Questions

Q1.

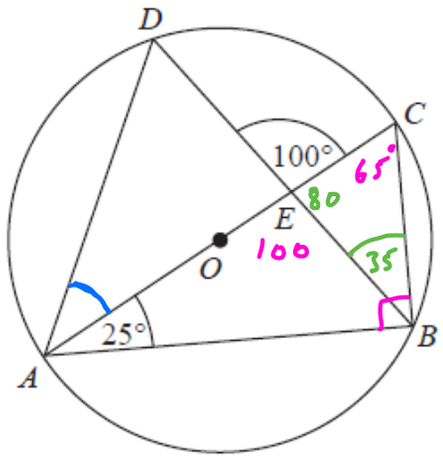

Diagram **NOT** accurately drawn

∠AEB = 100° (vert opp ∠s)

∠ABC = 90° (∠ in semi-circle)

∠ACB = 65° (∠ sum of △)

∠BEC = 80° (∠s on a str line)

∠EBC = 35° (∠ sum of △)

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

Angle *CAB* = 25°
Angle *DEC* = 100°

Work out the size of angle *DAC*.
You must show all your working.

∠DAC = 35°

(∠s in same segment)

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(Total for question = 4 marks)

Q2.

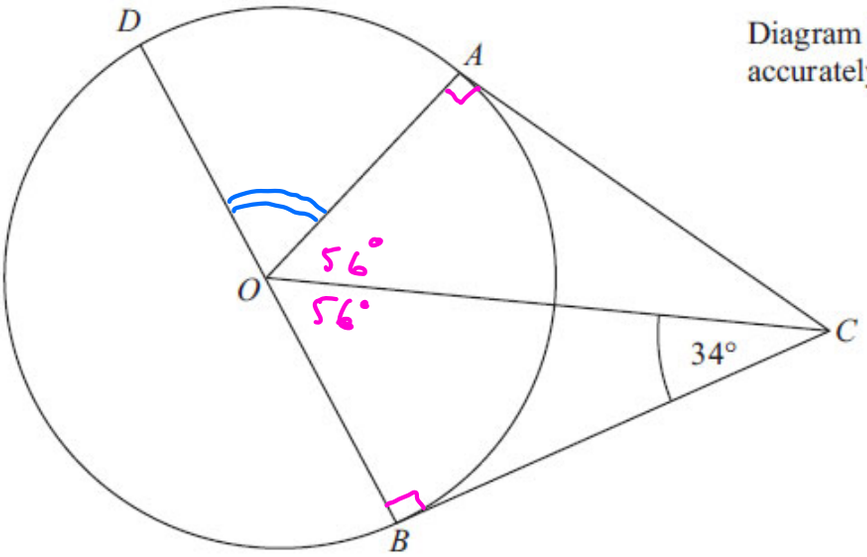

Diagram **NOT** accurately drawn

$\angle OBC = \angle OAC = 90°$
(radius – tangent)

$\angle BOC = 56°$
($\angle$ sum of $\triangle$)

$\angle OAC = 56°$
(symmetry) (congruent $\triangle$s)

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*.

$\angle DOA = 68°$
($\angle$s on a str line)

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(Total for Question is 3 marks)

Q3.

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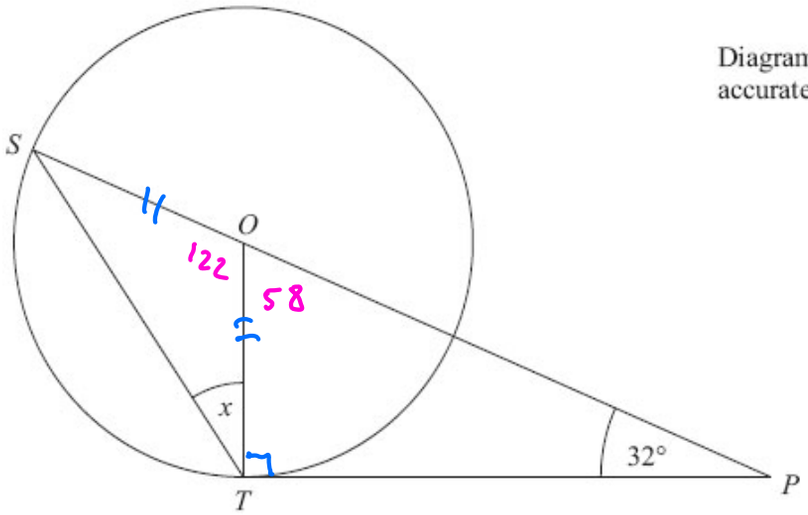

Diagram **NOT** accurately drawn

$\angle OTP = 90°$ (tgt radius)

$\angle TOP = 58°$ ($\angle$ sum of $\triangle$)

$\angle SOT = 122°$ ($\angle$s on str line)

$x = \dfrac{180 - 122}{2}$ isos $\triangle$

$x = 29°$

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.

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(Total for Question is 5 marks)

Q4.

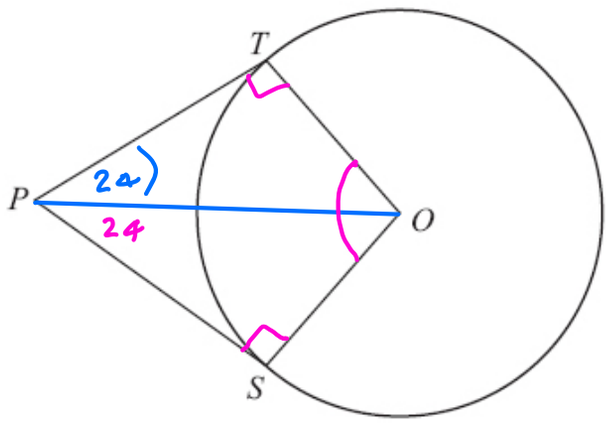

Diagram **NOT** accurately drawn

$\angle PTO = \angle PSO = 90°$
(tgt - radius)
$\angle SPO = 24°$ symmetry
(or congruent △s)

$\therefore \angle SOT = 360 - 90 - 90 - 48$

S and *T* are points on the circumference of a circle, centre *O*.
PT and *PS* are tangents.
Angle *TPO* = 24°.

Work out the size of angle *SOT*.

$\angle SOT = 132°$

. . . . . °

(Total for Question is 3 marks)

Q5.

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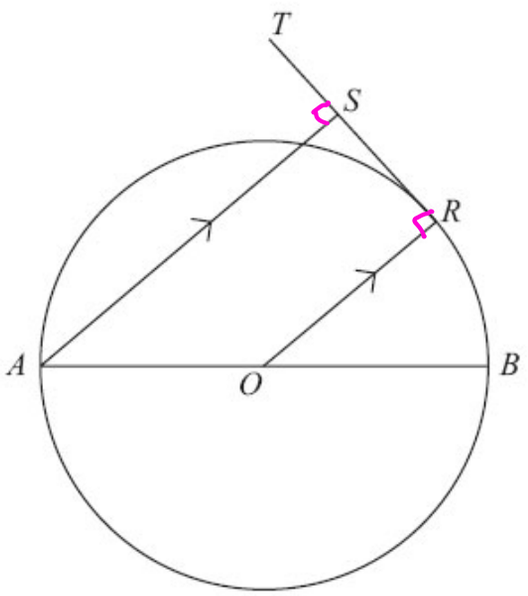


Diagram **NOT** accurately drawn

$\angle ORS = 90°$
(tgt - radius

$\angle AST = 90°$
(corresponding angles)

AB is a diameter of a circle centre *O*.
The point *R* is on the circumference of the circle.
RST is the tangent to the circle at *R*.
AS is parallel to *OR*.

Prove that the size of angle *AST* is 90°.

(Total for Question is 3 marks)

Q6.

$\angle ADO = \angle ABO = 90°$
(tgt – radius)
$\angle DOB$ (minor) $= 140°$
($\angle$ sum of quad)
$\angle DOB$ (major) $= 220°$
$\angle OBC = 15°$
($\angle$s on a str line)

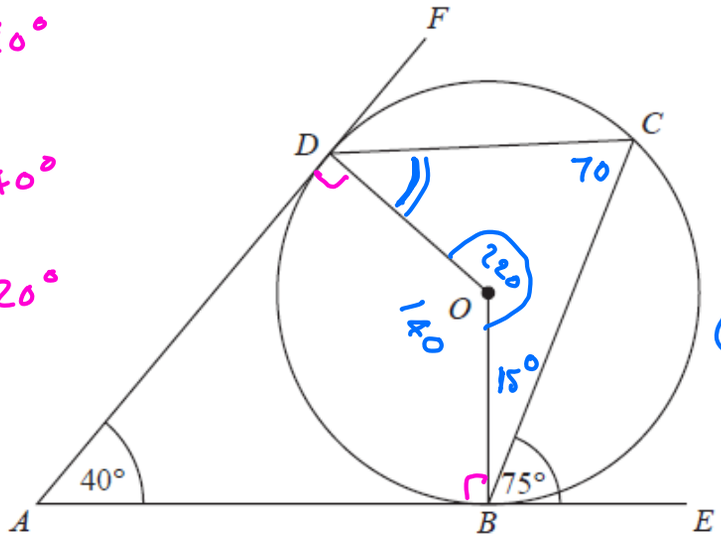


Diagram **NOT** accurately drawn

$\angle DCB = 70°$
($\angle$ at centre is twice $\angle$ at circ)

B, *C* and *D* are points on the circumference of a circle, centre *O*.
ABE and *ADF* are tangents to the circle.

Angle *DAB* = 40°
Angle *CBE* = 75°

Work out the size of angle *ODC*.

$\angle ODC = 360 - 220 - 15 - 70$
$\angle ODC = 55°$
($\angle$ sum of quad)

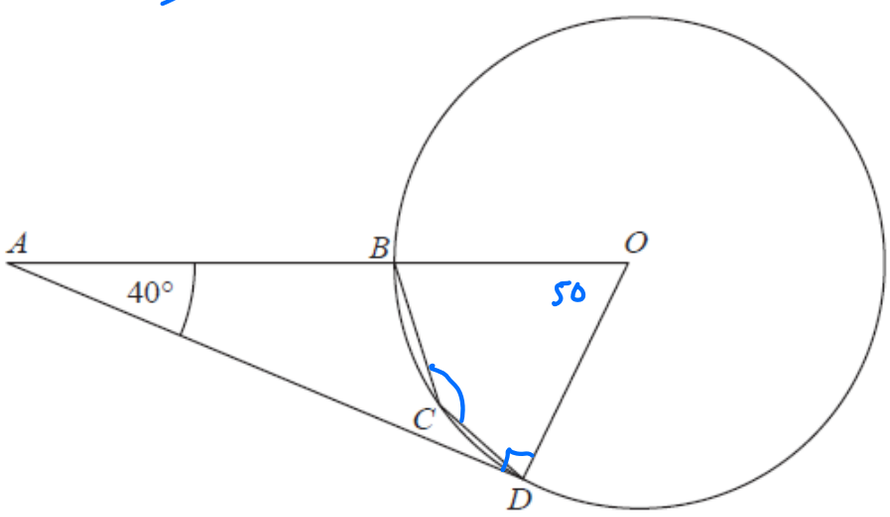
.....°

(Total for Question is 3 marks)

Q7.

$\angle ADO = 90°$
(tgt radius)
$\angle AOD = 50°$
($\angle$ sum of $\triangle$)

Diagram **NOT** accurately drawn



$\angle BOD$ major $= 310$
$\angle BCD = 155°$
($\angle$ at centre twice $\angle$ at circ)

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

ABO is a straight line.
AD is the tangent at *D* to the circle.
Angle *DAO* = 40°

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

(Total for question = 5 marks)

Q8.

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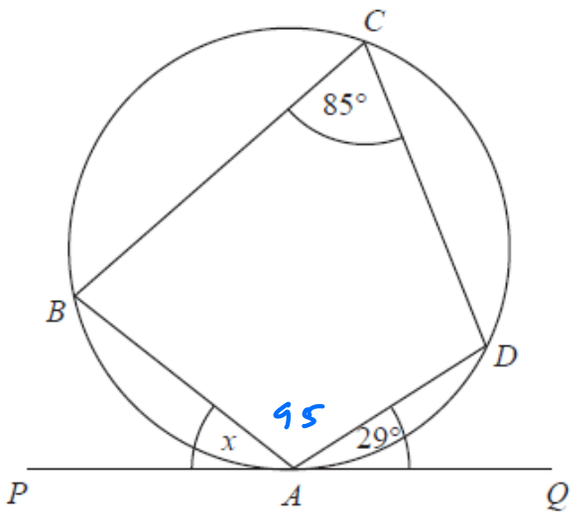

Diagram **NOT** accurately drawn

∠BAD = 95°
(opp ∠s of cyclic quad add to 180°)

x = 180 − 95 − 29

x = 56°
(∠s on a str line)

In the diagram,

the points *A*, *B*, *C* and *D* are on the circumference of a circle
the line *PAQ* is a tangent to the circle
angle *DAQ* = 29°
angle *BCD* = 85°

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

(Total for question = 3 marks)

Q9.

OR

$\angle AOC = 134°$
(∠ at centre twice ∠ at circ)
$x = 360 - 134$
$= 226°$

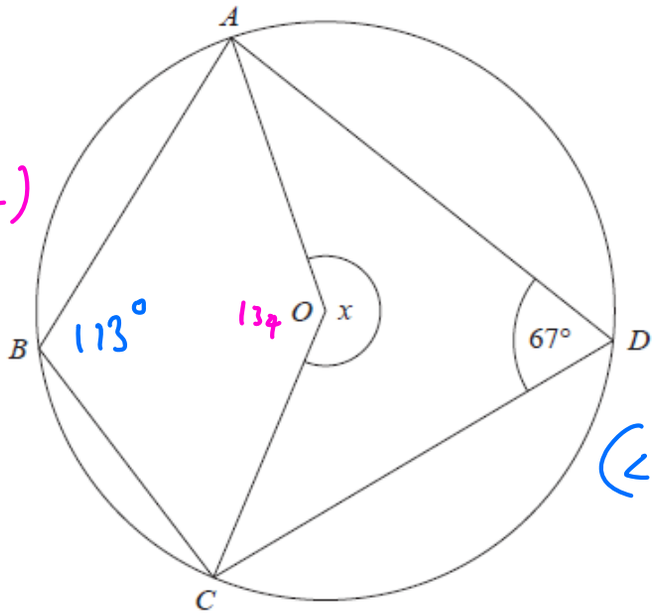

Diagram **NOT** accurately drawn

$\angle ABC = 113°$
(opp ∠s of cyclic quad)

$x = 226°$
(∠ at centre twice ∠ at circ)

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

Angle *ADC* = 67°

Find the size of the angle marked *x*.

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(Total for question = 2 marks)

$\angle ADO = \angle ABO = 90°$
(tgt – radius)

$\angle DOB = 130°$
(∠ sum of quad)

Q10.

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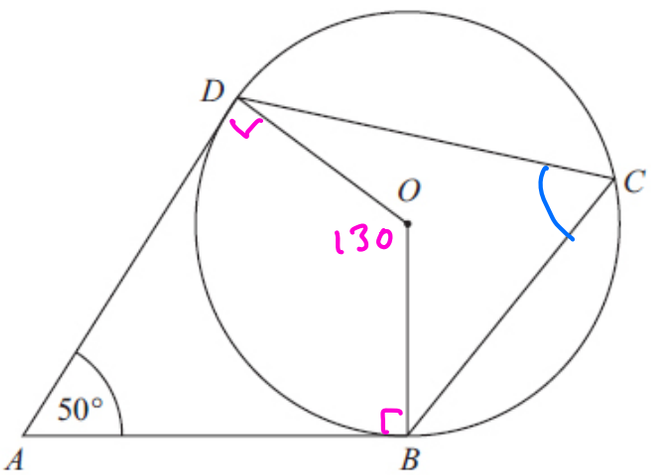

$\angle BCD = 65°$
(∠ at centre is twice ∠ at circ)

Diagram **NOT** accurately drawn

B, *C* and *D* are points on the circumference of a circle, centre *O*.
AB and *AD* are tangents to the circle.

Angle *DAB* = 50°

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

(Total for Question is 4 marks)

Q11.

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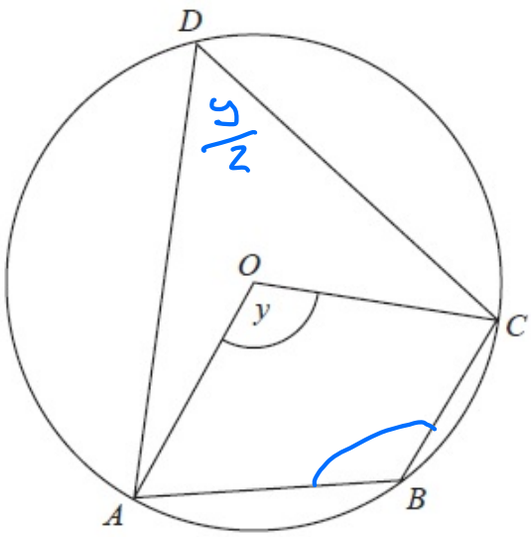

Diagram **NOT** accurately drawn

$\angle ADC = \frac{y}{2}$

(∠ at centre twice ∠ at circ)

$\angle ABC = 180 - \frac{y}{2}$

(opp ∠s of cyclic quad

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

Angle *AOC* = *y*.

Find the size of angle *ABC* in terms of *y*.

Give a reason for each stage of your working.

(Total for Question is 4 marks)

Q12.

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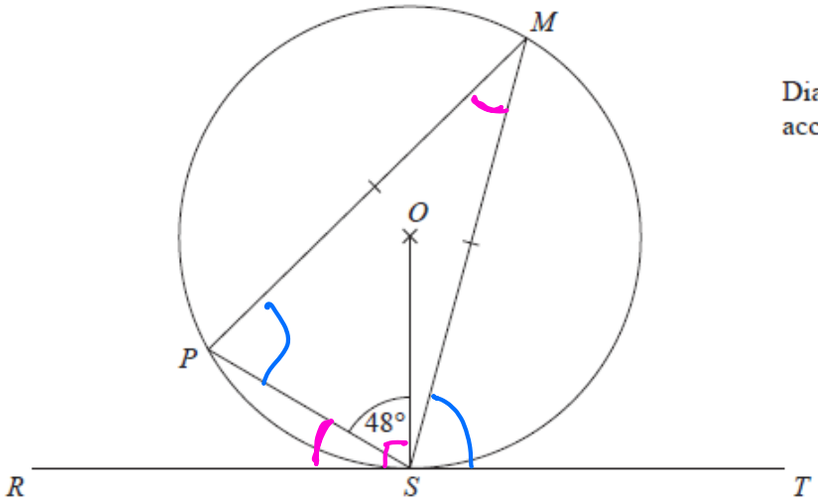

Diagram **NOT** accurately drawn

$\angle PSR = 42°$
(tgt radius)

$\angle PMS = 42°$
(alt seg theorem)

$\angle SPM = \frac{180-42}{2}$

$\angle SPM = 69°$

P, *M* and *S* are points on a circle, centre *O*.
RST is a tangent to the circle.

Angle *PSO* = 48°
MP = *MS*

Work out the size of angle *MST*.
Give reasons for each stage of your working.

$\angle MST = 69°$
(alternate seg theorem)

(Total for question = 5 marks)

Q13.

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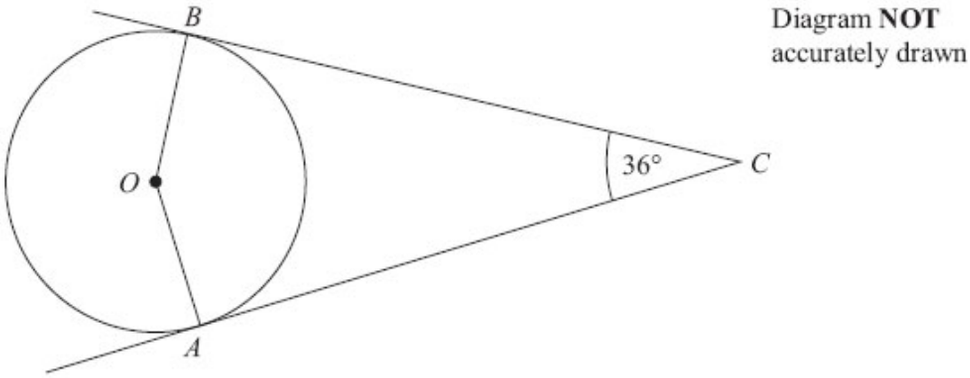


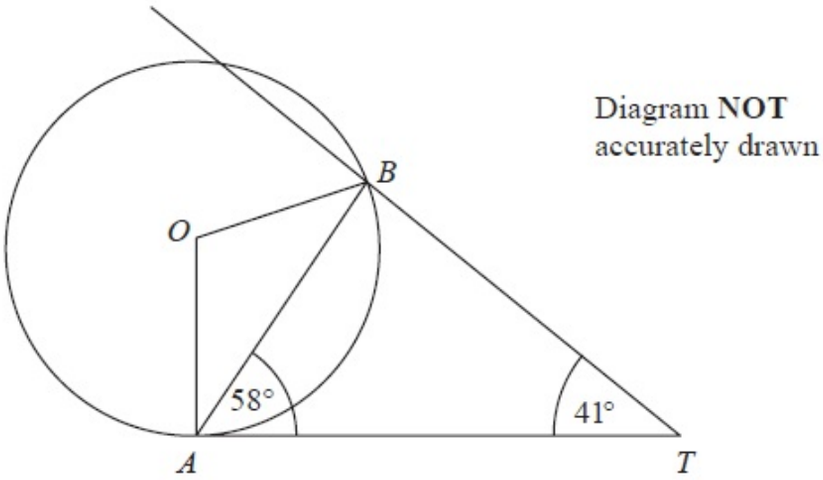
*A*and *B*are points on the circumference of a circle, centre *O*.
*AC*and *BC*are tangents to the circle.

Angle *ACB*= 36°.

Find the size of angle *OBA*.
Give reasons for your answer.

(Total for Question is 4 marks)

Q14.



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

AT is a tangent to the circle.

Angle *TAB* = 58°.

Angle *BTA* = 41°.

Calculate the size of angle *OBT*.

You must give reasons at each stage of your working.

(Total for Question is 5 marks)

Q15.

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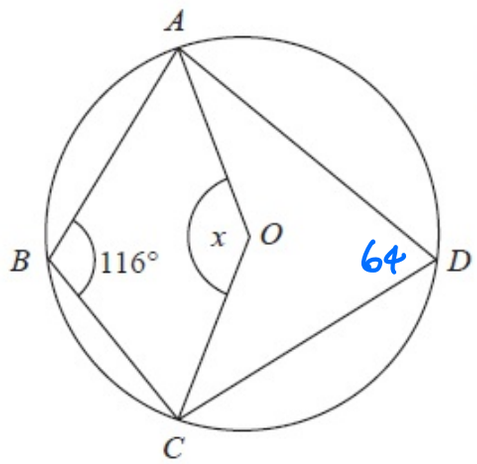

Diagram **NOT** accurately drawn

$\angle ABC = 64^\circ$

(opp $\angle$s of cyclic quad)

$x = 128^\circ$

($\angle$ at centre twice $\angle$ at circ)

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

Angle *ABC* = 116°

Find the size of the angle marked *x*.

Give reasons for your answer.

(Total for Question is 4 marks)