Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

0674189480

MATHEMATICS **0580/23**

Paper 2 (Extended) **October/November 2017**

1 hour 30 minutes

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
Tracing paper (optional)
Geometrical instruments

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.
Electronic calculators should be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For π, use either your calculator value or 3.142.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 70.

This document consists of **11** printed pages and **1** blank page.

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CAMBRIDGE International Examinations

1 Ahmed drives his car from London to Cambridge.
He leaves London at 07 45 and arrives in Cambridge at 10 17.

Work out the time, in hours and minutes, that he takes to drive from London to Cambridge.

..... h ..... min [1]

2 Calculate. $\sqrt{9+25^{-\frac{1}{3}}}$

..... [1]

3 Write \$450 as a percentage of \$680.

.....% [1]

4 A quadrilateral has one line of symmetry and no rotational symmetry.

Write down the name of this quadrilateral.

..... [1]

5 Factorise completely.

$18x + 27y$

..... [1]

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6 $(\sqrt[3]{10})^2 = 10^p$

Find the value of p.

$p =$ ..... [1]

7 Adilla invests \$1200 at a rate of 2.6% per year compound interest.

Calculate the value of her investment at the end of 2 years.

\$ ..... [2]

8 Write the recurring decimal $0.8\dot{7}$ as a fraction.
Show all your working.

..... [2]

9 Solve the inequality.

$$7 - 8x \geqslant 19 + 2x$$

..... [2]

10 A model of a house is made using a scale of 1 : 30.
The model has a volume of 2400 cm^3.

Calculate the volume of the actual house.
Give your answer in cubic metres.

..... m^3 [3]

11 Calculate the size of one interior angle of a regular 12-sided polygon.

..... [3]

12 The cost of one litre of fuel in May 2015 was \$0.88 .
This was a decrease of 20% on the cost in May 2014.

Calculate the cost of one litre of fuel in May 2014.

\$ ..... [3]

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13 Work out $3\frac{1}{7} - 1\frac{1}{4}$, giving your answer as a mixed number in its lowest terms.
Do not use a calculator and show all the steps of your working.

..... [3]

14 Solve by factorising.

$$3x^2 - 7x - 20 = 0$$

$x =$ ..... or $x =$ ..... [3]

15 $f(x) = 5x - 3$ $g(x) = x^2 + 6x + 1$

Find $gf(x)$.
Give your answer in its simplest form.

..... [3]

16 Make x the subject of $3m + xy = \frac{xp}{4}$.

$x =$ ..... [4]

17 **(a)** The nth term of a sequence is $6 - 5n$.

Write down the first three terms of this sequence.

..... , ... , ... [1]

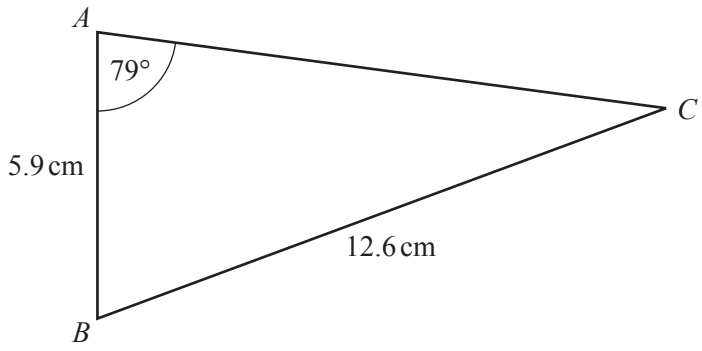
(b) The nth term of another sequence is $5n^2 + 3$.

Is 848 a term in this sequence?
Explain how you decide.

..... because ..... [3]

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18



NOT TO SCALE

Calculate angle *ABC*.

Angle *ABC* = ... [4]

19 $\mathbf{M} = \begin{pmatrix} -2 & 0 \\ 5 & -6 \end{pmatrix}$ $\mathbf{N} = \begin{pmatrix} -3 & 1 \\ 0 & -1 \end{pmatrix}$

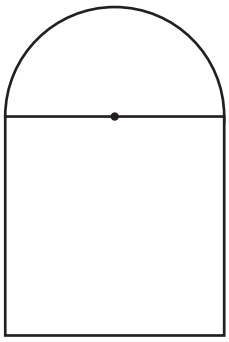
(a) Work out **NM**.

( ) [2]

(b) Find $\mathbf{M}^{-1}$, the inverse of **M**.

( ) [2]

20



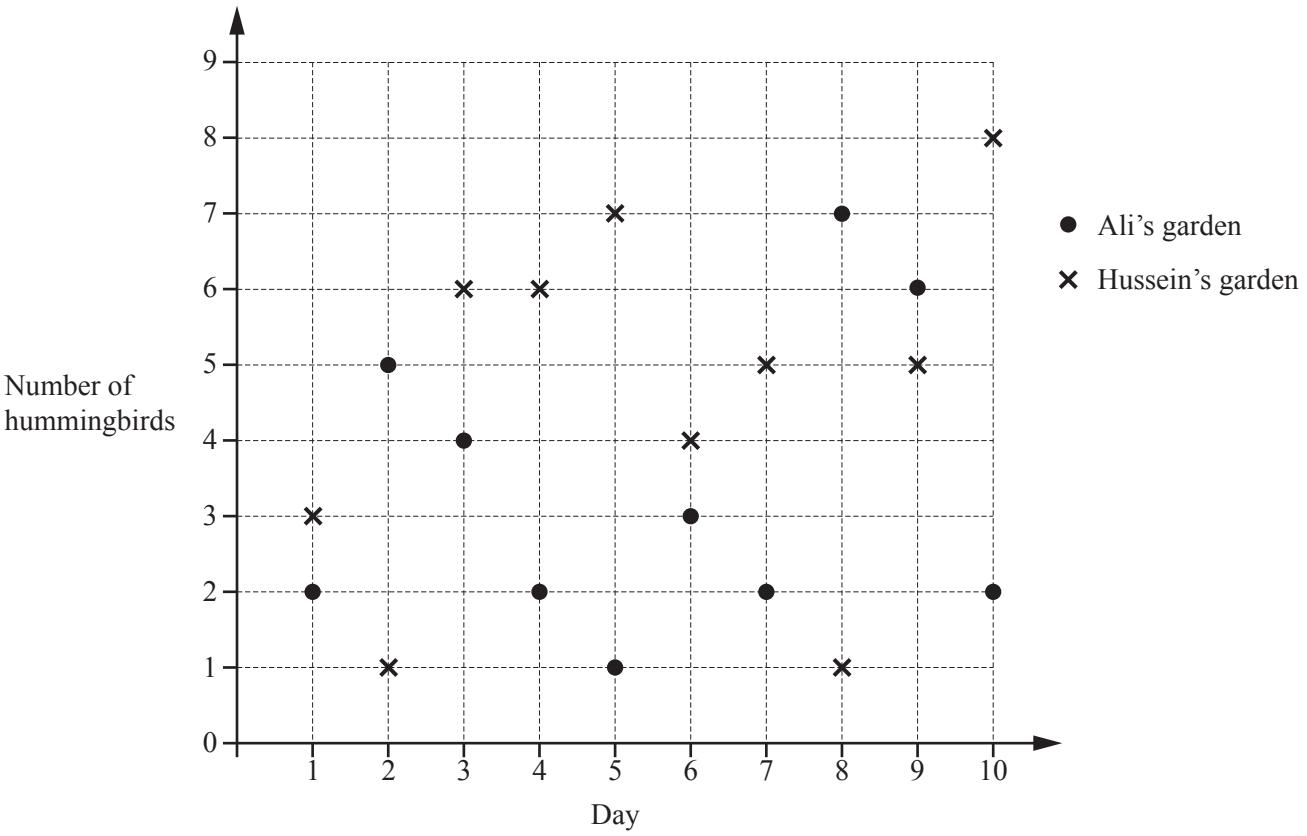
NOT TO SCALE

The diagram shows a shape made from a square and a semi-circle.

Calculate the area of the shape.
Give the units of your answer.

.... [5]

21 The diagram shows the numbers of hummingbirds seen by Ali and Hussein in their gardens each day for 10 days.



(a) Calculate the mean number of hummingbirds seen in Ali's garden each day.

..... [3]

(b) Work out the median number of hummingbirds seen in Hussein's garden each day.

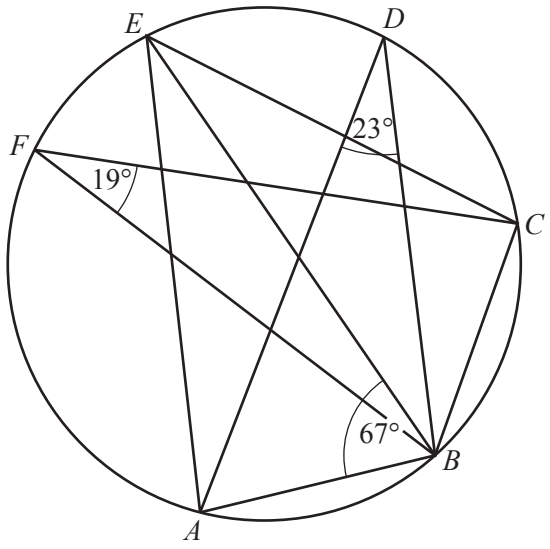
..... [2]

(c) On one of these days there were 4 times as many hummingbirds seen in Hussein's garden as in Ali's garden.

Which day was this?

Day ..... [1]

22



NOT TO SCALE

In the diagram, points A, B, C, D, E and F lie on the circumference of the circle.
Angle $BFC = 19°$, angle $ADB = 23°$ and angle $ABE = 67°$.

Work out

(a) angle BEC,

Angle $BEC =$ ..... [1]

(b) angle ABC,

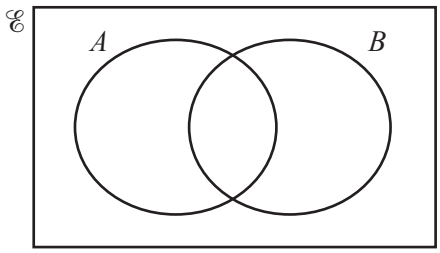
Angle $ABC =$ ..... [3]

(c) angle BCE.

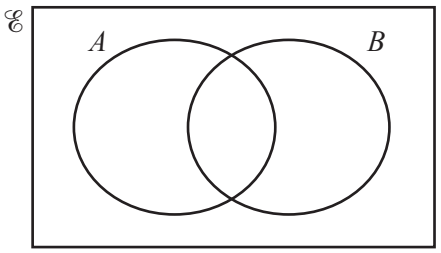
Angle $BCE =$ ..... [2]

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23 **(a)** Shade the required regions on the Venn diagrams.



$A \cup B'$



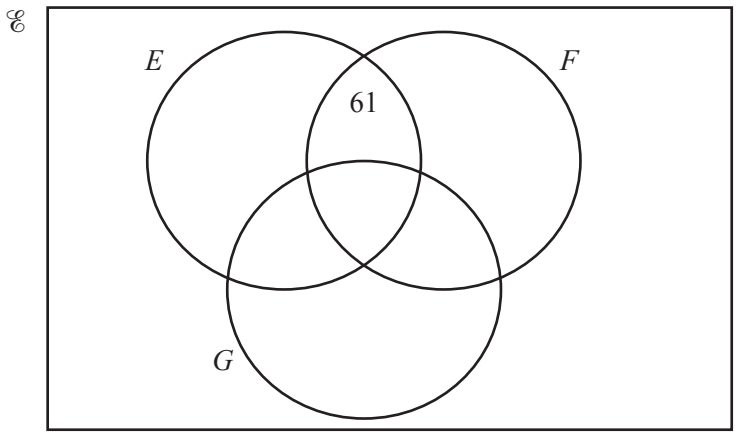
$A' \cap B$

[2]

(b) $\mathscr{E} = \{ x : x \text{ is an integer and } 60 < x < 70 \}$

$E = \{x : x \text{ is an odd number}\}$
$F = \{x : x \text{ is a prime number}\}$
$G = \{x : x \text{ is a square number}\}$

(i) Complete the Venn diagram below to show this information.



[3]

(ii) Find $\text{n}(E \cup F \cup G)'$.

..... [1]

(iii) Use set notation to complete the statement.

$E \cap F \cap G =$ ..... [1]

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