

Name: \_\_\_\_\_

## GCSE (1 – 9)

# Proof of 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.**

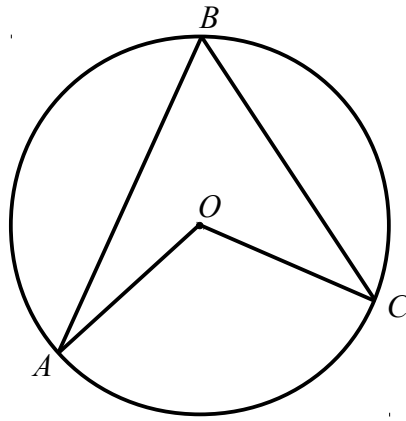
### Information

- 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



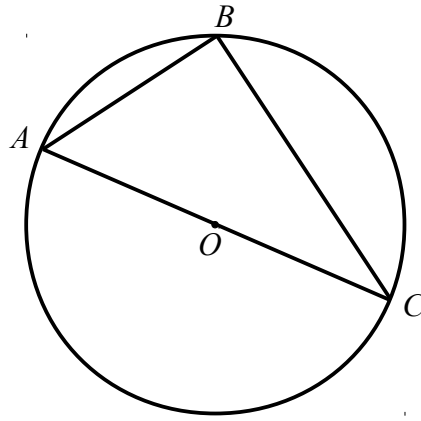
$A$ ,  $B$  and  $C$  are points on the circumference of a circle, centre  $O$ .

Prove that angle  $AOC$  is twice the size of angle  $ABC$ .  
You must **not** use any circle theorems in your proof.

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(Total for Question 1 is 4 marks)

2



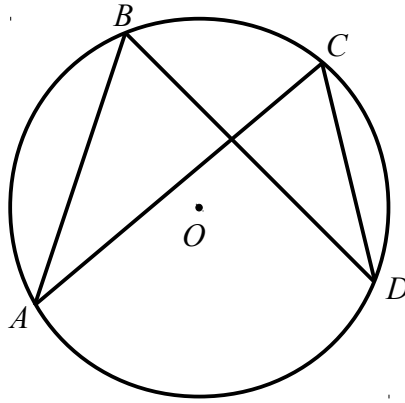
$A$ ,  $B$  and  $C$  are points on the circumference of a circle, centre  $O$ .  
 $AOC$  is a diameter of the circle.

Prove that angle  $ABC$  is  $90^\circ$   
You must **not** use any circle theorems in your proof.

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(Total for Question 2 is 4 marks)

3



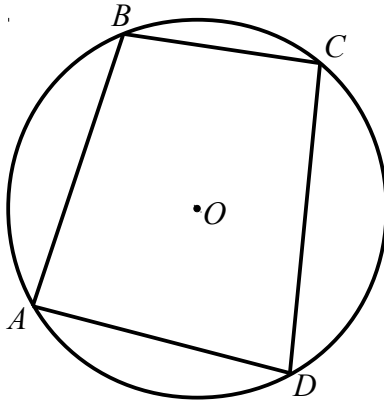
$A$ ,  $B$ ,  $C$  and  $D$  are points on the circumference of a circle, centre  $O$ .

Prove that angle  $ABD$  and angle  $ACD$  are equal.

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(Total for Question 3 is 2 marks)

4



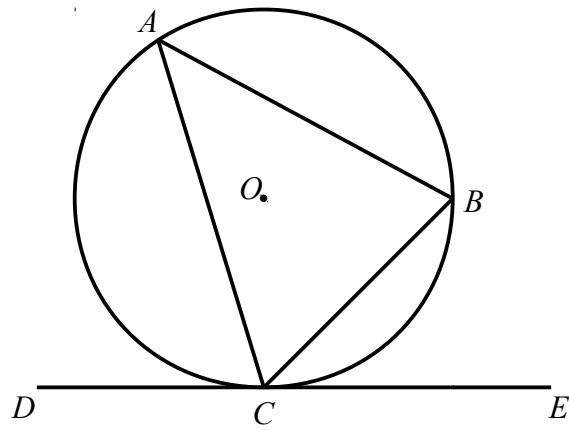
$A$ ,  $B$ ,  $C$  and  $D$  are points on the circumference of a circle, centre  $O$ .

Prove that angle  $ABC$  and angle  $ADC$  add to  $180^\circ$

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(Total for Question 4 is 4 marks)

5



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

Prove that angle  $BCE$  and angle  $BAC$  are equal.

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(Total for Question 5 is 4 marks)