

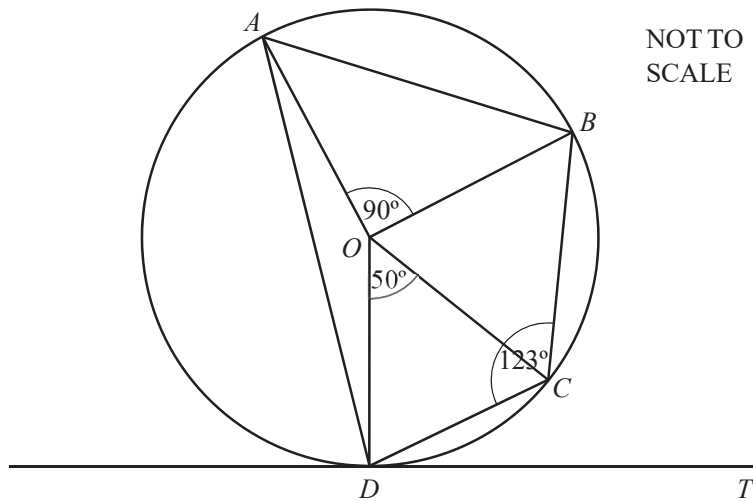


EXAM PAPERS PRACTICE

Circle Theorems

Question Paper

Question 1



The points A, B, C and D lie on a circle centre O .
Angle $AOB = 90^\circ$, angle $COD = 50^\circ$ and angle $BCD = 123^\circ$.
The line DT is a tangent to the circle at D .

Find

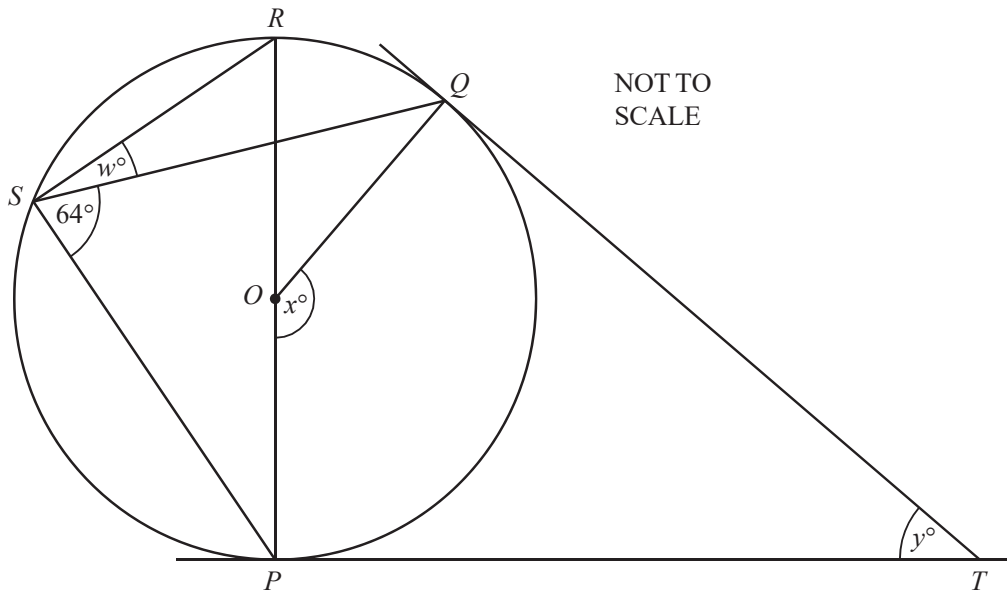
(a) angle OCD , [1]

(b) angle TDC , [1]

(c) angle ABC , [1]

(d) reflex angle AOC . [1]

Question 2



P , Q , R and S lie on a circle, centre O .
 TP and TQ are tangents to the circle.
 PR is a diameter and angle $PSQ = 64^\circ$.

(a) Work out the values of w and x .

[2]

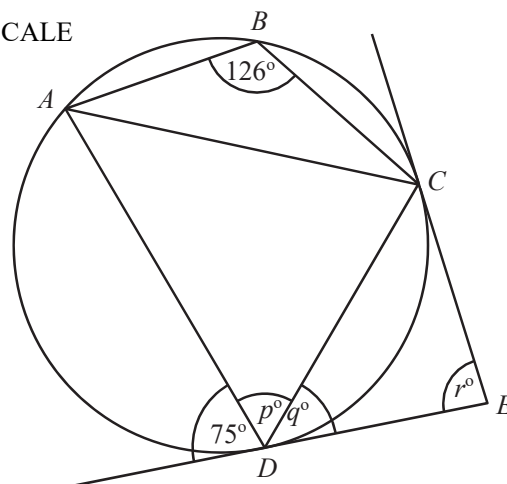
(b) Showing all your working, find the value of y .

[2]

Question 3

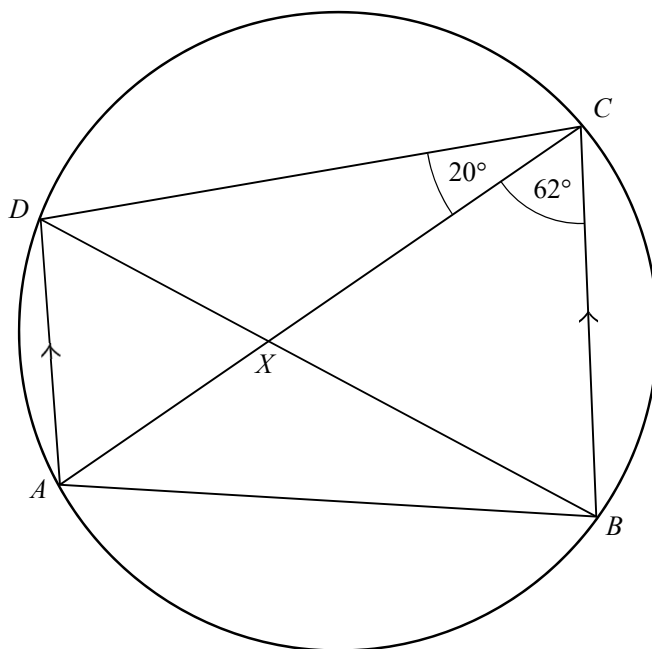
$ABCD$ is a cyclic quadrilateral.
The tangents at C and D meet at E .
Calculate the values of p , q and r .

NOT TO SCALE



[4]

Question 4



NOT TO
SCALE

$ABCD$ is a cyclic quadrilateral.

AD is parallel to BC . The diagonals DB and AC meet at X .

Angle $ACB = 62^\circ$ and angle $ACD = 20^\circ$.

Calculate

- (a) angle DBA , [1]

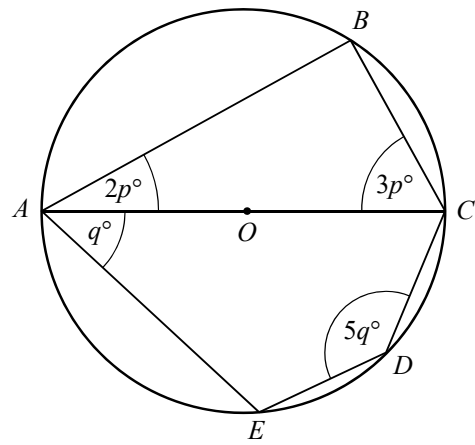
- (b) angle DAB , [1]

- (c) angle DAC , [1]

- (d) angle AXB , [1]

- (e) angle CDB . [1]

Question 5



NOT TO
SCALE

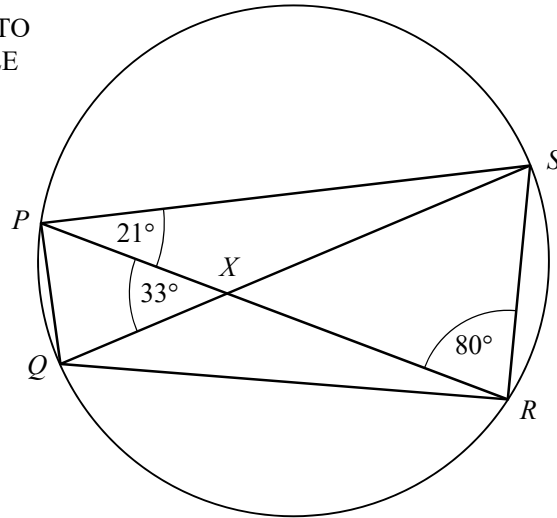
A , B , C , D and E lie on a circle, centre O . AOC is a diameter.
Find the value of

(a) p , [2]

(b) q . [2]

Question 6

NOT TO
SCALE



$PQRS$ is a cyclic quadrilateral. The diagonals PR and QS intersect at X .
Angle $SPR = 21^\circ$, angle $PRS = 80^\circ$ and angle $PXQ = 33^\circ$.
Calculate

(a) angle PQS ,

[1]

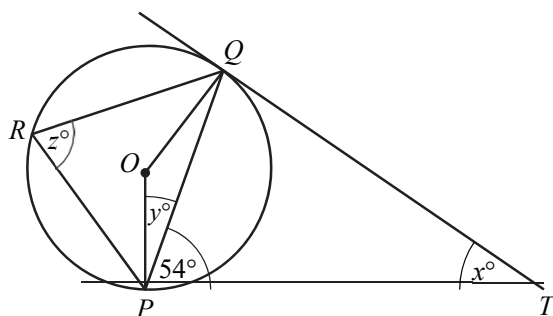
(b) angle QPR ,

[1]

(c) angle PSQ .

[1]

Question 7



NOT TO
SCALE

The points P , Q and R lie on a circle, centre O .
 TP and TQ are tangents to the circle.
Angle $TPQ = 54^\circ$.

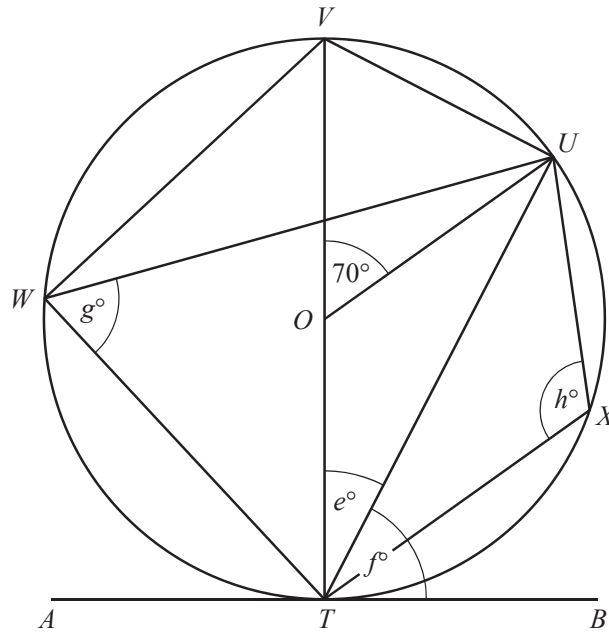
Calculate the value of

(a) x , [1]

(b) y , [1]

(c) z . [2]

Question 8



NOT TO
SCALE

The diagram shows a circle, centre O .
 VT is a diameter and ATB is a tangent to the circle at T .
 U , V , W and X lie on the circle and angle $VOU = 70^\circ$.

Calculate the value of

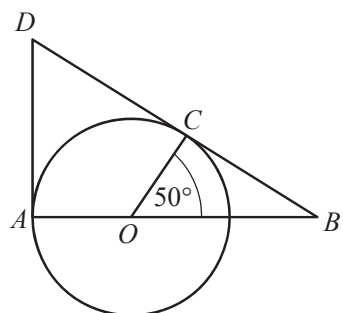
(a) e , [1]

(b) f , [1]

(c) g , [1]

(d) h . [1]

Question 9



NOT TO
SCALE

O is the centre of the circle.

DA is the tangent to the circle at A and DB is the tangent to the circle at C .

AOB is a straight line. Angle $COB = 50^\circ$.

Calculate

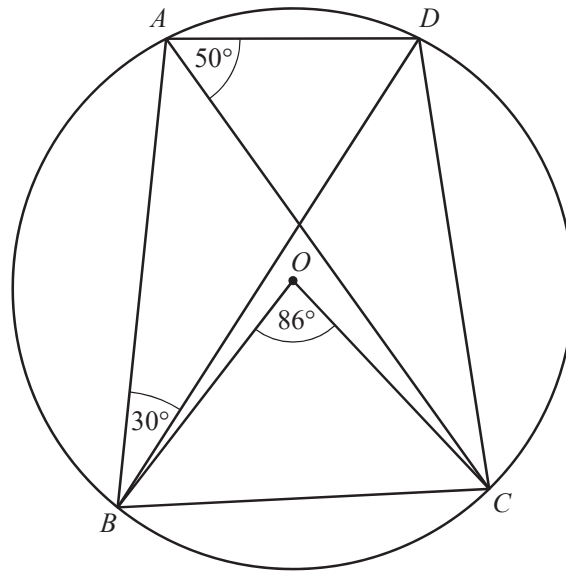
(a) angle CBO ,

[1]

(b) angle DOC .

[1]

Question 10



NOT TO
SCALE

The points A , B , C and D lie on the circumference of the circle, centre O .

Angle $ABD = 30^\circ$, angle $CAD = 50^\circ$ and angle $BOC = 86^\circ$.

(a) Give the reason why angle $DBC = 50^\circ$.

[1]

(b) Find

(i) angle ADC ,

[1]

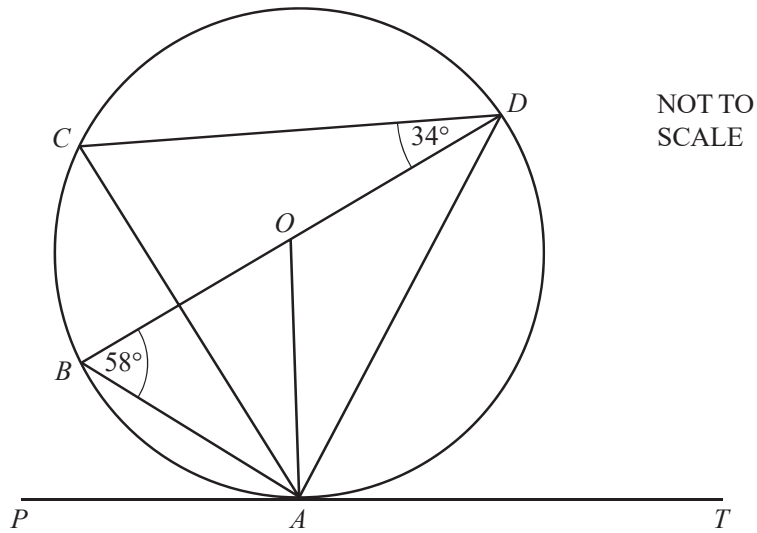
(ii) angle BDC ,

[1]

(iii) angle OBD .

[2]

Question 11



NOT TO
SCALE

A , B , C and D lie on the circle, centre O .
 BD is a diameter and PAT is the tangent at A .
Angle $ABD = 58^\circ$ and angle $CDB = 34^\circ$.

Find

(a) angle ACD ,

[1]

(b) angle ADB ,

[1]

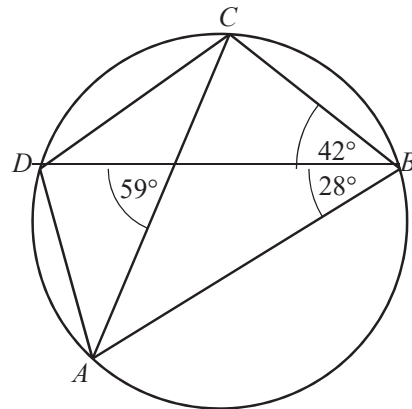
(c) angle DAT ,

[1]

(d) angle CAO .

[2]

Question 12



NOT TO
SCALE

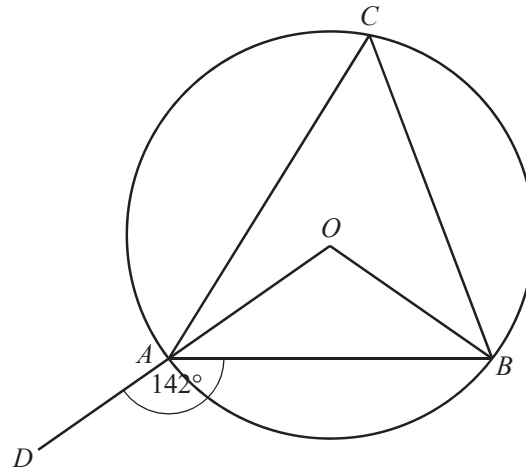
A , B , C and D lie on the circle.

Find

(a) angle ADC , [1]

(b) angle ADB . [2]

Question 13



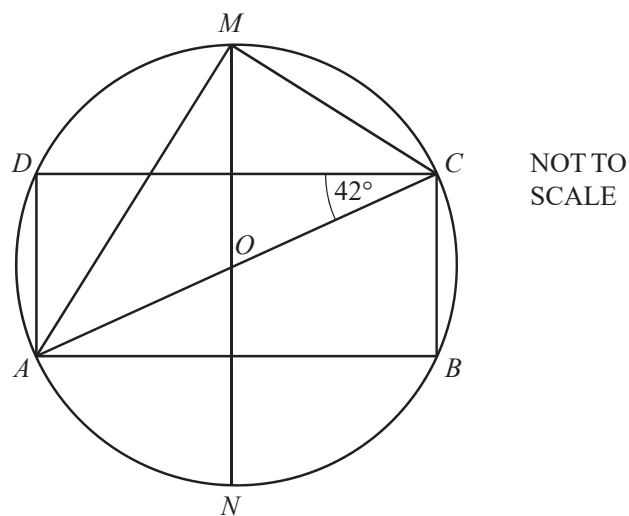
NOT TO
SCALE

A , B and C are points on the circumference of a circle centre O .
 OAD is a straight line and angle $DAB = 142^\circ$.

Calculate the size of angle ACB .

[3]

Question 14



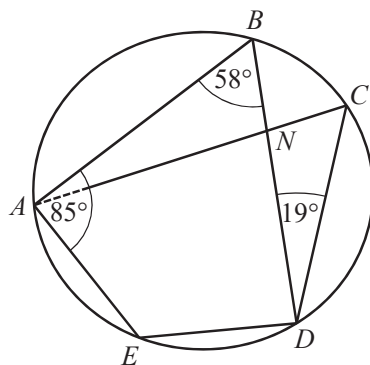
The vertices of the rectangle $ABCD$ lie on a circle centre O .
 MN is a line of symmetry of the rectangle.
 AC is a diameter of the circle and angle $ACD = 42^\circ$.

Calculate

(a) angle CAM , [2]

(b) angle DCM . [2]

Question 15



NOT TO
SCALE

A, B, C, D and E are points on a circle.
Angle $ABD = 58^\circ$, angle $BAE = 85^\circ$ and angle $BDC = 19^\circ$.
 BD and CA intersect at N .

Calculate

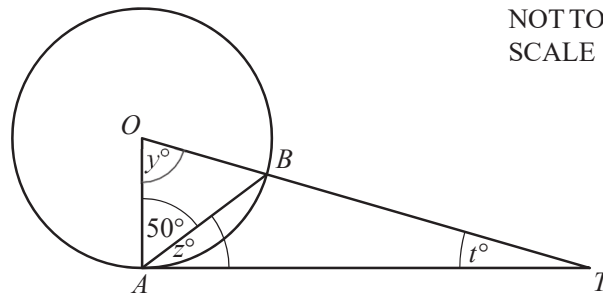
(a) angle BDE ,

[1]

(b) angle AND .

[2]

Question 16



TA is a tangent at A to the circle, centre O .
Angle $OAB = 50^\circ$.

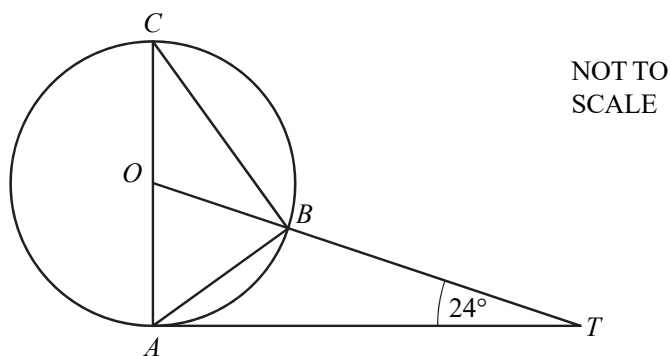
Find the value of

(a) y , [1]

(b) z , [1]

(c) t . [1]

Question 17



A , B and C are points on a circle, centre O .
 TA is a tangent to the circle at A and OBT is a straight line.
 AC is a diameter and angle $OTA = 24^\circ$.

Calculate

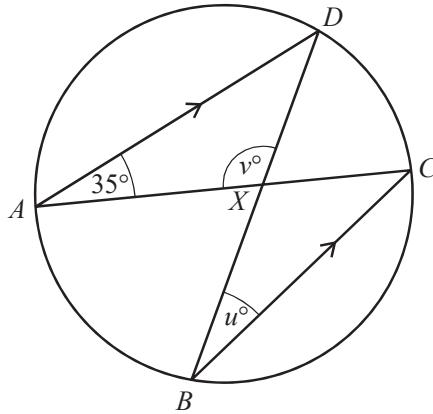
(a) angle AOT , [2]

(b) angle ACB , [1]

(c) angle ABT . [2]

Question 18

(a)



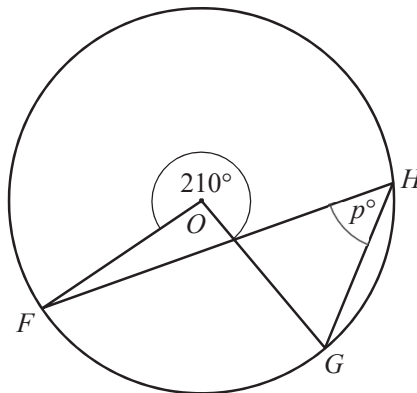
NOT TO
SCALE

A , B , C and D are points on the circle.
 AD is parallel to BC .
The chords AC and BD intersect at X .

[3]

Find the value of u and the value of v .

(b)



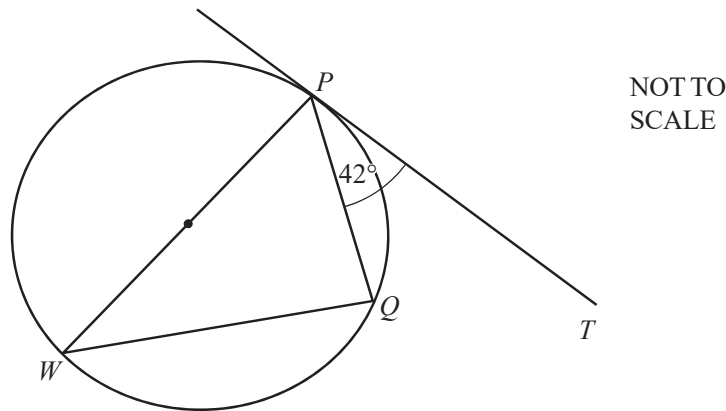
NOT TO
SCALE

F , G and H are points on the circle, centre O .

[2]

Find the value of p .

Question 19

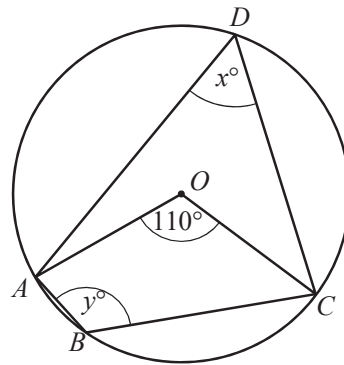


In the diagram, PT is a tangent to the circle at P .
 PW is a diameter and angle $TPQ = 42^\circ$.

[2]

Find angle PWQ .

Question 20



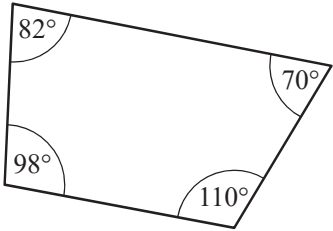
NOT TO
SCALE

A , B , C and D lie on the circle, centre O .

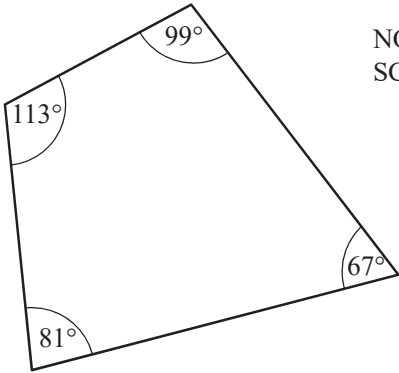
Find the value of x and the value of y .

[2]

Question 21

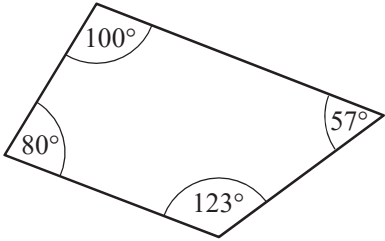


A

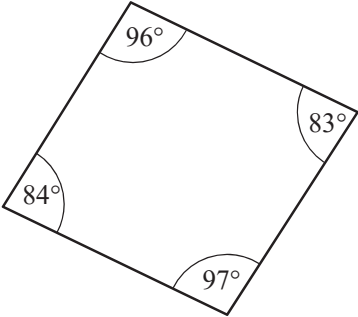


B

NOT TO SCALE



C



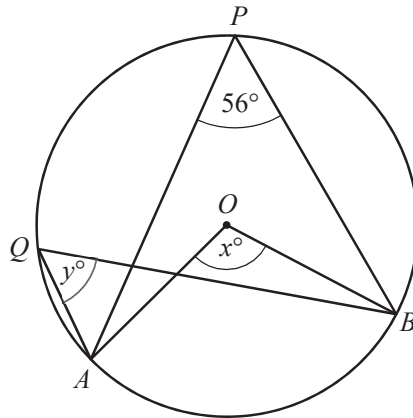
D

The diagram shows four quadrilaterals A, B, C and D.

Which one of these could be a cyclic quadrilateral?

[1]

Question 22



NOT TO
SCALE

A , B , P and Q lie on the circle, centre O .
Angle $APB = 56^\circ$.

Find the value of

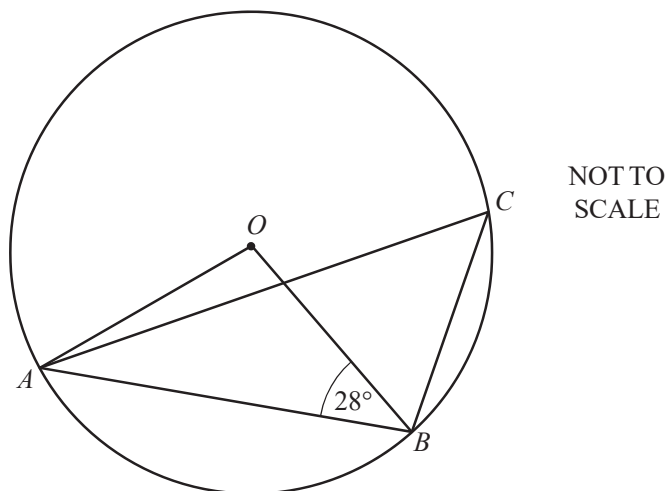
(a) x ,

[1]

(b) y .

[1]

Question 23



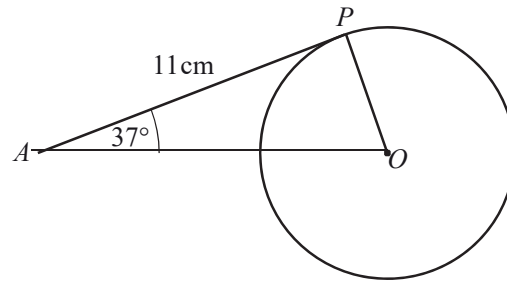
In the diagram, A , B and C lie on the circumference of a circle, centre O .

Work out the size of angle ACB .

Give a reason for each step of your working.

[4]

Question 24



NOT TO
SCALE

In the diagram, AP is a tangent to the circle at P .
 O is the centre of the circle, angle $PAO = 37^\circ$ and $AP = 11$ cm.

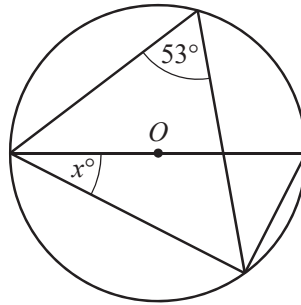
(a) Write down the size of angle OPA .

[1]

(b) Work out the radius of the circle.

[2]

Question 25



NOT TO
SCALE

The diagram shows a circle, centre O .

Find the value of x .

[2]