Write your name, centre number and candidate number in the boxes below.

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Area and perimeter

Time allowed: 45 minutes

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 2, Paper 3 and Paper 4

You must have: a ruler marked in centimetres and millimetres, a protractor, compasses, a pen, an HB pencil and an eraser.
You may use a calculator.

Total marks

/ 34

Instructions

- Answer every question in the space provided on this paper.
- Write in black or dark blue ink. Pencil may be used for diagrams and graphs.
- Fill in your name, centre number and candidate number above.
- Show your working: a correct method can earn marks even if the answer is wrong.
- Unless a question says otherwise, give answers that are not exact to 3 significant figures, and angles in degrees to 1 decimal place.

Information

- This paper has 10 questions worth 34 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

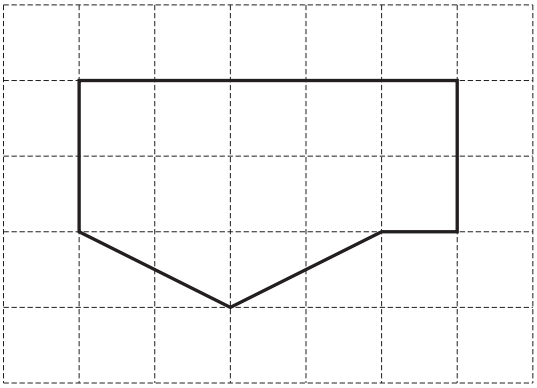
Advice

- Read every question through once before you write anything.
- Use the marks in brackets to judge how long to spend on each part.
- If you finish early, go back and check your working.

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Print at 100% (Actual size) so diagrams keep their real measurements.

1 The diagram shows a shape on a 1 cm^2 grid.



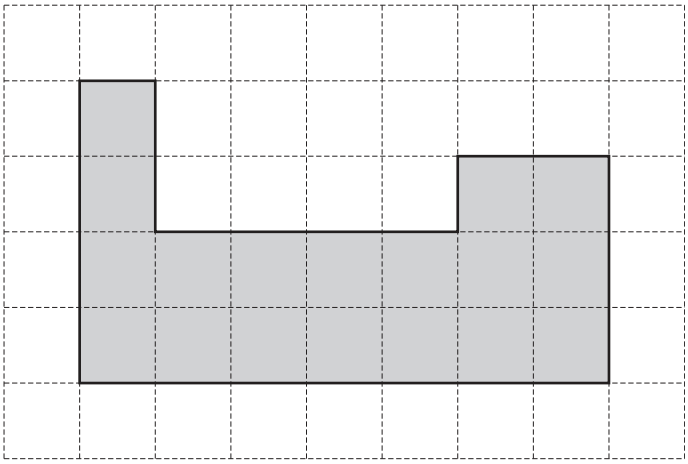
Find the area of this shape.

..... cm^2 [1]

Area Click for more variations

1	12	**1**	

2



This shape is drawn on a 1 cm^2 grid.

Find the perimeter of the shape.

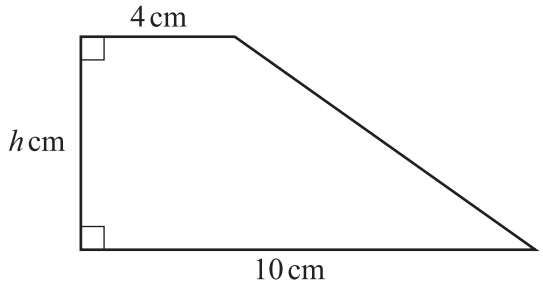
..... cm [1]

Perimeter Click for more variations

2	24	**1**	

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3



NOT TO SCALE

The diagram shows a trapezium.
The area of the trapezium is $42\,\text{cm}^2$.

Work out the value of h.

$h =$ ..... [2]

Area Click for more variations

3	6 nfww	**2**	**M1** for $\frac{1}{2}(4+10)h = 42$ oe or better

4 The area of a triangle is $528\,\text{cm}^2$.
The length of its base is 33 cm.

Calculate the perpendicular height of the triangle.

..... cm [2]

Area Click for more variations

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4	32	**2**	**M1** for $\frac{1}{2} \times 33 \times h = 528$ oe

5 The total perimeter of a semicircle is 19.02 cm.

Calculate the radius of the semicircle.

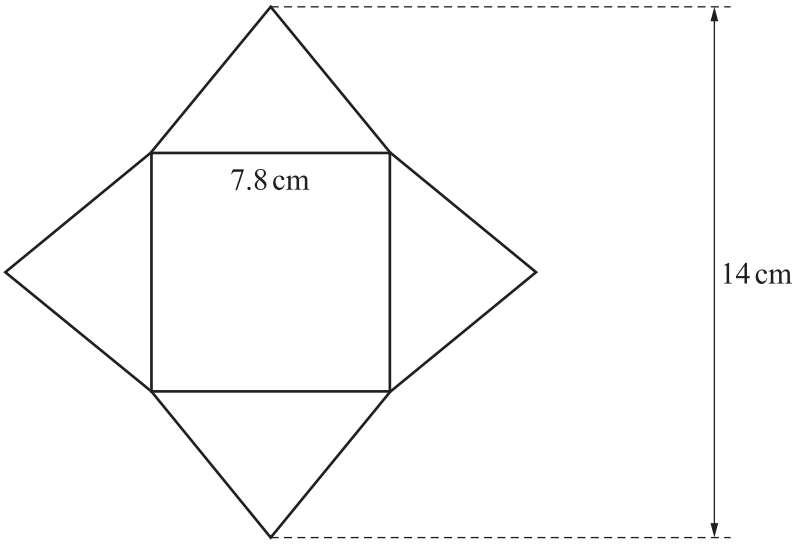
..... cm [3]

Perimeter Click for more variations

5	3.7[0] or 3.689 to 3.699…	**3**	**M2** for $\frac{19.02}{2+\pi}$ or **M1** for $2r+\pi r$ [=19.02] oe

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6 The diagram shows a shape made from a square and four congruent isosceles triangles.



NOT TO SCALE

Work out the area of this shape.

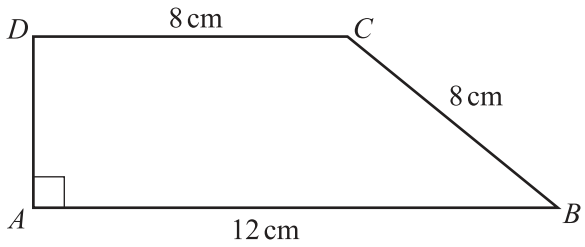
..... cm^2 [3]

Adding and subtracting areas Click for more variations

6	109.2	**3**	**M2** for $7.8 \times 7.8 + 4 \times \frac{1}{2} \times 7.8 \times \frac{14-7.8}{2}$ oe or **M1** for 7.8×7.8 oe or $[\frac{1}{2} \times]\ 7.8 \times \frac{14-7.8}{2}$ oe

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7



NOT TO SCALE

Calculate the area of this trapezium.

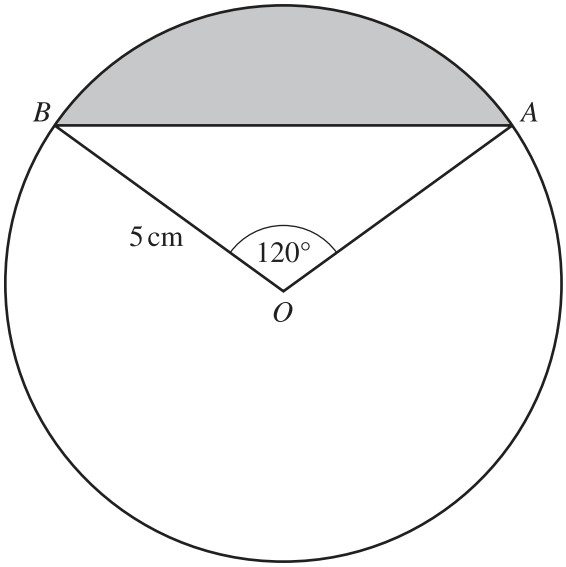
..... cm^2 [4]

Area Click for more variations

7	69.3 or 69.28…	**4**	**M2** for height = $\sqrt{8^2 - 4^2}$ or **M1** for $4^2 + h^2 = 8^2$ oe **and M1** for $\frac{1}{2}(8+12) \times$ *their* perp height oe

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8



NOT TO SCALE

A and B lie on a circle centre O, radius 5 cm.
Angle $AOB = 120°$.

Find the area of the shaded segment.

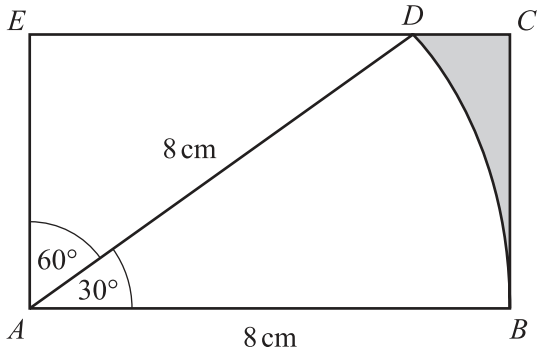
Answer ..... cm^2 [4]

Adding and subtracting areas Click for more variations

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8	**15.4** or 15.35 to 15.36	**4**	**M1** for $\frac{120}{360}\times\pi\times5^2$ oe **M1** for $\frac{1}{2}\times5^2\times\sin120$ oe **M1** for $\frac{120}{360}\times\pi\times5^2-\frac{1}{2}\times5^2\times\sin120$ oe

9



NOT TO SCALE

The diagram shows a rectangle *ABCE*.
D lies on *EC*.
DAB is a sector of a circle radius 8 cm and sector angle 30°.

Calculate the area of the shaded region.

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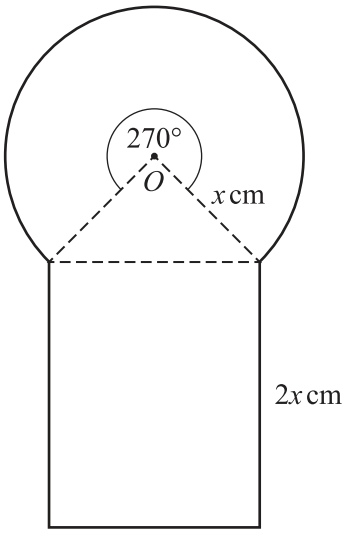
Answer ..... cm^2 [7]

Adding and subtracting areas Click for more variations

9	1.38 or 1.39 or 1.384 to 1.389	**7**	**M3** [Area Δ =] $\frac{1}{2}\times 8\cos 60\times 8\sin 60$ or **M1** for [*AE* =] 8cos 60 and **M1** for [*ED*] = 8sin 60 and **M1** for Area sector $\frac{30}{360}\times\pi\times 8^2$ and **M1** for Area rectangle = 8 × 8cos60 or 8 × 4 **M1** for *their* 32 – (*their* 13.86 + *their* 16.76) or better

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10



NOT TO SCALE

The diagram shows a sector of a circle, a triangle and a rectangle.
The sector has centre O, radius x cm and angle 270°.
The rectangle has length $2x$ cm.

The total area of the shape is kx^2 cm^2.

(a) Find the value of k.

$k =$ ..... [5]

(b) Find the value of x when the total area is 110 cm^2.

$x =$ ..... [2]

(a) Adding and subtracting areas (b) Solving quadratics by factorising Click for more variations

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10(a)	5.68 or 5.684 to 5.685	**5**	**M2** for $2x\sqrt{x^2+x^2}$ oe or $2\times\sqrt{2}\times x^2$ or **M1** for $x\sqrt{2}$ or $\sqrt{x^2+x^2}$ oe soi **M1** for $\frac{270}{360}\times\pi\times x^2$ oe **M1** for $0.5\ x^2$ oe
10(b)	4.4[0] or 4.398 to 4.401	**2**	**dep** on a correct value for k in **(a)** **M1** for $\left[x^2\right]=\frac{110}{their\ k}$

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