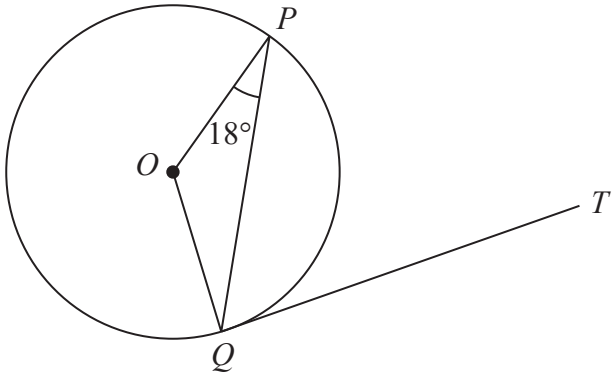
1 In the diagram below, P and Q are points on a circle with centre O.



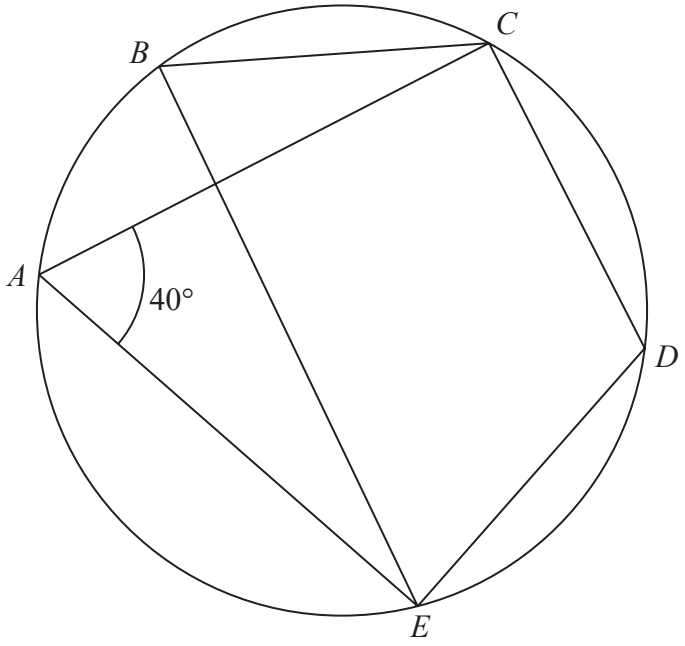
QT is a tangent to the circle.
Angle $OPQ = 18°$

Work out the size of angle PQT.
Give a reason for each stage of your working.

.....

(Total for Question 1 is 3 marks)

2



A, *B*, *C*, *D* and *E* are points on a circle.

Angle *EAC* = 40°

(a) (i) Write down the size of angle *EBC*.

.....°

(1)

(ii) Give a reason for your answer.

.....

(1)

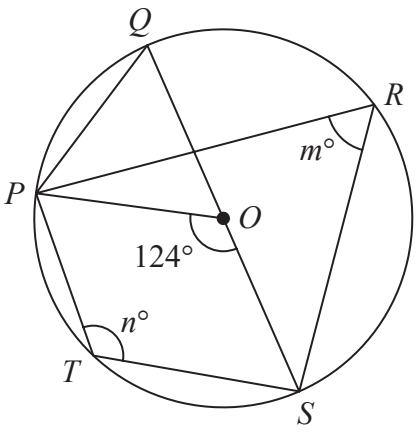
(b) Find the size of angle *EDC*.

.....°

(1)

(Total for Question 2 is 3 marks)

3 P, Q, R, S and T are points on a circle with centre O.



QOS is a diameter of the circle.

angle $POS = 124°$ angle $PRS = m°$ angle $PTS = n°$

(a) Find the value of

(i) m

.....

(ii) n

.....

(2)

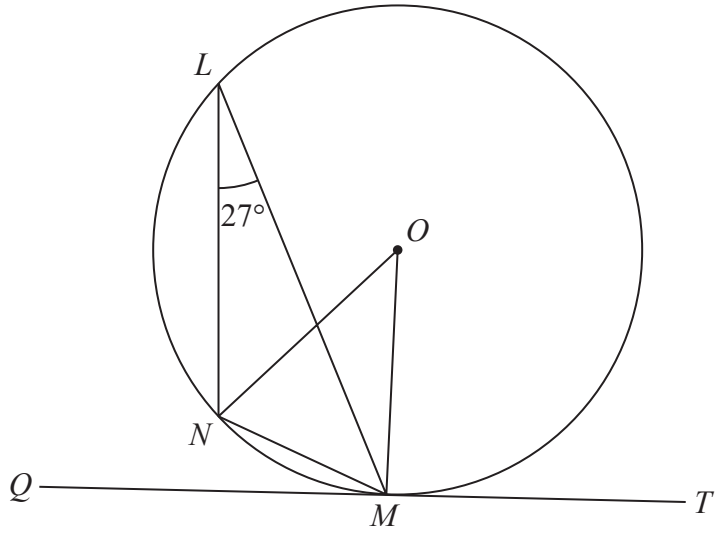
(b) Find the size of angle QPO.

..... °

(1)

(Total for Question 3 is 3 marks)

4



L, *M* and *N* are points on a circle, centre *O*.
QMT is the tangent to the circle at *M*.

(a) (i) Find the size of angle *NOM*.

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

(b) (i) Find the size of angle *NMQ*.

.....°

(ii) Give a reason for your answer.

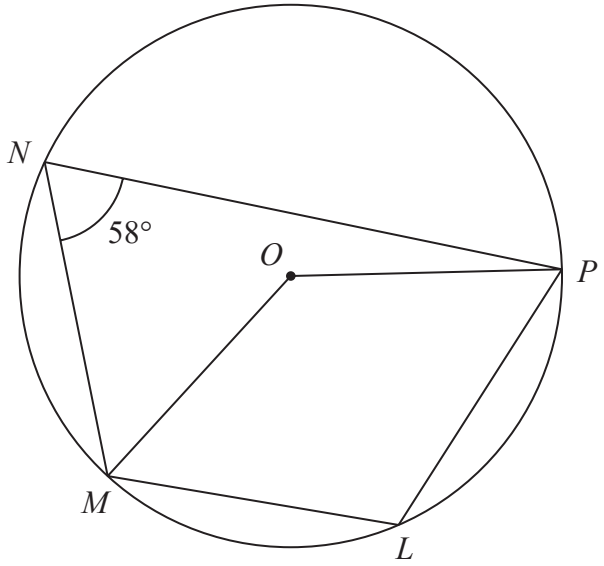
.....

.....

(2)

(Total for Question 4 is 4 marks)

5



L, M, N and P are points on a circle, centre O

Angle $MNP = 58°$

(a) (i) Find the size of angle MLP

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

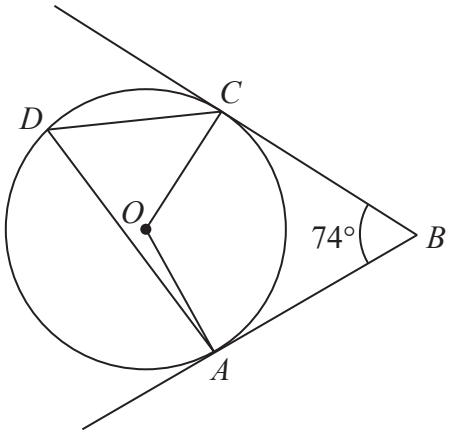
(b) Find the size of the reflex angle MOP

.....°

(2)

(Total for Question 5 is 4 marks)

6



A, *C* and *D* are points on a circle, centre *O*.
AB and *CB* are tangents to the circle.

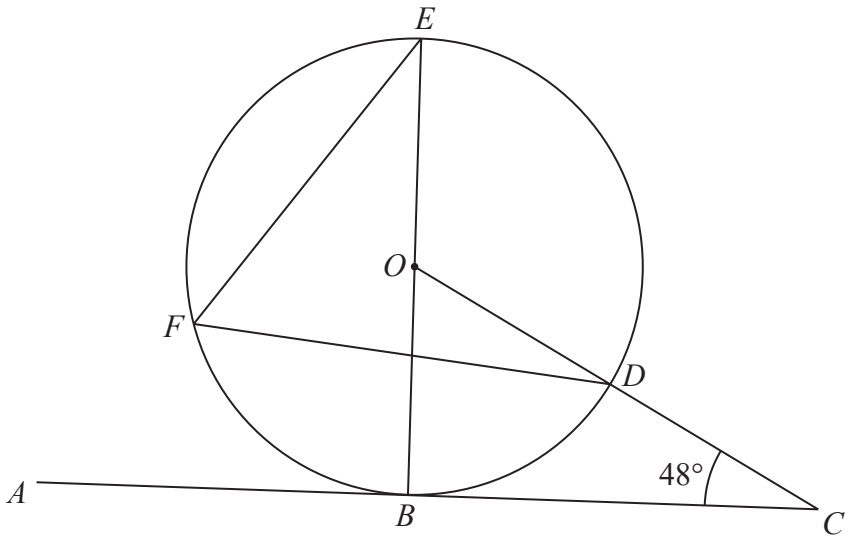
Angle *ABC* = 74°

Work out the size of angle *ADC*.
Show your working clearly.

.....°

(Total for Question 6 is 3 marks)

7



B, *D*, *E* and *F* are points on a circle, centre *O*.
ABC is a tangent to the circle.
ODC is a straight line.

BOE is a diameter of the circle.

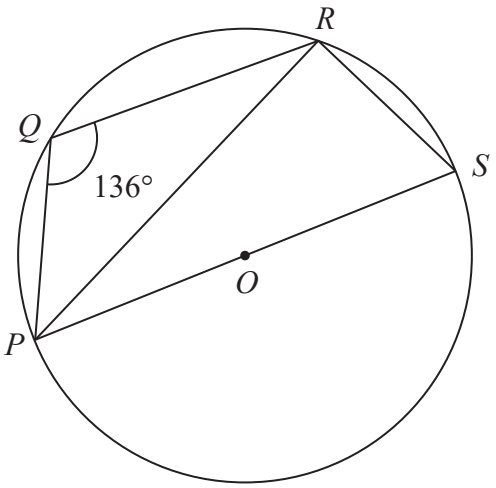
Angle *BCD* = 48°

Find the size of angle *DFE*.

.....°

(Total for Question 7 is 3 marks)

8



P, *Q*, *R* and *S* are points on a circle with centre *O*

PS is a diameter of the circle.

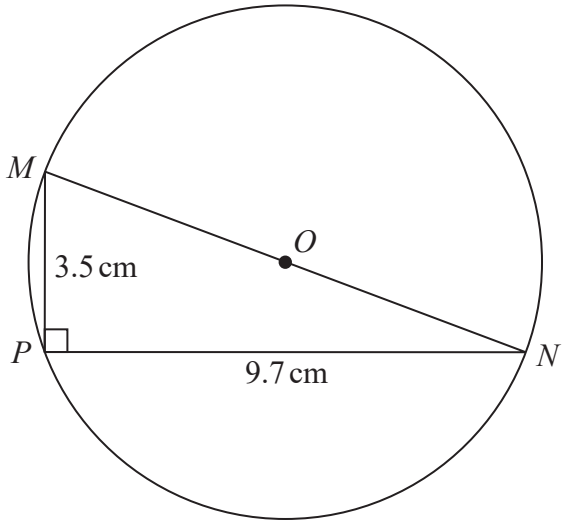
Angle *PQR* = 136°

Work out the size of angle *RPS*

.....°

(Total for Question 8 is 3 marks)

9



M, *N* and *P* are points on a circle, centre *O*.
MON is a diameter of the circle.

MP = 3.5 cm
PN = 9.7 cm

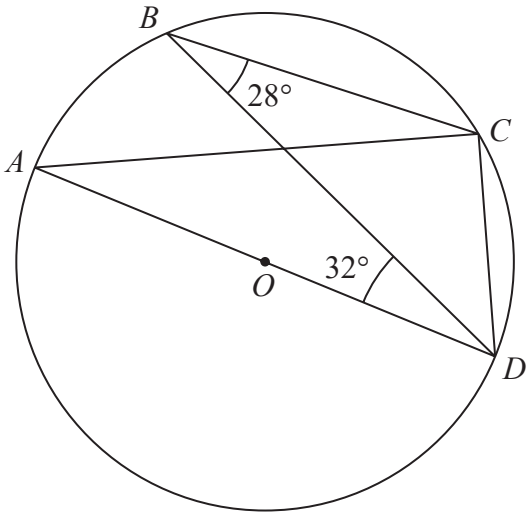
Angle *MPN* = 90°

Work out the circumference of the circle.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 9 is 4 marks)

10



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

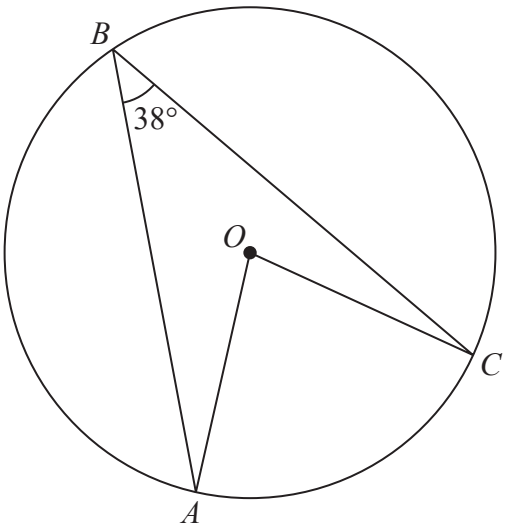
Angle *CBD* = 28°
Angle *BDA* = 32°

Find the size of angle *BDC*.
Give a reason for each stage of your working.

.....°

(Total for Question 10 is 4 marks)

11



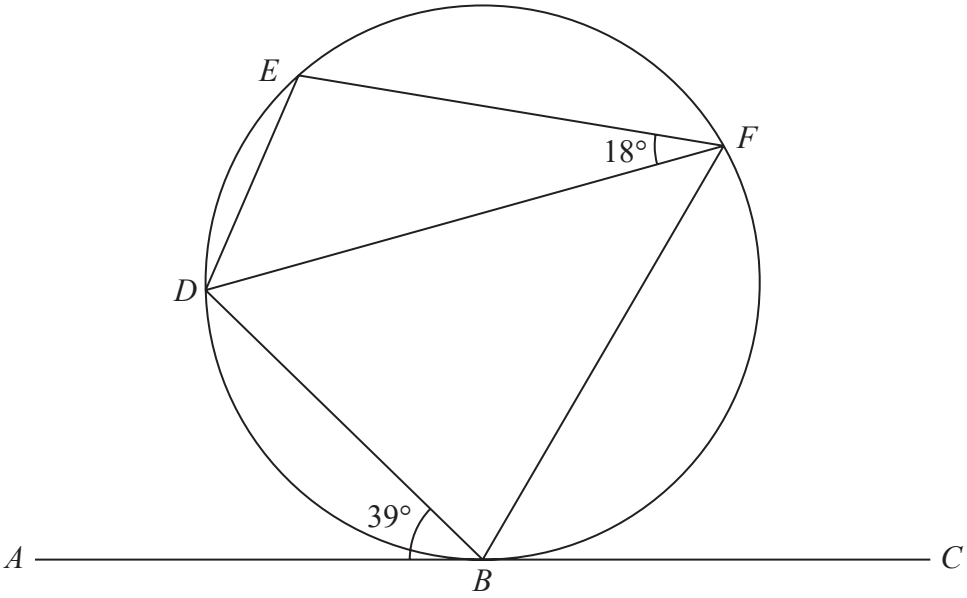
A, *B* and *C* are points on a circle, centre *O*.
Angle *ABC* = 38°

Work out the size of angle *OAC*.
Give a reason for each stage of your working.

.....°

(Total for Question 11 is 4 marks)

12



B, *D*, *E* and *F* are points on a circle.

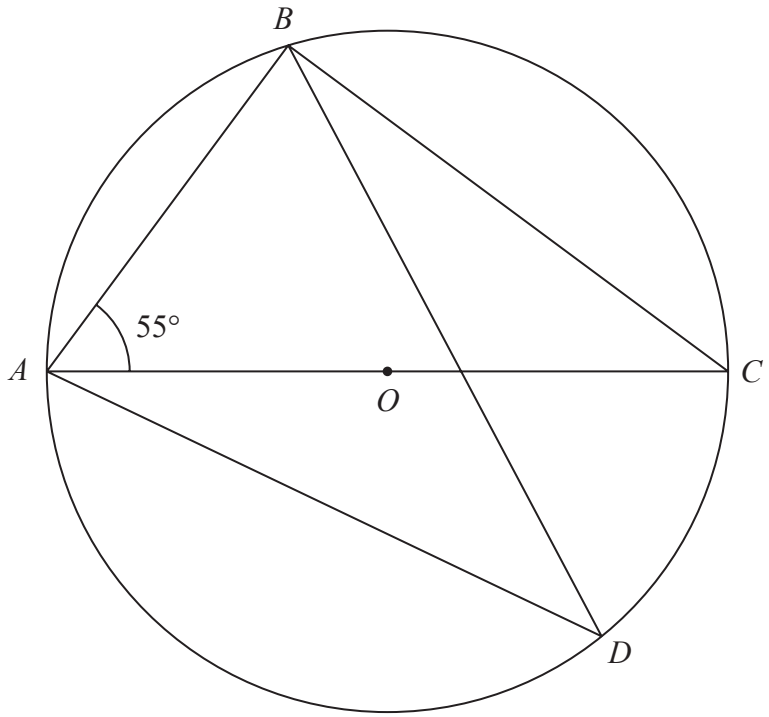
ABC is the tangent at *B* to the circle.
Angle *ABD* = 39°
Angle *EFD* = 18°

Work out the size of angle *BDE*.
Give reasons for your working.

.....°

(Total for Question 12 is 4 marks)

13



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

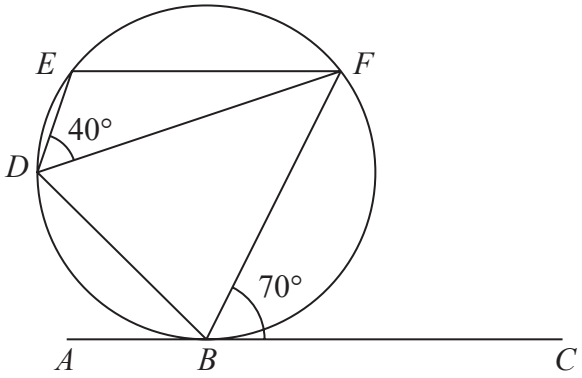
Angle *BAC* = 55°

Work out the size of angle *ADB*
Give a reason for each stage of your working.

.....°

(Total for Question 13 is 4 marks)

14



B, *D*, *E* and *F* are points on a circle.
ABC is the tangent to the circle at *B*.

Angle *EDF* = 40°
Angle *FBC* = 70°

Prove that the tangent *ABC* is parallel to *EF*.
Give a reason for each stage of your working.

(Total for Question 14 is 4 marks)

15 *P*, *Q* and *R* are points on a circle, centre *O*.
TRV is the tangent to the circle at *R*.

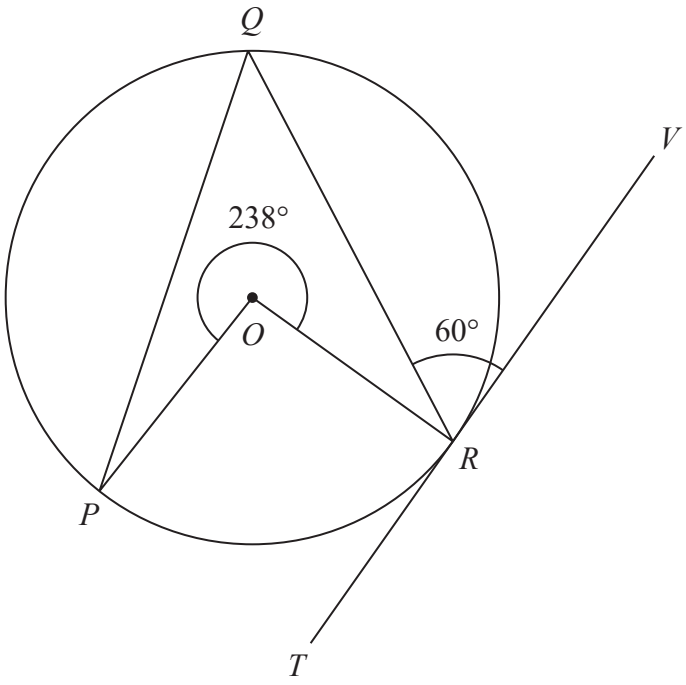


Diagram **NOT** accurately drawn

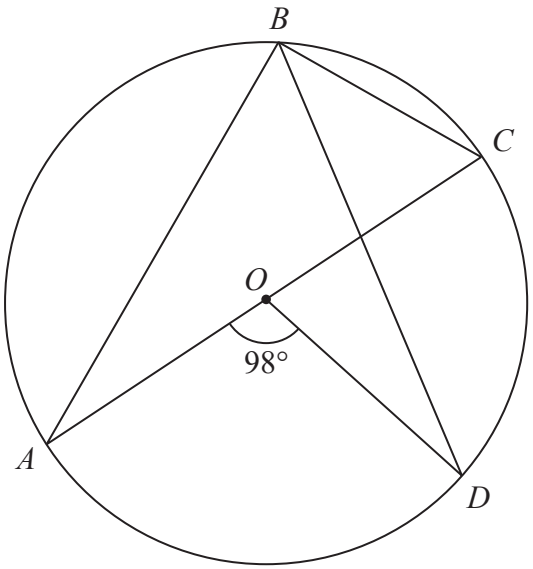
Reflex angle *POR* = 238°
Angle *QRV* = 60°

Calculate the size of angle *OPQ*.
Give a reason for each stage of your working.

.....°

(Total for Question 15 is 4 marks)

16 *A*, *B*, *C* and *D* are points on a circle, centre *O*.



AOC is a diameter of the circle.

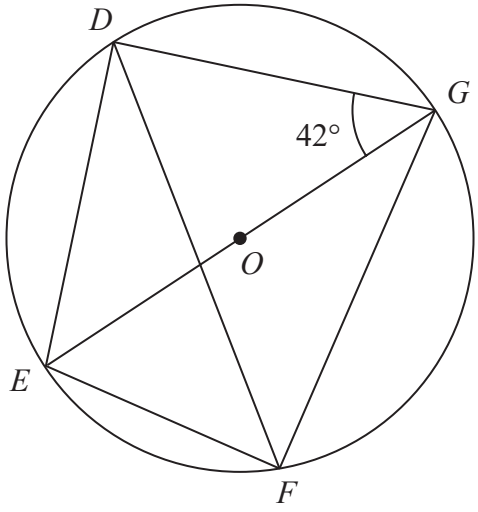
Angle *AOD* = 98°

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

.....°

(Total for Question 16 is 4 marks)

17 *D*, *E*, *F* and *G* are points on a circle, centre *O*



EOG is a diameter of the circle.

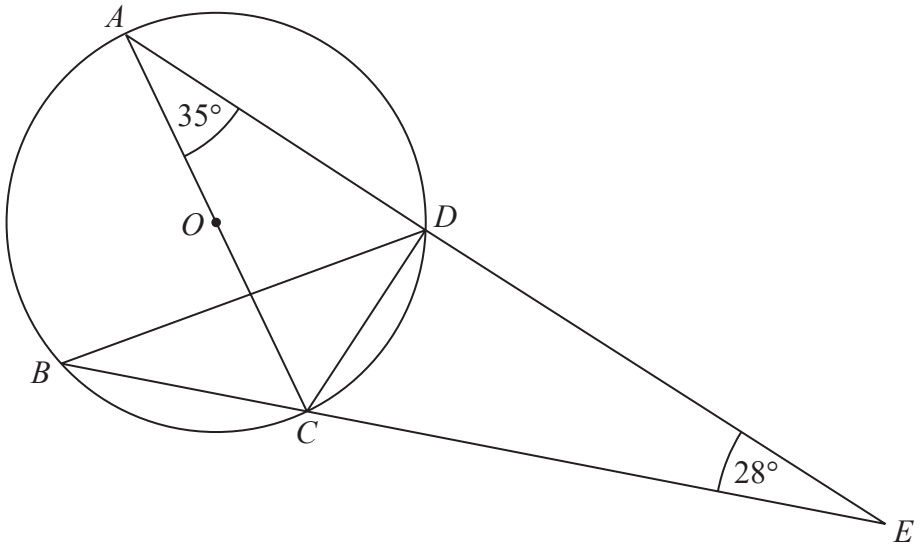
Angle *EGD* = 42°

Calculate the size of angle *DFG*
Give a reason for each stage of your working.

Angle *DFG* = ... °

(Total for Question 17 is 4 marks)

18



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

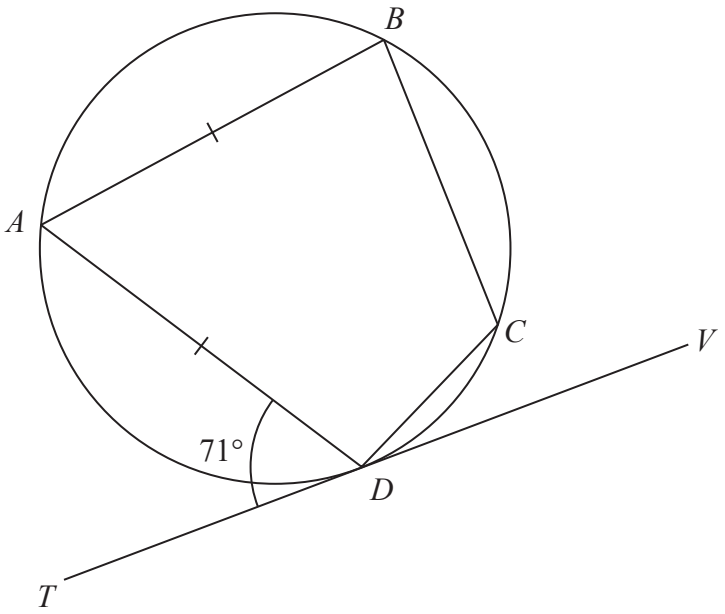
ADE and *BCE* are straight lines.

Work out the size of angle *BDC*.
Write down any circle theorems that you use.

.....°

(Total for Question 18 is 4 marks)

19



A, *B*, *C* and *D* are points on a circle.
TDV is the tangent to the circle at *D*.

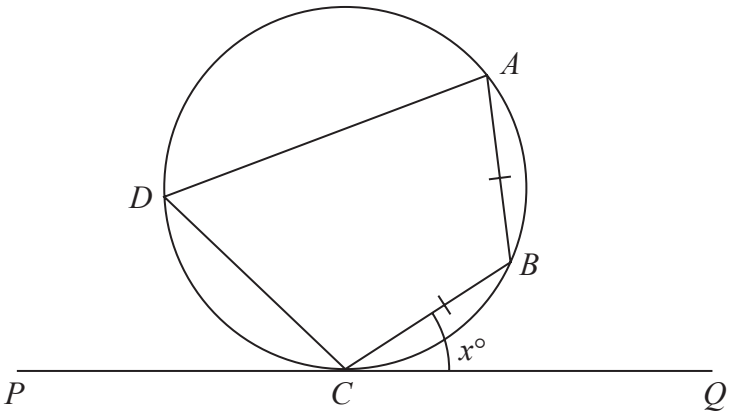
AB = *AD*
Angle *ADT* = 71°

Work out the size of angle *BCD*.
Give a reason for each stage of your working.

.....°

(Total for Question 19 is 5 marks)

20



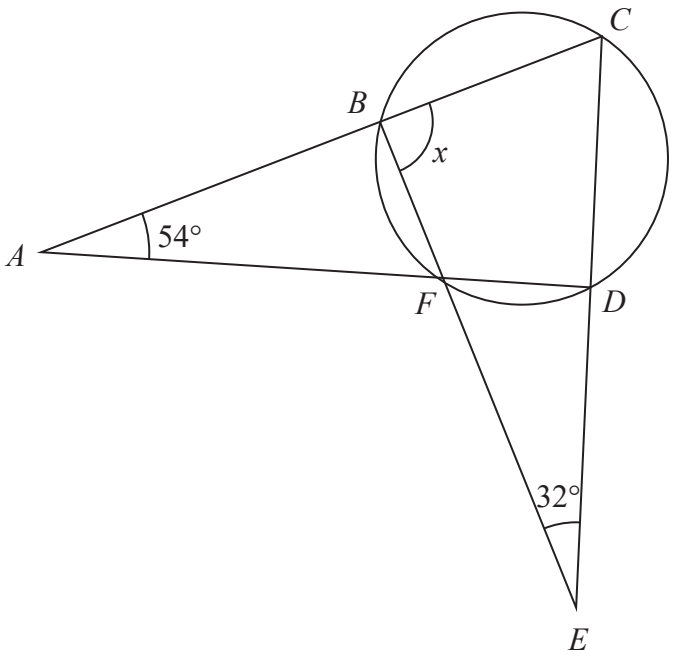
A, *B*, *C* and *D* are points on a circle.
PCQ is a tangent to the circle.
AB = *CB*.

Angle *BCQ* = $x°$

Prove that angle *CDA* = $2x°$
Give reasons for each stage in your working.

(Total for Question 20 is 5 marks)

21



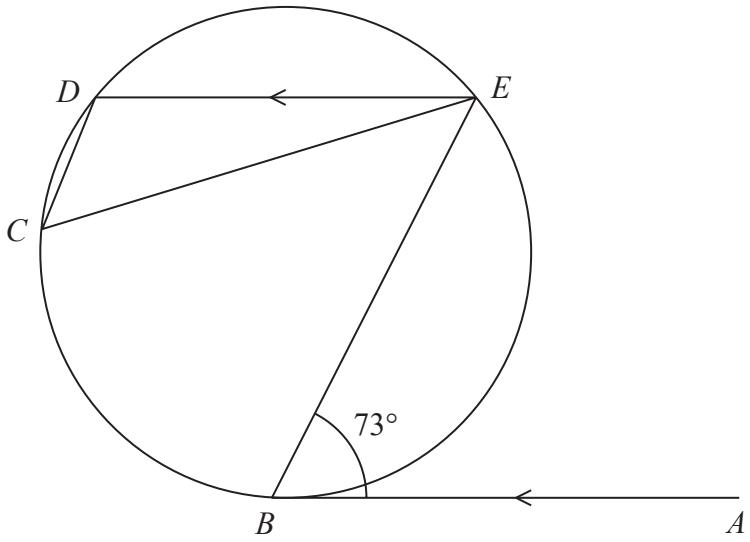
B, *C*, *D* and *F* are points on a circle.
ABC, *AFD*, *BFE* and *CDE* are straight lines.

Work out the size of angle *x*.
Show your working clearly.

x = ... °

(Total for Question 21 is 4 marks)

22



B, *C*, *D* and *E* are points on a circle.

AB is the tangent at *B* to the circle.
AB is parallel to *ED*.
Angle *ABE* = 73°

Work out the size of angle *DCE*.
Give a reason for each stage of your working.

°

(Total for Question 22 is 5 marks)