

G236 Circle theorems

Q1.

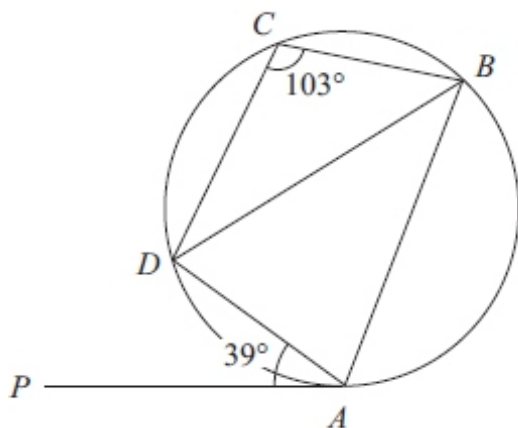


Diagram NOT
accurately drawn

A , B , C and D are points on a circle. PA is a tangent to the circle.
Angle $PAD = 39^\circ$. Angle $BCD = 103^\circ$. Calculate the size of angle ADB .

.....°

(Total for question = 3 marks)

Q2.

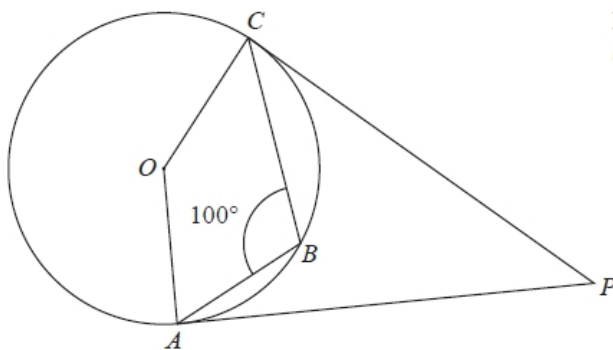


Diagram NOT
accurately drawn

A , B and C are points on a circle, centre O . PA and PC are tangents to the circle.
Angle $ABC = 100^\circ$. Calculate the size of angle APC .

.....°

(Total for question = 3 marks)

Q3.

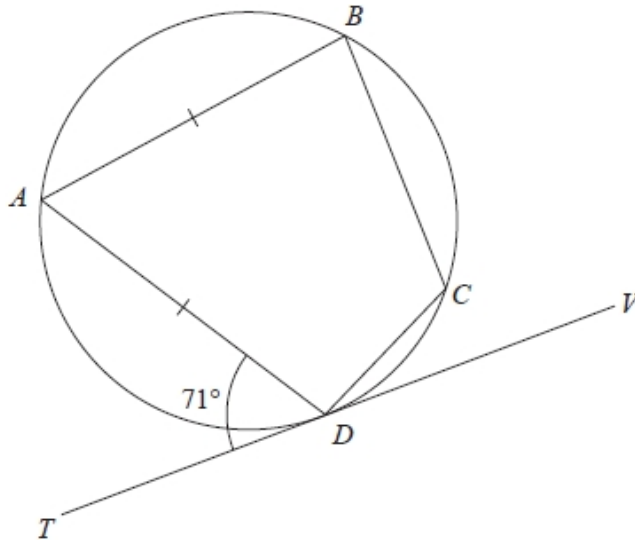


Diagram NOT
accurately drawn

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

$AB = AD$. Angle $ADT = 71^\circ$

Work out the size of angle BCD .

Give a reason for each stage of your working.

.....°

(Total for question = 5 marks)

Q4.

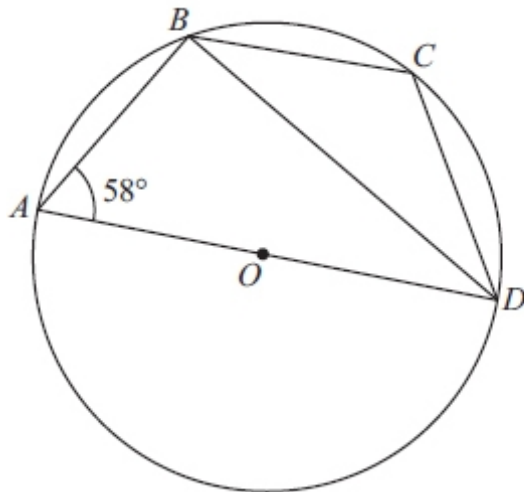


Diagram NOT accurately drawn

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

Angle $BAD = 58^\circ$

(a) Calculate the size of angle ADB .

.....^o
(2)

(b) (i) Calculate the size of angle BCD .

.....^o

(ii) Give a reason for your answer.

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

(Total for question = 4 marks)

Q5.

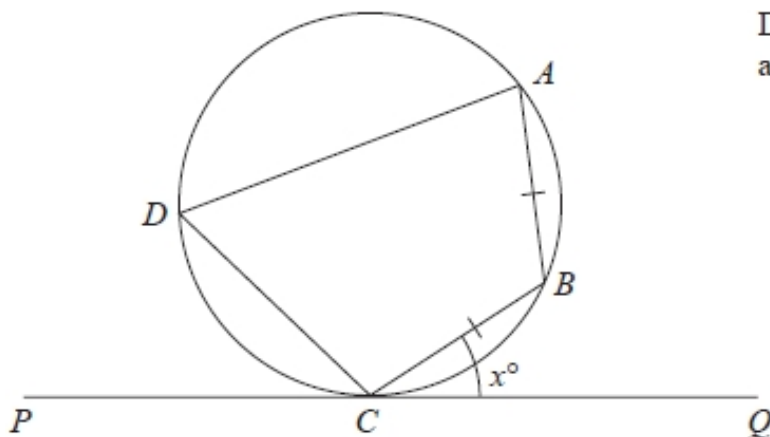


Diagram NOT
accurately drawn

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

PCQ is a tangent to the circle.

$AB = CB$. Angle $BCQ = x^\circ$

Prove that angle $CDA = 2x^\circ$

Give reasons for each stage in your working.

(Total for question = 5 marks)

Q6.

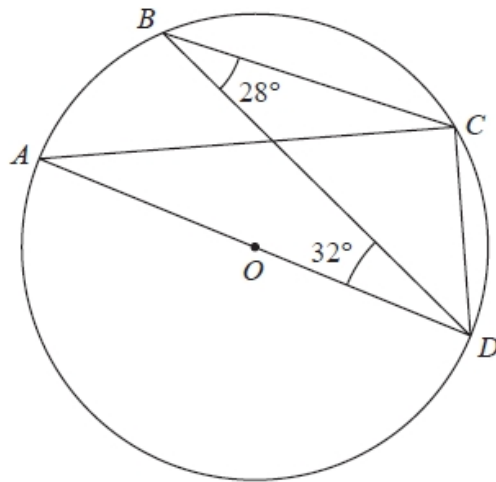


Diagram NOT accurately drawn

A , B , C and D are points on a circle, centre O . AOD is a diameter of the circle.
Angle $CBD = 28^\circ$. Angle $BDA = 32^\circ$
Find the size of angle BDC . Give a reason for each stage of your working.

.....^o
(Total for question = 4 marks)

Q7.

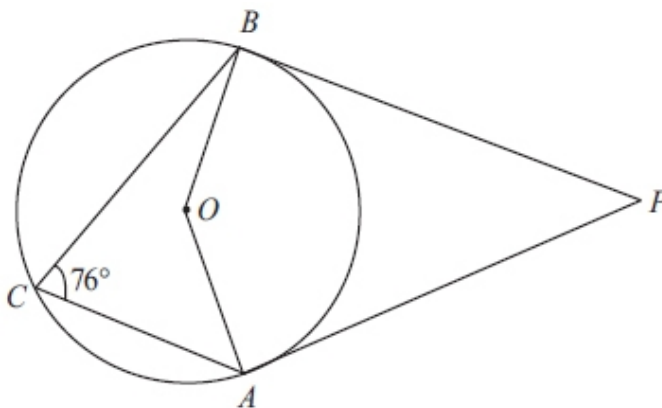


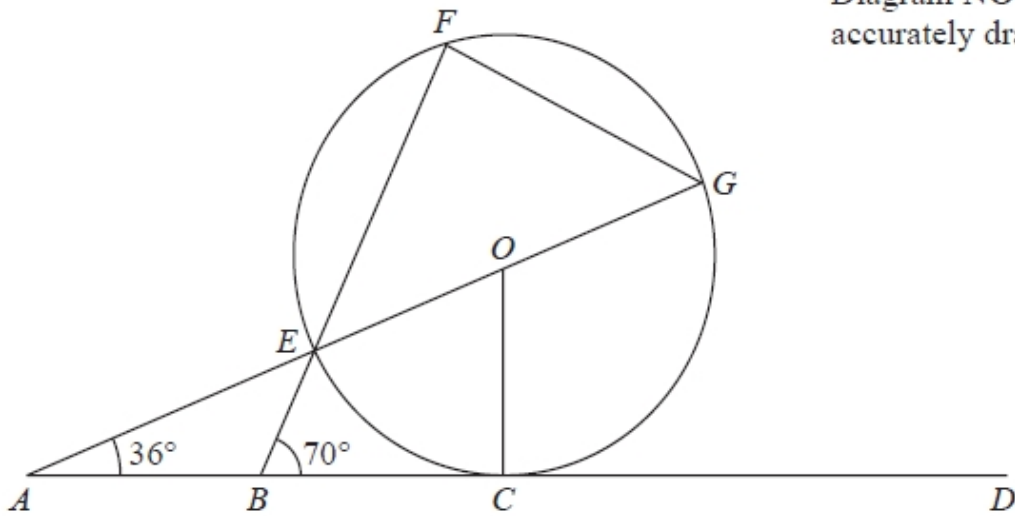
Diagram NOT accurately drawn

A , B and C are points on a circle, centre O . Angle $ACB = 76^\circ$
 PA and PB are tangents to the circle.
Calculate the size of angle APB .

.....^o
(Total for question = 4 marks)

Q8.

Diagram NOT
accurately drawn



$ABCD$ is the tangent at C to a circle, centre O .
 E , F and G are points on the circle.
 $AEOG$ and BEF are straight lines.
Angle $BAE = 36^\circ$. Angle $EBC = 70^\circ$
(a) (i) Find the size of angle AOC .

.....^o

(ii) Give reasons for your answer.

.....
.....

(2)

(b) Find the size of angle CGF .

.....^o

(3)

(Total for Question is 5 marks)

Q9.

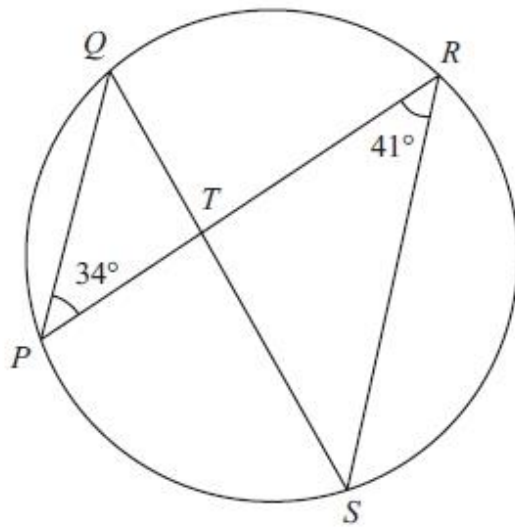


Diagram NOT accurately drawn

P , Q , R and S are points on the circumference of a circle.
 PR and QS intersect at T .
Angle $QPR = 34^\circ$ and angle $PRS = 41^\circ$

(a) (i) Find the size of angle PQS .

.....°

(ii) Give a reason for your answer.

.....
.....

(2)

(b) (i) Find the size of angle PTS .

.....°

(ii) Explain why T cannot be the centre of the circle.

.....
.....

(2)

(Total for question is 4 marks)

Q10.

J, K, L and M are points on the circumference of a circle.
 GJH is the tangent to the circle at J . MK and JL intersect at the point P .
 GML is a straight line.
 Angle $HJK = 62^\circ$, angle $JKM = 21^\circ$ and angle $JGL = 78^\circ$

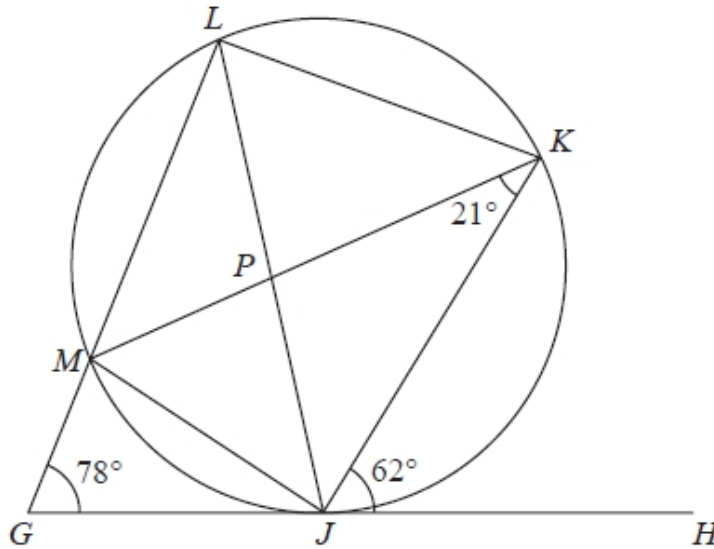


Diagram NOT accurately drawn

(a) Write down the size of angle MLJ .

.....^o
 (1)

(b) Write down the size of angle JLK .

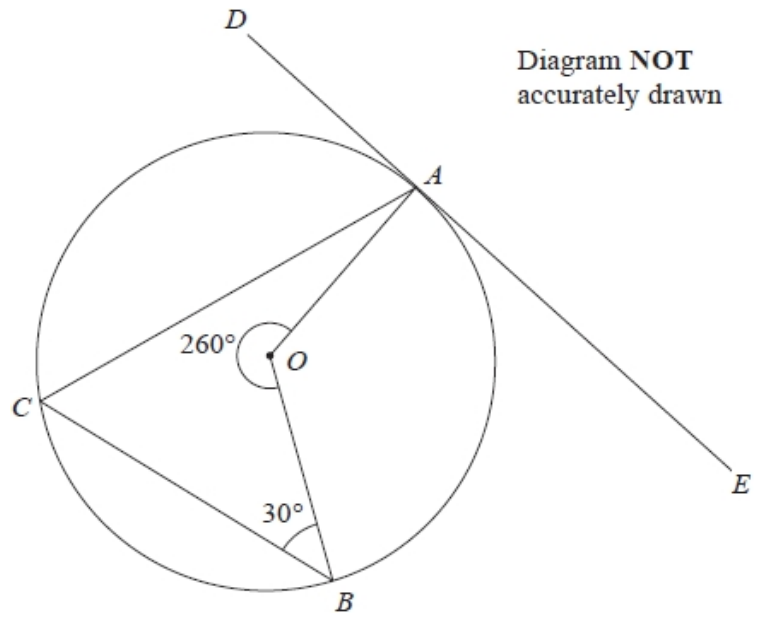
.....^o
 (1)

(c) Work out the size of angle KPL .

.....^o
 (3)

(Total for question = 5 marks)

Q11.



A , B , and C are points on the circumference of a circle, centre O .
 DAE is a tangent to the circle.

(a) Work out the size of angle ACB .

..... °

(2)

(b) Work out the size of angle CAD .

..... °

(2)

(Total for question = 4 marks)

Q12.

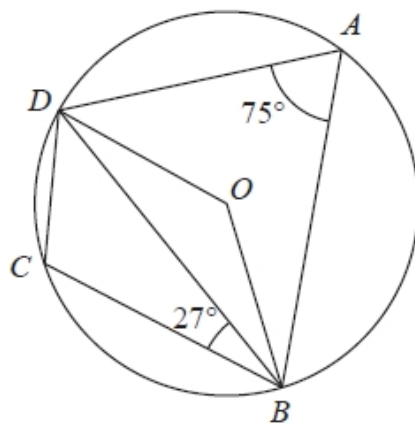


Diagram NOT
accurately drawn

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

Angle $DAB = 75^\circ$. Angle $DBC = 27^\circ$

Work out the size of angle ODC .

.....°

(Total for question = 4 marks)

Q13.

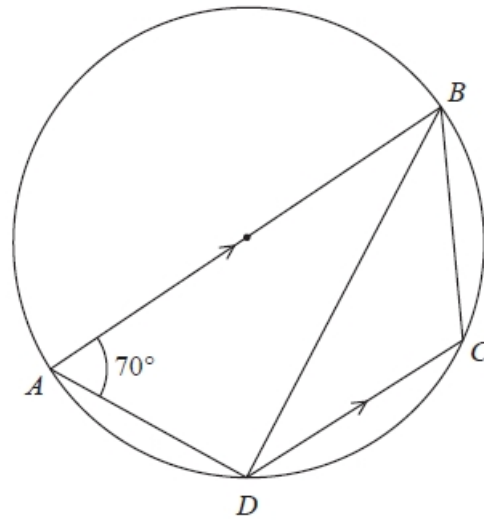


Diagram NOT
accurately drawn

A , B , C and D are points on a circle. AB is a diameter of the circle.
 DC is parallel to AB . Angle $BAD = 70^\circ$

(a) Calculate the size of angle BDC .

.....^o
(2)

The tangent to the circle at D meets the line BC extended at T .

(b) Calculate the size of angle $BT D$.

.....^o
(3)

(Total for question = 5 marks)

Q14.

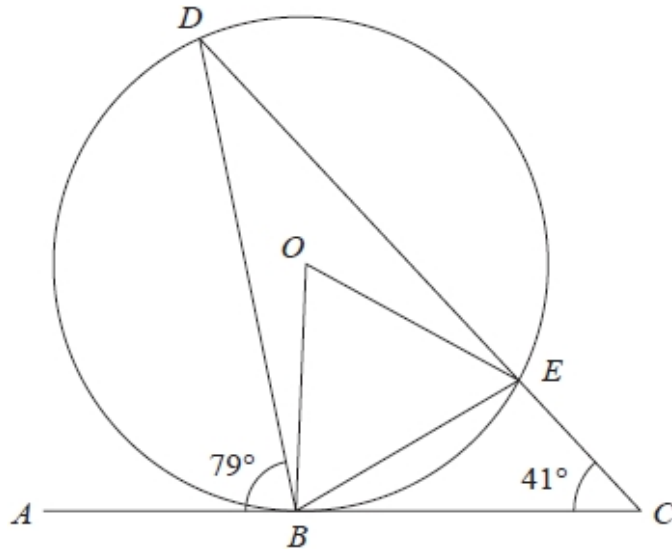


Diagram NOT
accurately drawn

B , D and E are points on a circle, centre O .
 ABC is a tangent to the circle. DEC is a straight line.
Angle $ABD = 79^\circ$ and angle $ECB = 41^\circ$

(a) Write down the size of angle BED .

.....^o
(1)

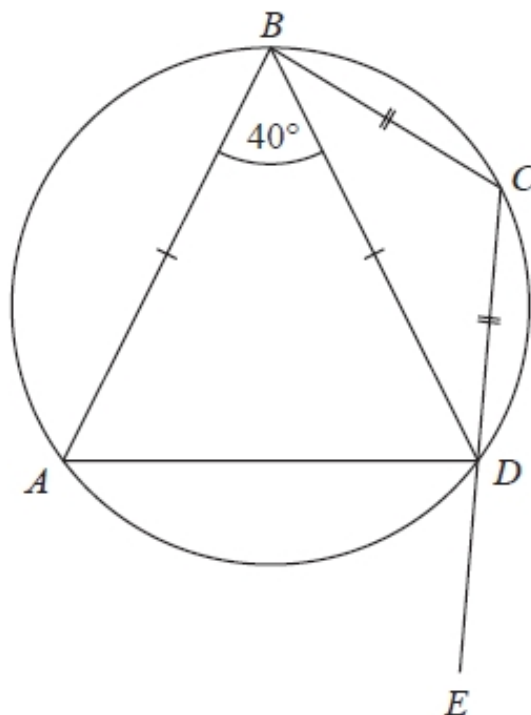
(b) Work out the size of angle BOE .

.....^o
(2)

(Total for question = 3 marks)

Q15.

The points A , B , C and D lie on a circle. CDE is a straight line.



$$BA = BD$$

$$CB = CD$$

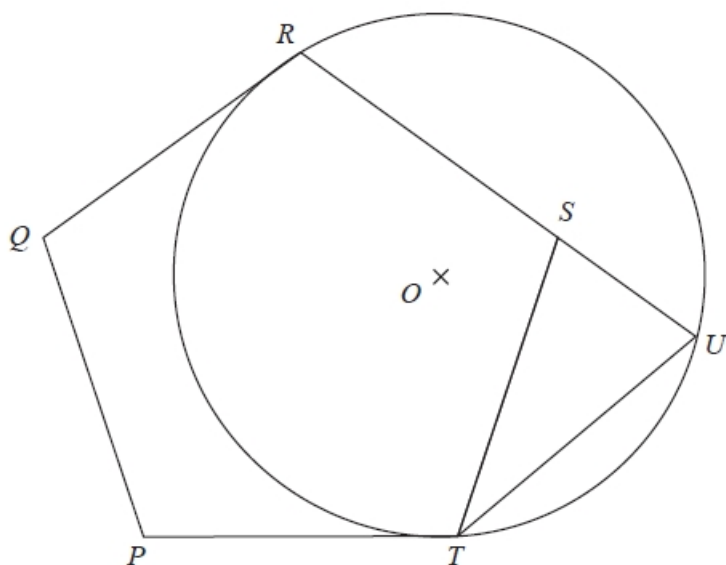
$$\text{Angle } ABD = 40^\circ$$

Work out the size of angle ADE .

You must give a reason for each stage of your working.

(Total for question = 5 marks)

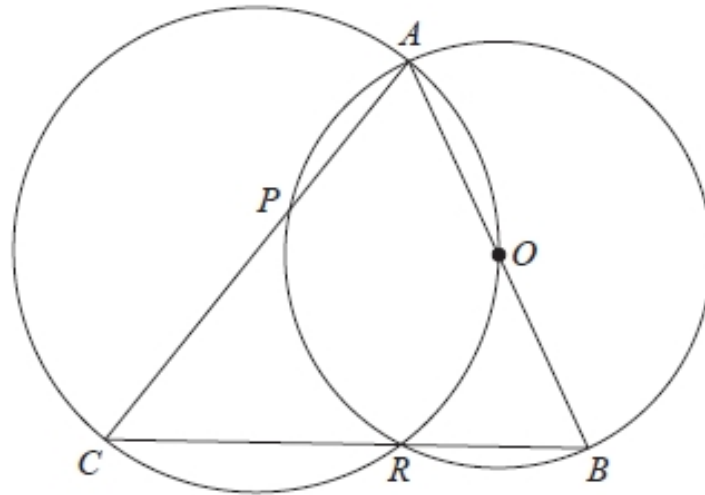
Q16.



$PQRST$ is a regular pentagon.
 R , U and T are points on a circle, centre O .
 QR and PT are tangents to the circle.
 RSU is a straight line.
Prove that $ST = UT$.

(Total for question = 5 marks)

Q17.



A , B , R and P are four points on a circle with centre O .

A , O , R and C are four points on a different circle.

The two circles intersect at the points A and R .

CPA , CRB and AOB are straight lines.

Prove that angle $CAB =$ angle ABC .

(Total for question = 4 marks)