

Properties of Shapes

Question Paper 2

Level	IGCSE
Subject	Maths (0580)
Exam Board	Cambridge International Examinations (CIE)
Paper Type	Extended
Topic	Geometry
Sub-Topic	Properties of Shapes
Booklet	Question Paper 2

Time Allowed: 70 minutes

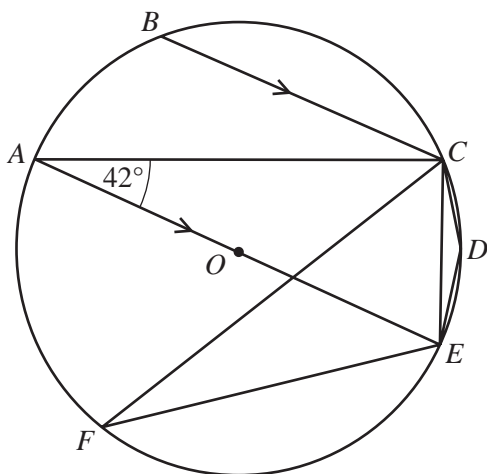
Score: /58

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, D, E and F are points on the circumference of a circle centre O .
 AE is a diameter of the circle.
 BC is parallel to AE and angle $CAE = 42^\circ$.

Giving a reason for each answer, find

(i) angle BCA ,

Answer(a)(i) Angle $BCA = \dots\dots\dots$

Reason [2]

(ii) angle ACE ,

Answer(a)(ii) Angle $ACE = \dots\dots\dots$

Reason [2]

(iii) angle CFE ,

Answer(a)(iii) Angle $CFE = \dots\dots\dots$

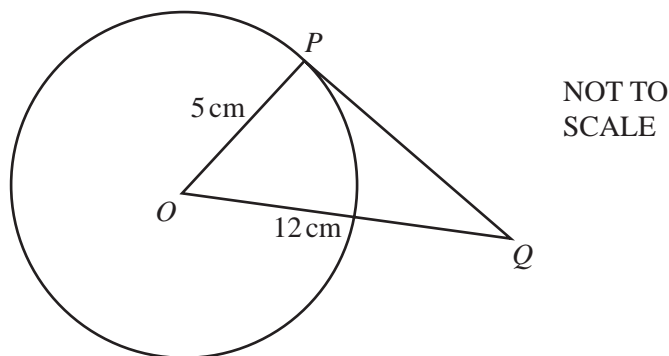
Reason [2]

(iv) angle CDE .

Answer(a)(iv) Angle $CDE = \dots\dots\dots$

Reason [2]

(b)

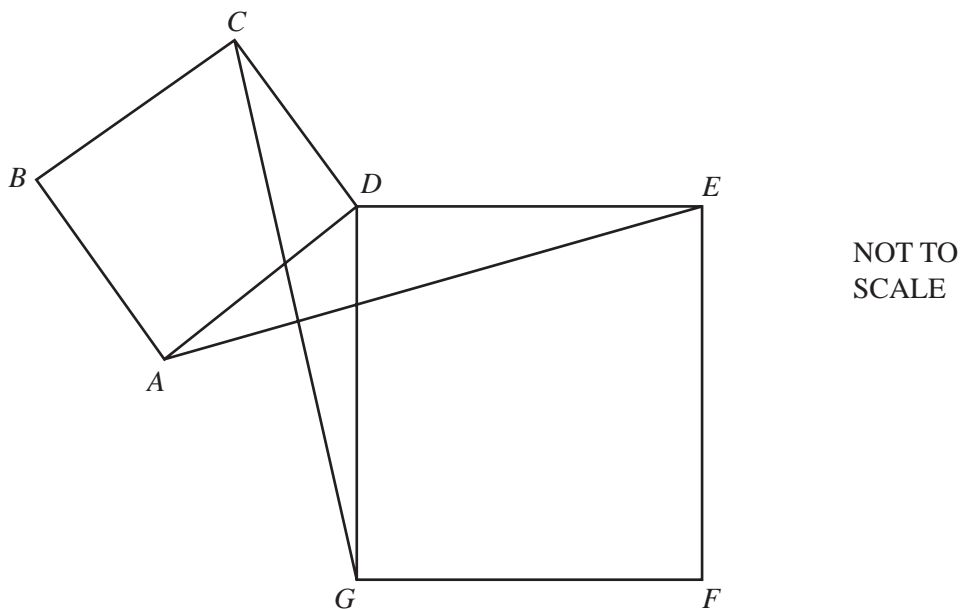


In the diagram, O is the centre of the circle and PQ is a tangent to the circle at P .
 $OP = 5$ cm and $OQ = 12$ cm.

Calculate PQ .

Answer(b) $PQ = \dots\dots\dots$ cm [3]

(c)



In the diagram, $ABCD$ and $DEFG$ are squares.

(i) In the triangles CDG and ADE , explain with a reason which sides and/or angles are equal.

Answer (c)(i)

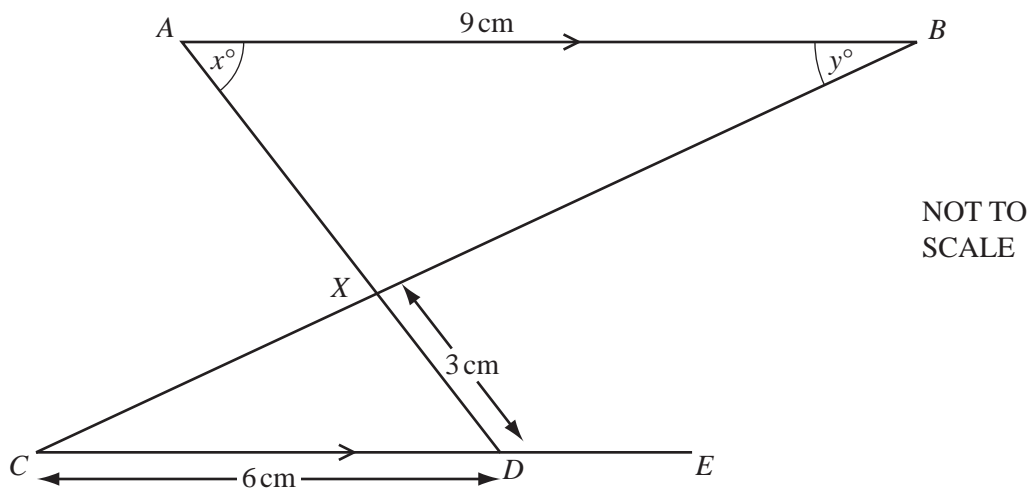
[3]

(ii) Complete the following statement.

Triangle CDG is to triangle ADE .

[1]

2 (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 cm^2 .

Calculate the area of triangle ABX .

Answer(a)(iii) cm^2 [2]

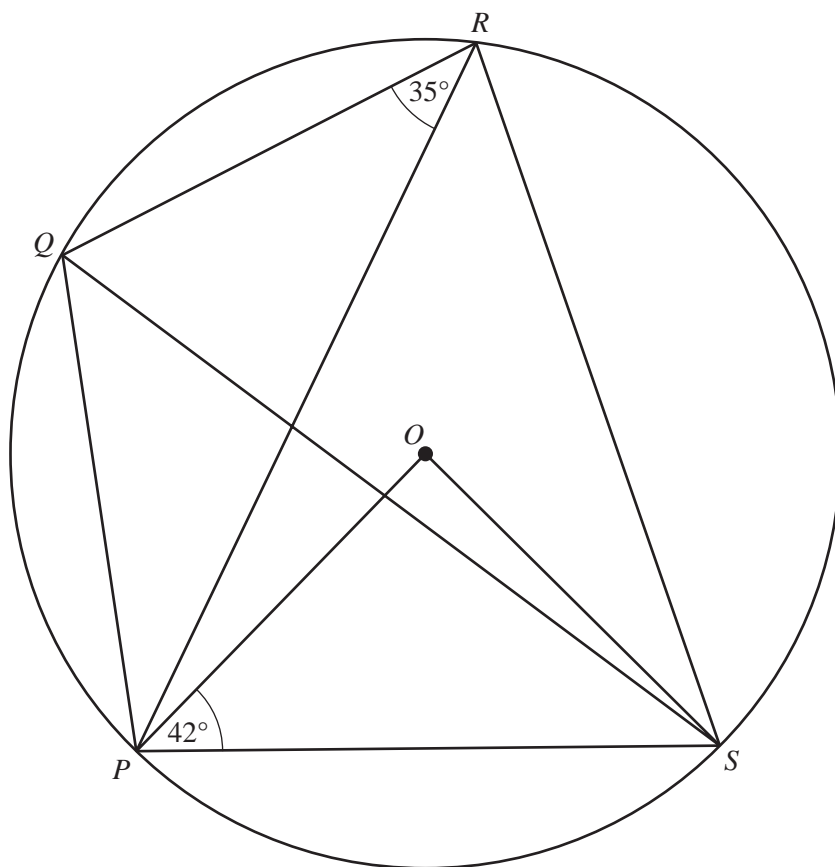
(iv) Angle $BAX = x^\circ$ and angle $ABX = y^\circ$.

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 .

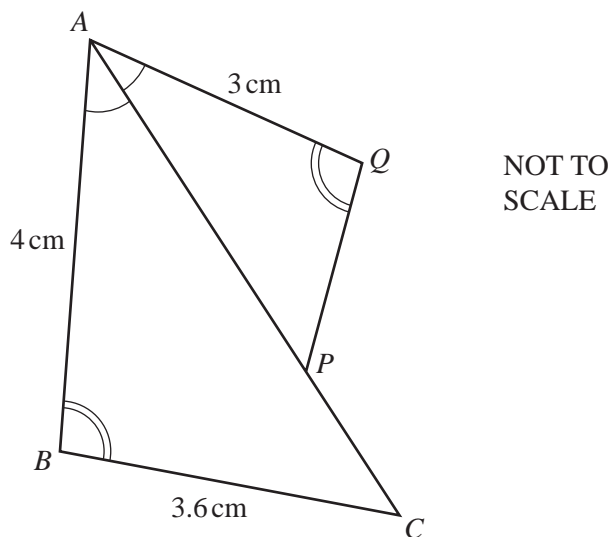
Answer(b)(iv) Angle $PSQ = \dots\dots\dots$ [1]

(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]

3 (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 .

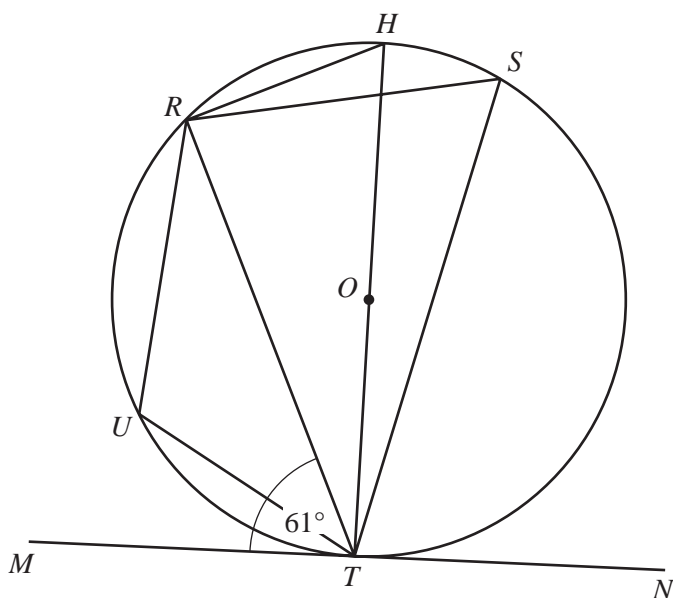
Answer(a)(ii) $PQ =$ cm [2]

(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]

4 (a) Calculate the area of an equilateral triangle with sides 10 cm. [2]

(b) Calculate the radius of a circle with circumference 10 cm. [2]

(c)

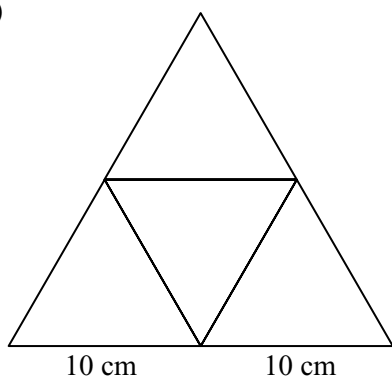


Diagram 1

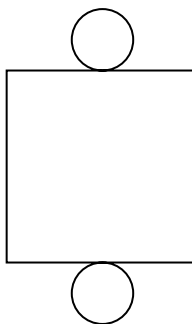


Diagram 2

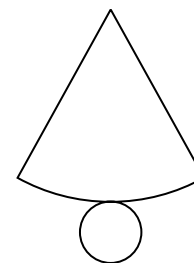


Diagram 3

The diagrams represent the nets of 3 solids. Each straight line is 10 cm long. Each circle has circumference 10 cm. The arc length in Diagram 3 is 10 cm.

(i) Name the solid whose net is Diagram 1. Calculate its surface area. [3]

(ii) Name the solid whose net is Diagram 2. Calculate its volume. [4]

(iii) Name the solid whose net is Diagram 3. Calculate its perpendicular height. [4]