

2D Shapes

Perimeters & Areas

Question Paper 11

Level	IGCSE
Subject	Maths (0580)
Exam Board	Cambridge International Examinations (CIE)
Paper Type	Extended
Topic	Mensuration (Perimeters, Areas & Volumes)
Sub-Topic	2D Shapes: Perimeters & Areas
Booklet	Question Paper 11

Time Allowed: 70 minutes

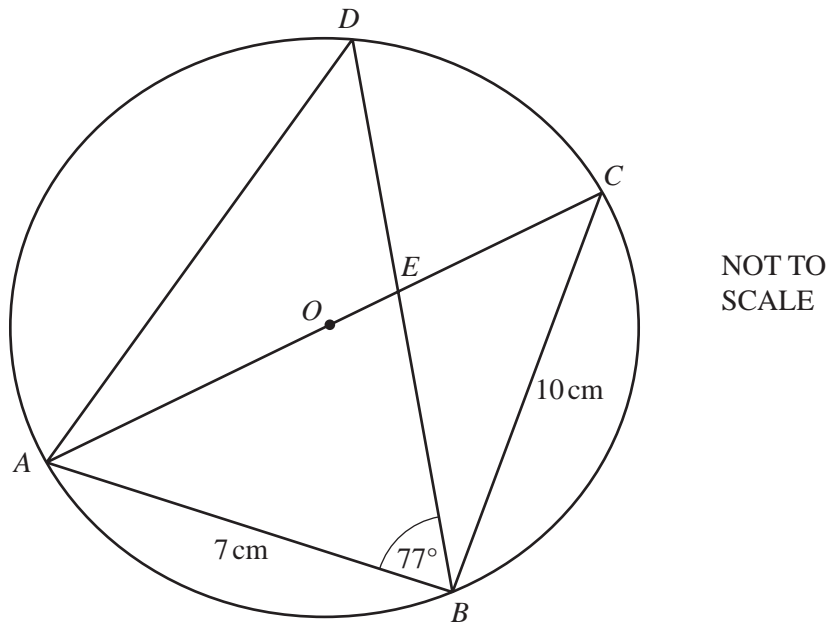
Score: /58

Percentage: /100

Grade Boundaries:

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

1



A, B, C and D lie on a circle, centre O .
 $AB = 7$ cm, $BC = 10$ cm and angle $ABD = 77^\circ$.
 AOC is a diameter of the circle.

(a) Find angle ABC .

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

(b) Calculate angle ACB and show that it rounds to 35° correct to the nearest degree.

Answer(b)

[2]

(c) Explain why angle $ADB =$ angle ACB .

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

(d) Calculate the length of AD .

Answer(d)(i) $AD =$ cm [3]

(ii) Calculate the area of triangle ABD .

Answer(d)(ii) cm^2 [2]

(e) The area of triangle $AED = 12.3 \text{ cm}^2$, correct to 3 significant figures.

Use similar triangles to calculate the area of triangle BEC .

Answer(e) cm^2 [3]

- 2 A rectangular photograph measures 23.3 cm by 19.7 cm, each correct to 1 decimal place.
Calculate the lower bound for

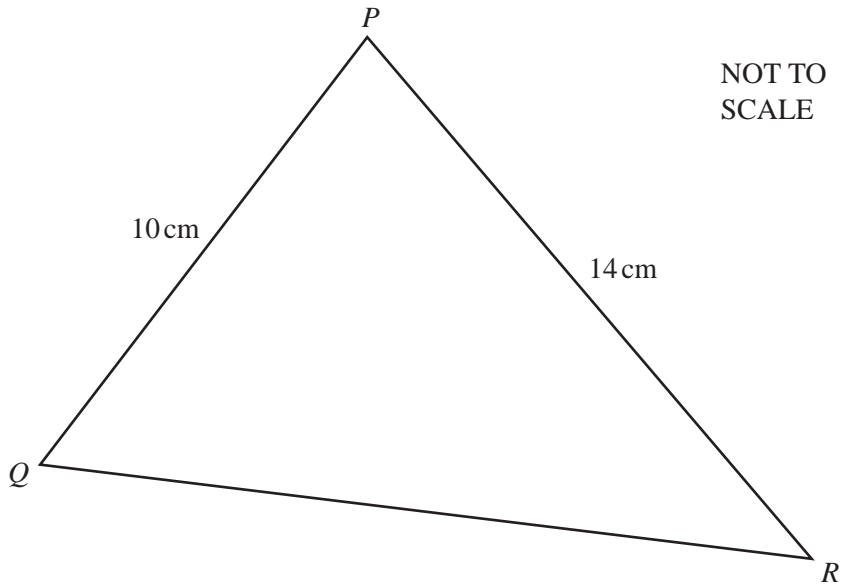
(a) the perimeter,

Answer(a) cm [2]

(b) the area.

Answer(b) cm² [1]

3



In triangle PQR , angle QPR is acute, $PQ = 10$ cm and $PR = 14$ cm.

- (a) The area of triangle PQR is 48 cm^2 .

Calculate angle QPR and show that it rounds to 43.3° , correct to 1 decimal place.
You must show all your working.

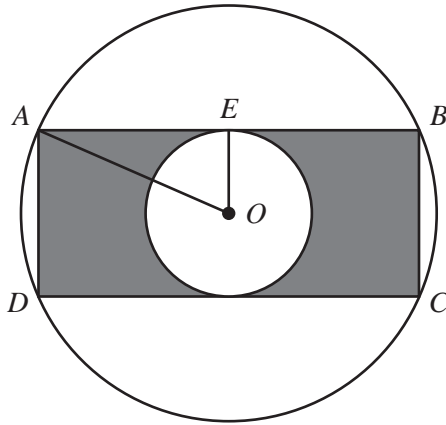
Answer (a)

[3]

- (b) Calculate the length of the side QR .

Answer(b) $QR = \dots\dots\dots$ cm [4]

4



NOT TO
SCALE

A, B, C and D lie on a circle, centre O , radius 8 cm.
 AB and CD are tangents to a circle, centre O , radius 4 cm.
 $ABCD$ is a rectangle.

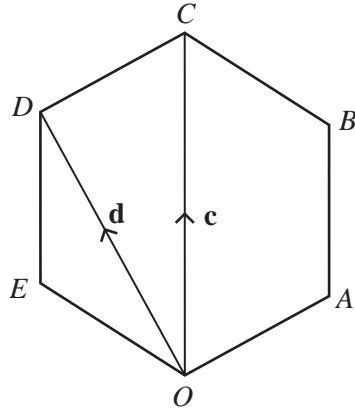
(a) Calculate the distance AE .

Answer(a) $AE = \dots\dots\dots$ cm [2]

(b) Calculate the shaded area.

Answer(b) $\dots\dots\dots$ cm² [3]

5



NOT TO
SCALE

$OABCDE$ is a regular hexagon.

With O as origin the position vector of C is \mathbf{c} and the position vector of D is \mathbf{d} .

(a) Find, in terms of \mathbf{c} and \mathbf{d} ,

(i) \vec{DC} , [1]

(ii) \vec{OE} , [2]

(iii) the position vector of B . [2]

(b) The sides of the hexagon are each of length 8 cm.

Calculate

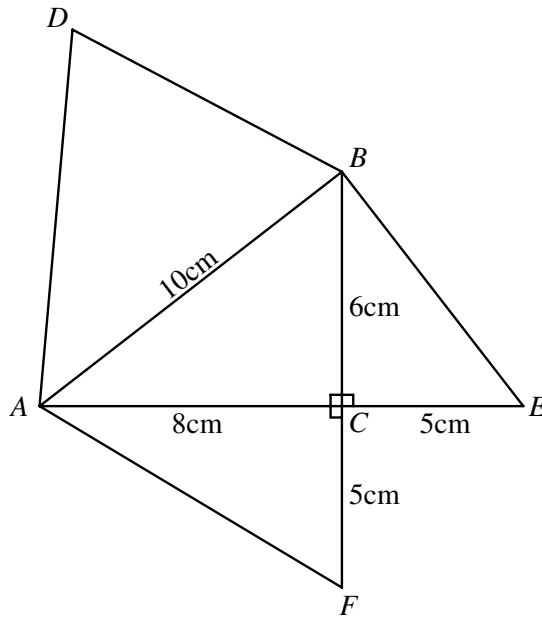
(i) the size of angle ABC , [1]

(ii) the area of triangle ABC , [2]

(iii) the length of the straight line AC , [3]

(iv) the area of the hexagon. [3]

6



NOT TO SCALE

The diagram shows a sketch of the net of a solid tetrahedron (triangular prism).
The right-angled triangle ABC is its base.
 $AC = 8$ cm, $BC = 6$ cm and $AB = 10$ cm. $FC = CE = 5$ cm.

- (a) Show that $BE = \sqrt{61}$ cm. [1]
- (ii) Write down the length of DB . [1]
- (iii) Explain why $DA = \sqrt{89}$ cm. [2]
- (b) Calculate the size of angle DBA . [4]
- (c) Calculate the area of triangle DBA . [3]
- (d) Find the total surface area of the solid. [3]
- (e) Calculate the volume of the solid.
[The volume of a tetrahedron is $\frac{1}{3}$ (area of the base) \times perpendicular height.] [3]