1.

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*.

.........................°

(ii) Give a reason for your answer.

....

....

(3 marks)

2.

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.

....°

(4 marks)

3.

Diagram **NOT**
accurately drawn
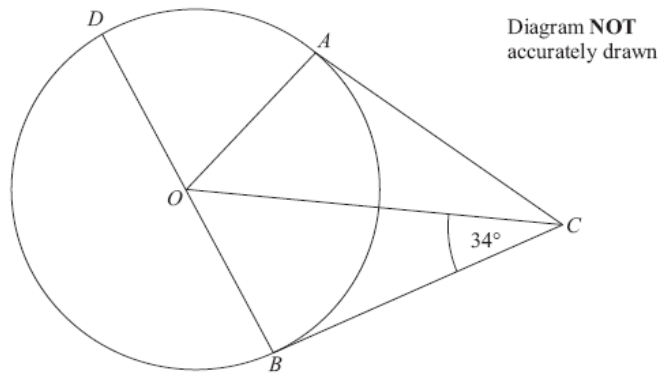
A, B and D are points on the circumference of a circle, centre O.
BOD is a diameter of the circle.
BC and AC are tangents to the circle.
Angle $OCB = 34°$.

Work out the size of angle DOA.

.... °
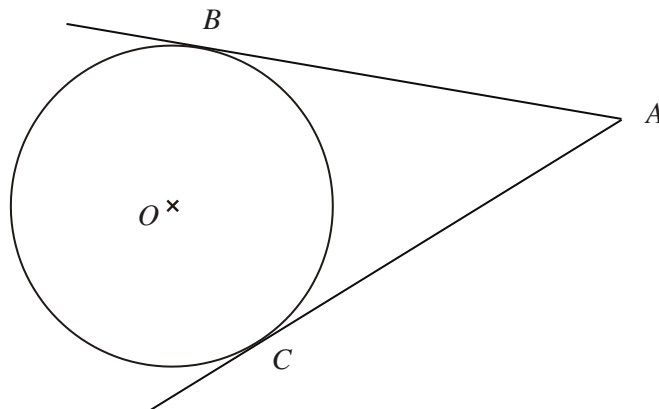
(4 marks)

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.

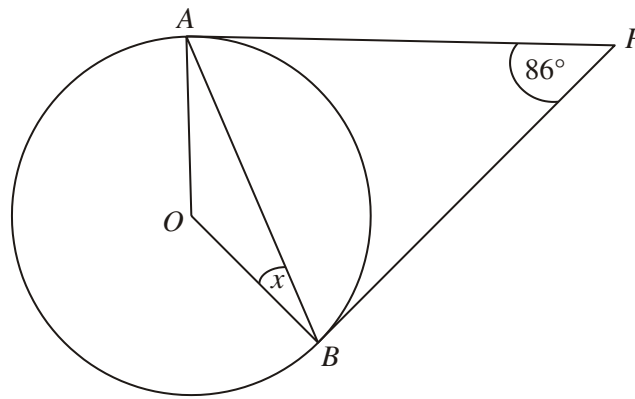.............................°

(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*.

.........................°
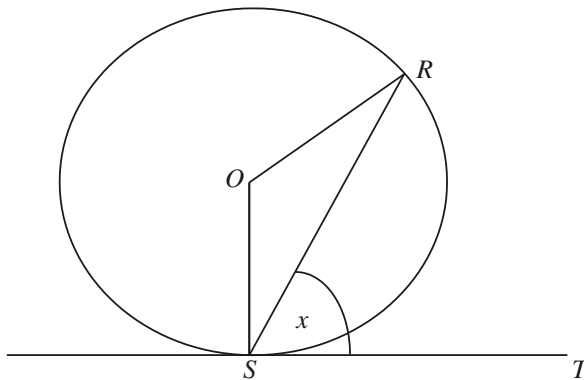
(3 marks)

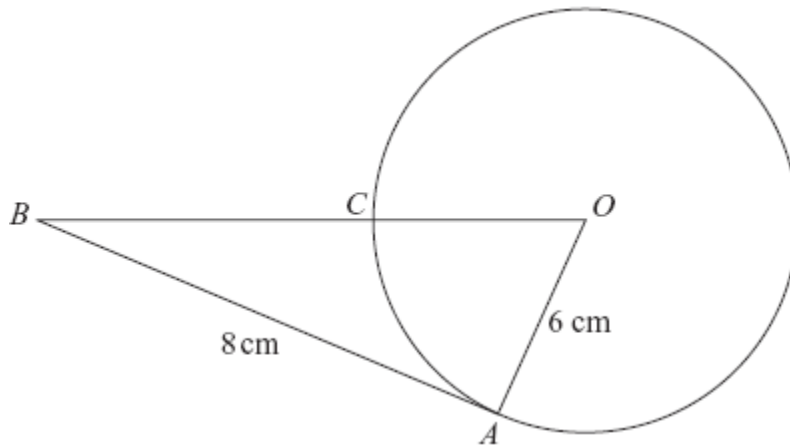**6.**

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.

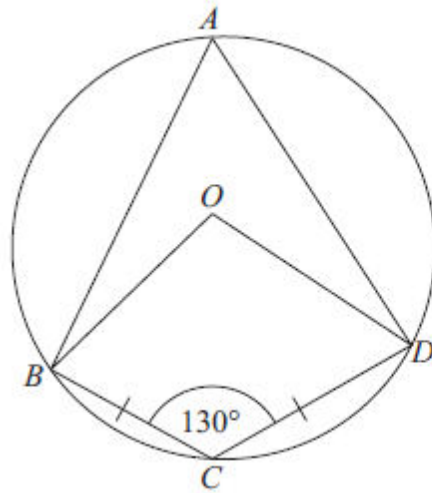Diagram **NOT** accurately drawn

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.

.....................................°
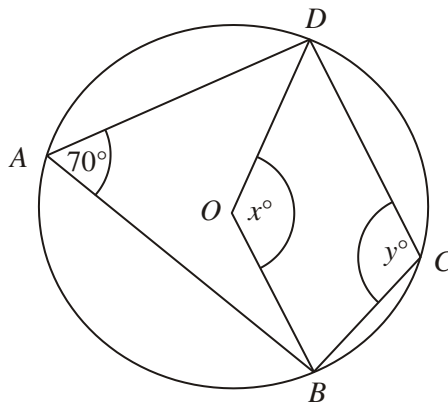
(4)

(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.

....

....
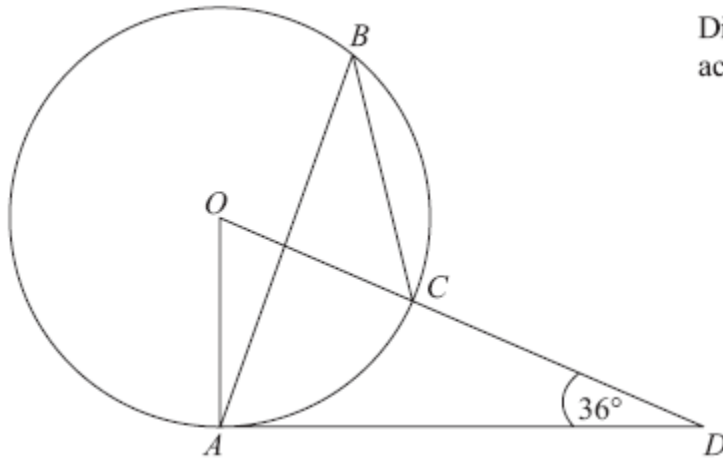
(2)

(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.

....

....

....
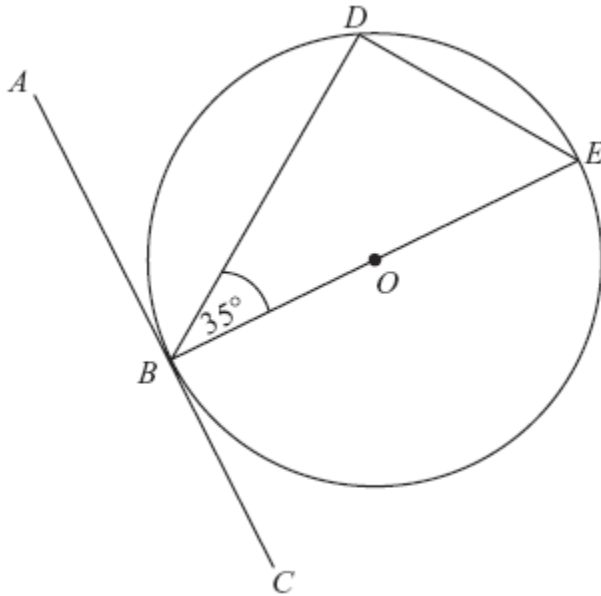
(3)

(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°.

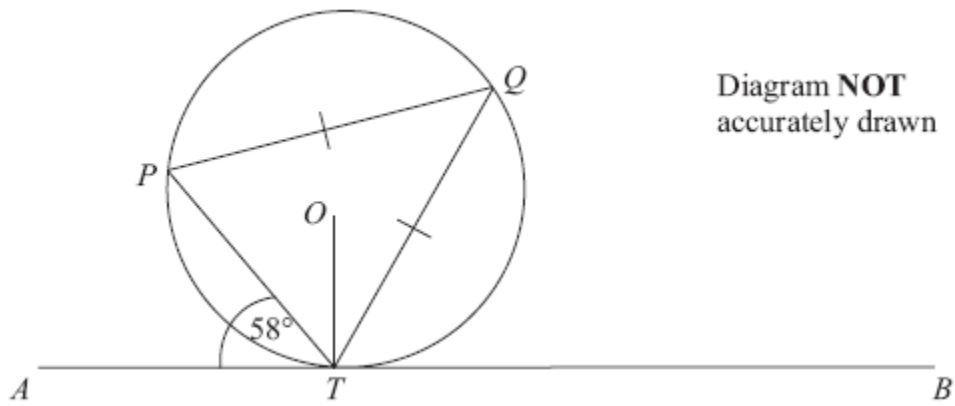(a)   Find the size of angle *ABD*.

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)
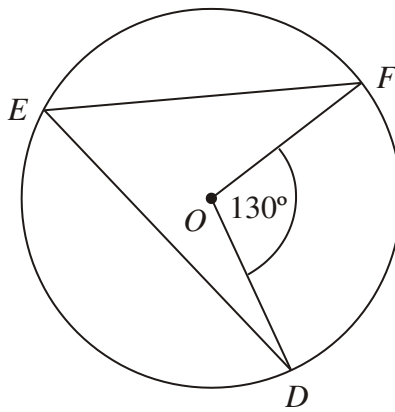
D, *E* and *F* are points on the circumference of a circle, centre *O*.
Angle *DOF* = 130°.
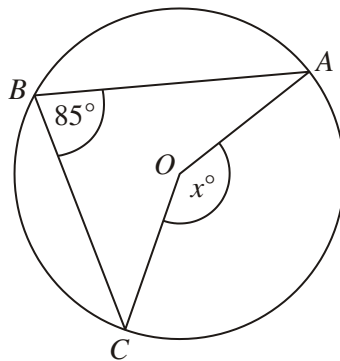
      (i)   Work out the size of angle *DEF*.

                                                                   ....°

      (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)
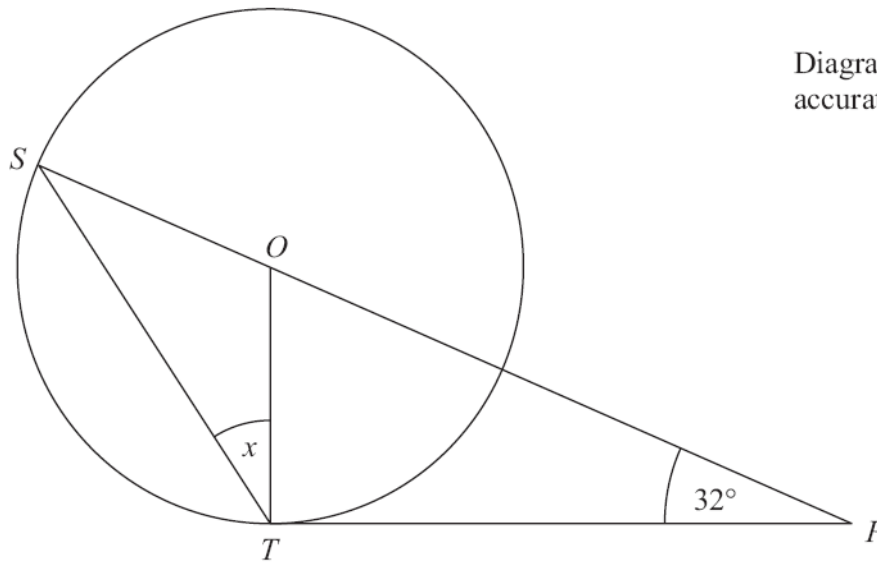   **(4 marks)**

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)

_____