Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS   **0580/13**

Paper 1 (Core)   **October/November 2023**

                                                                                    1 hour

You must answer on the question paper.

You will need: Geometrical instruments

INSTRUCTIONS
- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should use a calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For π, use either your calculator value or 3.142.

INFORMATION
- The total mark for this paper is 56.
- The number of marks for each question or part question is shown in brackets [ ].

1
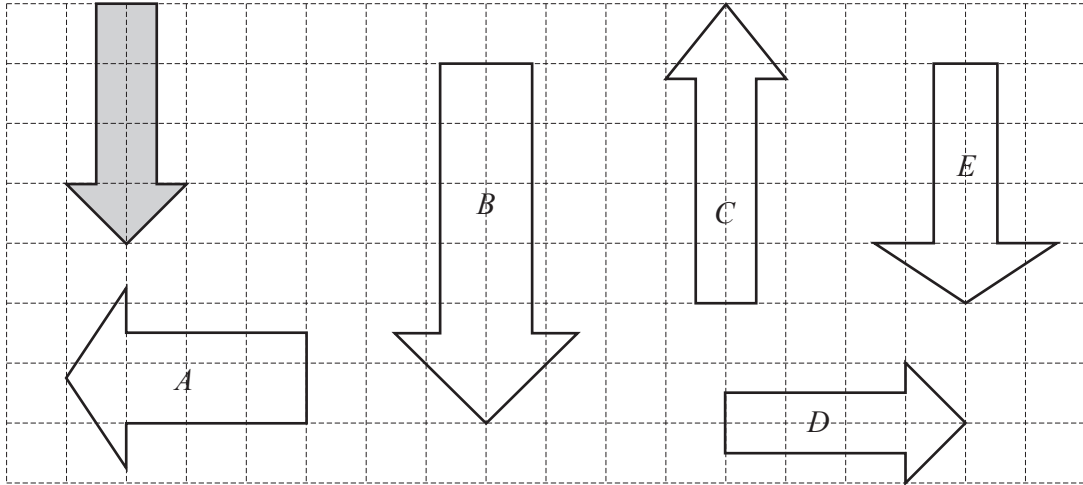
Write down the letter of the shape that is congruent to the shaded shape.

.... [1]

2 Write down

(a) all the factors of 32

.... [2]

(b) the reciprocal of $\frac{1}{8}$

.... [1]

(c) the value of the 7 in the number 473 285.

.... [1]

3
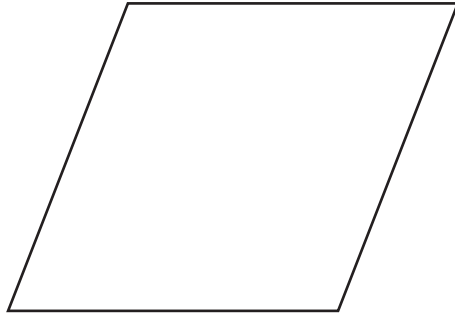
Draw the lines of symmetry on this rhombus. [2]

4

| 61 | 63 | 64 | 66 | 68 | 69 |

From this list, write down

(a) a cube number

.... [1]

(b) a prime number.

.... [1]

5 Tara goes on a journey by train.
The train leaves at 06 48.
The journey takes 12 hours and 35 minutes.

Find the time when Tara arrives.

.... [1]

 [Turn over

6 Jamie records the masses of two samples of oranges, type A and type B.
The stem-and-leaf diagram shows the mass, in grams, of each of 30 oranges of type A.

17	6 8 8 9
18	0 1 2 2 4 7
19	1 2 2 3 6 7 8
20	0 2 5 5 5 6 7 7 8
21	1 5 6 8

Key: 17|6 represents 176 grams

(a) Complete the table to show the range for type A oranges.

	Type A	Type B
Mean (g)	195.7	215.8
Range (g)		35

[1]

(b) Use the information in the table to write down two comments comparing the masses of type A oranges with the masses of type B oranges.

1. ....

....

2. ....

....

[2]

7 In triangle *LMN*, *LN* = 7.5 cm and *MN* = 8 cm.

(a) **Using a ruler and compasses only**, construct triangle *LMN*.
Leave in your construction arcs.
The line *LM* has been drawn for you.

M

L

[2]

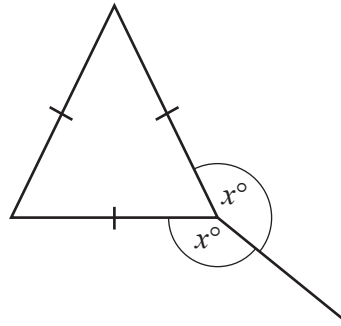**(b)** Write down the mathematical name for this type of triangle.

.... [1]

8 The surface area of a cube is 73.5 cm^2.

Find the length of one side of the cube.

.... cm [2]

9

NOT TO
SCALE

The diagram shows an equilateral triangle.

Find the value of x.

$x =$ .... [2]

10 $\mathbf{a} = \begin{pmatrix} 4 \\ 9 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -6 \\ 1 \end{pmatrix}$ $\mathbf{c} = \begin{pmatrix} 13 \\ -2 \end{pmatrix}$

Work out.

(a) $\mathbf{a} + \mathbf{b}$

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

(b) $3\mathbf{c}$

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

11 Factorise completely.
$$15v^2 - 3v$$

.... [2]

12 Rama asks a group of students how they travel to school.
The table shows the probability of how a student, chosen at random, travels to school.

	Bus	Walk	Car	Other
Probability	0.4	0.32	0.17	

(a) Complete the table.

[2]

(b) There are 1800 students at the school.

Find the expected number of students that walk to school.

.... [1]

13 **Without using a calculator**, work out $1\frac{5}{6} \div \frac{11}{15}$.

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

.... [3]

14
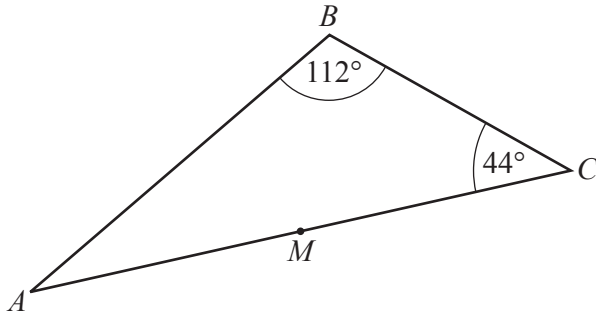
The diagram shows triangle *ABC*.
M is the midpoint of *AC*.

Triangle *ABC* is rotated 180° about centre *M*.
The image and the original triangle together form a quadrilateral *ABCD*.

(a) Write down the mathematical name of the quadrilateral *ABCD*.

.... [1]

(b) Find angle *BAD*.

Angle *BAD* = ... [2]

15 Shubhu invests \$750 in a savings account for 5 years.
The account pays simple interest at a rate of 1.8% per year.

Calculate the total interest she earns during the 5 years.

\$ .... [2]

16 Solve the equation.
$$5x + 7 = 9x - 3$$

$x =$ .... [2]

17
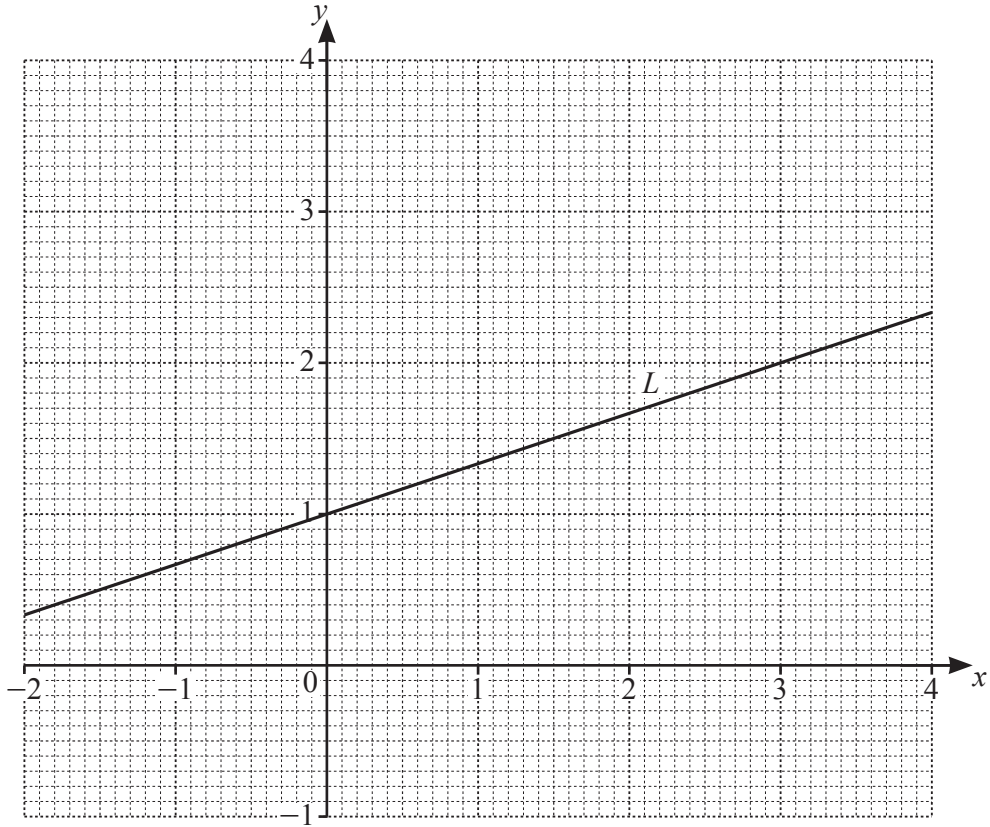
(a) Find the equation of line L in the form $y = mx + c$.

$y =$ .... [2]

(b) On the grid, draw a line that is perpendicular to line L. [1]

18 A bar of chocolate costs \$3 and a bag of sweets costs \$5.

Write down an expression for the total cost, in dollars, of x bars of chocolate and y bags of sweets.

\$ .... [2]

19 (a) A bag contains these cards.

$$\boxed{1}\ \boxed{7}\ \boxed{3}\ \boxed{9}\ \boxed{4}\ \boxed{5}\ \boxed{2}$$

One of these cards is picked at random.

Find the probability that the number on the card is greater than 3.

.... [1]

(b) A box contains 3 blue cards and 7 red cards.
Kim picks one card at random, notes its colour and then replaces it in the box.
She then picks another card at random.

(i) Complete the tree diagram.

First card   Second card

Blue $\frac{3}{10}$

Blue $\frac{3}{10}$ ← Blue

.... Red

.... Red

Red $\frac{3}{10}$ Blue

.... Red

[1]

(ii) Work out the probability that both of the cards Kim picks are blue.

.... [2]

20

NOT TO SCALE

The diagram shows a sector of a circle with radius r cm and sector angle 72°.
The arc length is 9.35 cm.

Calculate the value of r.

$r =$ .... [2]

21 $\mathscr{E} = \{2,\ 4,\ 8,\ 9,\ 10,\ 12\}$
$Q = \{\text{square numbers}\}$
$R = \{\text{multiples of 4}\}$

(a) Use this information to complete the Venn diagram.

[2]

(b) Write down $\text{n}(Q \cap R)$.

.... [1]

   [Turn over
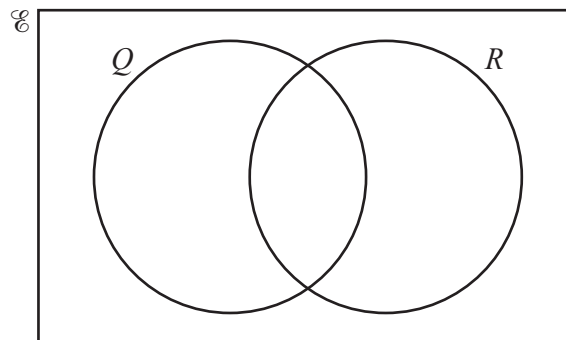
22 Find the highest common factor (HCF) of 48 and 80.

.... [2]

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

$$3x + 5y = 23$$
$$6x - 4y = 11$$

$x =$ ....

$y =$ .... [3]

BLANK PAGE

BLANK PAGE