

Circle Theorems

Please write clearly in block capitals

Forename:

Surname:

Materials

For this paper you must have:

- mathematical instruments



You **can** use a calculator.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

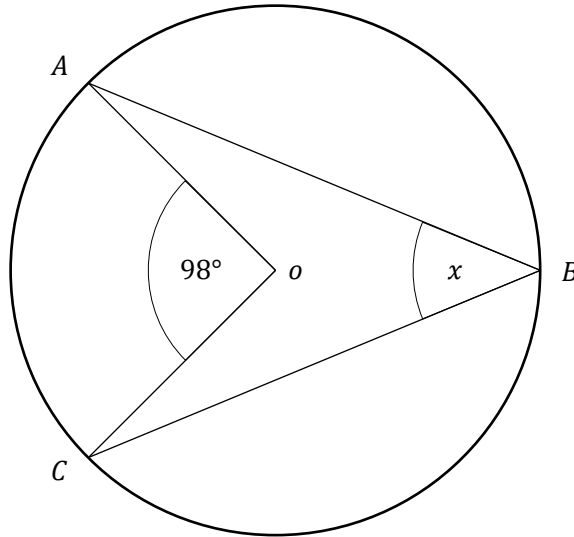
Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

- In all calculations, show clearly how you work out your answer.

- 1 Points A , B , and C are all on the circumference of the circle.
 O represents the centre.



Not drawn
accurately

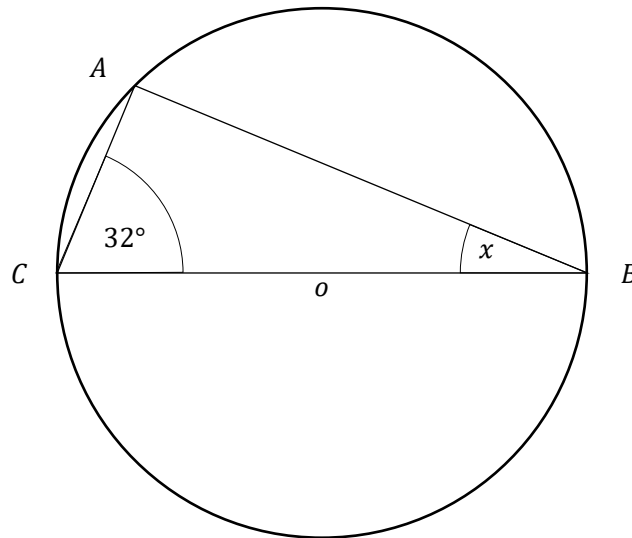
Calculate the angle x , giving a reason for your answer.

[2 marks]

Answer _____

Turn over for next question

- 2 Points A , B , and C lie on the circumference of a circle.
The line BC passes through the centre of the circle, O .



Not drawn
accurately

Calculate the angle x , giving your reasoning for each step.

[2 marks]

Answer _____



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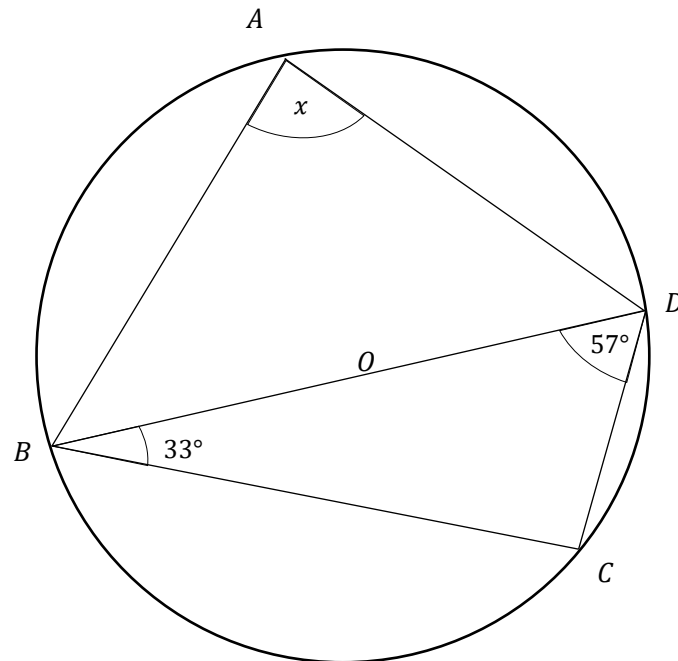
Turn over ►

3

The diagram below shows a cyclic quadrilateral $ABCD$.

Points A, B, C and D touch the circumference of the circle.

Line BD goes through centre O .



Not drawn
accurately

Work out the size of the angle marked x .

Explain your reasoning carefully.

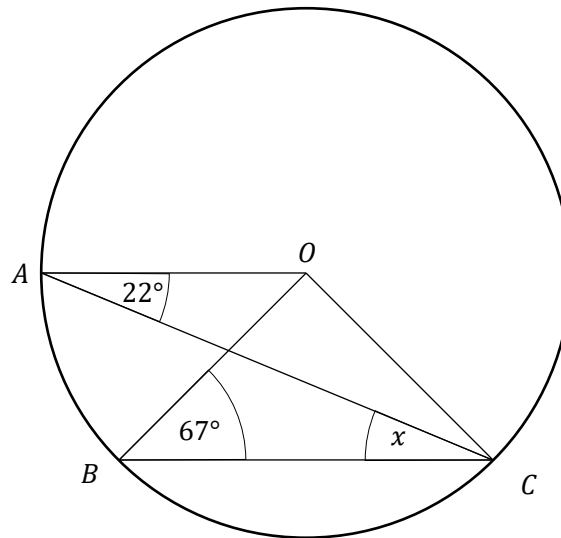
[2 marks]

Answer _____

4

Points A , B , and C are all on the circumference of a circle.

O represents the centre.



Not drawn
accurately

Calculate the angle x , giving your reasoning for each step.

[2 marks]

Answer _____

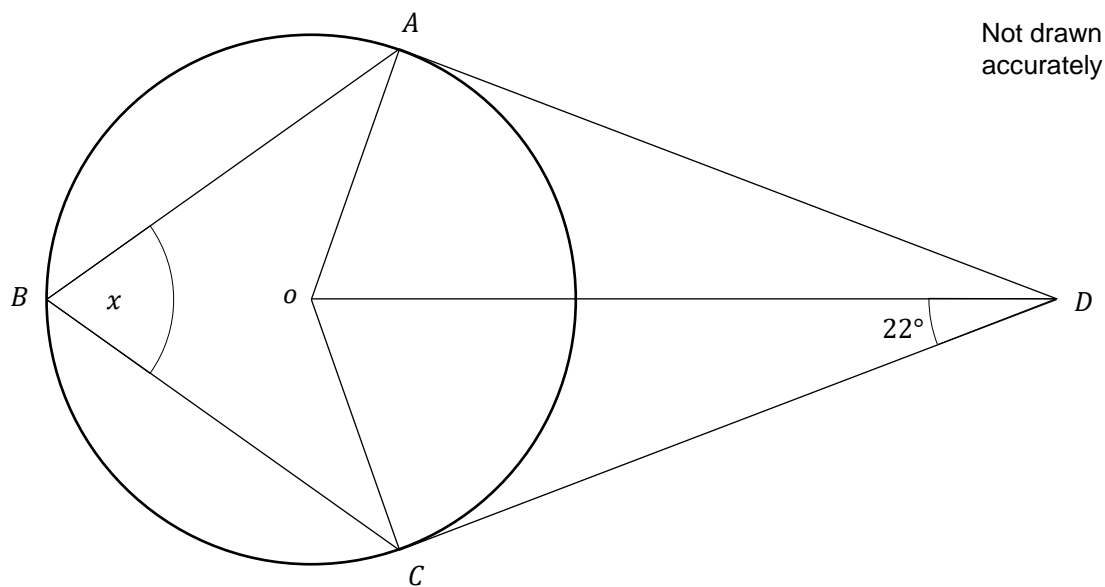
Turn over for next question

5 Points A , B , and C are all on the circumference of the circle.

O represents the centre.

DA and DC are tangents to the circle.

Angle $CDO = 22^\circ$



Calculate the angle x , giving your reasoning for each step.

[4 marks]

Answer _____

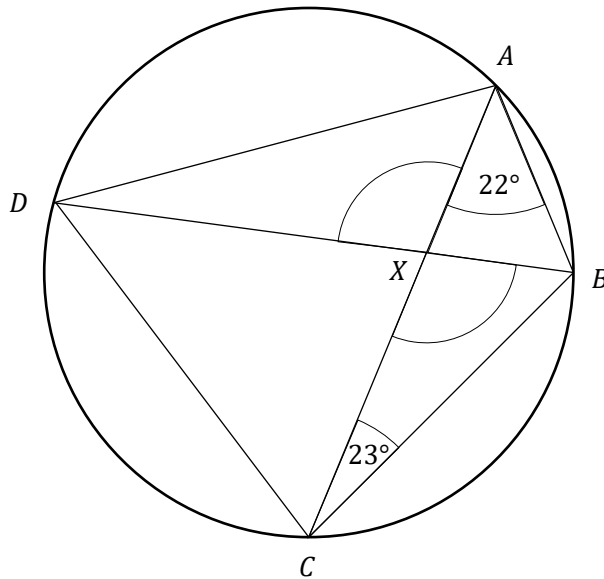
- 6** Points A , B , C , and D are all on the circumference of the circle and DB is the diameter.

Point X is the intersection between line AC and line DB

$$\text{Angle } CXB = 110^\circ$$

$$\text{Angle } XAB = 22^\circ$$

$$\text{Angle } BCX = 23^\circ$$



Not drawn
accurately

- 6(a)** Calculate the angle XBC

[1 mark]

Answer _____

- 6(b)** Calculate the angle DAX
Give a reason for your answer

[2 marks]

Answer _____

Turn over for next question

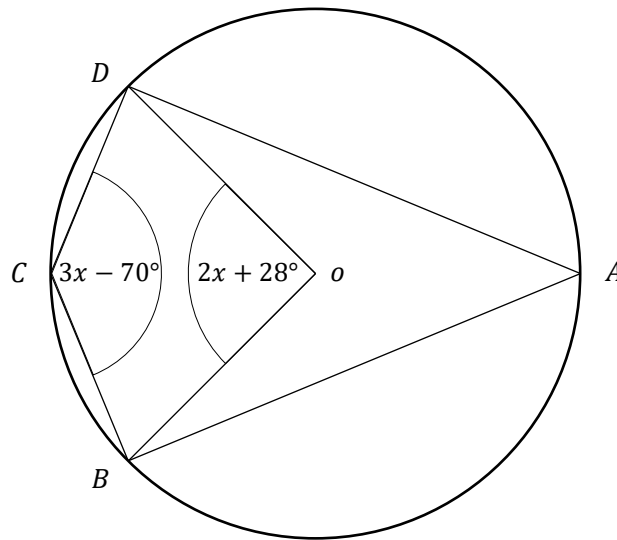
7

Points A , B , and C are all on the circumference of the circle.

O represents the centre.

$$\text{Angle } DOB = 2x + 28$$

$$\text{Angle } DCB = 3x - 70$$



Not drawn
accurately

Calculate the value of x .

[3 marks]

Answer _____



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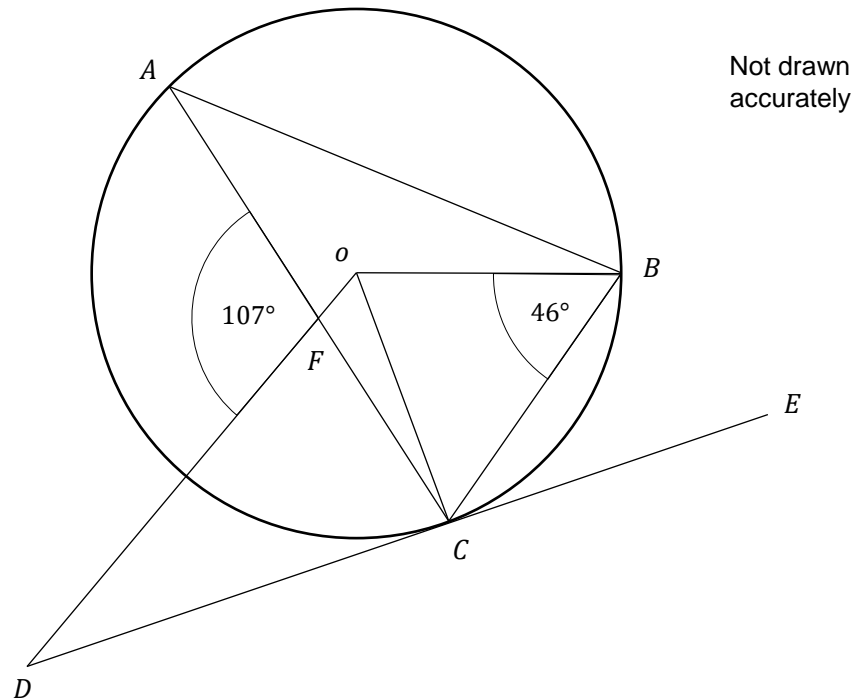


Turn over ►

8 Points A , B and C are on the circumference of a circle, with centre O .

Points C , D and E lie on a tangent line.

$$AB = AC$$



Calculate angle CDO .

[5 marks]

Answer _____

End of Questions