

Name:.....

Total Marks:.....

GCSE (9-1) Grade 6

Circle Theorems 2



Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name.
- Answer **all** questions.
- Answer the questions in the spaces provided
 - there may be more space than you need.
- **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.
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed

Advice

- Read each question carefully before you start to answer it
- Attempt every question
- Check your answers if you have time at the end

1.

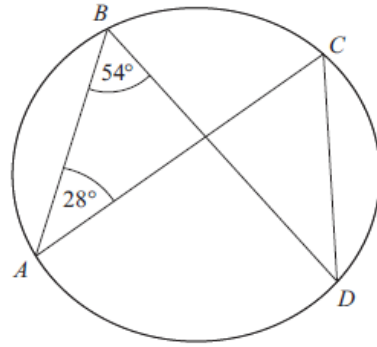


Diagram NOT accurately drawn

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 .

.....^o

(ii) Give a reason for your answer.

.....
.....

(3 marks)

2.

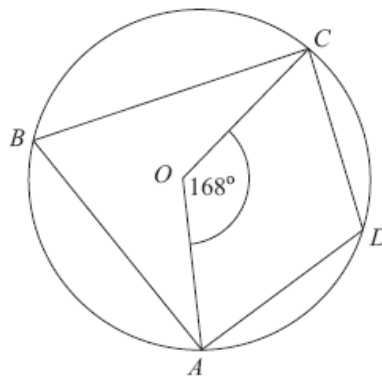


Diagram NOT accurately drawn

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

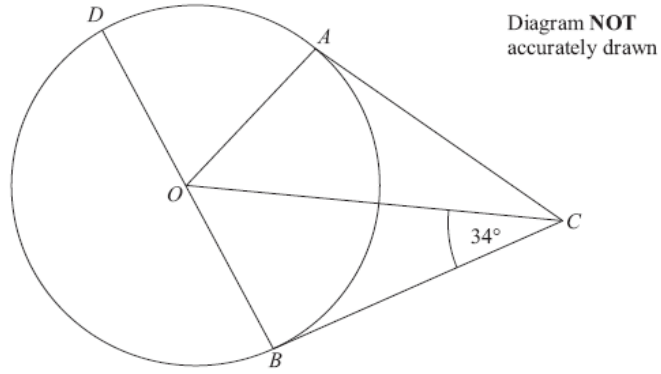
Angle $AOC = 168^\circ$

Work out the size of angle ADC .
You must give reasons for your working.

.....^o

(4 marks)

3.



A , B and D are points on the circumference of a circle, centre O .
 BOD is a diameter of the circle.
 BC and AC are tangents to the circle.
Angle $OCB = 34^\circ$.

Work out the size of angle DOA .

.....^o

(4 marks)

4.

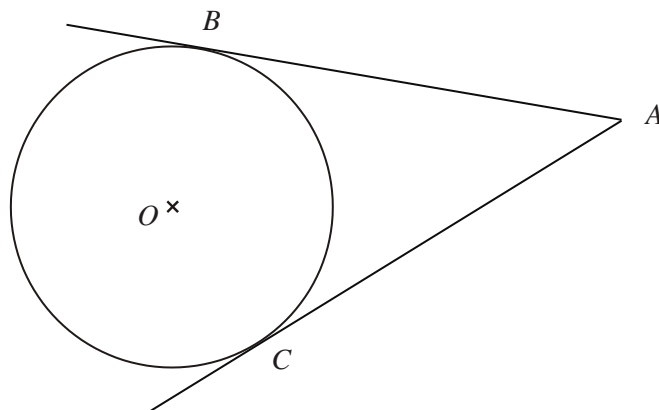


Diagram NOT accurately drawn

B and C are points on a circle, centre O .
 AB and AC are tangents to the circle.
Angle $BOC = 130^\circ$.

Work out the size of angle BAO .

.....^o

(4 marks)

5.

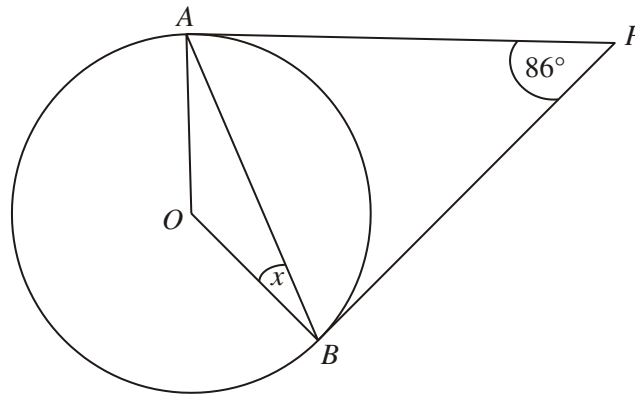


Diagram **NOT** accurately drawn

A and *B* are points on the circumference of a circle, centre *O*.
PA and *PB* are tangents to the circle.
Angle *APB* is 86° .

Work out the size of the angle marked *x*.

.....^o

(3 marks)

6.

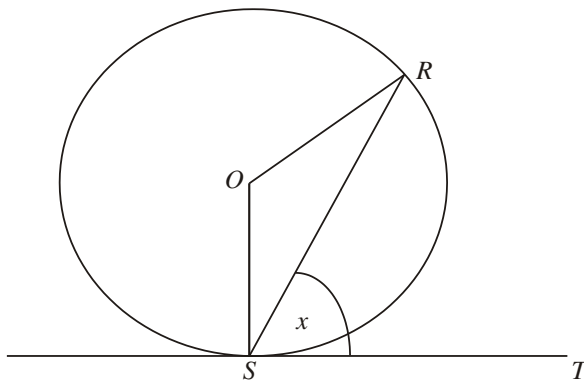


Diagram **NOT** accurately drawn

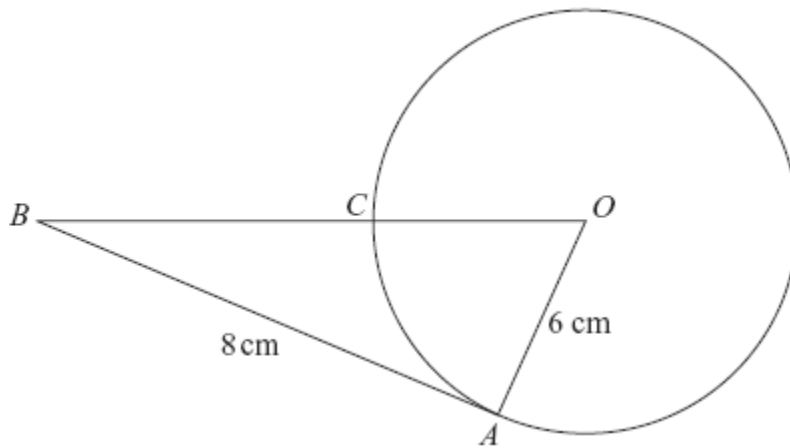
R and *S* are two points on a circle, centre *O*.
TS is a tangent to the circle.
Angle *RST* = *x*.

Prove that angle *ROS* = $2x$.
You must give reasons for each stage of your working.

(4 marks)

7.

Diagram NOT
accurately drawn



In the diagram, O is the centre of the circle.
 A and C are points on the circumference of the circle.
 BCO is a straight line.
 BA is a tangent to the circle.

$AB = 8$ cm.
 $OA = 6$ cm.

(a) Explain why angle OAB is a right angle.

.....
.....

(1)

(b) Work out the length of BC .

.....cm
(3)

(4 marks)

8.

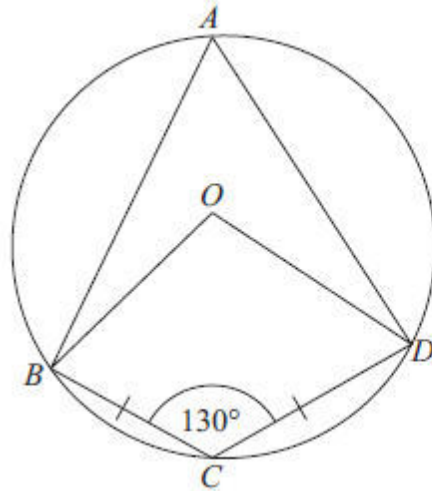


Diagram NOT
accurately drawn

A, B, C and D are points on a circle, centre O .
 $BC = CD$.
Angle $BCD = 130^\circ$.

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

.....^o
(2)

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

.....^o
(4)

(6 marks)

9.

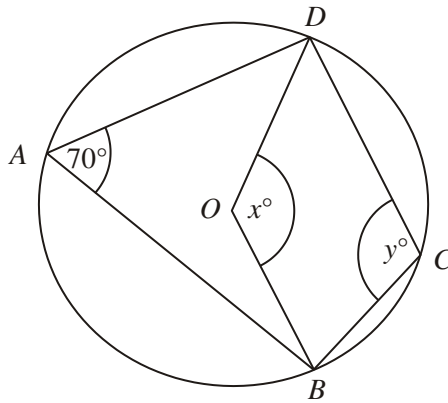


Diagram **NOT** accurately drawn

In the diagram, A , B , C and D are points on the circumference of a circle, centre O .
Angle $BAD = 70^\circ$.
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)

(4 marks)

10.

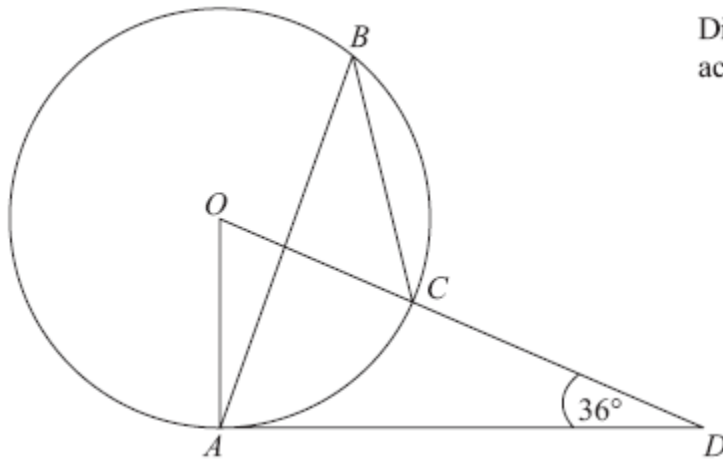


Diagram **NOT** accurately drawn

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 $ADO = 36^\circ$

(a) Work out the size of angle AOD .

.....^o
(2)

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

.....^o

(ii) Give a reason for your answer.

.....

(3)

(4 marks)

11.

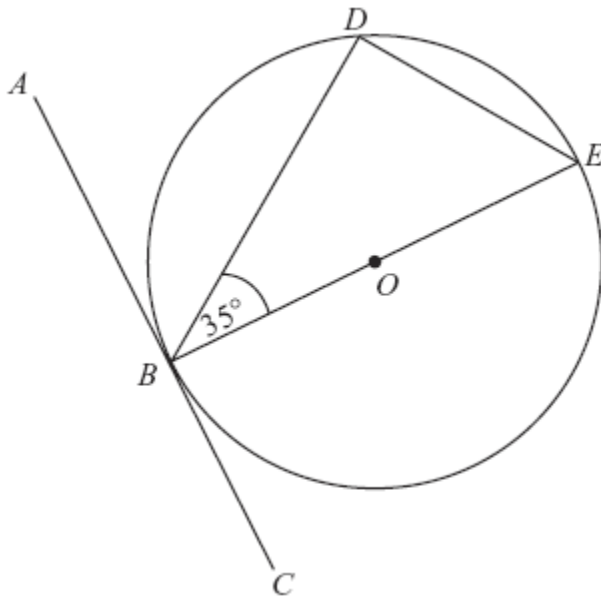


Diagram NOT
accurately drawn

B , D and E are points on a circle centre O .
 ABC is a tangent to the circle.
 BE is a diameter of the circle.
Angle $DBE = 35^\circ$.

(a) Find the size of angle ABD .

Give a reason for your answer.

.....^o
(2)

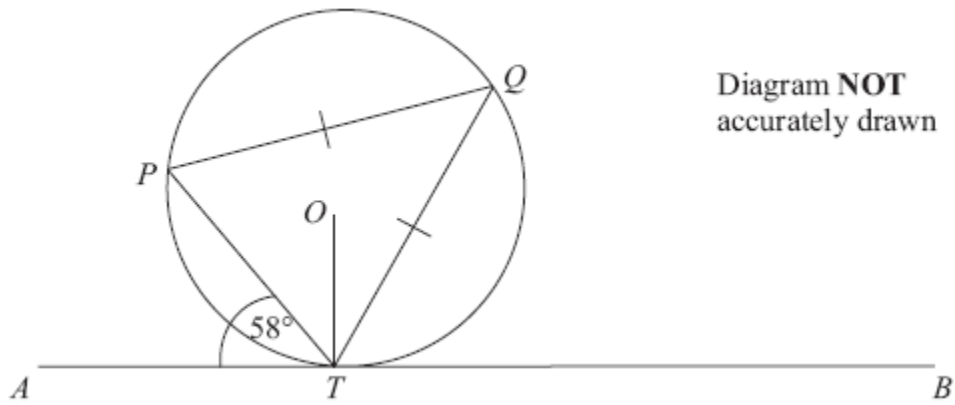
(b) Find the size of angle DEB .

Give a reason for your answer.

.....^o
(2)

(4 marks)

12.



P , Q and T are points on the circumference of a circle, centre O .
The line ATB is the tangent at T to the circle.

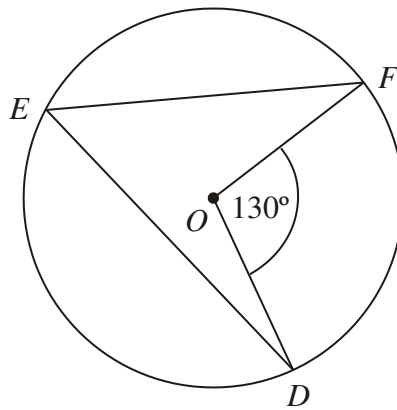
$PQ = TQ$.
Angle $ATP = 58^\circ$.

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

..... °

(4 marks)

13. (a)



D , E and F are points on the circumference of a circle, centre O .
Angle $DOF = 130^\circ$.

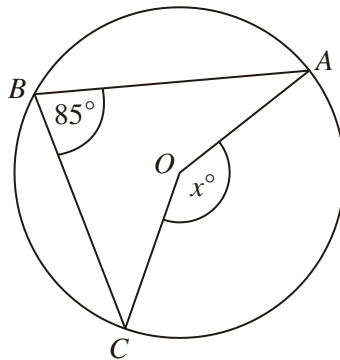
(i) Work out the size of angle DEF .

.....^o

(ii) Give a reason for your answer.

.....
.....

(2)



(b)

In the diagram, A , B and C are points on the circumference of a circle, centre O .
Angle $ABC = 85^\circ$.

(i) Work out the size of the angle marked x° .

.....^o

(ii) Give a reason for your answer.

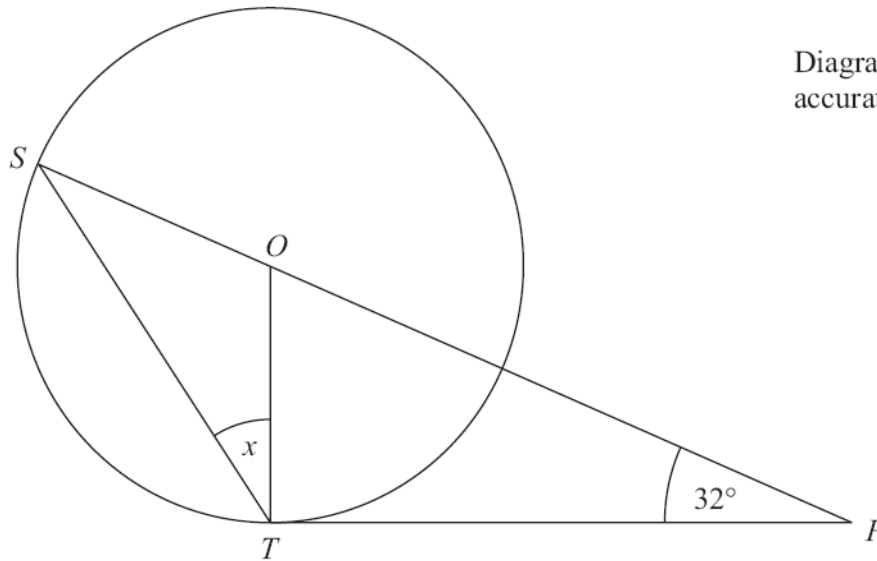
.....
.....

(2)

(4 marks)

***14.**

Diagram **NOT**
accurately drawn



S and T are points on the circumference of a circle, centre O .
 PT is a tangent to the circle.
 SOP is a straight line.

Angle $OPT = 32^\circ$.

Work out the size of the angle marked x .
Give reasons for your answer.

.....^o

(Total 5 marks)