Solutions by
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GCSE (9-1) Grade 6
Circle Theorems 2

Unfinished. Please support to inspire me on.

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.

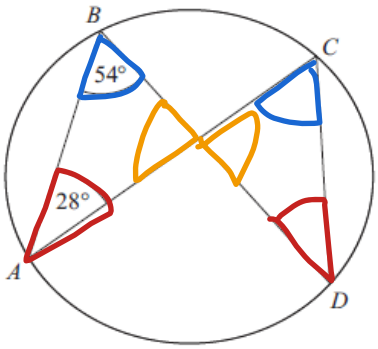


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on the circumference of a circle.
Angle *ABD* = 54°.
Angle *BAC* = 28°.

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

54 .....°

(ii) Give a reason for your answer.

Angles in the same segment are equal.

(3 marks)

2.

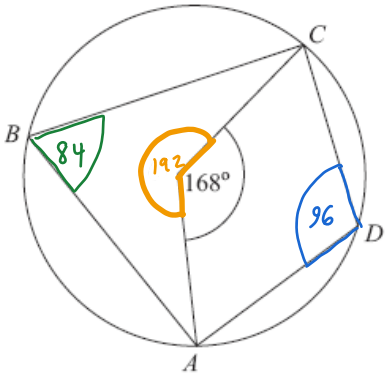


Diagram **NOT** accurately drawn

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

Angle *AOC* = 168°

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

96° .....°

(4 marks)

3.

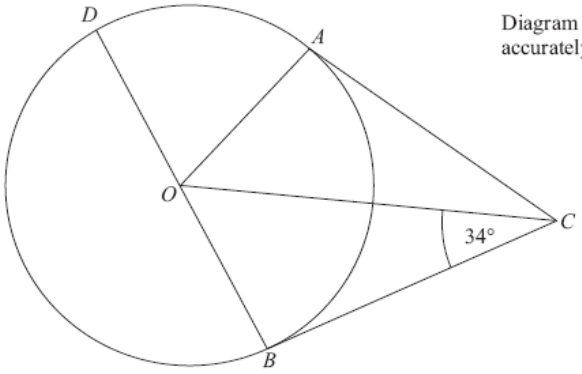


Diagram **NOT** accurately drawn

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°.

Work out the size of angle *DOA*.

..... °

(4 marks)

4.

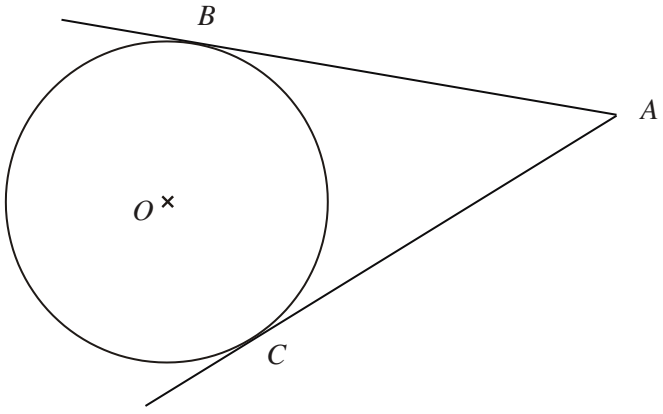


Diagram **NOT** accurately drawn

B and *C* are points on a circle, centre *O*.
AB and *AC* are tangents to the circle.
Angle *BOC* = 130°.

Work out the size of angle *BAO*.

.....°

(4 marks)

5.

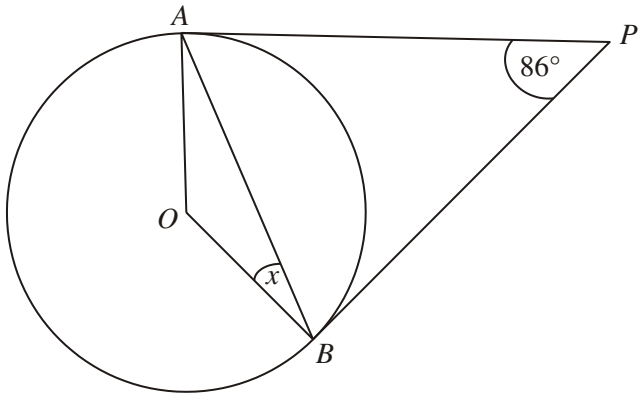


Diagram **NOT** accurately drawn

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*.

.....°

(3 marks)

6.

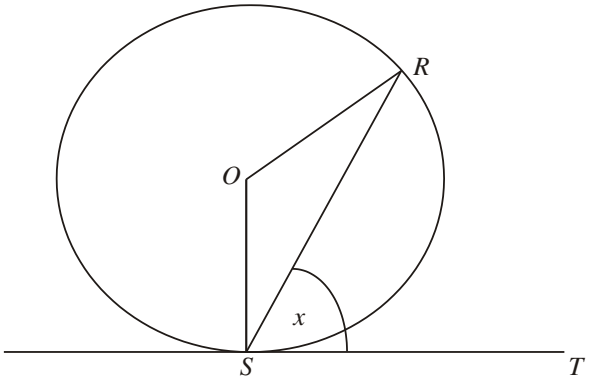


Diagram **NOT** accurately drawn

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* = 2*x*.
You must give reasons for each stage of your working.

(4 marks)

7.

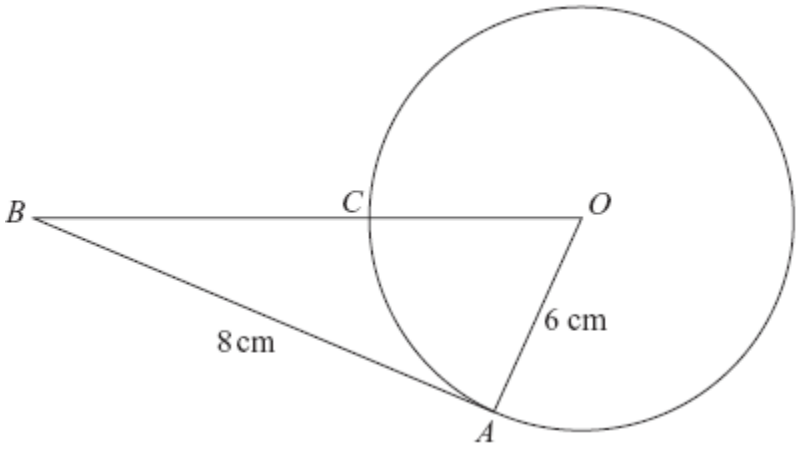


Diagram **NOT** accurately drawn

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.

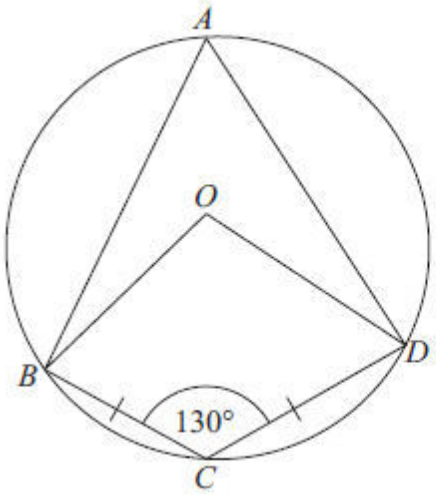


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on a circle, centre *O*.
BC = *CD*.
Angle *BCD* = 130°.

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

.....°
(2)

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

.....°
(4)

(6 marks)

9.

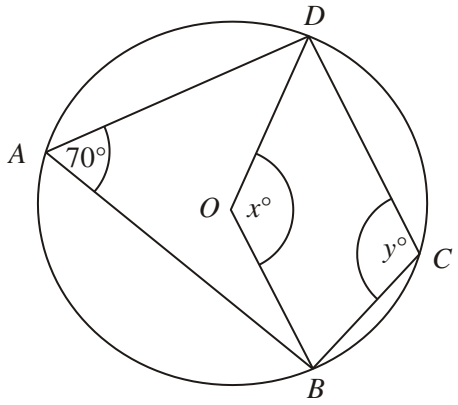


Diagram **NOT** accurately drawn

In the diagram, A, B, C and D are points on the circumference of a circle, centre O.
Angle $BAD = 70°$.
Angle $BOD = x°$.
Angle $BCD = y°$.

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

$x =$ .....

(ii) Give a reason for your answer.

.....

.....

(2)

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

$y =$ .....

(ii) Give a reason for your answer.

.....

.....

(2)

(4 marks)

10.

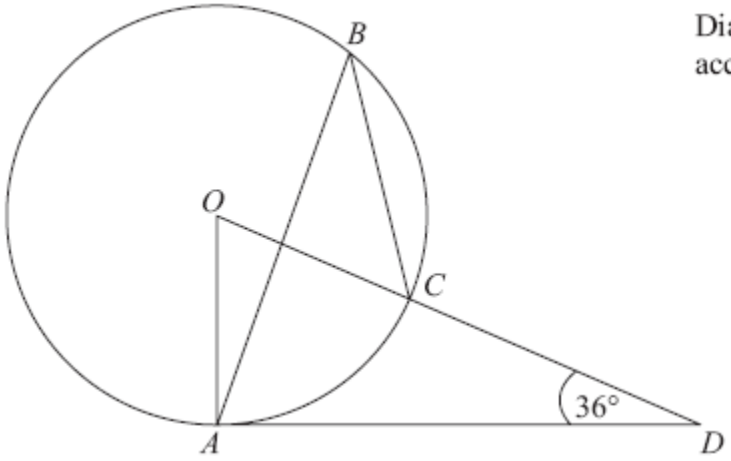


Diagram **NOT** accurately drawn

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 $ADO = 36°$

(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)

(4 marks)

11.

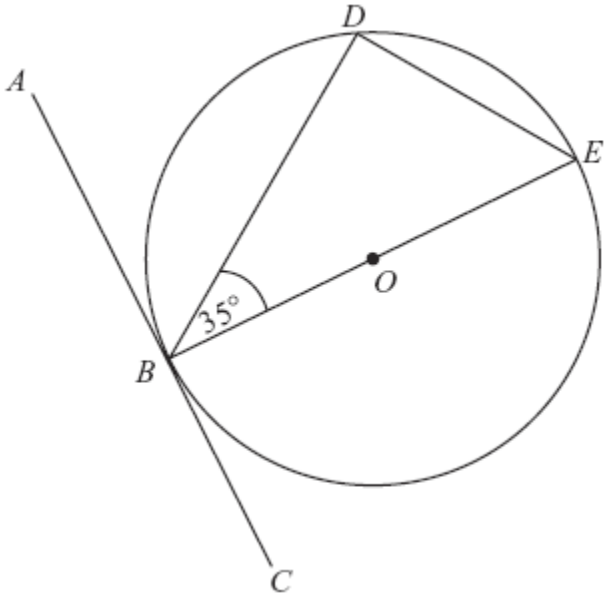


Diagram **NOT** accurately drawn

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°.

(a) Find the size of angle *ABD*.

Give a reason for your answer.

..... °
(2)

(b) Find the size of angle *DEB*.

Give a reason for your answer.

..... °
(2)

(4 marks)

12.

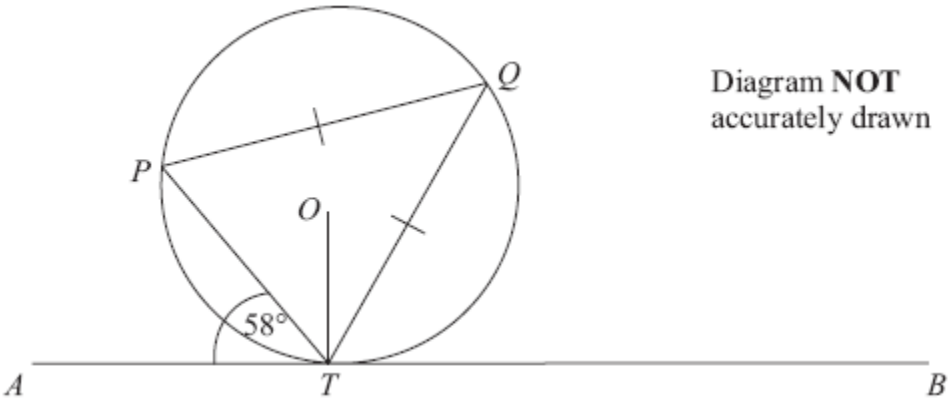


Diagram **NOT** accurately drawn

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.

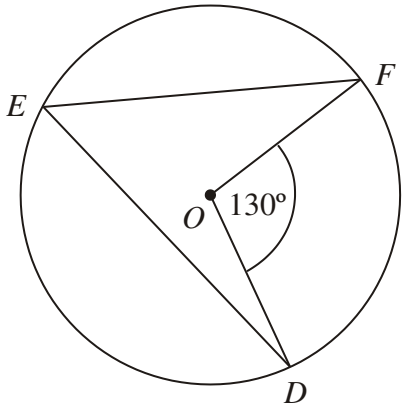
PQ = *TQ*.
Angle *ATP* = 58°.

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°.

(i) Work out the size of angle *DEF*.

.....°

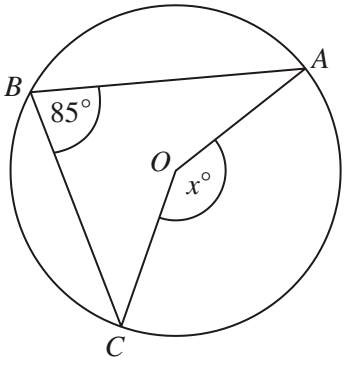
(ii) Give a reason for your answer.

.....

.....

(2)

(b)



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

Angle *ABC* = 85°.

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

(ii) Give a reason for your answer.

.....

.....

(2)

(4 marks)

***14.**

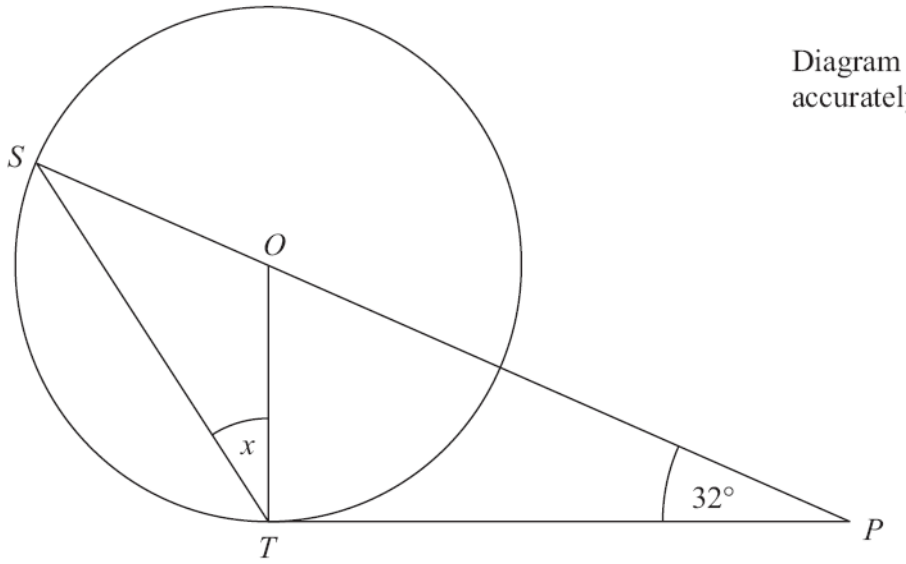


Diagram **NOT** accurately drawn

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°.

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

.....°

(Total 5 marks)