Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

MATHEMATICS **0580/12**

Paper 1 (Core) **February/March 2017**

1 hour

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.

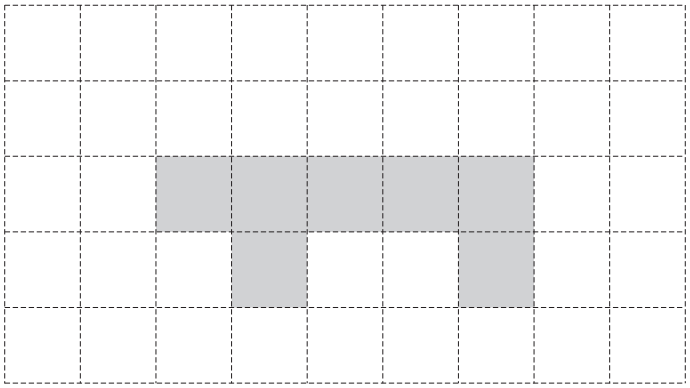
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 56.

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

1 Write down the difference in temperature between −4 °C and −9 °C.

..... °C [1]

2 Shade **two** more squares so that this shape has rotational symmetry of order 2.



[1]

3 Find the value of

(a) $\sqrt{196}$,

..... [1]

(b) $\frac{24}{0.2^3}$.

..... [1]

4 A cuboid has dimensions 12 m by 15 m by 20 m.

Find the volume of the cuboid.

..... m^3 [2]

5

34 38 10 87 45 28 19 23

Calculate the mean of these 8 numbers.

..... [2]

6 **(a)** Write 629 000 in standard form.

..... [1]

(b) Write 8.21×10^{-3} as an ordinary number.

..... [1]

7 A circular plate has diameter 27 cm.

Calculate the circumference of the plate.

..... cm [2]

8 **Without using your calculator** and by rounding each number correct to 1 significant figure, estimate the value of

$$\frac{10.3 \times 19.5}{88.9 - 43.2}.$$

You must show all your working.

..... [2]

9 Factorise completely.

$$15c^2 - 5c$$

..... [2]

10 Find the highest common factor (HCF) of 36 and 63.

..... [2]

11

7 2 3 5 1 2 6 9 7 2 6 4 2 3 6

For these numbers

(a) find the range,

..... [1]

(b) write down the mode.

..... [1]

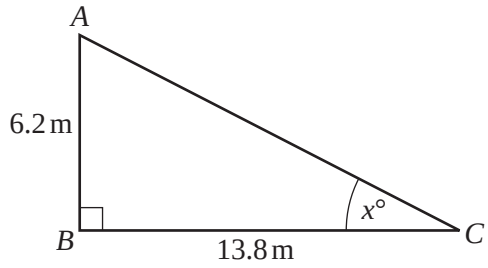
12

1 euro = \$1.09
\$1 = 62 rupees

Change 400 euros into rupees using these exchange rates.

..... rupees [2]

13

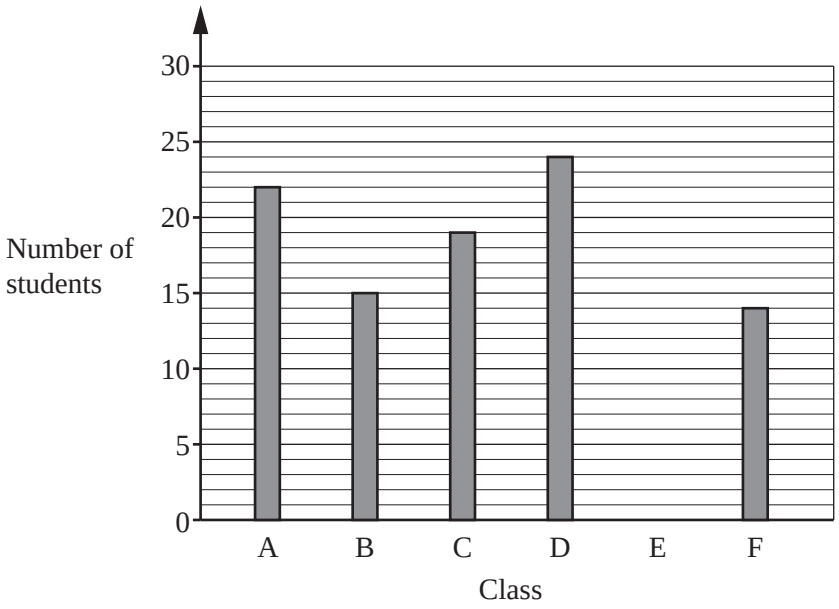


NOT TO SCALE

Calculate the value of x.

$x =$ ..... [2]

14



The bar chart shows the number of students in each of the Classes A, B, C, D and F.

(a) Write down how many **more** students there are in Class D than in Class B.

..... [1]

(b) The total number of students in these six classes is 117.

Draw the bar for Class E.

[2]

15 Write down the next term in each of these sequences.

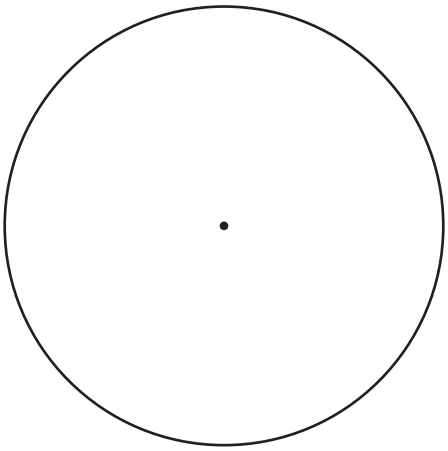
(a) 19, 15, 11, 7, 3, ... [1]

(b) 0, 1, 4, 9, 16, ... [1]

(c) 3, 5, 9, 17, 33, ... [1]

16 (a) The angle in a semi-circle is 90°.

Use the circle drawn below, with its centre marked, to show this.



[1]

(b) The line *AB* is one side of an equilateral triangle *ABC*.

Using a straight edge and compasses only, construct triangle *ABC*.

A *B*

[2]

17 **Without using your calculator**, work out $3\frac{1}{3} \div 2\frac{1}{2}$.

You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

18 **(a)** Expand the brackets and simplify.

$$4(5w+3)-2(w-1)$$

..... [2]

(b) Simplify.

$$(w^5)^2$$

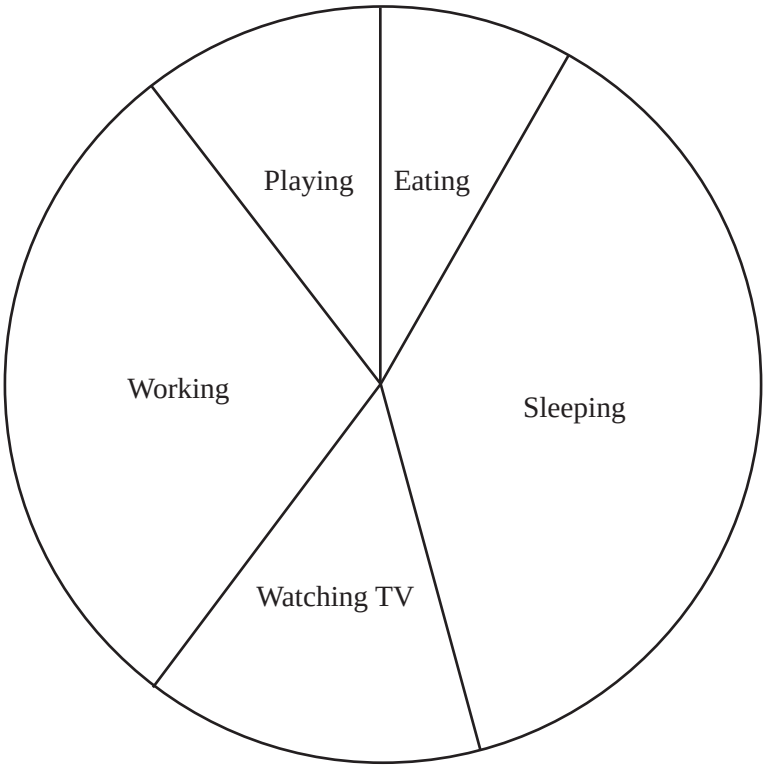
..... [1]

19 Kaasni invested \$2400 at a rate of 7.5% per year compound interest.

Calculate the total value of this investment at the end of 3 years.
Give your answer correct to 2 decimal places.

\$ ..... [3]

20



The pie chart shows how Miranda spent her time yesterday.

Work out how many hours she spent sleeping.

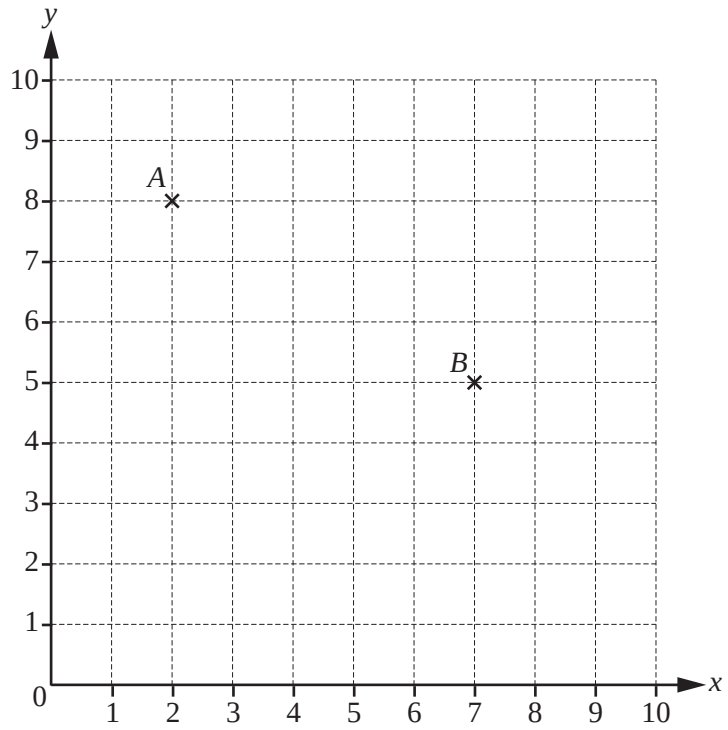
..... hours [3]

21 **(a)** Work out.

$$\begin{pmatrix} 3 \\ -2 \end{pmatrix} + \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(b)



Points A and B are marked on the grid.

$\overrightarrow{BC} = \begin{pmatrix} -4 \\ 0 \end{pmatrix}$

(i) On the grid, plot the point C. [1]

(ii) Write $\overrightarrow{AC}$ as a column vector.

$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

22 Solve.

(a) $4x = 10$

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

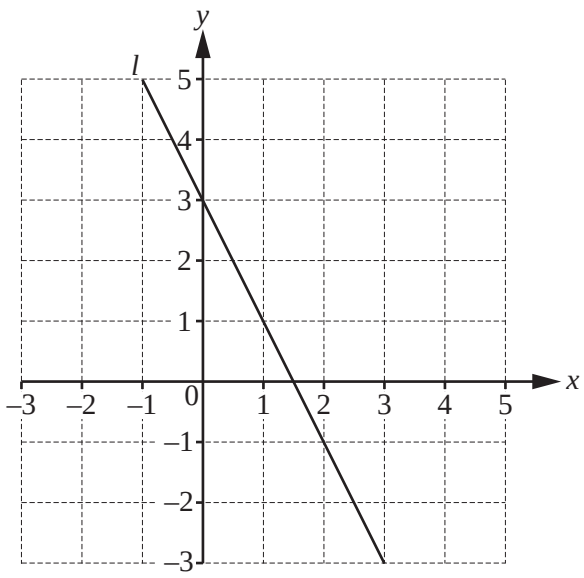
(b) $5(x + 8) = 75$

$x =$ ..... [2]

(c) $3^7 \div 3^x = 9$

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

23



(a) Find the equation of the line l.
Give your answer in the form $y = mx + c$.

$y =$ ..... [3]

(b) Draw another straight line on the diagram that passes through $(-1, 1)$ and is parallel to the line l. [1]

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