

Angles

(Circles, Quadrilaterals, Polygons & Triangles)

Question Paper 8

Level	IGCSE
Subject	Maths (0580)
Exam Board	Cambridge International Examinations (CIE)
Paper Type	Extended
Topic	Geometry
Sub-Topic	Angles (Circles, Quadrilaterals, Polygons & Triangles)
Booklet	Question Paper 8

Time Allowed: 60 minutes

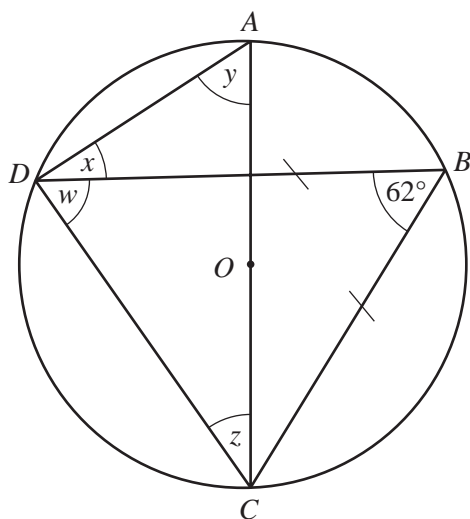
Score: /50

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	60%	45%	35%	25%	<25%

1 (a)



NOT TO SCALE

A, B, C and D are points on the circumference of a circle centre O .
 AC is a diameter.
 $BD = BC$ and angle $DBC = 62^\circ$.

Work out the values of w, x, y and z .
 Give a reason for each of your answers.

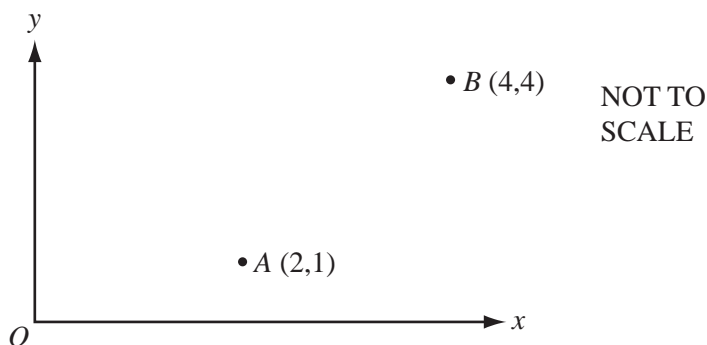
$w =$ because [2]

$x =$ because [2]

$y =$ because [2]

$z =$ because [2]

(b)



(i) Write down \vec{AB} as a column vector.

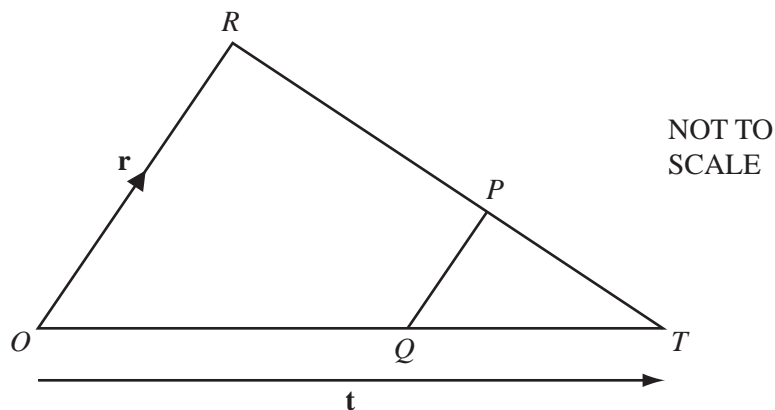
Answer(b)(i) $\vec{AB} = \begin{pmatrix} \\ \end{pmatrix}$ [1]

(ii) $\vec{AC} = \begin{pmatrix} 0 \\ 7 \end{pmatrix}$.

Work out \vec{BC} as a column vector.

Answer(b)(ii) $\vec{BC} = \begin{pmatrix} \\ \end{pmatrix}$ [2]

(c)



$\vec{OR} = \mathbf{r}$ and $\vec{OT} = \mathbf{t}$.

P is on RT such that $RP : PT = 2 : 1$.

Q is on OT such that $OQ = \frac{2}{3} OT$.

Write the following in terms of \mathbf{r} and/or \mathbf{t} .
Simplify your answers where possible.

(i) \vec{QT}

Answer(c)(i) $\vec{QT} = \dots\dots\dots$ [1]

(ii) \vec{TP}

Answer(c)(ii) $\vec{TP} = \dots\dots\dots$ [2]

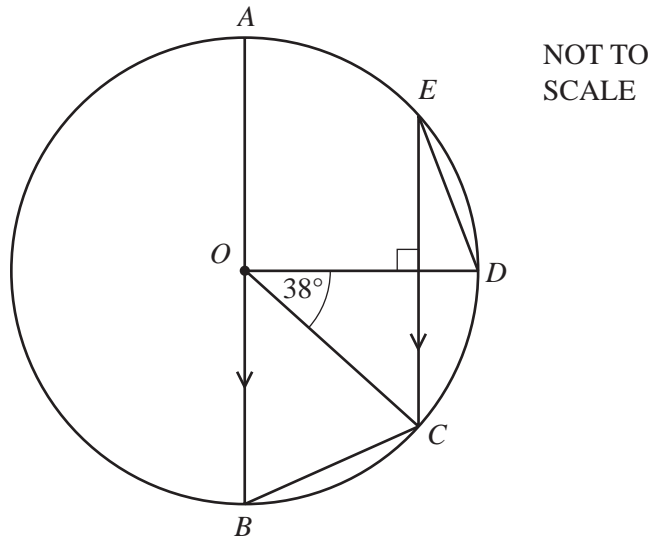
(iii) \vec{QP}

Answer(c)(iii) $\vec{QP} = \dots\dots\dots$ [2]

(iv) Write down two conclusions you can make about the line segment QP.

Answer(c)(iv) $\dots\dots\dots$
 $\dots\dots\dots$ [2]

2



AB is the diameter of a circle, centre O . C , D and E lie on the circle. EC is parallel to AB and perpendicular to OD . Angle DOC is 38° .

Work out

(a) angle BOC ,

Answer(a) Angle $BOC = \dots\dots\dots$ [1]

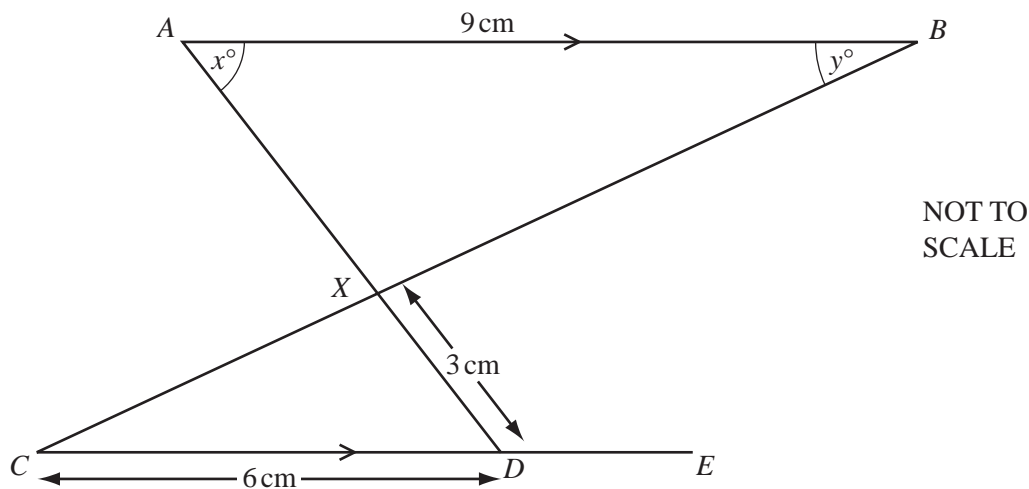
(b) angle CBO ,

Answer(b) Angle $CBO = \dots\dots\dots$ [1]

(c) angle EDO .

Answer(c) Angle $EDO = \dots\dots\dots$ [2]

3 (a)



The lines AB and CDE are parallel.
 AD and CB intersect at X .
 $AB = 9$ cm, $CD = 6$ cm and $DX = 3$ cm.

(i) Complete the following statement.

Triangle ABX is to triangle DCX . [1]

(ii) Calculate the length of AX .

Answer(a)(ii) $AX =$ cm [2]

(iii) The area of triangle DCX is 6 cm².

Calculate the area of triangle ABX .

Answer(a)(iii) cm² [2]

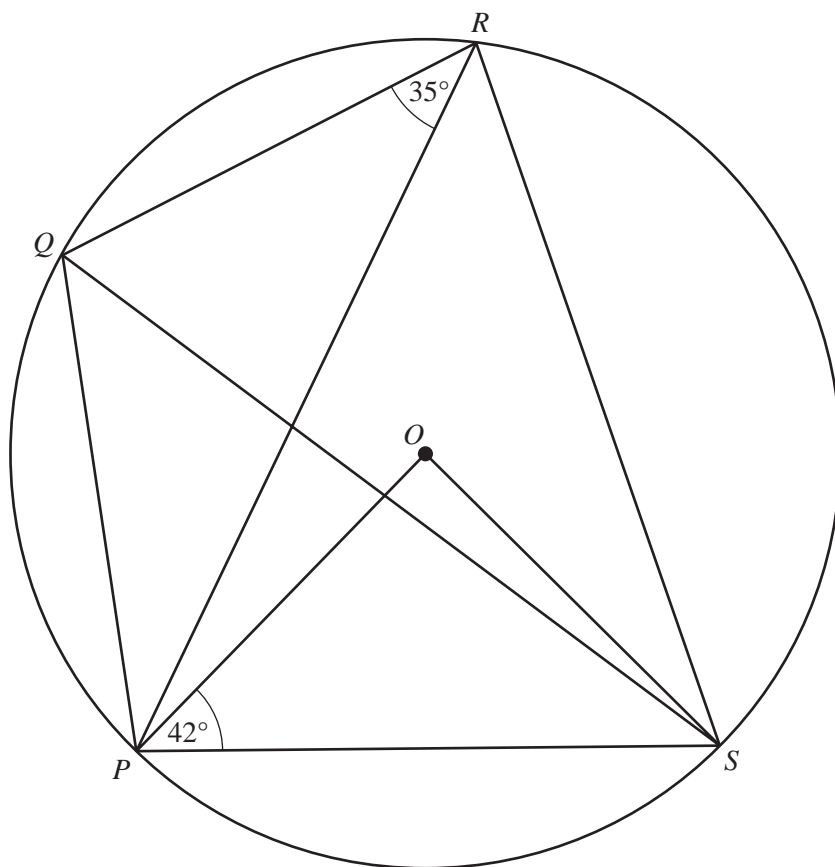
(iv) Angle $BAX = x^\circ$ and angle $ABX = y^\circ$.

Find angle AXB and angle XDE in terms of x and/or y .

Answer(a)(iv) Angle $AXB =$

Angle $XDE =$ [2]

(b)



NOT TO SCALE

P, Q, R and S lie on a circle, centre O .
 Angle $OPS = 42^\circ$ and angle $PRQ = 35^\circ$.

Calculate

(i) angle POS ,

Answer(b)(i) Angle $POS = \dots\dots\dots$ [1]

(ii) angle PRS ,

Answer(b)(ii) Angle $PRS = \dots\dots\dots$ [1]

(iii) angle SPQ ,

Answer(b)(iii) Angle $SPQ = \dots\dots\dots$ [1]

(iv) angle PSQ .

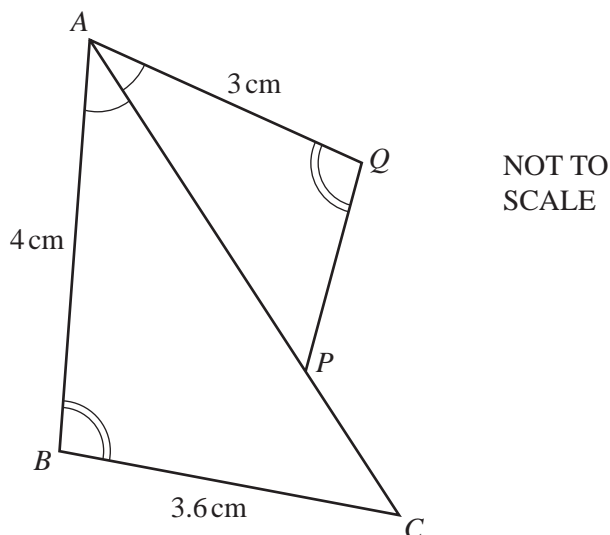
Answer(b)(iv) Angle $PSQ = \dots\dots\dots$ [1]

(c) The interior angle of a regular polygon is 8 times as large as the exterior angle.

Calculate the number of sides of the polygon.

Answer(c) $\dots\dots\dots$ [3]

4 (a)



The diagram shows two triangles ACB and APQ .

Angle $PAQ =$ angle BAC and angle $AQP =$ angle ABC .

$AB = 4$ cm, $BC = 3.6$ cm and $AQ = 3$ cm.

(i) Complete the following statement.

Triangle ACB is to triangle APQ . [1]

(ii) Calculate the length of PQ .

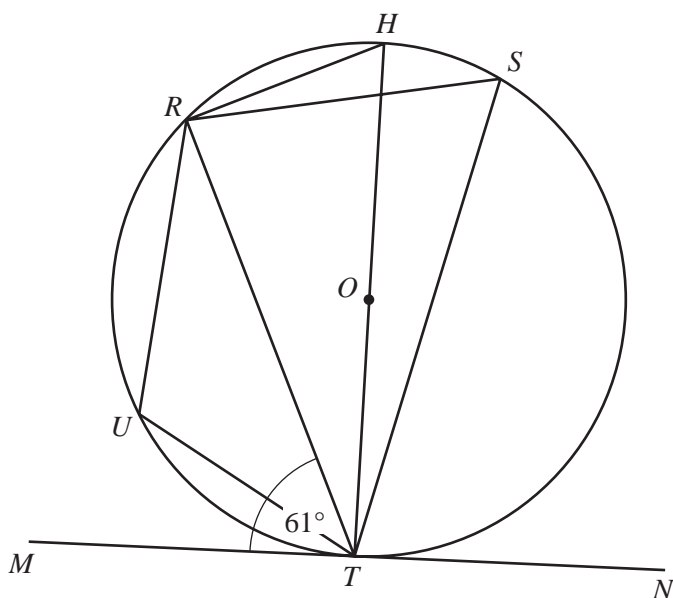
Answer(a)(ii) $PQ =$ cm [2]

(iii) The area of triangle ACB is 5.6 cm².

Calculate the area of triangle APQ .

Answer(a)(iii) cm² [2]

(b)



NOT TO SCALE

R, H, S, T and U lie on a circle, centre O .
 HT is a diameter and MN is a tangent to the circle at T .
 Angle $RTM = 61^\circ$.

Find

(i) angle RTH ,

Answer(b)(i) Angle $RTH = \dots\dots\dots$ [1]

(ii) angle RHT ,

Answer(b)(ii) Angle $RHT = \dots\dots\dots$ [1]

(iii) angle RST ,

Answer(b)(iii) Angle $RST = \dots\dots\dots$ [1]

(iv) angle RUT .

Answer(b)(iv) Angle $RUT = \dots\dots\dots$ [1]

(c) $ABCDEF$ is a hexagon.
 The interior angle B is 4° greater than interior angle A .
 The interior angle C is 4° greater than interior angle B , and so on, with each of the next interior angles 4° greater than the previous one.

(i) By how many degrees is interior angle F greater than interior angle A ?

Answer(c)(i) $\dots\dots\dots$ [1]

(ii) Calculate interior angle A .

Answer(c)(ii) $\dots\dots\dots$ [3]