Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

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.

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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.

View solution

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

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

2 Calculate.

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

View solution

..... [1]

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

View solution

..... % [1]

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

View solution

Write down the name of this quadrilateral.

..... [1]

5 Factorise completely.

$18x + 27y$

View solution

..... [1]

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

View solution

Find the value of p.

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

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

View solution

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.

View solution

..... [2]

9 Solve the inequality.

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

View solution

..... [2]

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

View solution

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.

View solution

..... [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.

View solution

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

\$ ..... [3]

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.

View solution

..... [3]

14 Solve by factorising.

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

View solution

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

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

View solution

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

..... [3]

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

View solution

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

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

View solution

Write down the first three terms of this sequence.

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

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

View solution

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

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

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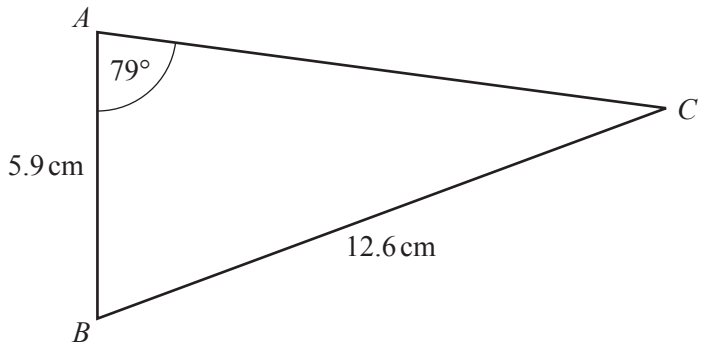
18



NOT TO SCALE

View solution

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**.

View solution

( ) [2]

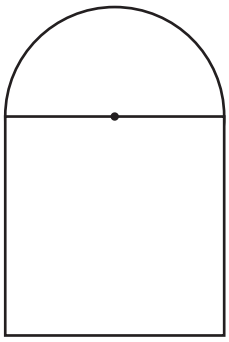
(b) Find $\mathbf{M}^{-1}$, the inverse of **M**.

View solution

( ) [2]

20

View solution



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]

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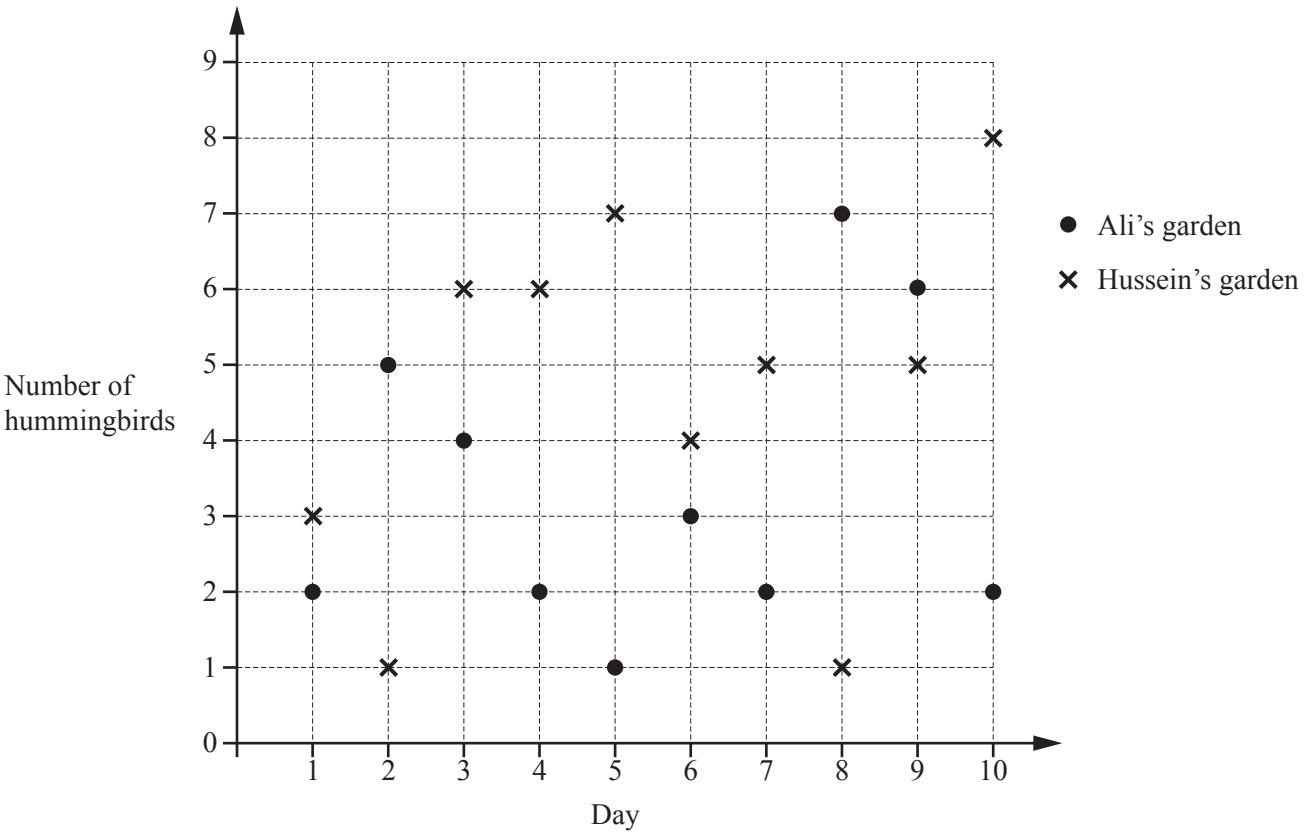
21 The diagram shows the numbers of hummingbirds seen by Ali and Hussein in their gardens each day for 10 days.



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

View solution

..... [3]

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

View solution

..... [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?

View solution

Day ..... [1]

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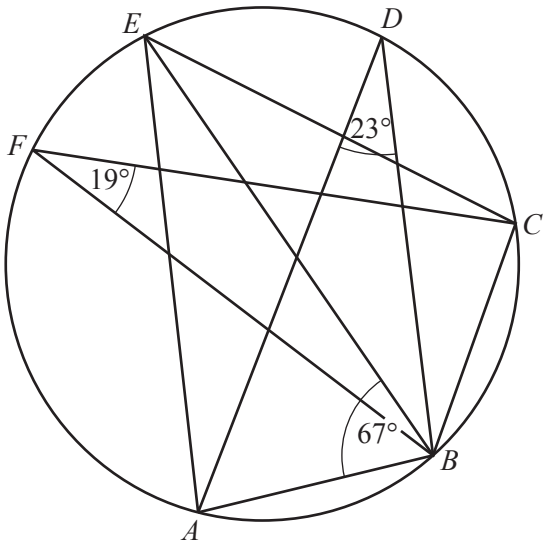
22



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,

View solution

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

(b) angle ABC,

View solution

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

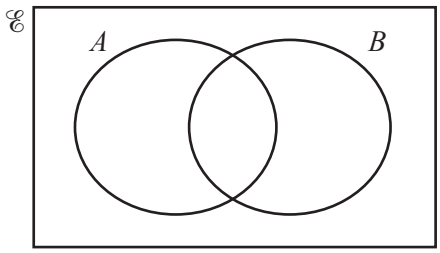
(c) angle BCE.

View solution

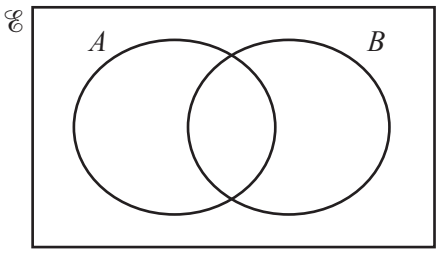
Angle $BCE =$ ..... [2]

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

View solution



$A \cup B'$



$A' \cap B$

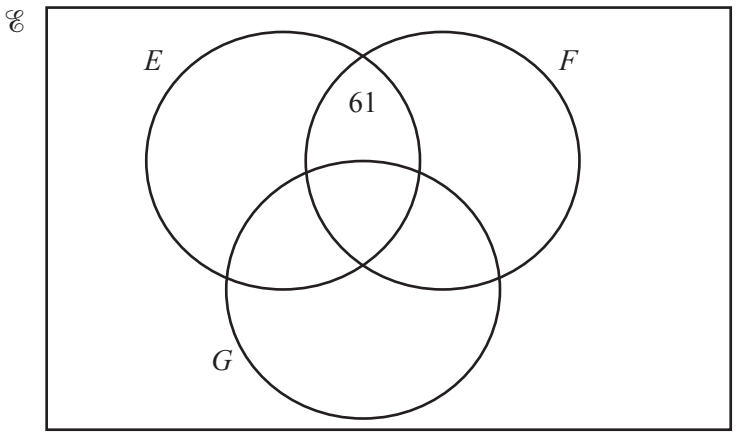
[2]

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

View solution

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

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



[3]

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

View solution

..... [1]

(iii) Use set notation to complete the statement.

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

View solution

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