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MATHEMATICS

0580/11

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. Any blank pages are indicated.

- 1 Work out the number of months in 5 years.

..... months [1]

- 2 Write 3752 correct to the

(a) nearest 10

..... [1]

(b) nearest 100.

..... [1]

- 3 Magazines cost \$3.40 each.
Rosina has \$15 to buy as many magazines as possible.

Complete the statement.

Rosina can buy magazines and will have \$ left. [3]

- 4 Write down the mathematical name of a 4-sided shape that has rotational symmetry of order 2 and no lines of symmetry.

..... [1]

5

21 8 15 32 3 29 19 45 8

Calculate the mean of these numbers.

..... [2]

- 6 A train journey starts at 21 43.
It takes 8 hours and 32 minutes.

Find the time the journey finishes.

..... [1]

- 7 Write these numbers in order, starting with the smallest.

$$\frac{15}{213}$$

$$0.071$$

$$0.7$$

$$7\%$$

..... < < < [2]
smallest

- 8 Write the fraction $\frac{24}{84}$ in its simplest form.

..... [1]

- 9 Simplify.

$$3a - 5b - a - 6b$$

..... [2]

- 10 The cost of hiring a bicycle, \$ C , for y hours is given by the formula $C = 12 + 3.5y$.
 Maria pays \$36.50 to hire this bicycle.

Work out the number of hours she hires the bicycle for.

..... hours [2]

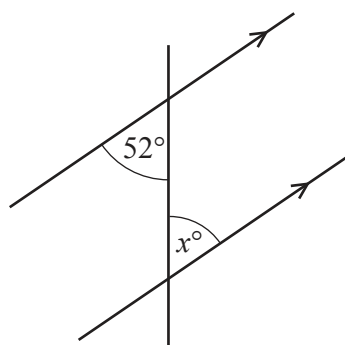
11

$$\mathbf{a} = \begin{pmatrix} 3 \\ 7 \end{pmatrix} \quad \mathbf{b} = \begin{pmatrix} -2 \\ 5 \end{pmatrix}$$

Work out $\mathbf{a} - 2\mathbf{b}$.

$\left(\begin{array}{c} \\ \end{array} \right)$ [2]

12 (a)



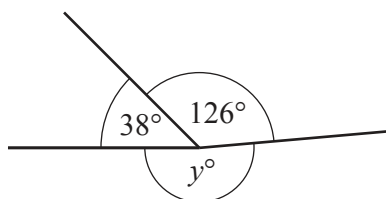
NOT TO
SCALE

The diagram shows a pair of parallel lines and a straight line.

Write down the geometrical reason why the value of x is 52.

..... [1]

(b)



NOT TO
SCALE

Find the value of y and write down the geometrical reason for your answer.

$y =$ because [2]

- 13 Calculate the volume of a sphere with diameter 4.8 cm.

[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

..... cm^3 [2]

- 14 By writing each number in the calculation correct to 1 significant figure, work out an estimate for the value of

$$\frac{6.7 \times 2.1}{18 - 5.9}.$$

You must show all your working.

..... [2]

- 15 Eric has four colours of paint.
The table shows the probability that he uses each colour.

Colour	Red	Blue	Green	Yellow
Probability	0.3	0.35	0.13	x

Find the value of x .

$x =$ [2]

- 16 Factorise completely.

$$8x^2 - 20x$$

..... [2]

- 17 (a) The n th term of a sequence is $10 - n^2$.

Write down the first three terms of this sequence.

.....,, [2]

- (b) These are the first four terms of another sequence.

7 10 13 16

Find an expression for the n th term of this sequence.

..... [2]

- 18 The length, l metres, of a piece of wood is 3.6 metres, correct to the nearest 10 centimetres.

Complete this statement about the value of l .

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

- 19 Calculate $1 \div (6.4 \times 10^{-5})$.

Give your answer in standard form.

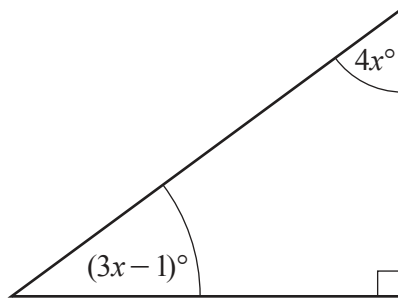
..... [2]

- 20 Without using a calculator, work out $2\frac{1}{7} \div \frac{5}{9}$.

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

..... [3]

21



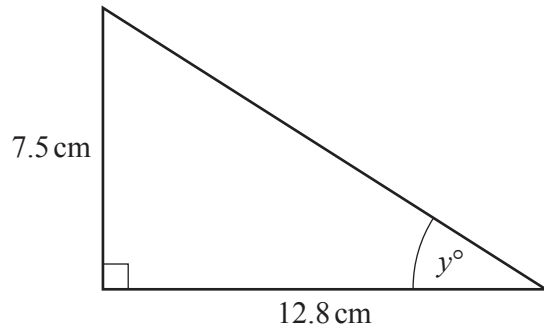
NOT TO
SCALE

The diagram shows a right-angled triangle.

Use the information in the diagram to write down and solve an equation to find the value of x .

$x =$ [3]

22

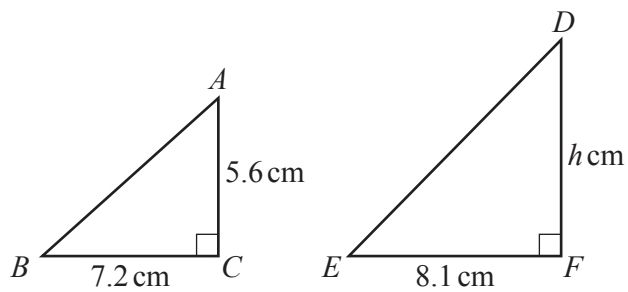
NOT TO
SCALE

The diagram shows a right-angled triangle.

Calculate the value of y .

$y = \dots\dots\dots$ [2]

23

NOT TO
SCALE

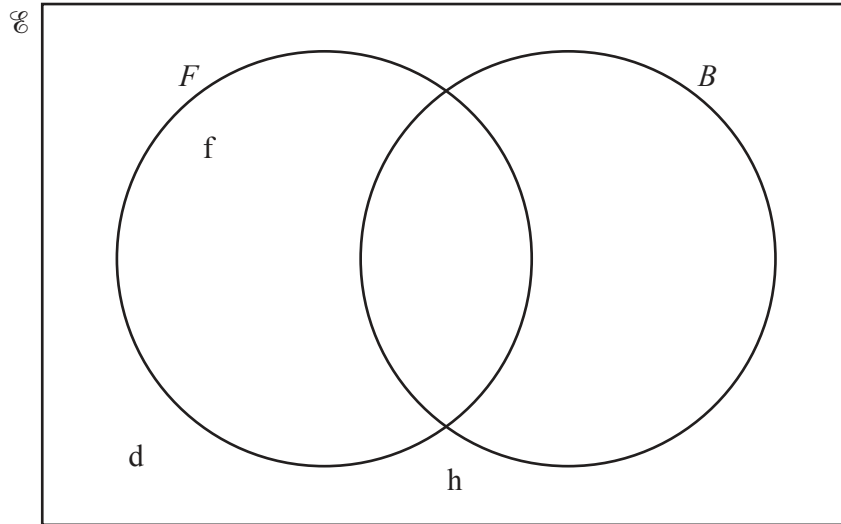
Triangle ABC is similar to triangle DEF .

Calculate the value of h .

$h = \dots\dots\dots$ [2]

- 24 $\mathcal{E} = \{a, b, c, d, e, f, g, h, i, j, k\}$
 $F = \{f, a, c, e\}$
 $B = \{b, a, c, k\}$

(a) Complete the Venn diagram.



[2]

(b) Find $n(F \cup B)$.

..... [1]

25 At a cinema, an adult ticket costs $\$a$ and a child ticket costs $\$c$.

- (a)** Farah buys 3 adult tickets and 4 child tickets for $\$38.50$.

Complete the equation.

$$3a + 4c = \dots\dots\dots [1]$$

- (b)** Hana buys 6 adult tickets and 5 child tickets for $\$65.00$.

Write down another equation in terms of a and c .

$$\dots\dots\dots [1]$$

- (c)** Solve the two simultaneous equations to find the value of a and the value of c .
You must show all your working.

$$a = \dots\dots\dots$$

$$c = \dots\dots\dots [3]$$

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