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MATHEMATICS

0580/12

Paper 1 (Core)

May/June 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 [].

This document has **12** pages.

2

1 (a) Write down all the factors of 18.

..... [2]

(b) Write down the reciprocal of 8.

..... [1]

2

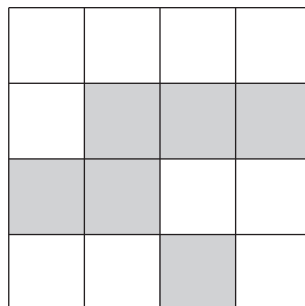


(a) Draw a line perpendicular to the line AB. [1]

(b) Measure the line AB in centimetres.

.....cm [1]

3



Shade two squares so that the diagram has rotational symmetry of order 4. [2]

3

4 Kai and Ava each have a piece of wood 57 cm long.

(a) Kai cuts his piece into 4 equal length parts.

Find the length of one part.

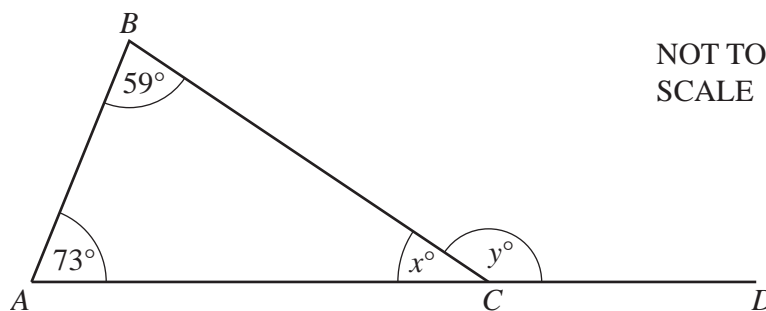
.....cm [1]

(b) Ava cuts her piece into two parts and the lengths are in the ratio 5 : 1.

Find the length of the longer part.

.....cm [2]

5



In the diagram, ABC is a triangle and ACD is a straight line.

Find the value of x and the value of y .

$x =$

$y =$ [2]

4

- 6 Find the temperature that is 8°C colder than -5°C .

..... $^{\circ}\text{C}$ [1]

- 7 There are two prime numbers in this list.

27 47 57 61 75 93

Work out the sum of these two prime numbers.

..... [2]

- 8 On ten days, Stefan records the number of minutes he has to wait for a train.

1 3 12 5 4 23 5 24 11 8

- (a) Complete the stem-and-leaf diagram to show this information.

0	1 3
1	
2	

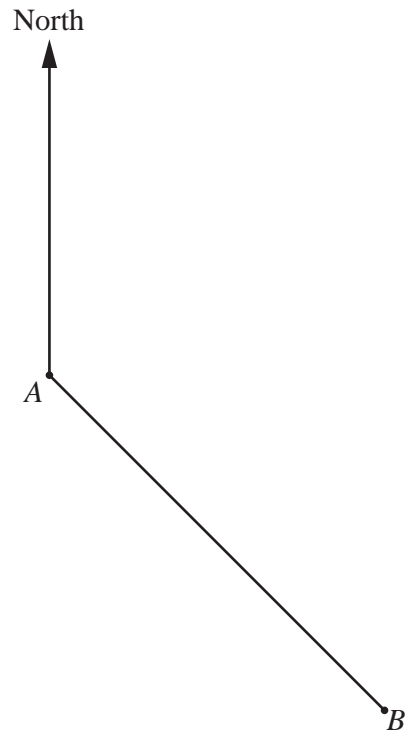
Key: 0 | 1 represents 1 minute

[2]

- (b) Find the median.

..... min [1]

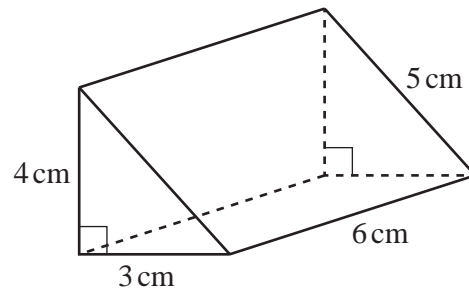
9 The scale drawing shows the positions of town *A* and town *B*.



Measure the bearing of town *B* from town *A*.

..... [1]

10

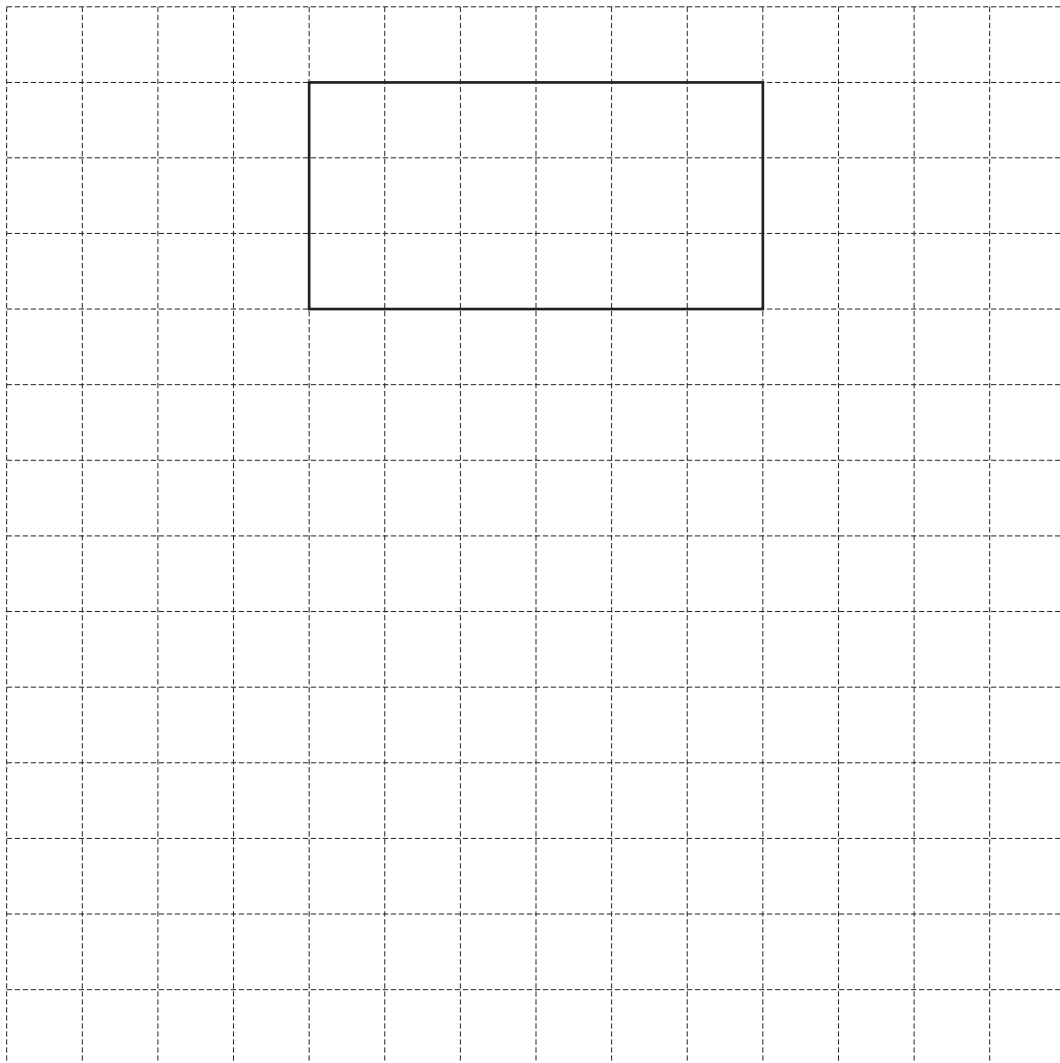


NOT TO SCALE

The diagram shows a right-angled triangular prism.

On the 1 cm^2 grid, complete the net of this prism.

One face has been drawn for you.



[3]

- 11 The distance from town A to town B on a map is 3.5 cm.
The scale on the map is 1 : 250 000.

Find the actual distance, in kilometres, from town A to town B .

..... km [2]

- 12 A spinner is spun.
The possible outcomes are A, B, C or D.
The probability of spinning A, C or D is shown in the table.

Letter on spinner	A	B	C	D
Probability	0.2		0.05	0.35

Complete the table.

[2]

- 13 $\mathcal{C} = \{x: 1 \leq x \leq 20\}$
 $E = \{\text{even numbers}\}$
 $M = \{\text{multiples of 5}\}$

(a) Find $n(M)$.

..... [1]

(b) Find the elements in the set $E \cap M$.

..... [1]

14 Without using a calculator, work out $\frac{4}{7} \div 1\frac{5}{21}$.

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

..... [3]

15 F is the point $(1, -4)$, $\overrightarrow{FG} = \begin{pmatrix} 8 \\ -3 \end{pmatrix}$ and $\overrightarrow{GH} = \begin{pmatrix} -12 \\ 35 \end{pmatrix}$.

Find

(a) $3\overrightarrow{FG}$

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

(b) $\overrightarrow{FG} + \overrightarrow{GH}$

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

(c) the coordinates of the point G .

(.....,) [1]

16 x is an integer where $x \geq -3$ and $x < 3$.

Write down all the possible values of x .

..... [2]

17 Find the size of an interior angle of a regular 15-sided polygon.

..... [2]

18 (a) Write 45 000 in standard form.

..... [1]

(b) Calculate $6.75 \times 10^{-3} \times 4.2 \times 10^5$.
Give your answer in standard form.

..... [1]

19 Simplify.
 $18x^{12} \div 3x^3$

..... [2]

20 Buses at a station go to the port or to the town.

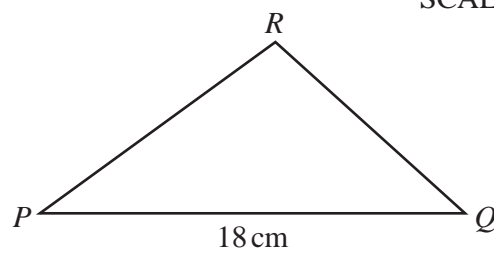
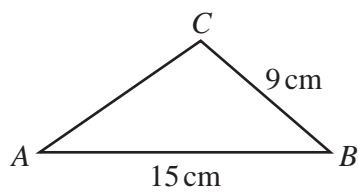
Buses leave every 28 minutes for the port.
Buses leave every 48 minutes for the town.

At 10 18 a bus for the port and a bus for the town leave the station together.

Find the next time when a bus for the port and a bus for the town leave the station together.

..... [3]

21



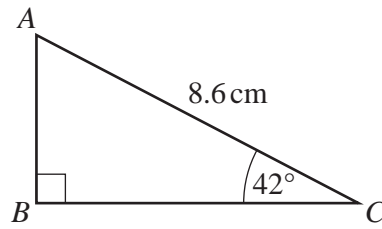
NOT TO
SCALE

Triangle ABC is similar to triangle PQR .

Calculate QR .

$QR = \dots\dots\dots\text{ cm}$ [2]

22 (a)



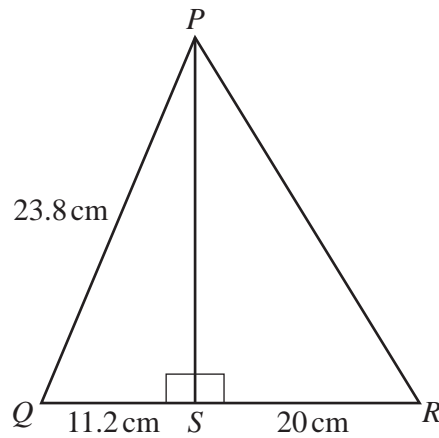
NOT TO SCALE

The diagram shows a right-angled triangle ABC .

Calculate AB .

$AB = \dots\dots\dots \text{ cm [2]}$

(b)



NOT TO SCALE

The diagram shows right-angled triangles PQS and PRS .
 $PQ = 23.8 \text{ cm}$, $QS = 11.2 \text{ cm}$ and $SR = 20 \text{ cm}$.

Calculate PR .

$PR = \dots\dots\dots \text{ cm [4]}$

Question 23 is printed on the next page.

- 23 (a) The mass, m kilograms, of object A is 350 kg, correct to the nearest 10 kg.

Complete this statement about the value of m .

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

- (b) The mass of object B is 348 kg, correct to the nearest kilogram.

Show that the mass of object B may be more than the mass of object A .

..... [1]

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