

Name: _____

GCSE (1 – 9)

Circle Theorems

Instructions

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

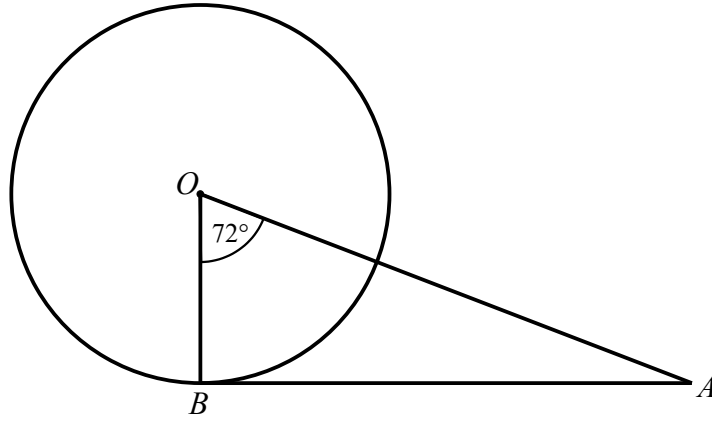
Information

- The marks for each question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end

1



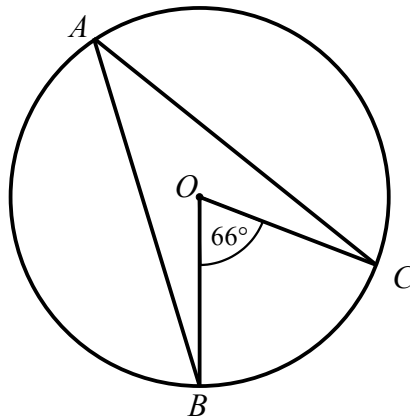
B is a point on the circumference of a circle, centre O .
 AB is a tangent to the circle.

Angle $BOA = 72^\circ$

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

.....
(Total for Question 1 is 2 marks)

2



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

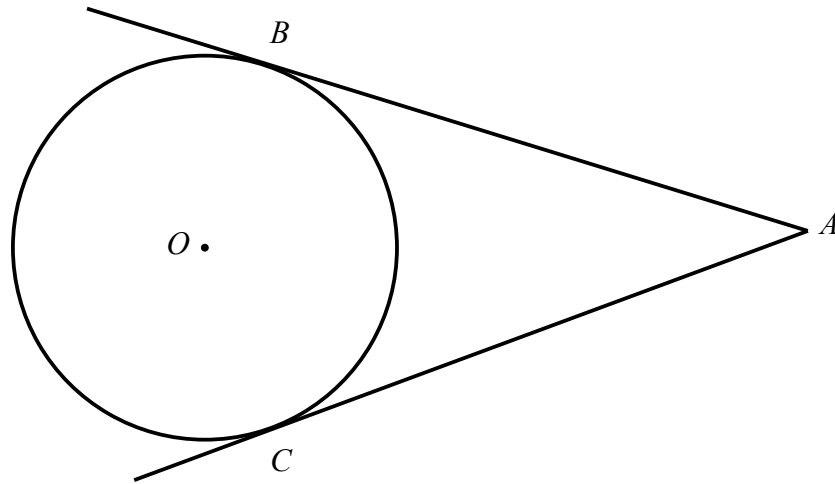
Angle $BOC = 66^\circ$

(i) Find the size of angle BAC .

(ii) Give a reason for your answer.

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.....
(Total for Question 2 is 2 marks)

3



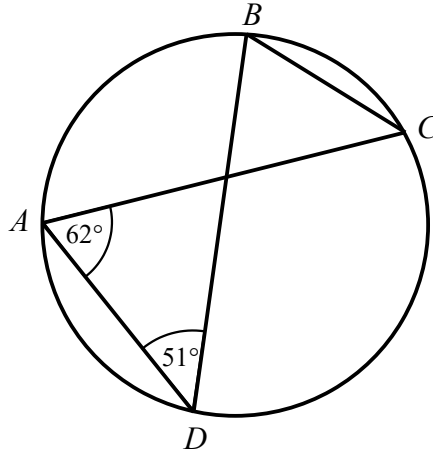
B and C are points on a circle, centre O .
 AB and AC are tangents to the circle.

Angle $BAC = 40^\circ$

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

.....
(Total for Question 3 is 3 marks)

4



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

Angle $CAD = 62^\circ$

Angle $ADB = 51^\circ$

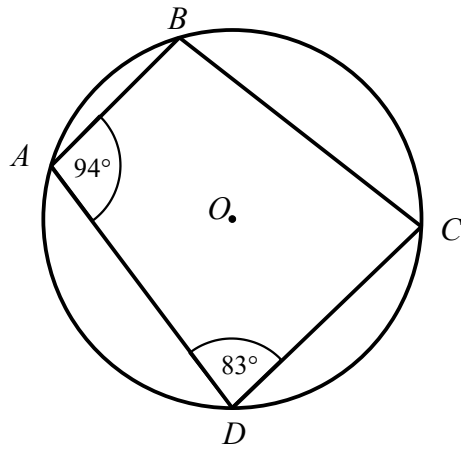
(i) Find the size of angle ACB .

(ii) Give a reason for your answer.

.....
.....

(Total for Question 4 is 2 marks)

5



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

Angle $BAD = 94^\circ$

Angle $ADC = 83^\circ$

(i) Find the size of angle ABC .

o

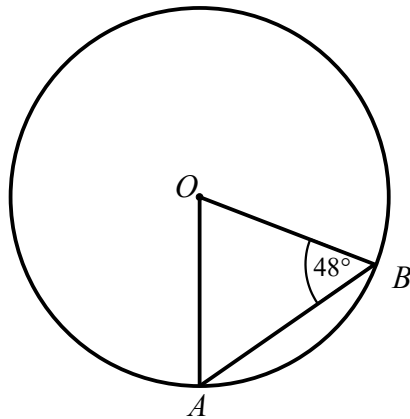
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(ii) Give a reason for your answer.

.....
.....

(Total for Question 5 is 2 marks)

6



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

Angle $ABO = 48^\circ$

(i) Find the size of angle AOB .

o

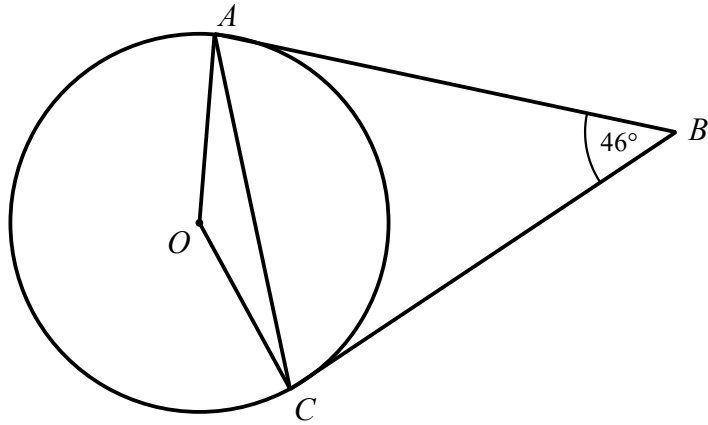
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(ii) Give a reason for your answer.

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.....

(Total for Question 6 is 2 marks)

7



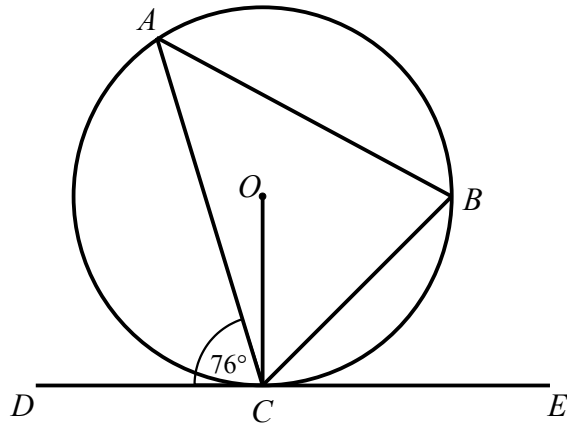
A and C are points on the circumference of a circle, centre O .
 AB and BC are tangents to the circle.

Angle $ABC = 46^\circ$

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

.....
(Total for Question 7 is 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.

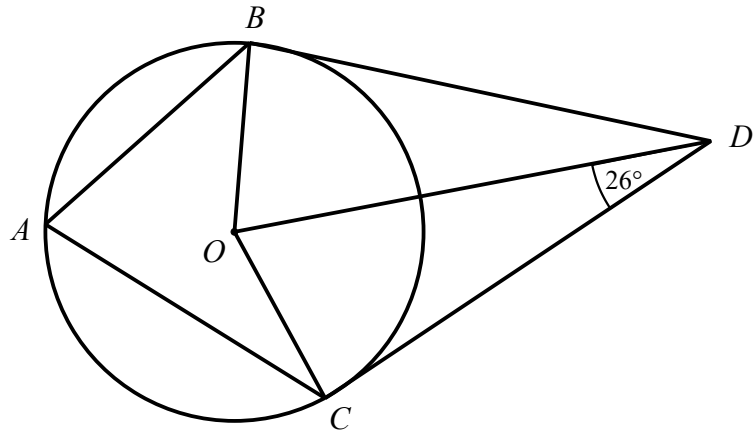
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(2)

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

.....
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(2)

(Total for Question 8 is 4 marks)

9



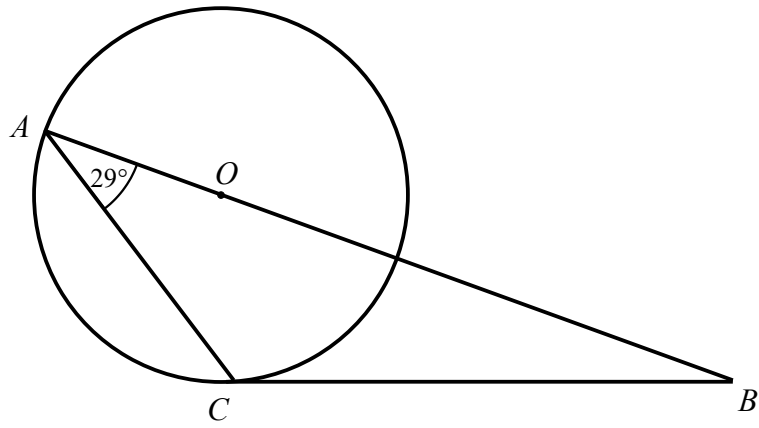
A , B and C are points on the circumference of a circle, centre O .
 BD and CD are tangents to the circle.

Angle $ODC = 26^\circ$

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

.....
(Total for Question 9 is 4 marks)

10



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

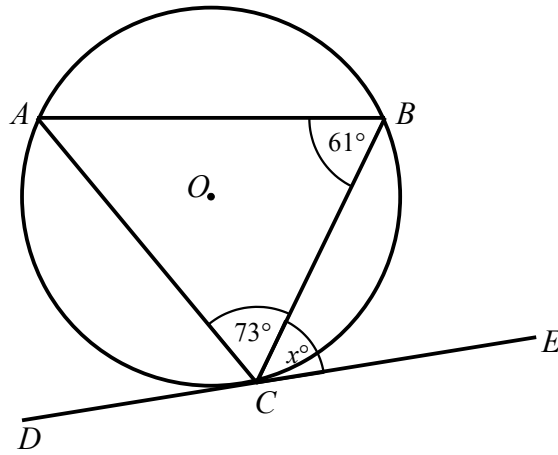
Angle $CAB = 29^\circ$

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

o

.....
(Total for Question 10 is 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 $ABC = 61^\circ$

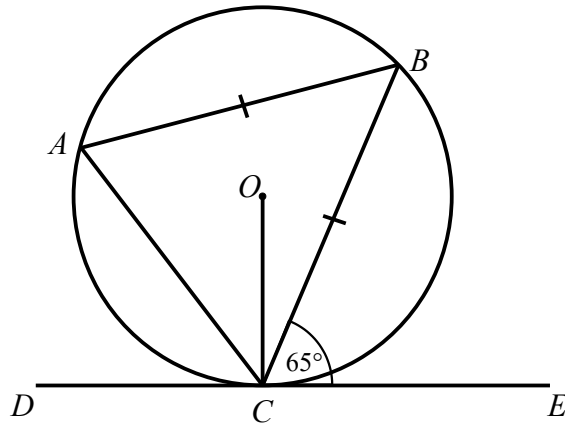
Angle $ACB = 73^\circ$

Angle $BCE = x^\circ$

Find the value of x .

Give reasons for each stage of your working.

.....
(Total for Question 11 is 3 marks)



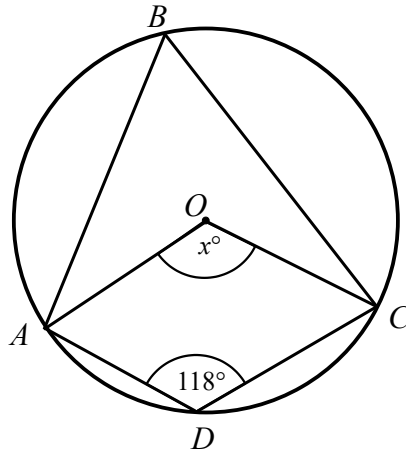
A , B and C are points on the circumference of a circle, centre O .
 DCE is a tangent to the circle.

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

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

.....
 (Total for Question 12 is 4 marks)

13



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

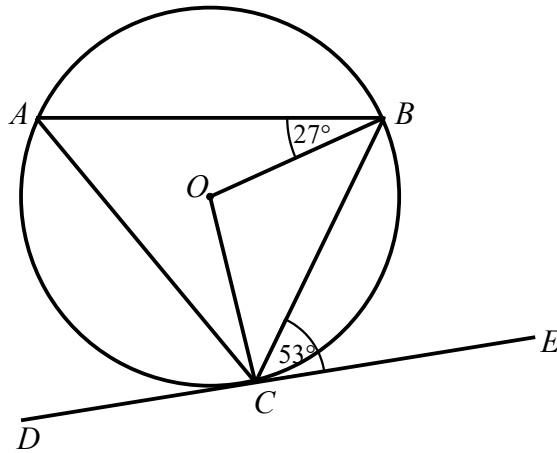
Angle $ADC = 118^\circ$

Angle $AOC = x^\circ$

Work out the value of x .

You must show all your working.

.....
(Total for Question 13 is 3 marks)



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

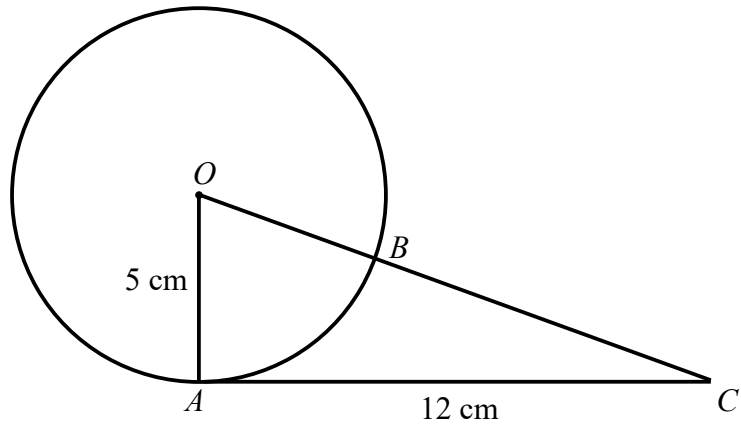
Angle $ABO = 27^\circ$

Angle $BCE = 53^\circ$

Find the size of angle ACO .

Give reasons for each stage of your working.

.....
(Total for Question 14 is 4 marks)



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.

$$OA = 5 \text{ cm}$$

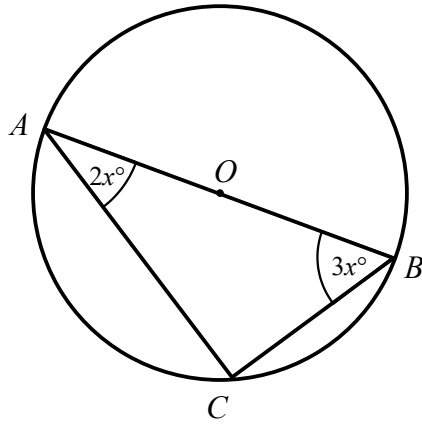
$$AC = 12 \text{ cm}$$

Find the length of BC .

You must show all your working.

..... cm

(Total for Question 15 is 4 marks)



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

$$\text{Angle } CAB = 2x^\circ$$

$$\text{Angle } ABC = 3x^\circ$$

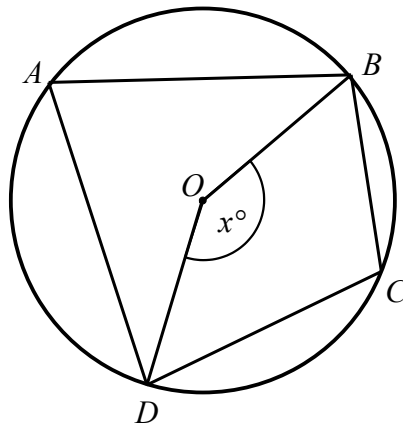
Find the value of x .

You must show all your working.

$$x = \dots\dots\dots$$

(Total for Question 16 is 3 marks)

17

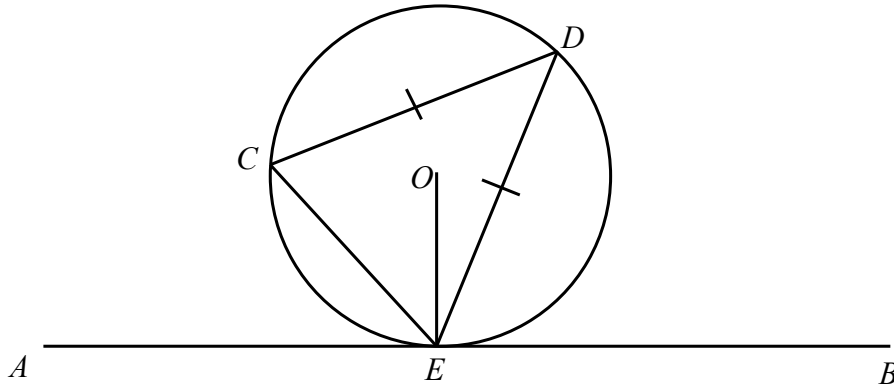


A , B , C and D are points on the circumference of a circle, centre O .

Angle $BOD = x^\circ$

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

(Total for Question 17 is 3 marks)



C , D and E are points on a circle, centre O .
 $AE B$ 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.

(Total for Question 18 is 5 marks)