OML \\
 &= 90^\circ - 80^\circ \\
 &= 10^\circ
 \end{aligned}$$

$$\begin{aligned}
 (y + 10^\circ) + (43^\circ + 10^\circ) + 80^\circ &= 180^\circ \\
 y + 143^\circ &= 180^\circ \\
 y &= 37^\circ
 \end{aligned}$$

8



$$\begin{aligned}
 \angle QOR &= 180^\circ - 60^\circ \\
 &= 120^\circ
 \end{aligned}$$

$$\begin{aligned}
 \text{Reflex angle } QOR &= 360^\circ - 120^\circ \\
 &= 240^\circ
 \end{aligned}$$

$$\angle QSR = \frac{1}{2} \times 240^\circ$$

$$x = 120^\circ$$

$$\begin{aligned}
 \angle OQS &= 360^\circ - 120^\circ - 70^\circ - 120^\circ \\
 &= 50^\circ
 \end{aligned}$$

$$y = 90^\circ - 50^\circ$$

$$= 40^\circ$$

$$\angle PRT = 90^\circ - 70^\circ$$

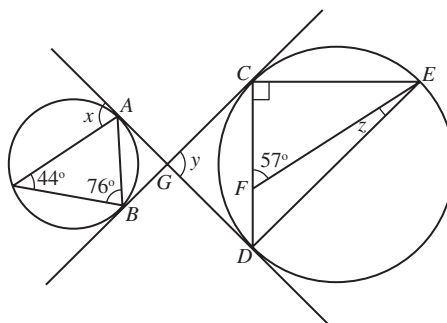
$$= 20^\circ$$

$$z + 20^\circ + 60^\circ = 180^\circ$$

$$z + 80^\circ = 180^\circ$$

$$z = 100^\circ$$

9



$$x = 76^\circ$$

$$\angle BAG = \angle ABG = 44^\circ$$

$$y = 180^\circ - 44^\circ - 44^\circ$$

$$= 92^\circ$$

$$\angle DCG = 44^\circ$$

$$\angle CEF = 90^\circ - 57^\circ$$

$$= 33^\circ$$

$$z + 33^\circ = 44^\circ$$

$$z = 11^\circ$$