Walking Talking - Circle Theorems

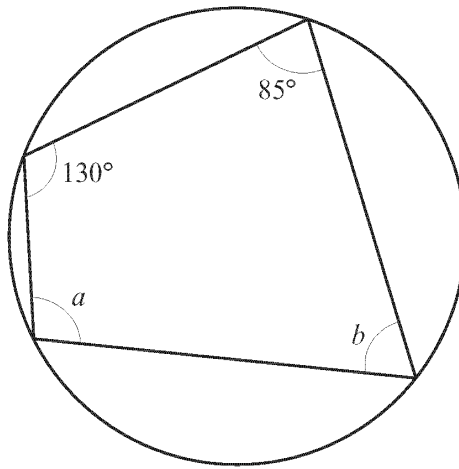**1.**

Diagram not drawn to scale

Giving a reason for your answers, calculate the size of the angles marked *a* and *b* in the diagram.

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$$a = \text{................}° \qquad b = \text{................}°$$

[3]

2.

The diagram shows a circle with centre O.
The straight lines AC and CE are tangents to the circle at B and D respectively.
$B\hat{F}D = 78°$.

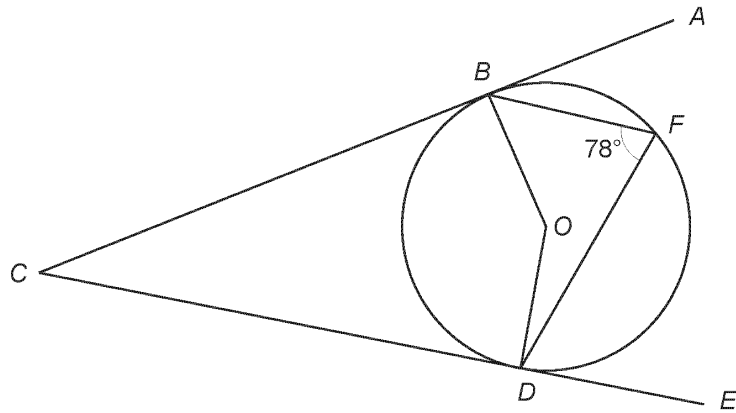*Diagram not drawn to scale*

Find the size of $B\hat{C}D$. You **must** give reasons in your solution. [4]

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3.

The diagram shows a circle with centre O.
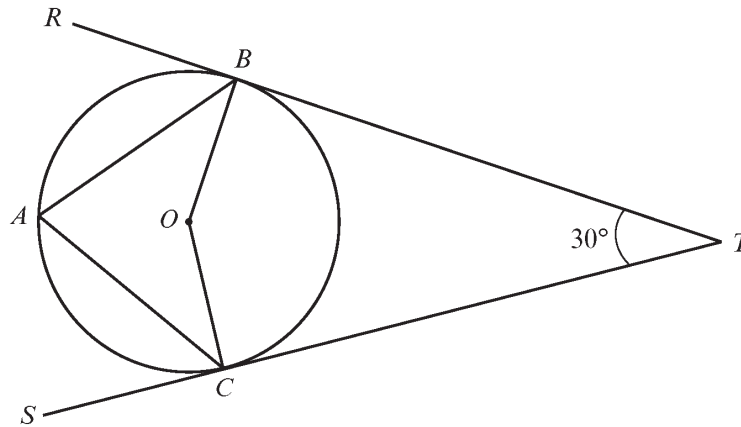The straight lines RT and ST are tangents to the circle, meeting the circle at B and C respectively.

Diagram not drawn to scale

Given that $B\widehat{T}C = 30°$, calculate the size of $B\widehat{A}C$.
You must give reasons in your solution.

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[4]

4.

The points *A*, *B*, *C* and *D* lie on the circumference of a circle, centre *O*.
EF is a tangent to the circle at *C*.
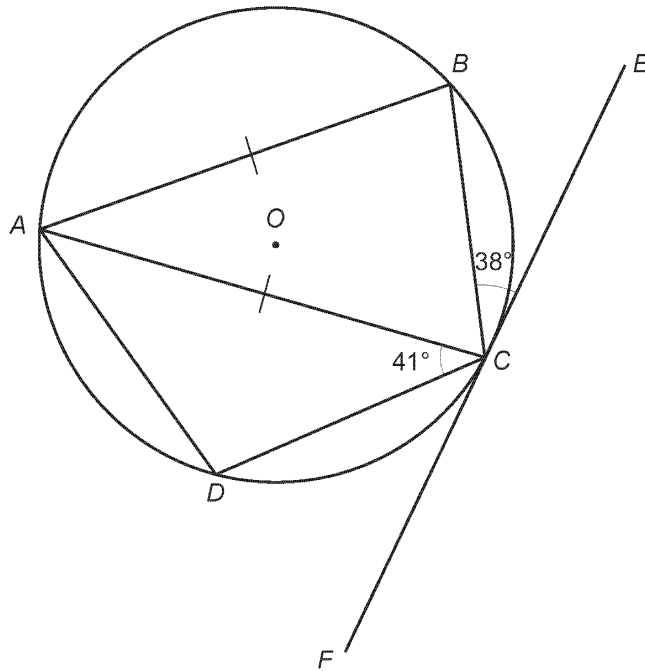*AB* = *AC*.
$\hat{BCE} = 38°$ and $\hat{ACD} = 41°$.

Diagram not drawn to scale

Write down the size of

(a) $\hat{BAC}$ [1]

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(b) $\hat{ABC}$ [1]

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(c) $\hat{ADC}$ [1]

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(d) $C\hat{O}B$ [1]

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5.

The diagram shows a circle with centre O and a tangent PT that touches the circle at C.
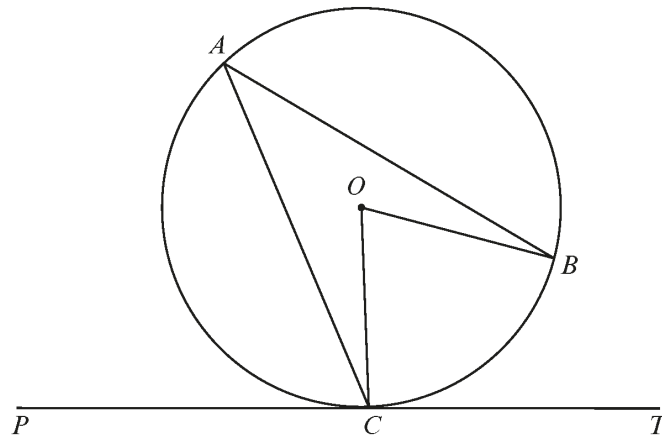

Diagram not drawn to scale

The reflex angle at the centre of the circle is 280°.
Find the size of each of the following angles.
You must give a reason for each answer.

(a) $B\hat{A}C$

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(b) $B\hat{C}P$

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6.

The points A, B, C and D lie on the circumference of the circle with centre O.
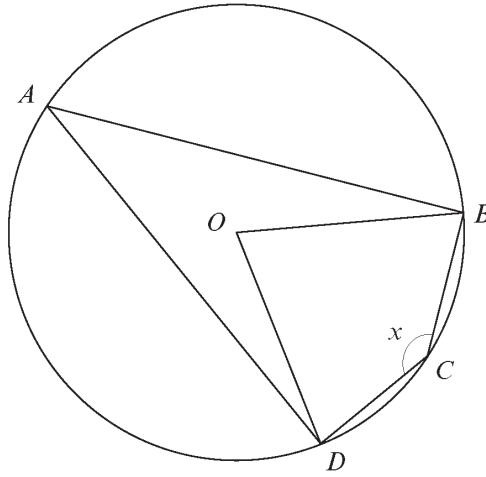$B\widehat{C}D = x$, where x is measured in degrees.

Diagram not drawn to scale

Show, giving reasons in your answer, that the size of $D\widehat{O}B$ in degrees is $360 - 2x$.

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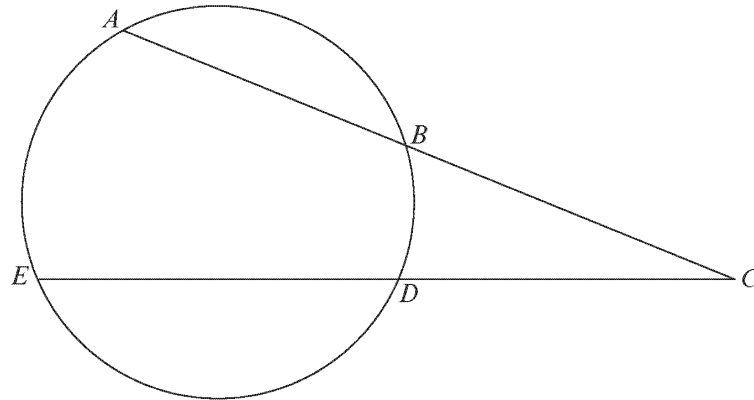The diagram shows a circle with $BC = 30\,\text{cm}$, $AB = 50\,\text{cm}$ and $CD = 25\,\text{cm}$.

Diagram is not drawn to scale

Calculate the length of *ED*.

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[4]

8.

The three points A, B and C lie on the circumference of a circle centre O.
The tangent XAY touches the circle at A.

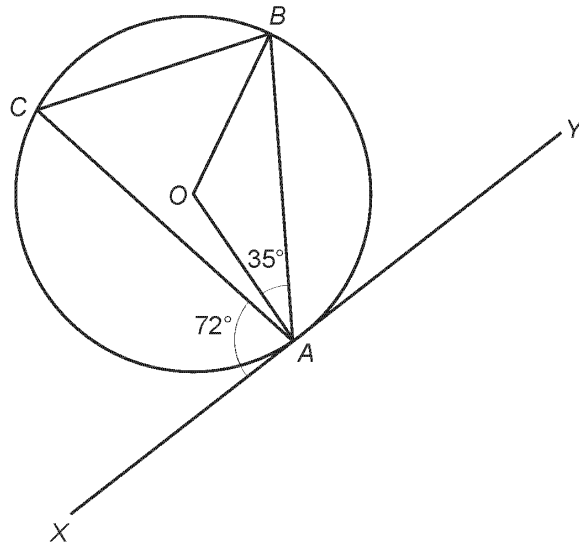*Diagram not drawn to scale*

Find each of the following angles.
Give reasons for your answers.

(a) $C\hat{B}O$ [2]

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(b) $B\hat{C}A$ [2]

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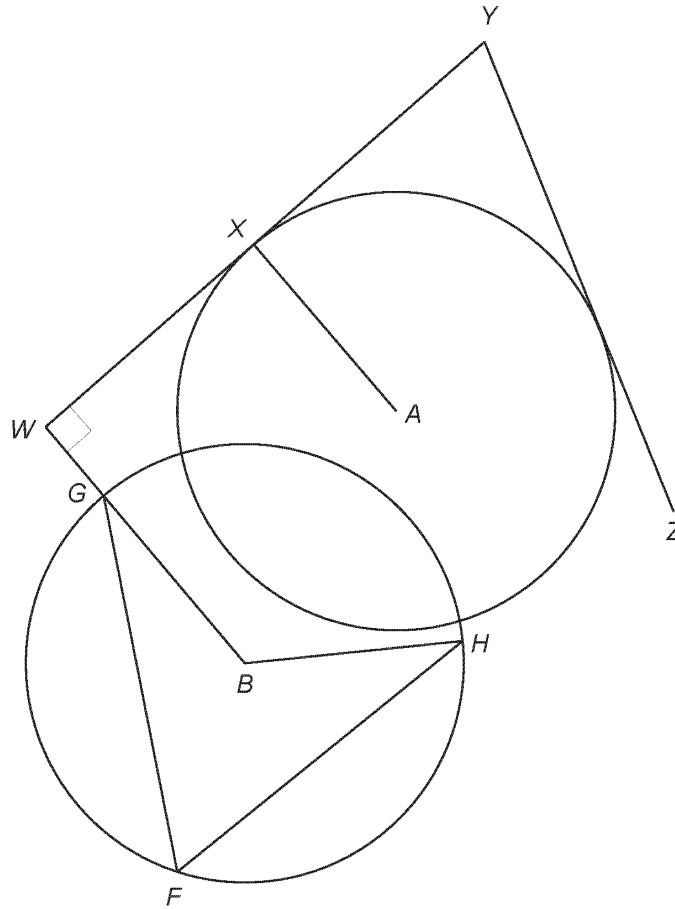Two circles of equal radius intersect as shown in the diagram below.

Diagram not drawn to scale

The centres of the circles are *A* and *B*.
The straight lines *WXY* and *YZ* are tangents to the circle with centre *A* and $G\hat{F}H = 80°$.

(a) Indicate on one of the lines on the diagram on the previous page, where the point *P* lies, so that *YP* = *YX*. [1]

(b) Explain why *XA* is parallel to *WB*. [2]

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(c) Given that a straight line drawn between the centres of the two circles bisects $H\hat{B}G$, calculate the size of $X\hat{A}B$. You must give reasons for your answer. [4]

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10.

The points *A* and *B* lie on the circumference of a circle with centre *O*.
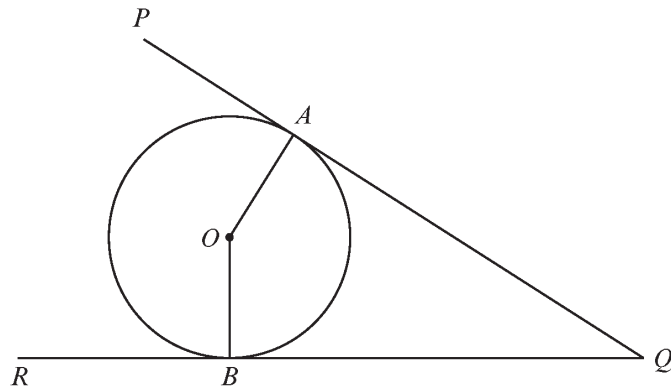The straight lines *PAQ* and *RBQ* are tangents to the circle.

Diagram not drawn to scale

You are given that $A\hat{Q}B = 2x$, where *x* is measured in degrees.

Write down the size of $A\hat{O}Q$ in terms of *x*.
Give reasons in your answer.

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