

## CHAPTER 8: CIRCLES III

### Paper 1

#### Solution to Question 24

$$\begin{aligned} \angle DOB &= 180^\circ - 50^\circ && \leftarrow \text{AD and AB are tangents to the circle.} \\ &= 130^\circ \end{aligned}$$

$$\begin{aligned} \angle DCB &= \frac{130^\circ}{2} && \leftarrow \text{The angle at the circumference is half the angle at the centre.} \\ &= 65^\circ \end{aligned}$$

$$\begin{aligned} \angle ECB &= \angle EBA && \leftarrow \text{Angle in the alternate segment} \\ &= 46^\circ \end{aligned}$$

$$\begin{aligned} \text{Thus, } x + 46^\circ &= 65^\circ \\ x &= 19^\circ \end{aligned}$$

Answer: C

#### Solution to Question 29

$$\begin{aligned} \angle CBD &= \angle CDB && \leftarrow \triangle BCD \text{ is isosceles.} \\ &= \angle EDH && \leftarrow \text{vertically opposite angles} \\ &= \angle EAH && \leftarrow \text{angles subtended by the same arc} \\ &= 58^\circ \end{aligned}$$

$$\begin{aligned} y = \angle CBD & && \leftarrow \text{angle in the alternate segment} \\ &= 58^\circ \end{aligned}$$

$$\angle GBA = 20^\circ \leftarrow \text{angle in the alternate segment}$$

$$\begin{aligned} \text{Thus } 20^\circ + x + 58^\circ + 58^\circ &= 180^\circ && \leftarrow \text{angles on a straight line} \\ x + 136^\circ &= 180^\circ \\ x &= 44^\circ \end{aligned}$$

Answer: A

**Solution to Question 30**

$\angle FEP = 40^\circ$  ← angle in the alternate segment

$\angle GEP = 90^\circ$  ← property of tangent to a circle

Therefore,  $\angle FEG = 90^\circ - 40^\circ$   
 $= 50^\circ$

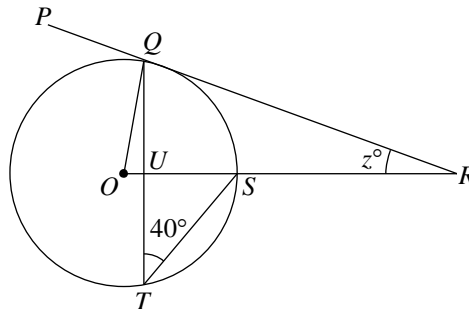
Thus,  $\angle ABC = 180^\circ - 50^\circ$  ← property of a cyclic quadrilateral  
 $= 130^\circ$

*Answer:* **B**

 **Paper 1**

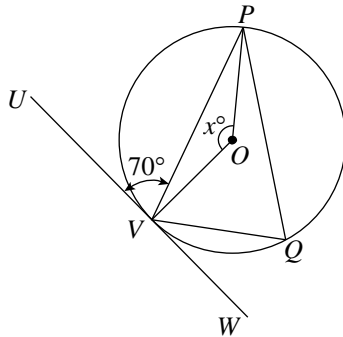
1. In the diagram,  $PQR$  is a tangent to the circle with centre  $O$  at  $Q$ .  $QUT$  and  $OUSR$  are straight lines.

Clone  
SPM  
2006



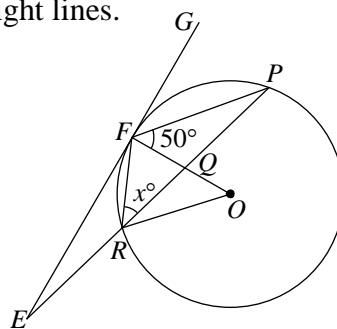
The value of  $z$  is

- |          |    |          |    |
|----------|----|----------|----|
| <b>A</b> | 10 | <b>C</b> | 30 |
| <b>B</b> | 20 | <b>D</b> | 40 |
2. In the diagram,  $UVW$  is a tangent to the circle with centre  $O$  at  $V$ .



Find the value of  $x$ .

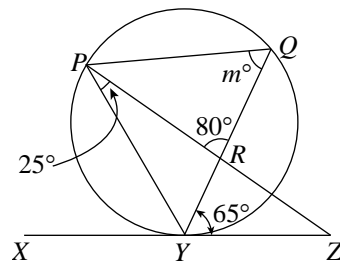
- |          |     |          |     |
|----------|-----|----------|-----|
| <b>A</b> | 100 | <b>C</b> | 130 |
| <b>B</b> | 110 | <b>D</b> | 140 |
3. The diagram shows a circle with centre  $O$  and  $EFG$  is a tangent to the circle at  $F$ .  $FQO$  and  $ERQP$  are straight lines.



The value of  $x$  is

- |          |    |          |    |
|----------|----|----------|----|
| <b>A</b> | 25 | <b>C</b> | 40 |
| <b>B</b> | 35 | <b>D</b> | 45 |

4. In the diagram,  $XYZ$  is a tangent to the circle at  $Y$ . The line  $PZ$  intersects the chord  $YQ$  at  $R$ .



Find the value of  $m$ .

- |          |    |          |    |
|----------|----|----------|----|
| <b>A</b> | 50 | <b>C</b> | 70 |
| <b>B</b> | 60 | <b>D</b> | 80 |