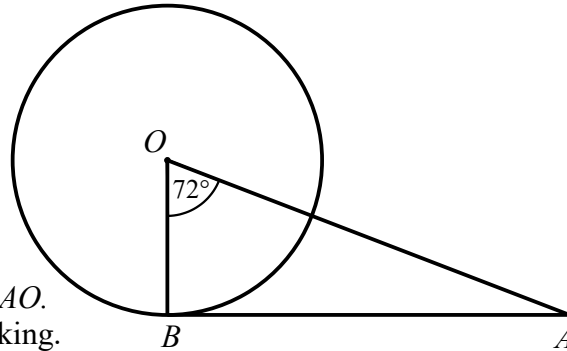


- 1 B is a point on the circumference of a circle, centre O .

AB is a tangent to the circle.

Angle $BOA = 72^\circ$

Work out the size of angle BAO .
You must show all your working.

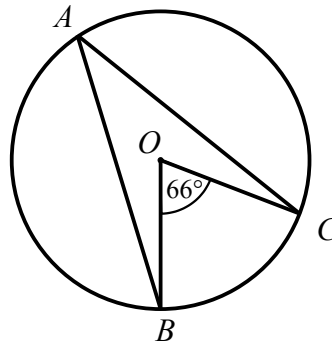


(2 marks)

- 2 A, B, C and D are points on the circumference of a circle.

Angle $BOC = 66^\circ$

Find the size of angle BAC .
Give a reason for your answer.

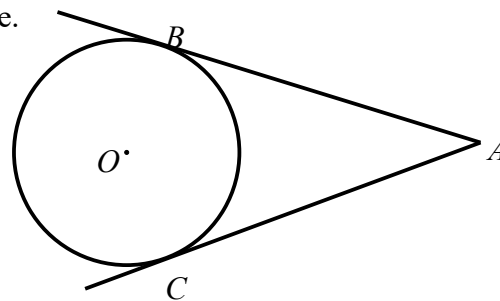


(2 marks)

- 3 B and C are points on a circle, centre O .
 AB and AC are tangents to the circle.

Angle $BAC = 40^\circ$

Work out the size of angle BOC .
You must show all your working.



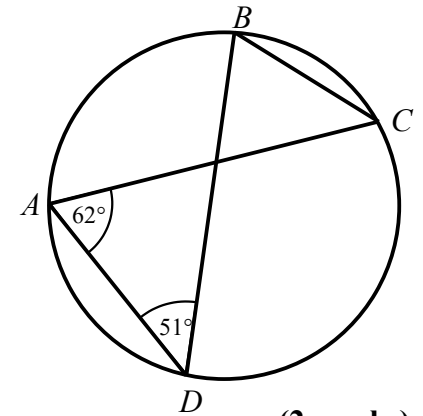
(3 marks)

- 4 A, B, C and D are points on the circumference of a circle.

Angle $CAD = 62^\circ$

Angle $ADB = 51^\circ$

Find the size of angle ACB .
Give a reason for your answer.



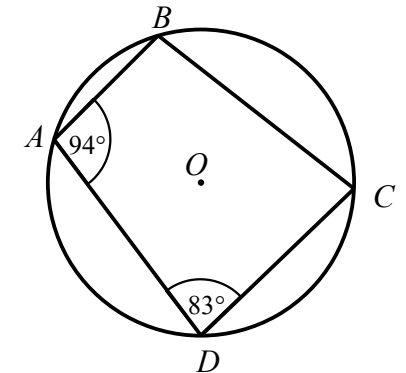
(2 marks)

- 5 A, B, C and D are points on the circumference of a circle.

Angle $BAD = 94^\circ$

Angle $ADC = 83^\circ$

Find the size of angle ABC .
Give a reason for your answer.

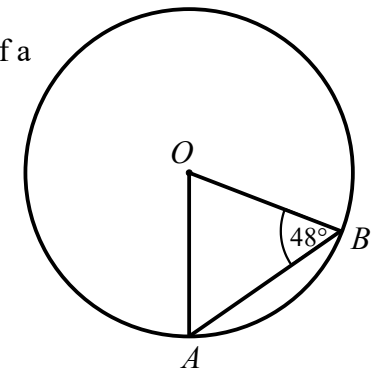


(2 marks)

- 6 A and B are points on the circumference of a circle, centre O .

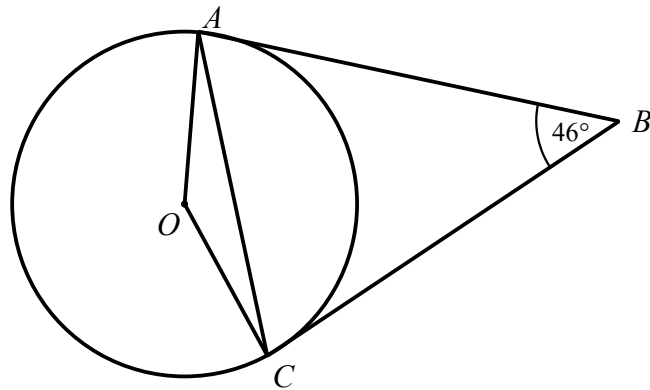
Angle $ABO = 48^\circ$

Find the size of angle AOB .
Give a reason for your answer.



(2 marks)

7



A and C are points on the circumference of a circle, centre O .
 AB and BC are tangents to the circle.

Angle $ABC = 46^\circ$

Find the size of angle OAC .

Give reasons for each stage of your working.

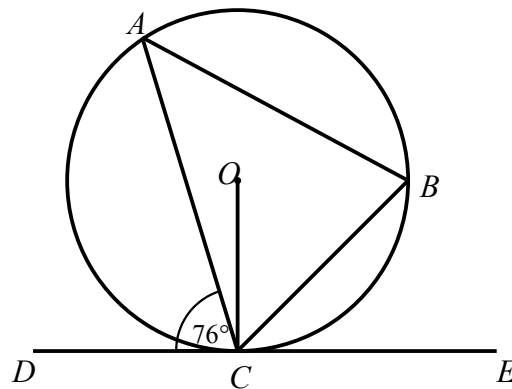
(4 marks)

- 8 A and B are points on the circumference of a circle, centre O .
 DCE is a tangent to the circle.

Angle $ACD = 76^\circ$

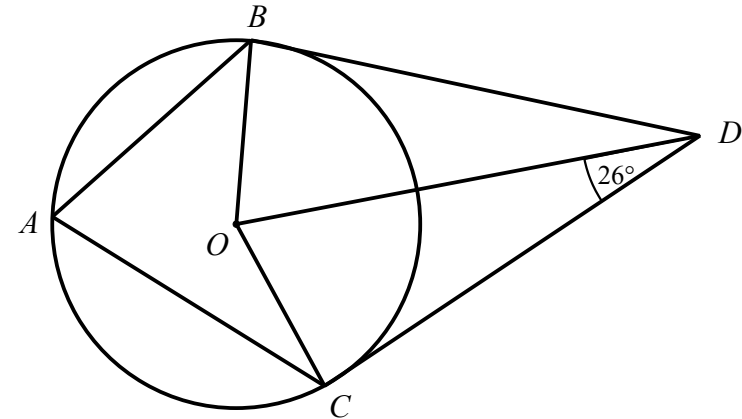
(a) Find the size of angle ACO .
 Give reasons for each stage of your working.

(b) Find the size of angle ABC .
 Give reasons for each stage of your working.



(4 marks)

9



A , B and C are points on the circumference of a circle, centre O .
 BD and CD are tangents to the circle.

Angle $ODC = 26^\circ$

Find the size of angle BAC .

Give reasons for each stage of your working.

(4 marks)

10

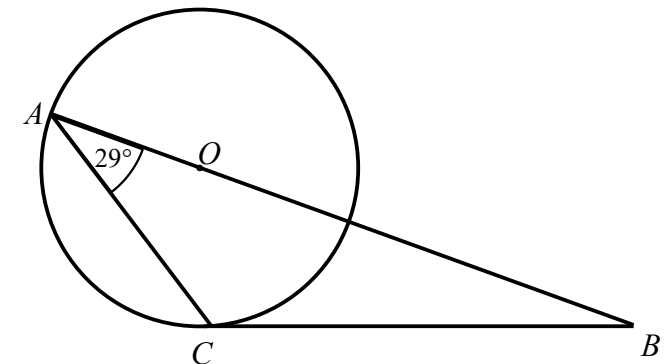
A and C are points on the circumference of a circle, centre O .

BC is a tangent to the circle.

Angle $CAB = 29^\circ$

Find the size of angle ABC .

You must show all your working.

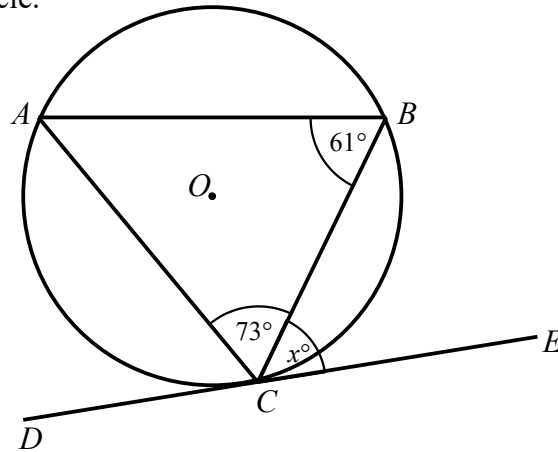


(4 marks)

11

A , B and C are points on the circumference of a circle, centre O .
 DCE is a tangent to the circle.

Angle $ABC = 61^\circ$
 Angle $ACB = 73^\circ$
 Angle $BCE = x^\circ$



Find the value of x .
 Give reasons for each stage of your working.

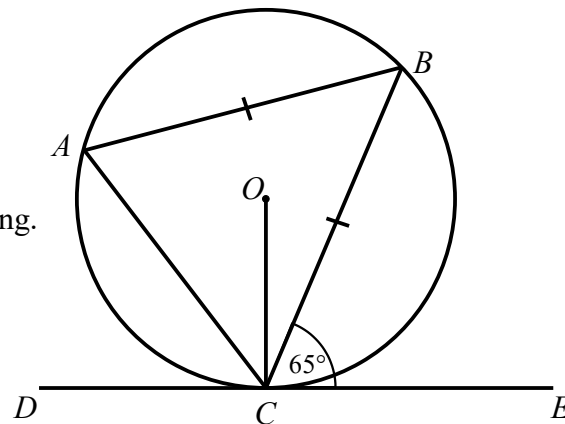
(3 marks)

12

A , B and C are points on the circumference of a circle, centre O .
 DCE is a tangent to the circle.

$AB = BC$
 Angle $BCE = 65^\circ$

Find the size of angle AOC .
 You must show all your working.

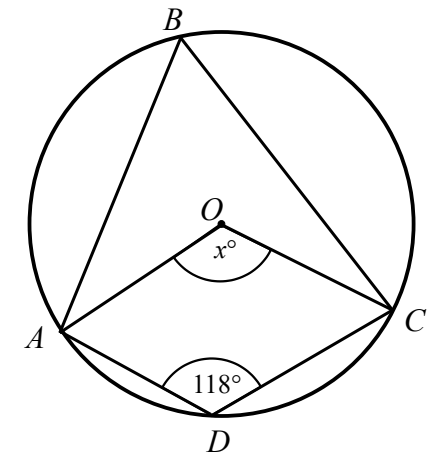
**(4 marks)**

13

A , B , C and D are points on the circumference of a circle, centre O .

Angle $ADC = 118^\circ$
 Angle $AOC = x^\circ$

Work out the value of x .
 You must show all your working.

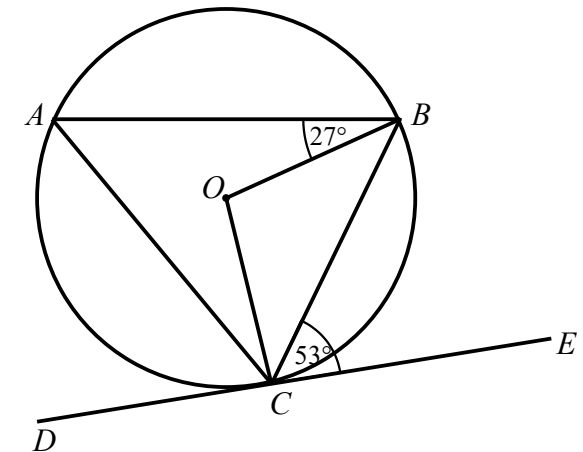
**(3 marks)**

14

A , B and C are points on the circumference of a circle, centre O .
 DCE is a tangent to the circle.

Angle $ABO = 27^\circ$
 Angle $BCE = 53^\circ$

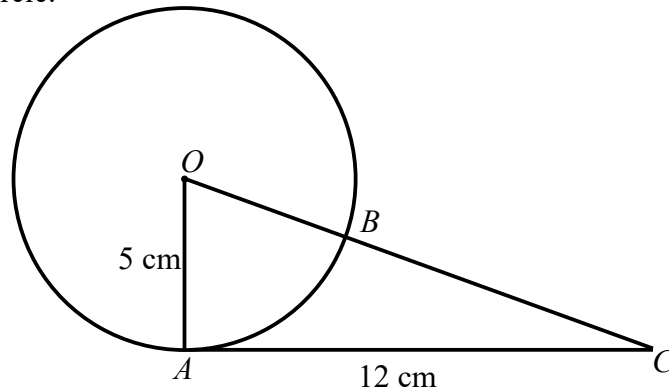
Find the size of angle ACO .
 Give reasons for each stage of your working.

**(4 marks)**

15

A and B are points on the circumference of a circle, centre O .
 AC is a tangent to the circle.
 OBC is a straight line.

$OA = 5$ cm
 $AC = 12$ cm



Find the length of BC .
 You must show all your working.

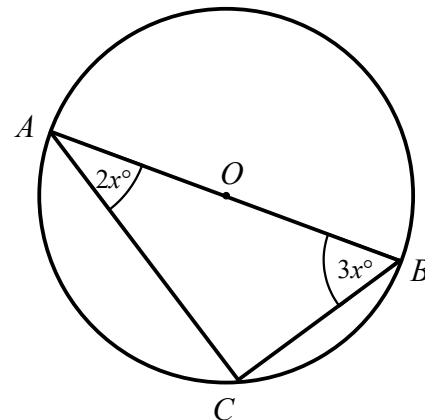
(4 marks)

16

A , B and C are points on the circumference of a circle, centre O .

Angle $CAB = 2x^\circ$
 Angle $ABC = 3x^\circ$

Find the value of x .
 You must show all your working.



(3 marks)

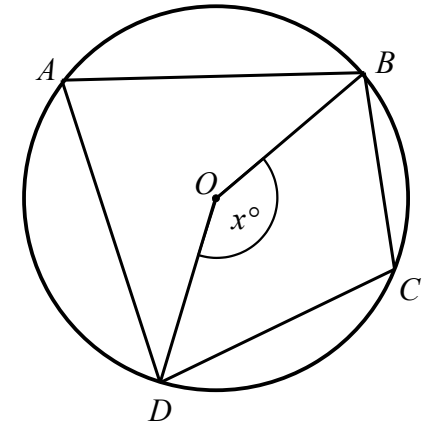
17

A , B , C and D are points on the circumference of a circle, centre O .

Angle $BOD = x^\circ$

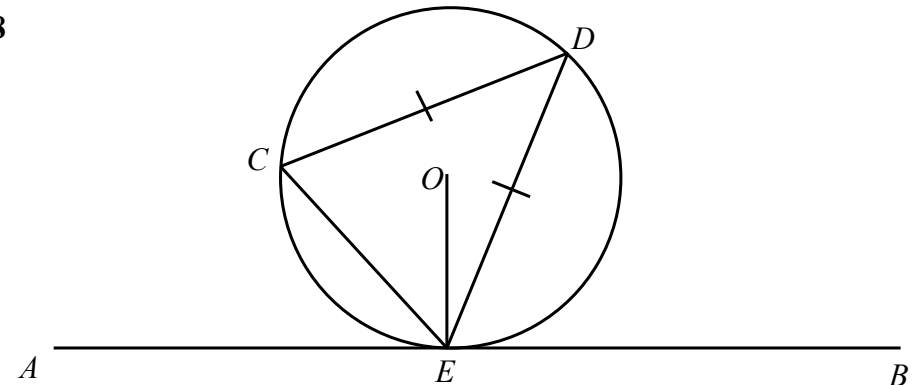
Find the size of angle BCD , in terms of x .

Give reasons for each stage of your working.



(3 marks)

18



C , D and E are points on a circle, centre O .
 AEB is a tangent to the circle at E .

$CD = DE$
 Angle $AEC = x^\circ$

Find the size of angle OED , in terms of x .
 Give reasons for each stage of your working.

(5 marks)