



# Cambridge IGCSE™

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**MATHEMATICS**

**0580/13**

Paper 1 (Core)

**October/November 2023**

**1 hour**

You must answer on the question paper.

You will need: Geometrical instruments

## INSTRUCTIONS

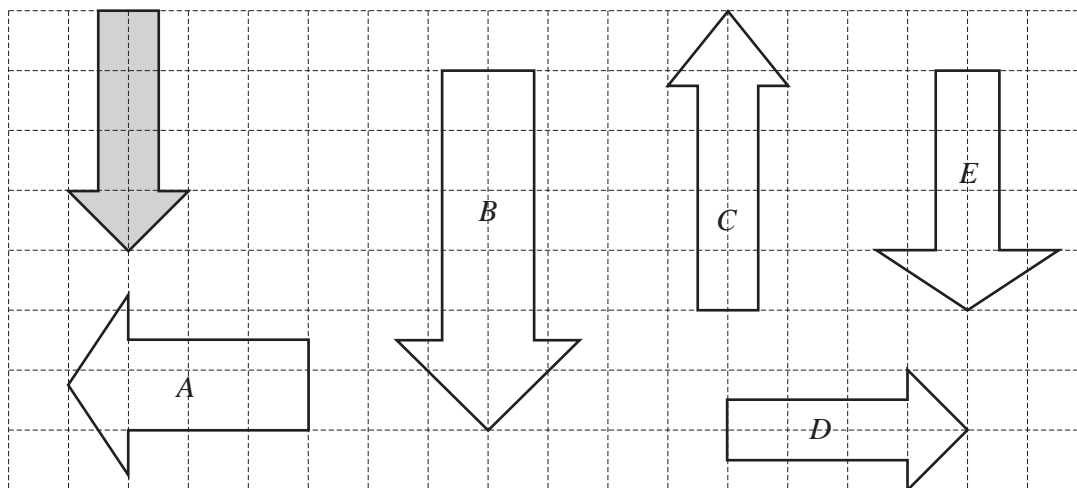
- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction 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  $\pi$ , 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 [ ].

This document has **16** pages. Any blank pages are indicated.

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  $\frac{1}{8}$

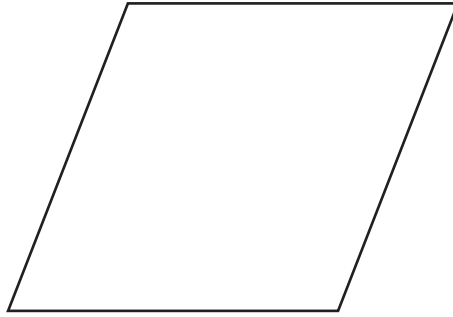
..... [1]

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

..... [1]

3

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 0648.  
The journey takes 12 hours and 35 minutes.

Find the time when Tara arrives.

..... [1]

- 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.



[2]

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

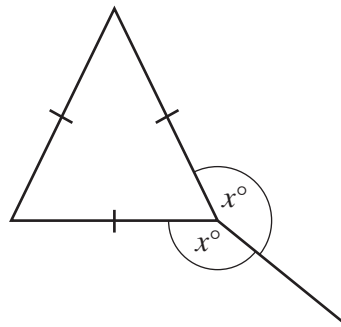
..... [1]

8 The surface area of a cube is  $73.5 \text{ cm}^2$ .

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  $x$ .

$x = \dots\dots\dots$  [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)  $\mathbf{a} + \mathbf{b}$

$\begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [1]

(b)  $3\mathbf{c}$

$\begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [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.

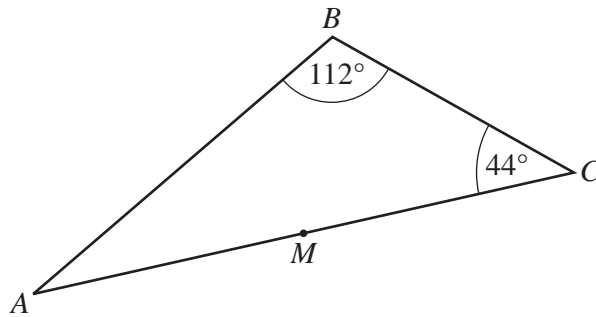
..... [1]

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]





NOT TO  
SCALE

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

Triangle  $ABC$  is rotated  $180^\circ$  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]

10

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

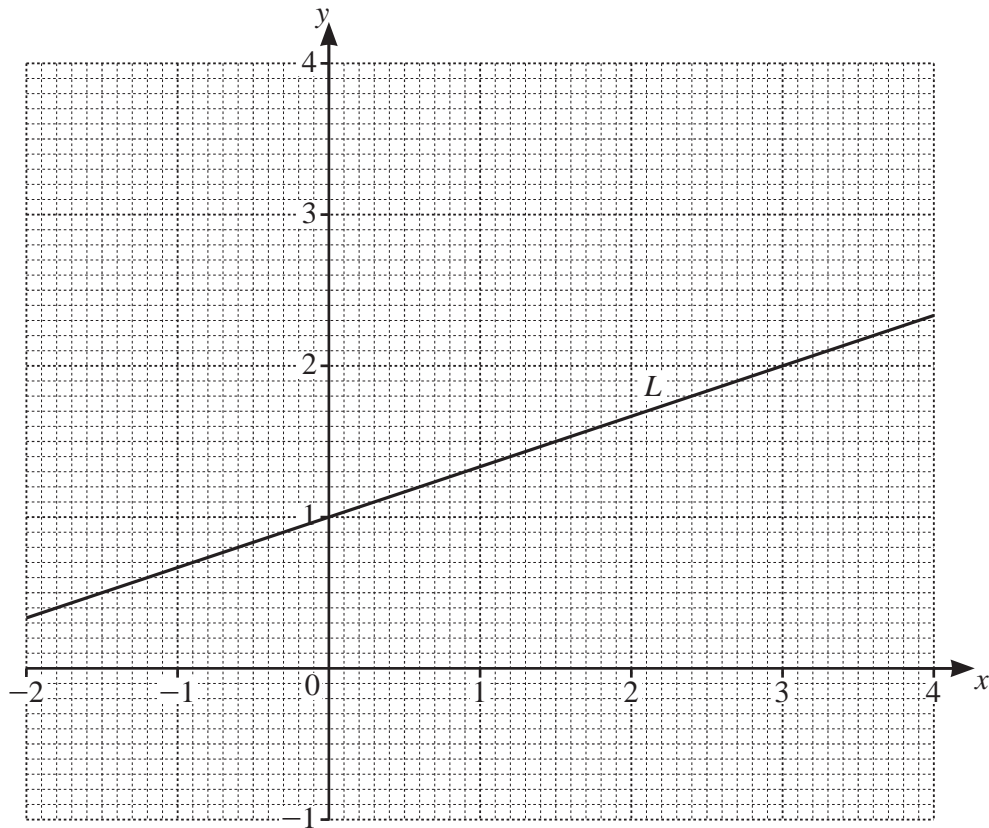
Calculate the total interest she earns during the 5 years.

\$ ..... [2]

- 16 Solve the equation.

$$5x + 7 = 9x - 3$$

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



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

$y = \dots\dots\dots$  [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.

\$ \dots\dots\dots [2]

19 (a) A bag contains these cards.



One of these cards is picked at random.

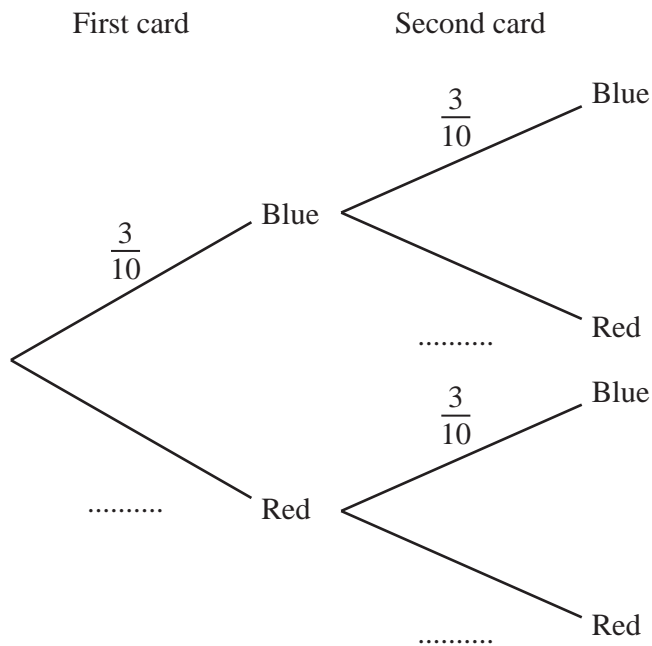
Find the probability that the number on the card is greater than 3.

..... [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.

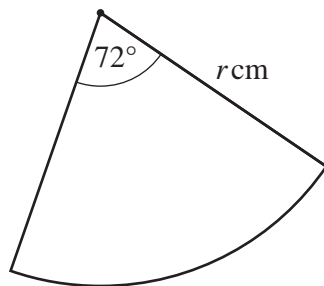


[1]

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

..... [2]

20



NOT TO SCALE

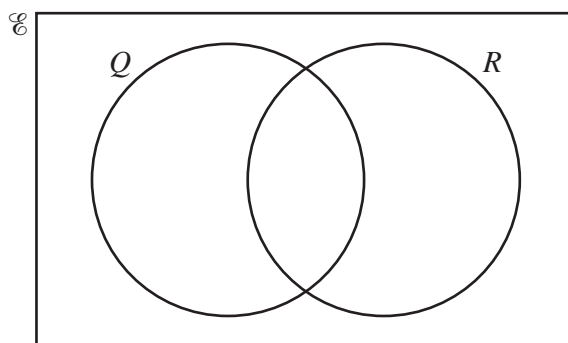
The diagram shows a sector of a circle with radius  $r$  cm and sector angle  $72^\circ$ . The arc length is 9.35 cm.

Calculate the value of  $r$ .

$r = \dots\dots\dots$  [2]

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

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



[2]

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

$\dots\dots\dots$  [1]

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]



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