Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

4117273298

MATHEMATICS **0580/32**

Paper 3 (Core) **May/June 2017**

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.

This document consists of **15** printed pages and **1** blank page.

CAMBRIDGE International Examinations

1 Here is part of the menu in a café.

Item	Price
Tea	$2.40
Coffee	$2.80
Fruit juice	$1.85
Pizza	$4.15
Vegetable pasty	$3.60
Chicken curry	$5.20
Ice cream	$2.80
Cake	$3.25
Yoghurt	$1.40

(a) Jenna buys 3 coffees and 2 cakes.

Work out how much she spends altogether.

$ ..... [3]

(b) Find the maximum number of pizzas Harry can buy for $20.
Work out the change he receives from a $20 note.

Number of pizzas = ...

Change = $ ..... [3]

(c) Priti's meal costs $7.60 .
She gives the waitress 15% extra for service.

Work out the total amount she pays.

$ ..... [2]

(d) Elena and Maria are waitresses in the café.
One day they receive $96 for service.
They share the $96 in the ratio Elena : Maria = 3 : 1.

Work out how much Elena receives.

$ ..... [2]

(e) The café's opening hours are shown below.

Day	Opening hours
Monday	CLOSED
Tuesday	11 00 to 15 00 and 17 00 to 22 00
Wednesday	11 00 to 15 00 and 17 00 to 22 00
Thursday	11 00 to 15 00 and 17 00 to 22 00
Friday	11 00 to 15 00 and 17 00 to 22 00
Saturday	10 30 to 23 00
Sunday	09 30 to 21 00

(i) Find the number of hours the café is open during one week.

..... hours [2]

(ii) During opening hours the café needs 3 people on duty.
Each person works 36 hours in a week.

Find the number of people the café needs in a week.

..... [3]

(f) The café owner pays rent.
The **monthly** rent is \$6.40 for each square metre of floor area.
The floor area is 72.5 m^2.

Calculate the **total** rent the café owner pays in one year.

\$ ..... [3]

2 **(a)** Simplify.

$5a + 6a - a$

..... [1]

(b)

NOT TO SCALE

Write an expression for the perimeter of the rectangle.
Give your answer in its simplest form.

..... [3]

(c) **(i)** Work out the value of $5x + 10y$ when $x = 7$ and $y = 9$.

..... [2]

(ii) Work out the value of $4r^2 - pr$ when $p = 3$ and $r = 5$.

..... [2]

(d) Solve.

$5(3x - 6) = 75$

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

(e) Mr and Mrs Barker have three children, Molly, Dean and Raul.

	Age, in terms of x
Molly's age is x years	x
Dean is 5 years younger than Molly	$x-5$
Raul is 4 years older than Molly	
Mr Barker is 4 times older than Molly	
Mrs Barker is 6 years younger than Mr Barker	

(i) Complete the table with expressions in terms of x. [2]

(ii) The total of the five ages is 125 years.

Write down an equation in terms of x and show that it simplifies to $11x-7=125$.

[1]

(iii) Solve the equation $11x-7=125$ to find Molly's age.

Molly's age = ... years [2]

3 **(a)** The table shows the results of a survey in a village.
It shows the number of males and females who are left-handed, right-handed or ambidextrous.

	Left-handed	Right-handed	Ambidextrous	Total
Male	17		5	84
Female	21	102	3	126
Total	38	164	8	210

(i) Complete the table by finding the number of males in the survey who are right-handed. [1]

(ii) Using these results, write down the probability that

(a) a male chosen at random is left-handed,

..... [1]

(b) a left-handed person chosen at random is female,

..... [1]

(c) a person chosen at random is right-handed.

..... [1]

(iii) Here are the ages of the people who are ambidextrous.

27 79 31 16 60 45 42 52

Find the median age of these people.

..... [2]

(b) This table shows the results of another survey.
It shows the number of people in each of 50 households.

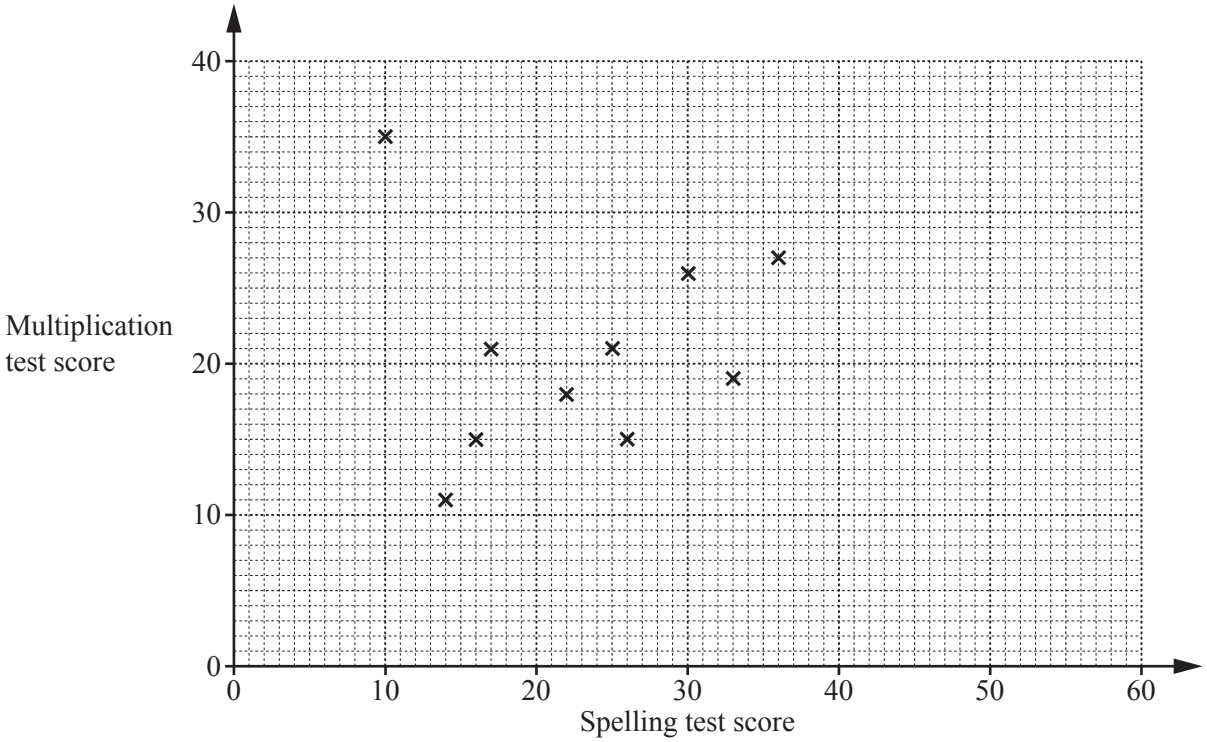
Number of people	Frequency
1	5
2	8
3	12
4	14
5	7
6	4

Work out the mean number of people in each household.

..... [3]

(c) Some students in the village school were given a multiplication test and a spelling test.
The scores are shown in the table.

Spelling test score	14	16	33	22	26	17	36	25	10	30	55	38	42	48
Multiplication test score	11	15	19	18	15	21	27	21	35	26	34	23	28	31



(i) Complete the scatter diagram.
The first ten points have been plotted for you. [2]

(ii) One student has a high score in the multiplication test and a low score in the spelling test.

On the scatter diagram, put a ring around this point. [1]

(iii) What type of correlation is shown in this scatter diagram?

..... [1]

(iv) On the scatter diagram, draw a line of best fit. [1]

(v) Another student, Kim, scored 45 in the spelling test but was absent for the multiplication test.

Use your line of best fit to estimate a score for Kim in the multiplication test.

..... [1]

4 **(a)**

4 10 11 18 20 27 28 32 36 40 56

From the list above, write down

(i) a multiple of 12,

..... [1]

(ii) a factor of 8,

..... [1]

(iii) a prime number,

..... [1]

(iv) a square number,

..... [1]

(v) a cube number.

..... [1]

(b) Find the lowest common multiple (LCM) of 32 and 80.

..... [2]

(c) Find the value of

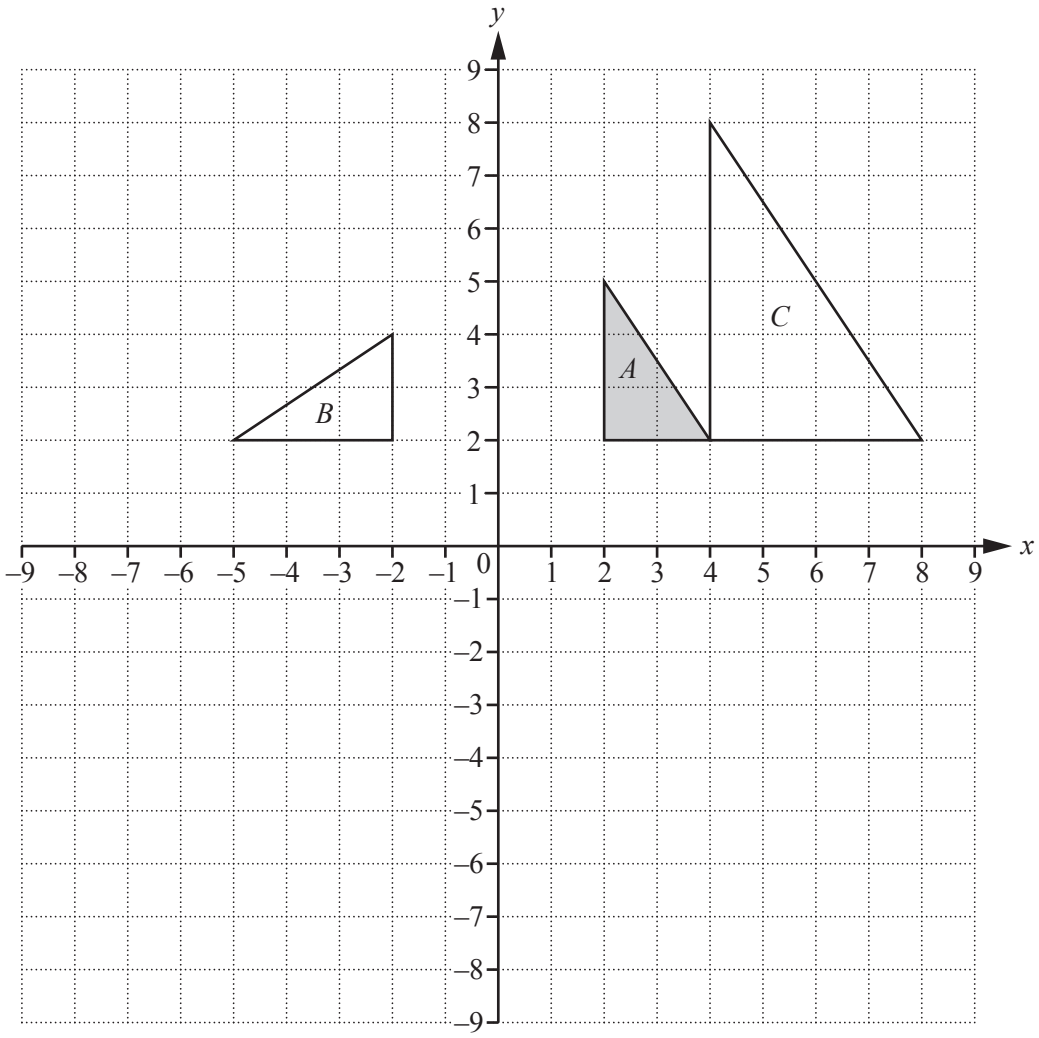
(i) $\sqrt{68.89}$,

..... [1]

(ii) $\sqrt[3]{19\,683}$.

..... [1]

5



(a) Describe fully the **single** transformation that maps triangle *A* onto triangle *B*.

.....

..... [3]

(b) Describe fully the **single** transformation that maps triangle *A* onto triangle *C*.

.....

..... [3]

(c) On the grid, draw the image of

(i) triangle *C* after a reflection in the *x*-axis, [1]

(ii) triangle *B* after a translation by the vector $\begin{pmatrix} -2 \\ 3 \end{pmatrix}$, [2]

(iii) triangle *A* after a rotation of 180° about centre (0, 0). [2]

6 **(a)** The scale drawing shows one side, AB, of a triangular field, ABC.
The scale is 1 centimetre represents 5 metres.

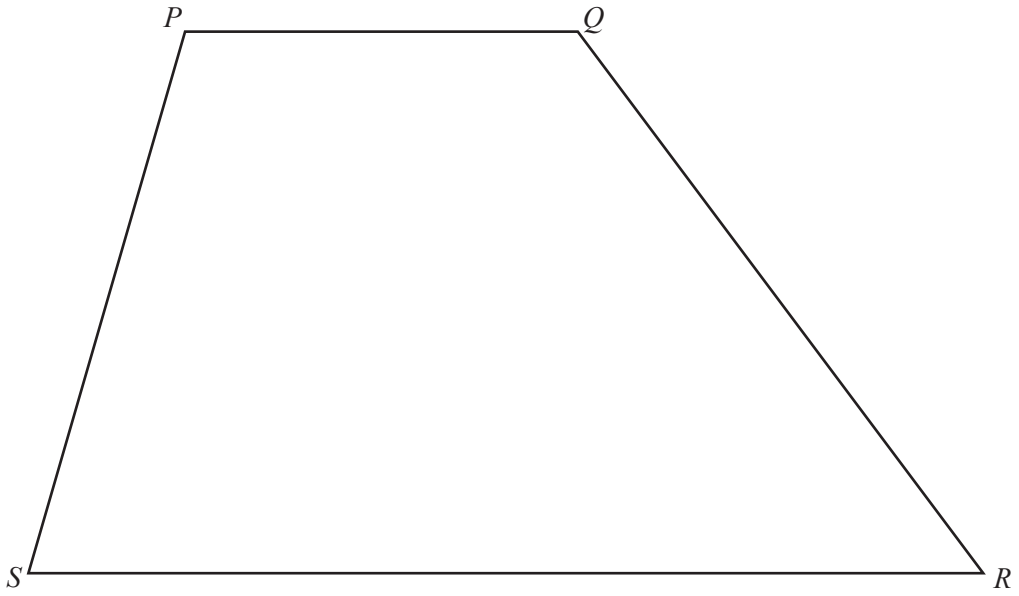
$AC = 40\,\text{m}$ and $BC = 35\,\text{m}$.

Using a ruler and compasses only, construct the triangle ABC.
Show all your construction arcs.

Scale : 1 cm to 5 m

[3]

(b) The diagram shows a quadrilateral *PQRS*.



Using a straight edge and compasses only, construct and shade the region inside *PQRS* that is

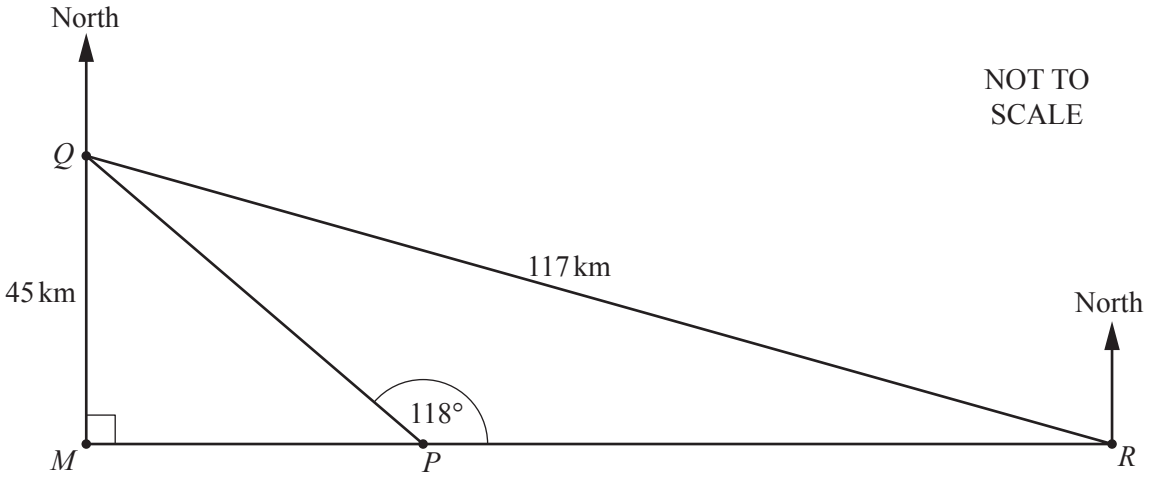
- nearer to *PS* than to *SR*

and

- nearer to *R* than to *S*.

Show all your construction lines and arcs. [5]

7 **(a)** The diagram shows the positions of ports M, P, Q and R.



Port M and port P are due west of port R.
Port M is due south of port Q.
$QM = 45$ km and $QR = 117$ km.

(i) Write down the bearing of port P from port R.

..... [1]

(ii) Work out the bearing of port P from port Q.

..... [3]

(iii) Work out the distance MR.

$MR =$ ..... km [3]

(b) The interior angle of a regular polygon is 171°.

Work out how many sides the polygon has.

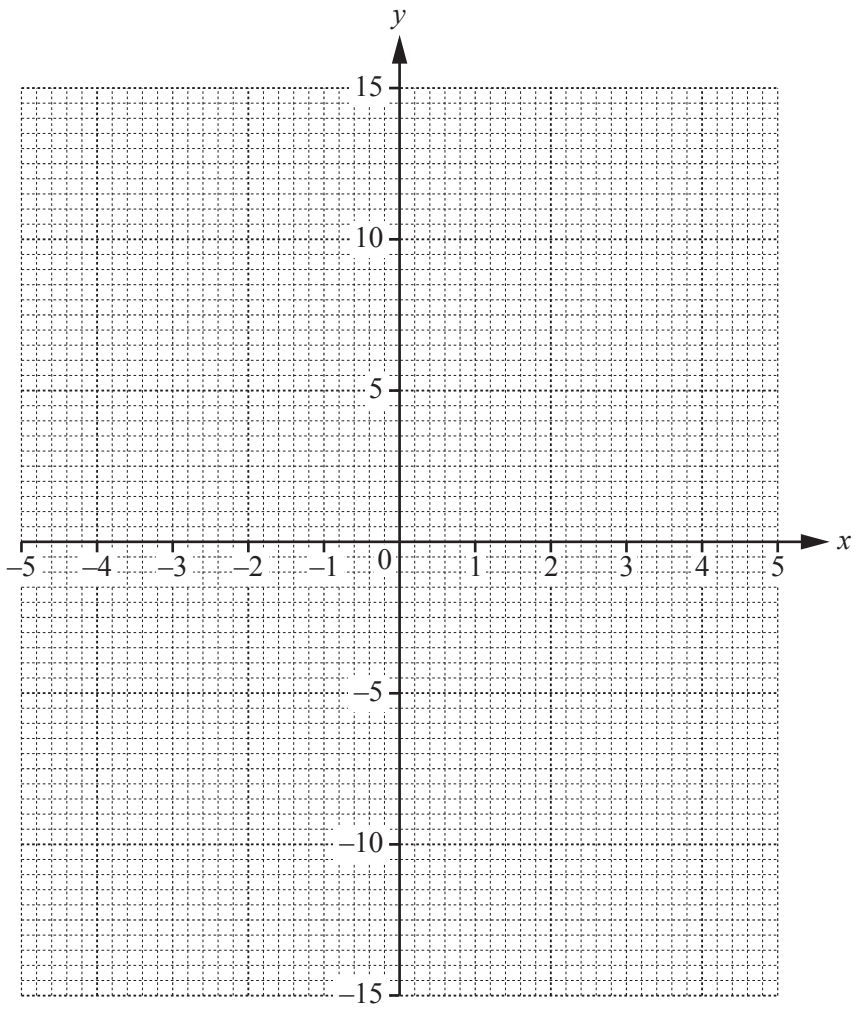
..... [3]

8 **(a)** Complete the table for $y = \frac{15}{x}$.

x	-5	-4	-3	-2	-1		1	2	3	4	5
y		-3.75			-15		15		5		

[3]

(b) On the grid, draw the graph of $y = \frac{15}{x}$ for $-5 \leqslant x \leqslant -1$ and $1 \leqslant x \leqslant 5$.



[4]

(c) Use your graph to solve the equation $\frac{15}{x} = 8$.

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

9 **(a)** Write down the next two terms in each of these sequences.

(i) 8, 14, 20, 26, …

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

(ii) 12, 10, 7, 3, …

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

(b) Find the nth term of this sequence.

14, 25, 36, 47, …

..... [2]

(c) Work out the second term of the sequence whose nth term is $5(3-2n)$.

..... [1]

(d) 1, 4, 9, 16, …

The nth term of this sequence is n^2.

Use this information to write down the nth term of each of these sequences.

(i) 2, 5, 10, 17, …

..... [1]

(ii) 3, 12, 27, 48, …

..... [1]

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