Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0912572650

MATHEMATICS **0580/33**

Paper 3 (Core) **October/November 2018**

2 hours

Candidates answer on the Question Paper.

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

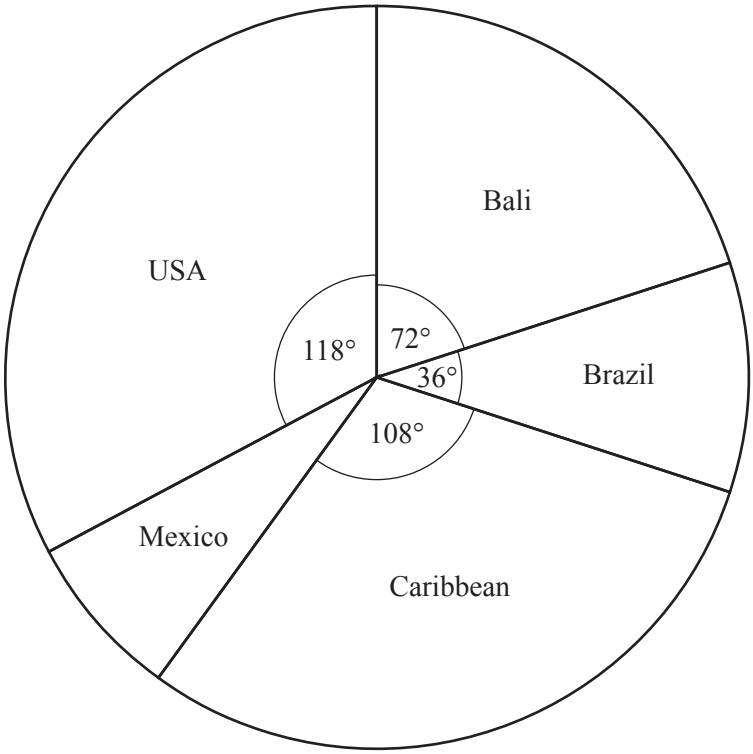
READ THESE INSTRUCTIONS FIRST

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 104.

1 **(a)** Some people each recorded their favourite holiday destination.
The results are shown in the pie chart.



(i) Complete the statements about the pie chart.

The sector angle for Mexico is ..... degrees.

The most popular destination is .....

$\frac{1}{5}$ of the people chose .....

Three times as many people chose ..... as ..... [4]

(ii) 180 people chose Bali.

Find how many people were asked altogether.

..... [2]

(b) Mr and Mrs Baker go on holiday with their three children.
They fly from Miami to Mexico City.

(i) The cost of each adult ticket is $450.
The cost of each child ticket is 70% of the cost of an adult ticket.

Calculate the total cost of the five tickets.

$ ..... [3]

(ii) The plane leaves Miami at 09 29.
It arrives in Mexico City 2 hours 11 minutes later.
The local time in Miami is 1 hour ahead of the local time in Mexico City.

Work out the time in Mexico City when the plane arrives.

..... [2]

(iii) The family travels 38 kilometres by taxi.
The journey costs $3.50 plus an extra $2.15 for each kilometre travelled.

Find the cost of the journey.

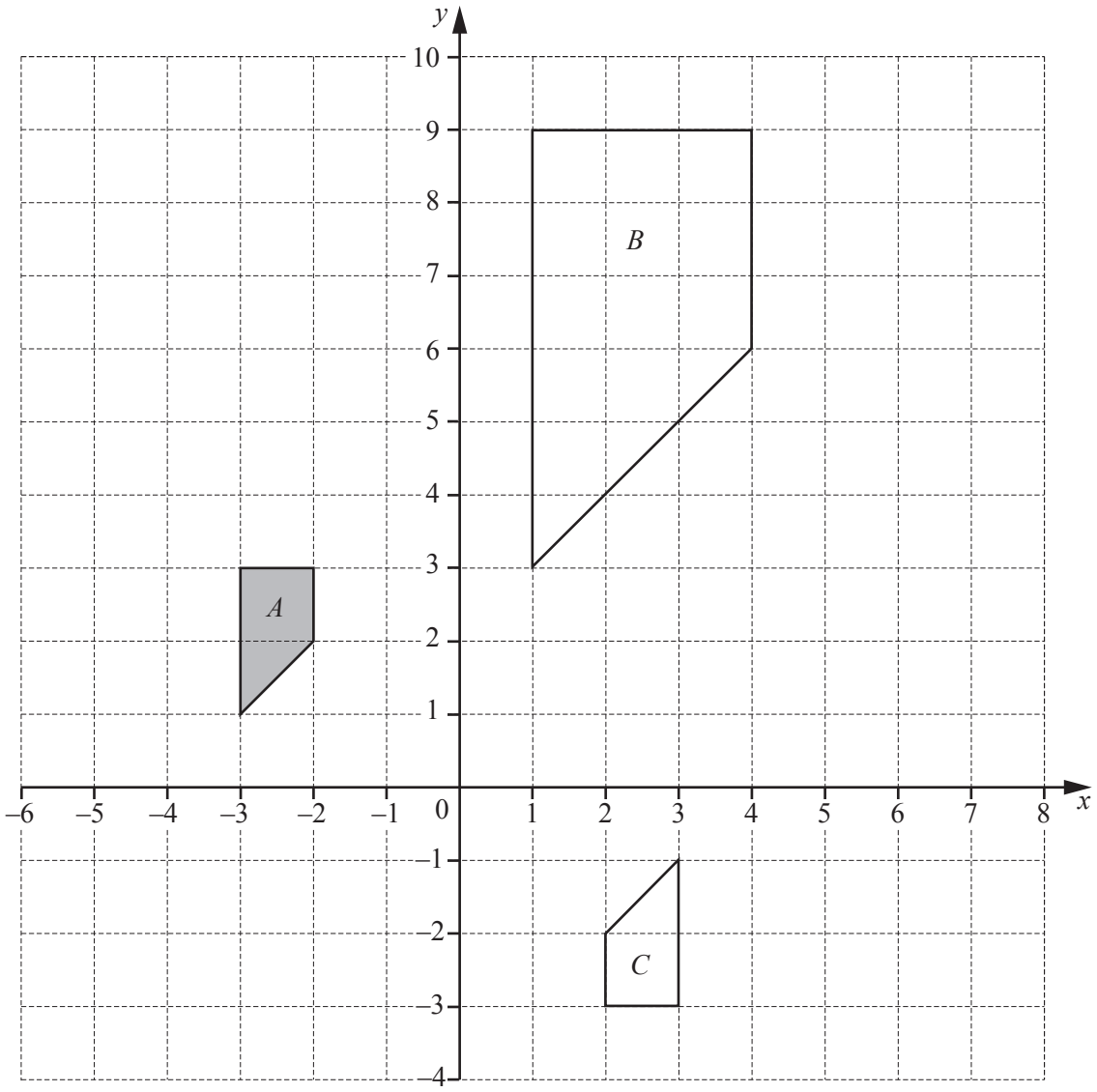
$ ..... [2]

(iv) At the end of the holiday Mr Baker changes 1335 pesos into dollars.
The exchange rate is $1 = 17.8 pesos.

Find how many dollars Mr Baker receives.

$ ..... [2]

2 Shapes A, B and C are shown on the $1\,cm^2$ grid.



(a) Shape A is a special type of quadrilateral.

Write down the mathematical name for shape A.

..... [1]

(b) Describe fully the **single** transformation that maps

(i) shape A onto shape B,

.....

..... [3]

(ii) shape A onto shape C.

.....

..... [3]

(c) On the grid,

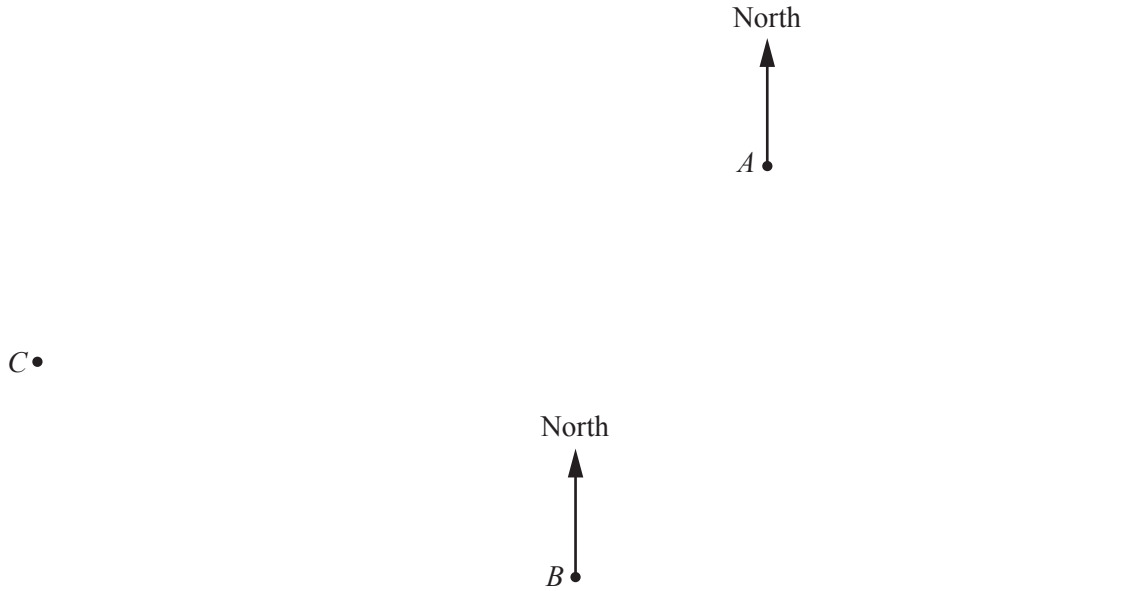
(i) translate shape A by the vector $\begin{pmatrix} 8 \\ -4 \end{pmatrix}$, [2]

(ii) reflect shape A in the line $x = 2$. [2]

(d) Find the area of **shape *B***.

..... cm^2 [1]

3 The scale drawing shows the positions of three towns A, B and C on a map.
The scale is 1 centimetre represents 10 kilometres.



Scale : 1 cm to 10 km

(a) Work out the actual distance between town A and town B.

..... km [2]

(b) **(i)** Measure the bearing of town C from town A.

..... [1]

(ii) Show how to use your answer to **part (b)(i)** to find the bearing of town A from town C.

..... [1]

(c) Town D is 96 km from town C on a bearing of 100°.

(i) Mark the position of town D on the map. [2]

(ii) Jez drives from town C to town D in $1\frac{1}{2}$ hours.

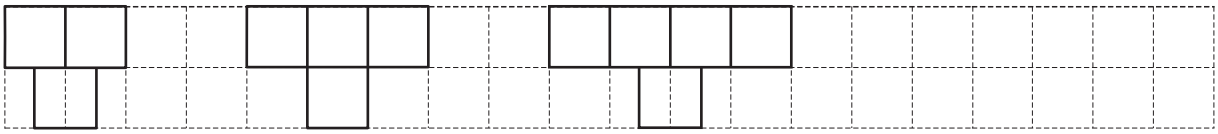
Work out his average speed.

..... km/h [2]

(iii) Change 96 km into miles.
Assume that 8 km equals 5 miles.

..... miles [2]

4 **(a)** The diagram shows the first three patterns in a sequence.



Pattern 1 Pattern 2 Pattern 3 Pattern 4

On the grid, draw pattern 4. [1]

(b) These are the first four terms of another sequence.

41 35 29 23

(i) Write down the next two terms.

..... , ... [2]

(ii) Write down the rule for continuing this sequence.

..... [1]

(c) These are the first four terms of a different sequence.

11 15 19 23

(i) Write down an expression for the nth term.

..... [2]

(ii) Is 129 a term in this sequence?
Show how you decide.

..... because ..... [2]

5 **(a)** Stef buys 3.5 kilograms of bananas.

(i) Bananas cost \$1.24 per kilogram.
Stef pays with a \$5 note.

Work out how much change she receives.

\$ ..... [2]

(ii) Write 3.5 kilograms in grams.

..... g [1]

(b) Oranges cost 85 cents each.
Leo has a \$10 note.

Work out the maximum number of oranges he can buy.

..... [2]

(c) 87% of the mass of a pineapple is water.
A pineapple has a mass of 700 g.

Work out the mass of water in this pineapple.

..... g [2]

(d) The number of melons sold in a shop each day for 7 days is shown below.

18 5 23 40 28 19 17

Work out the mean number of melons sold.

..... [2]

(e) Rio and Chi go to a fruit shop.
Rio buys 4 apples and 2 plums for $1.96 .
Chi buys 7 apples and 3 plums for $3.24 .

Write down a pair of simultaneous equations and solve them to find the cost of 1 apple and the cost of 1 plum.
You must show all your working.

Apple $ .....

Plum $ ..... [6]

6 **(a)** Write the number 602 047 in words.

..... [1]

(b) Find

(i) a multiple of 14,

..... [1]

(ii) 56^2,

..... [1]

(iii) $\sqrt[3]{103\,823}$,

..... [1]

(iv) 12^0.

..... [1]

(c) Find the lowest common multiple (LCM) of 12 and 78.

..... [2]

(d) Find the highest common factor (HCF) of 12 and 78.

..... [2]

(e) Write 432 as a product of its prime factors.

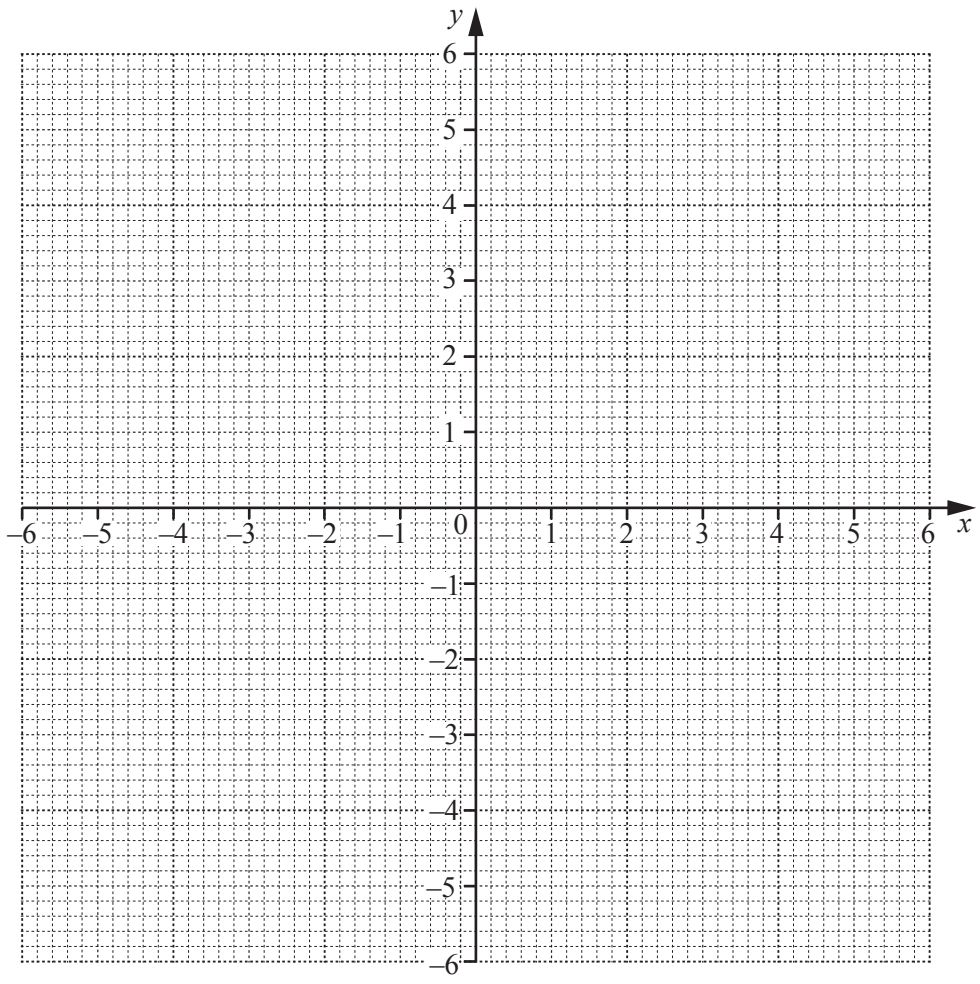
..... [2]

7 **(a)** Complete the table of values for $y = \frac{6}{x}$.

x	–6	–5	–4	–3	–2	–1		1	2	3	4	5	6
y	–1			–2	–3	–6		6	3	2		1.2	1

[2]

(b) On the grid, draw the graph of $y = \frac{6}{x}$ for $-6 \leqslant x \leqslant -1$ and $1 \leqslant x \leqslant 6$.



[4]

(c) Use your graph to solve the equation $\frac{6}{x} = 4.5$.

$x =$ ..... [1]

(d) **(i)** On the grid, draw the line $y = x$. [1]

(ii) Write down the co-ordinates of the points of intersection of $y = \frac{6}{x}$ and $y = x$.

(..... , ...) and (..... , ...) [2]

8 **(a)** A bag contains 20 bulbs.
8 are yellow, 5 are red, 4 are white and 3 are pink.
Sam takes one bulb at random.

Find the probability that the bulb he takes is

(i) white,

..... [1]

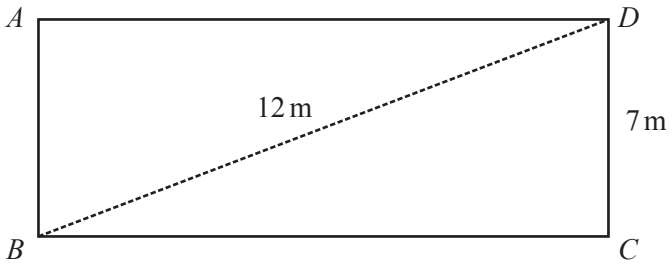
(ii) blue,

..... [1]

(iii) not pink.

..... [1]

(b) Sam has a rectangular pond, *ABCD*.



NOT TO SCALE

(i) Calculate *BC*.

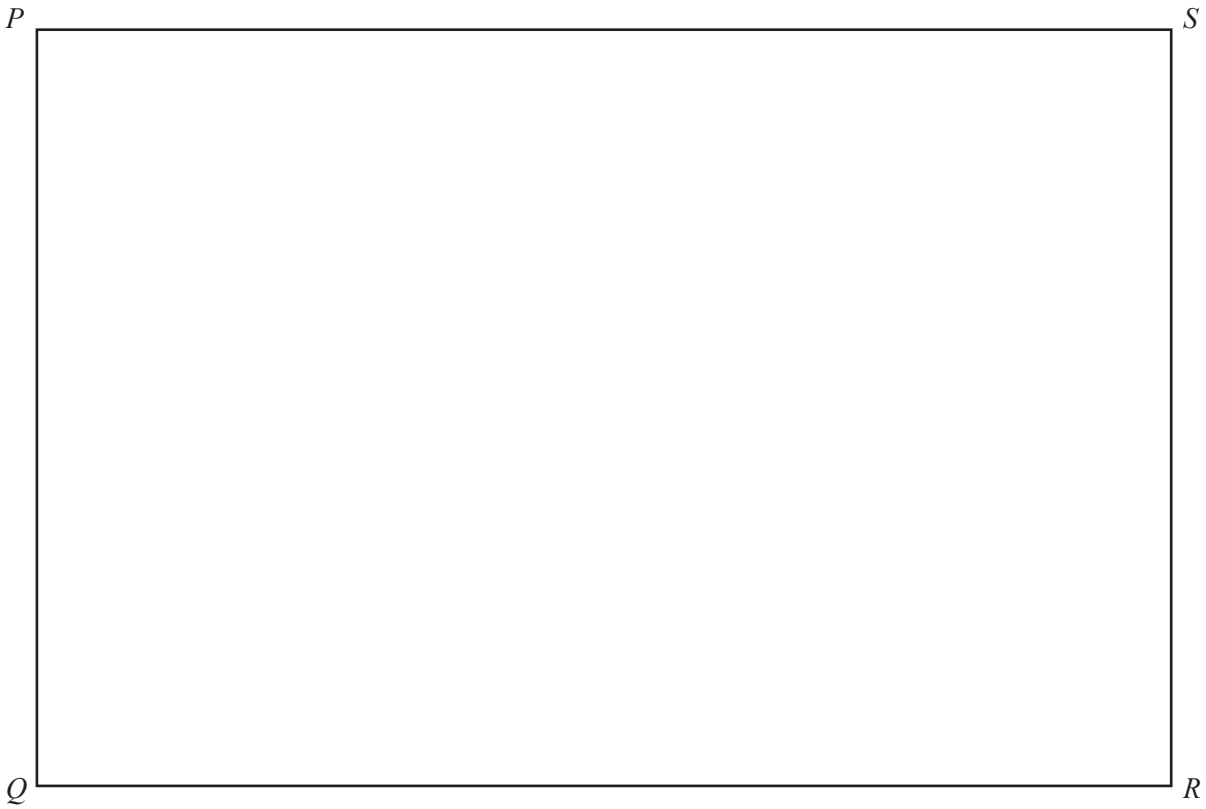
BC = ... m [3]

(ii) He puts a fence around the edge of the pond.

Calculate the length of the fence.

..... m [1]

(c) A scale drawing of Sam's garden, *PQRS*, is shown below.
The scale is 1 centimetre represents 4 metres.



Scale : 1 cm to 4 m

Sam plants some bulbs so that they are

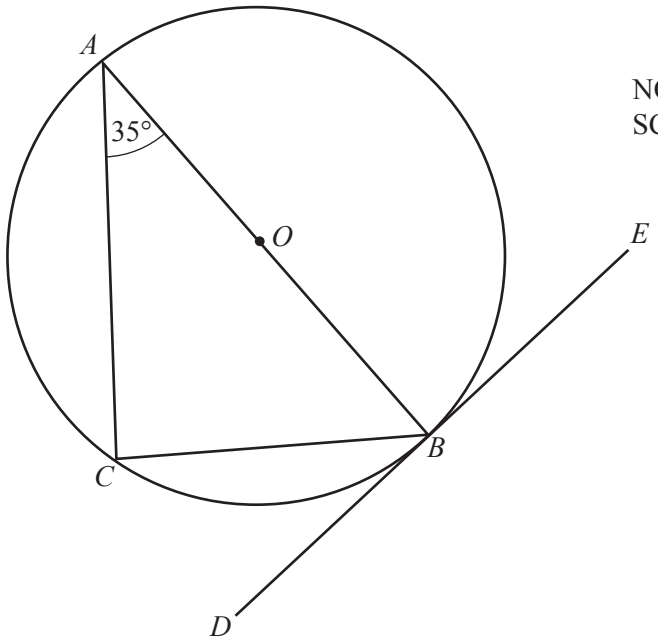
- less than 30 metres from *P*

and

- nearer to *PQ* than to *PS*.

Using a ruler and compasses only, construct and shade the region where he plants the bulbs. [5]

9



NOT TO SCALE

A, *B* and *C* are points on the circumference of the circle, centre *O*.
The straight line *DE* touches the circle at *B*.

(a) Write down the mathematical name for the line *DE*.

..... [1]

(b) On the circle, draw a radius. [1]

(c) Complete the following statements.

(i) Angle *ABD* = ... because .....

..... [2]

(ii) Angle *ACB* = ... because .....

..... [2]

(d) $AB = 9$ cm.

(i) Calculate the area of the circle.
Give the units of your answer.

.... [3]

(ii) Calculate BC.

$BC =$ ..... cm [2]

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