

Write your name here

Surname

Other names

**In the style of:  
Pearson Edexcel  
GCSE**

Centre Number

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Candidate Number

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# Mathematics

## Circle Theorems

**Higher Tier**

GCSE style questions arranged by topic

Paper Reference

**1MA0/2H**

**You must have:** Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator.

Total Marks



### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.142 unless the question instructs otherwise.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

### Information

- The total mark for this paper is 80
- 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.

Turn over ►



- 1  $ABCD$  is a cyclic quadrilateral within a circle centre  $O$ .  
 $XY$  is the tangent to the circle at  $A$ .  
Angle  $XAB = 58^\circ$   
Angle  $BAD = 78^\circ$   
Angle  $DBC = 34^\circ$

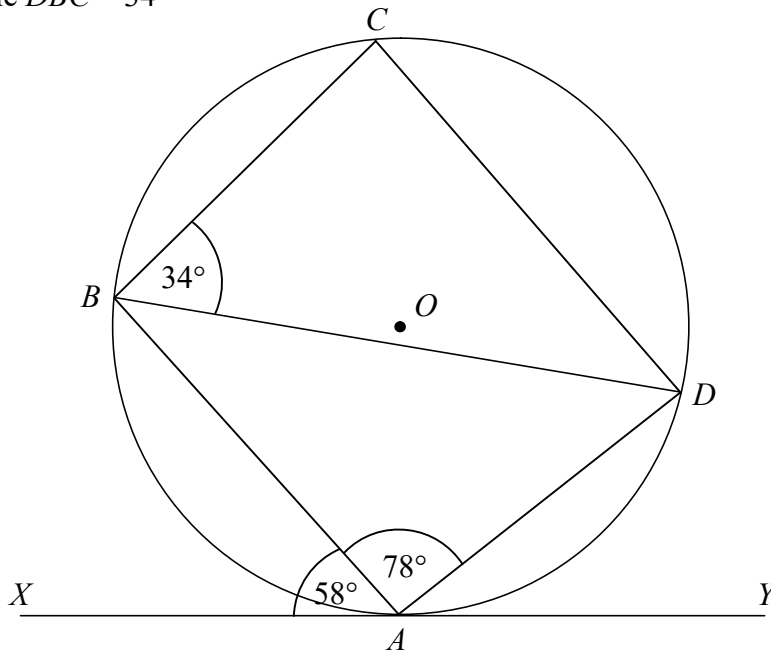


Diagram **NOT**  
accurately drawn

Prove that  $AB$  is parallel to  $CD$ .

(Total for Question 1 is 5 marks)



2 (a) Here is a circle with centre  $O$ .

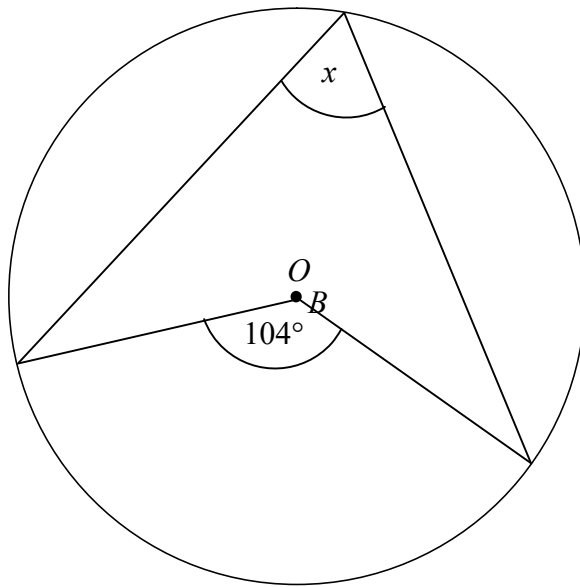


Diagram NOT accurately drawn

Write down the value of  $x$ .

..... degrees  
(1)

(b) Here is a different circle.

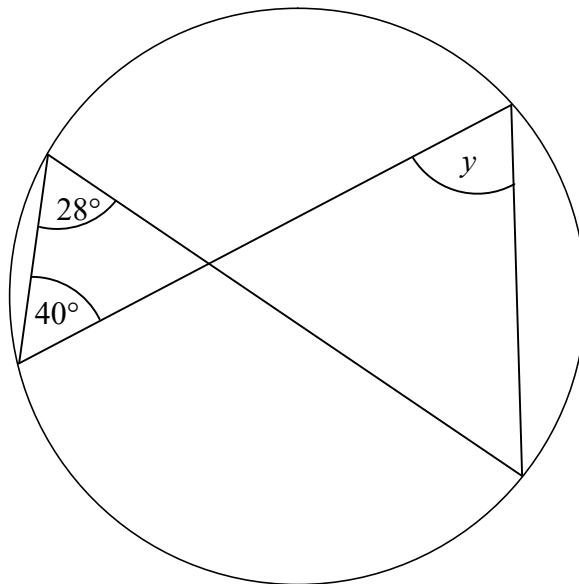


Diagram NOT accurately drawn

Write down the value of  $y$ .

..... degrees  
(1)



3

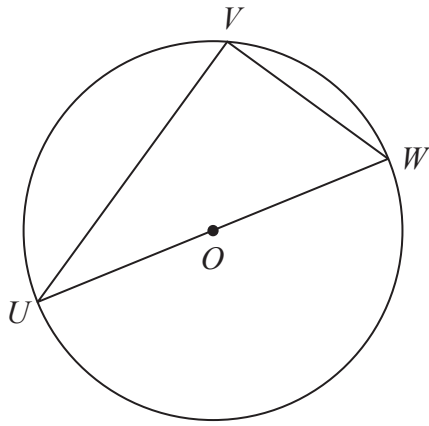


Diagram **NOT** accurately drawn

$U$ ,  $V$  and  $W$  are points on the circumference of a circle, centre  $O$ .  $UW$  is a diameter of the circle.

(a) (i) Write down the size of angle  $UVW$ .

.....  
.....

(ii) Give a reason for your answer.

.....  
.....

(2)

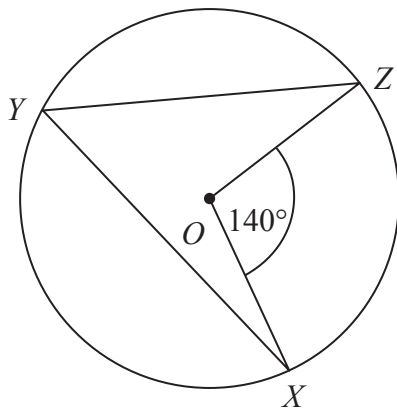


Diagram **NOT** accurately drawn

$X$ ,  $Y$  and  $Z$  are points on the circumference of a circle, centre  $O$ . Angle  $XOZ = 140^\circ$ .

(b) (i) Work out the size of angle  $XYZ$ .

.....  
.....

(ii) Give a reason for your answer.

.....  
.....

(2)



4

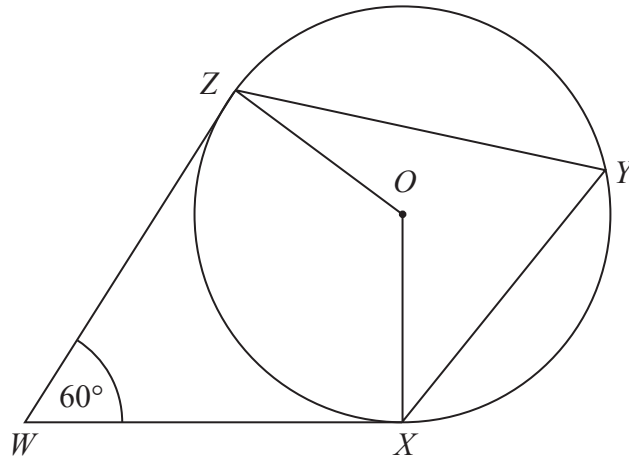


Diagram **NOT**  
accurately drawn

$X$ ,  $Y$  and  $Z$  are points on the circumference of a circle, centre  $O$ .  
 $WX$  and  $WZ$  are tangents to the circle.

Angle  $ZWX = 60^\circ$

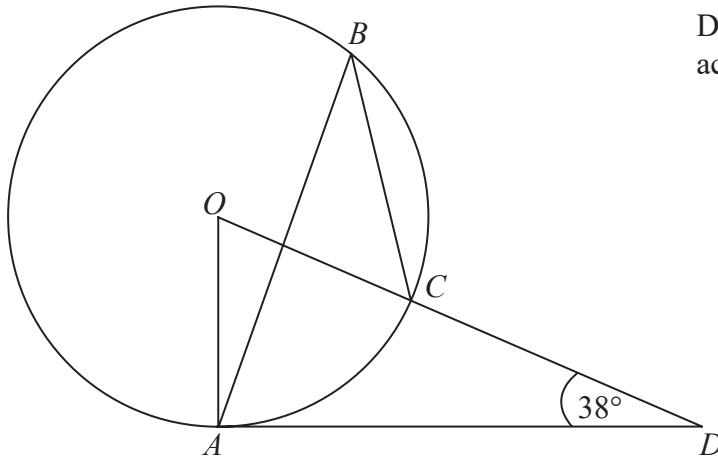
Work out the size of angle  $XYZ$ .  
Give a reason for each stage in your working.

(Total for Question 4 is 4 marks)



5

Diagram **NOT**  
accurately drawn



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

$DCO$  is a straight line.  
 $DA$  is a tangent to the circle.

Angle  $ADO = 38^\circ$

(a) Work out the size of angle  $AOD$ .

.....  
(2)

(b) (i) Work out the size of angle  $ABC$ .

.....

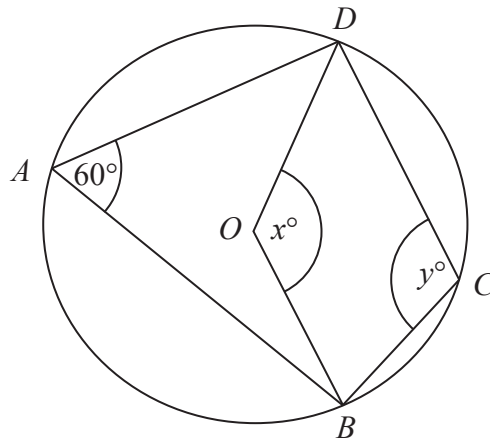
(ii) Give a reason for your answer.

.....  
(3)

**(Total for Question 5 is 5 marks)**



Diagram NOT accurately drawn



In the diagram,  $A, B, C$  and  $D$  are points on the circumference of a circle, centre  $O$ .  
 Angle  $BAD = 60^\circ$ .

Angle  $BOD = x^\circ$ .

Angle  $BCD = y^\circ$ .

(a) (i) Work out the value of  $x$ .

$x = \dots\dots\dots$

(ii) Give a reason for your answer.

.....  
 .....  
 (2)

(b) (i) Work out the value of  $y$ .

$y = \dots\dots\dots$

(ii) Give a reason for your answer.

.....  
 .....  
 (2)

**(Total for Question 6 is 4 marks)**



7

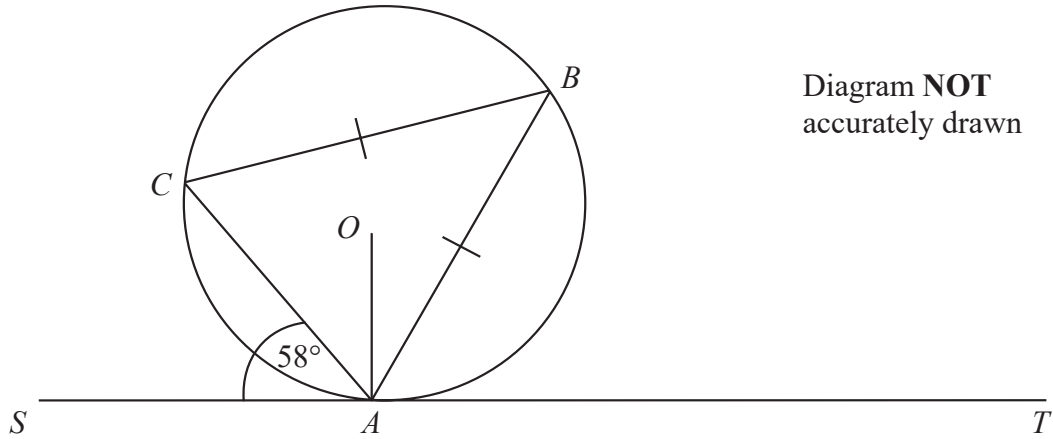


Diagram **NOT**  
accurately drawn

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

$CB = AB$ .  
Angle  $CAS = 58^\circ$ .

Calculate the size of angle  $OAB$ .  
Give a reason for each stage in your working.

.....  
(Total for Question 7 is 5 marks)





8

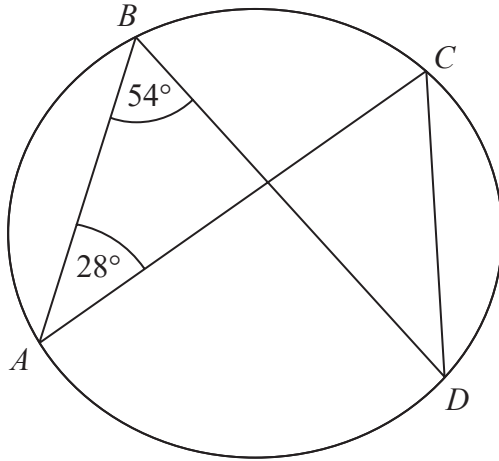


Diagram **NOT**  
accurately drawn

$A$ ,  $B$ ,  $C$  and  $D$  are points on the circumference of a circle.  
Angle  $ABD = 54^\circ$ .  
Angle  $BAC = 28^\circ$ .

(i) Find the size of angle  $ACD$ .

.....<sup>o</sup>

(ii) Give a reason for your answer.

.....  
.....

**(Total for Question 8 is 2 marks)**



9

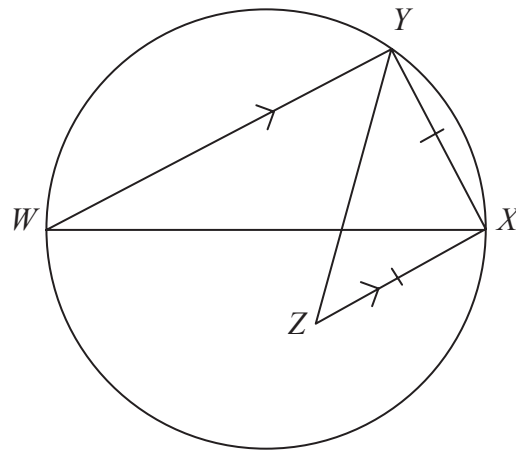


Diagram **NOT**  
accurately drawn

$WX$  is a diameter of a circle.

$Y$  is a point on the circle.

$Z$  is the point inside the circle such that  $ZX = XY$  and  $XZ$  is parallel to  $YW$ .

Find the size of angle  $XZY$ .

You must give reasons for your answer.

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



10

$ABCD$  is a cyclic quadrilateral.

$AE$  is a tangent at  $A$ .

$CDE$  is a straight line.

Angle  $CAD = 32^\circ$

Angle  $ABD = 40^\circ$

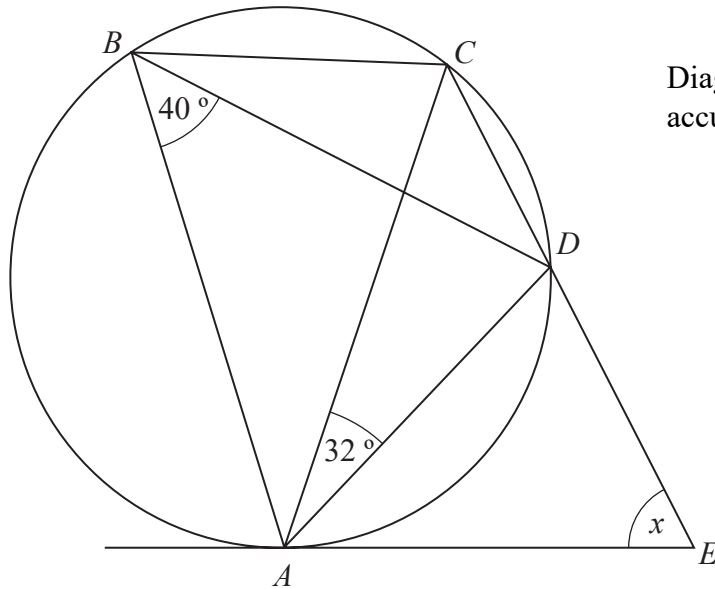


Diagram **NOT**  
accurately drawn

Work out the size of angle  $AED$ , marked  $x$ , on the diagram.

You **must** show your working.

Give reasons for any angles you work out.

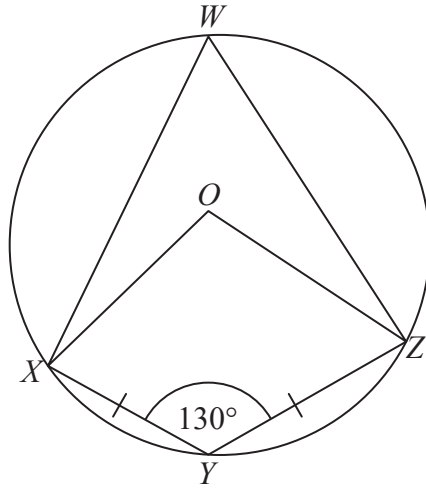
..... degrees

(Total for Question 10 is 5 marks)



11

Diagram **NOT**  
accurately drawn



$W, X, Y$  and  $Z$  are points on a circle, centre  $O$ .  
 $XY = YZ$ .  
Angle  $XYZ = 130^\circ$ .

- (a) Write down the size of angle  $XWZ$ .  
Give a reason for your answer.

.....  
(2)

- (b) Work out the size of angle  $OZY$ .  
Give reasons for your answer.

.....  
(4)

(Total for Question 11 is 6 marks)

