Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	

CENTRE NUMBER		CANDIDATE NUMBER	
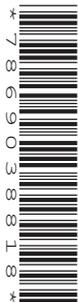
MATHEMATICS **0580/11**

Paper 1 (Core) **May/June 2017**

1 hour

Candidates answer on the Question Paper.

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

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 56.

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

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[Turn over

1   Write, in figures, the number seventy thousand and twenty.

.... [1]

2   Write, as a decimal, the value of 5^{-3}.

.... [1]

3   The thickness of one sheet of paper is 8×10^{-3} cm.

Work out the thickness of 250 sheets of paper.

.... cm [1]

4   Simplify.
    $$\left(x^2\right)^5$$

.... [1]

5
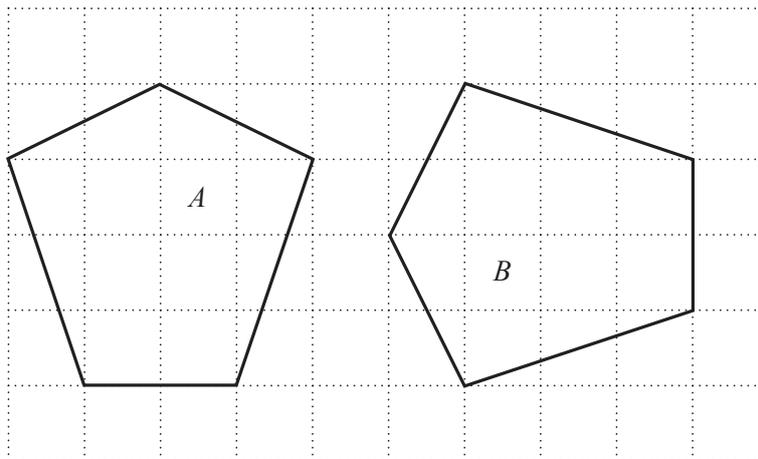
opposite   congruent   reflected   translated

Choose the mathematical word from the list to complete this statement.

Pentagon A is .... to pentagon B.   [1]

0580/11/M/J/17

6   31   33   35   37   39

From the list, write down a prime number.

.... [1]

7 Write 23.4571 correct to

(a) 4 significant figures,

.... [1]

(b) the nearest 10.

.... [1]

8 Factorise completely.
$$12n^2 - 4mn$$

.... [2]

9 Find the highest common factor (HCF) of 126 and 150.

.... [2]

10 The table shows the temperatures in five places at 10 am one day in January.

Place	Temperature (°C)
Helsinki	−7
Chicago	−10
London	3
Moscow	−4
Bangkok	26

(a) Which place was the coldest?

.... [1]

(b) At 2 pm the temperature in Helsinki had increased by 4 °C.

Write down the temperature in Helsinki at 2 pm.

....°C [1]

11 Expand the brackets and simplify.
$$7(2x+3y)-x(14-y)$$

.... [2]

12 The mass, m kilograms, of an elephant is 3570 kg, correct to the nearest 5 kg.

Complete this statement about the value of m.

.... $\leqslant m <$ .... [2]

13

$$\mathbf{a} = \begin{pmatrix} 5 \\ -1 \end{pmatrix} \qquad \mathbf{b} = \begin{pmatrix} -3 \\ -4 \end{pmatrix}$$

Write **a** + 2**b** as a single vector.

$$\begin{pmatrix} \\ \end{pmatrix}$$ [2]

14 Manuel changes 5000 Mexican Pesos to dollars.
He receives $336.

Complete this statement about the exchange rate.
Give your answer correct to 2 decimal places.

$1 = ... Mexican Pesos   [2]

15 Maria asks 50 students in her school when their birthday is.
She records the information in the table.

	Jan to Mar	Apr to Jun	Jul to Sep	Oct to Dec
Number of birthdays	9	21	14	6

(a) Find the relative frequency of a student having a birthday in April, May or June.

.... [1]

(b) There are 750 students in the school.

Estimate the number of students who have a birthday in April, May or June.

.... [1]

16 Work out $\dfrac{\sqrt[3]{512}}{6^2}$.

Write your answer as a fraction in its lowest terms.

.... [2]

17 $A = 4\pi r^2$

Make r the subject of this formula.

$r =$ .... [2]

18 (a) Work out.
$$3 + 2 \times -4$$

.... [1]

(b) In each of these, insert one pair of brackets to make the statement correct.

(i) $3 \times 5 + 2 + 2 = 23$ [1]

(ii) $12 \div 4 + 2 = 2$ [1]

19 **Without using a calculator**, work out $1\frac{2}{3} + \frac{5}{7}$.

Write down all the steps of your working and give your answer as a mixed number in its simplest form.

.... [3]

20 Solve the simultaneous equations.
You must show all your working.

$$5x - 2y = 24$$
$$7x + 4y = -14$$

$x =$ ....

$y =$ .... [3]

21 A cuboid has length 6 cm, width 5 cm and height 3 cm.

On the 1 cm^2 grid, complete the net of the cuboid.
The base is drawn for you.
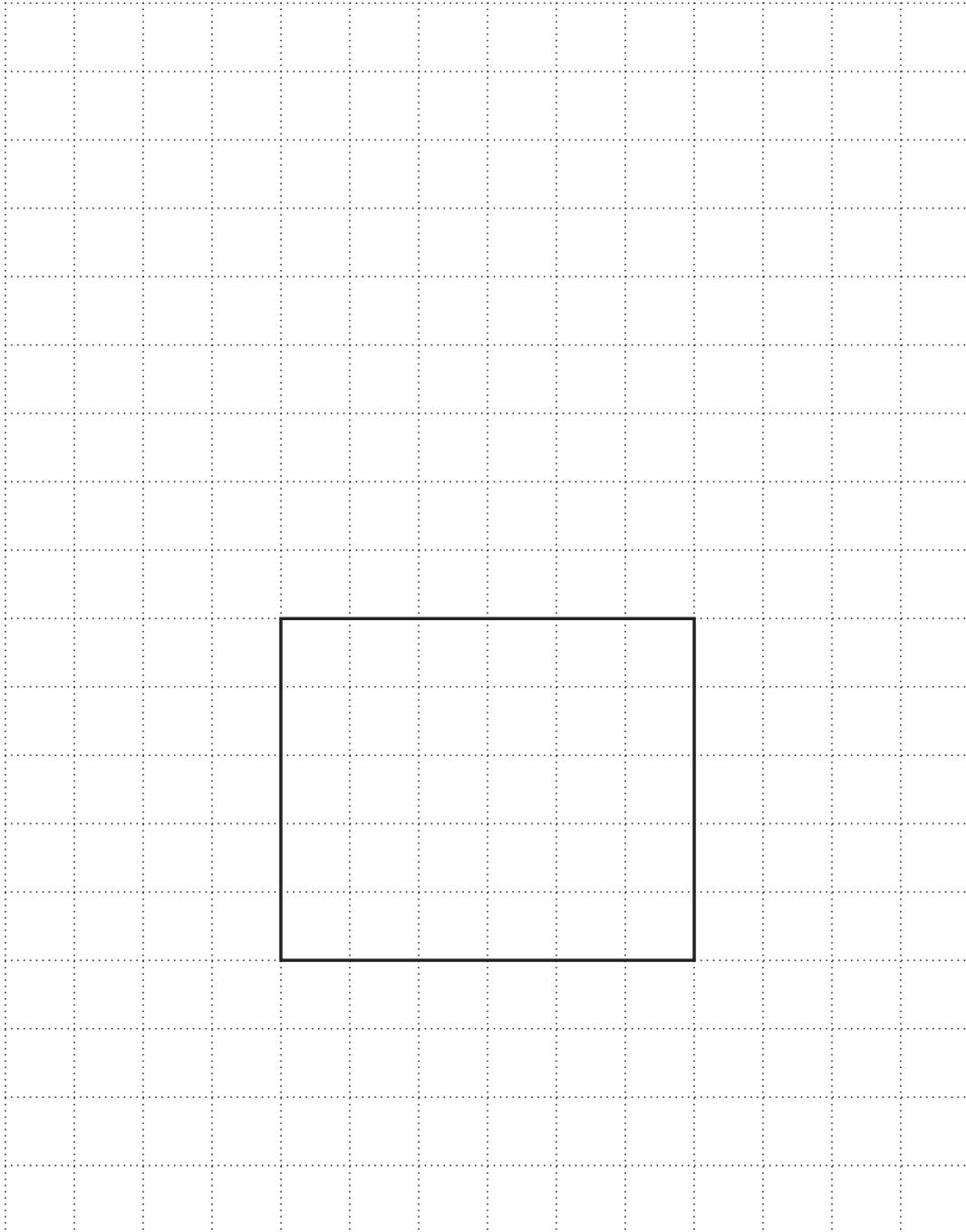
[3]

22 Six students revise for a test.
The scatter diagram shows the time, in hours, each student spent revising and their mark in the test.
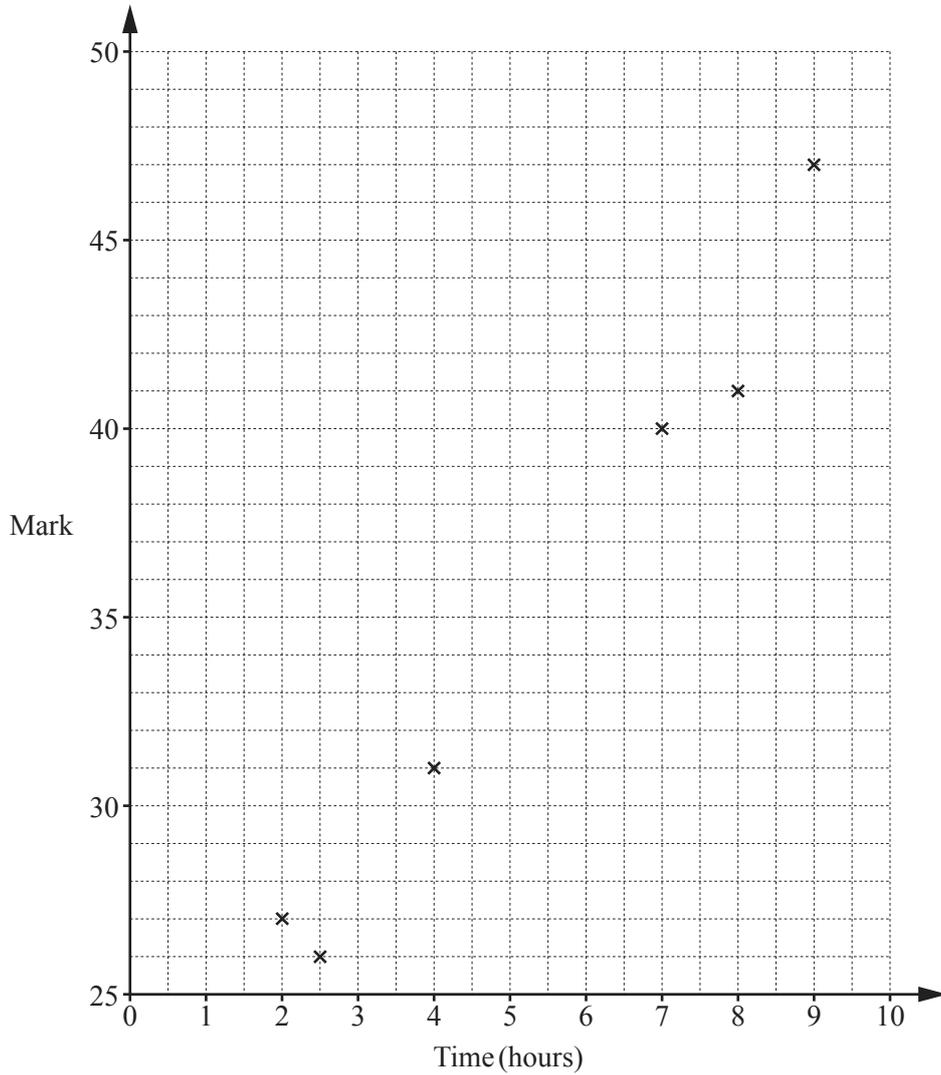
(a) The data for two more students is shown in the table.

Time (hours)	4.5	6.5
Mark	33	35

Plot these two points on the scatter diagram. [1]

(b) What type of correlation is shown on the scatter diagram?

.... [1]

(c) Draw a line of best fit on the scatter diagram. [1]

(d) Another student spent 5.5 hours revising.

Estimate a mark for this student.

.... [1]

 [Turn over

23

B

C

A
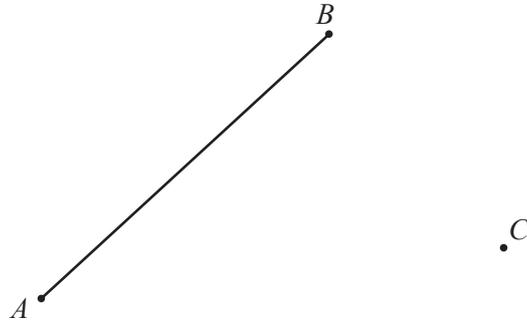
The diagram shows the positions of three points, *A*, *B* and *C*.

(a) **Using a ruler and compasses only**, construct

    (i) the perpendicular bisector of the line *AB*, [2]

    (ii) the locus of all points that are 3 cm from *C*. [2]

(b) Shade the region that is

       • closer to *A* than to *B*

  and

       • less than 3 cm from *C*. [1]

24 The diagram shows a notice board.
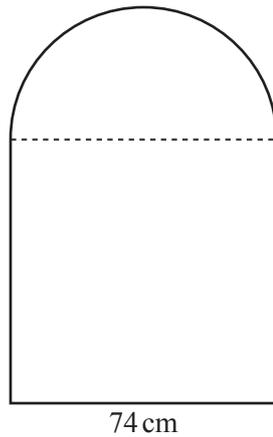
NOT TO
SCALE

74 cm

The board is in the shape of a semicircle joined to a square with side 74 cm.

(a) Calculate

(i) the perimeter of the board,

.... cm [3]

(ii) the area of the board.

.....................................cm^2 [3]

(b) The board is a prism that is 5 cm thick.

Calculate the volume of the board.

.....................................cm^3 [1]

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