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MATHEMATICS**0580/12**

Paper 1 (Core)

February/March 2020**1 hour**

You must answer on the question paper.

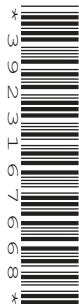
You will need: Geometrical instruments

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. Blank pages are indicated.

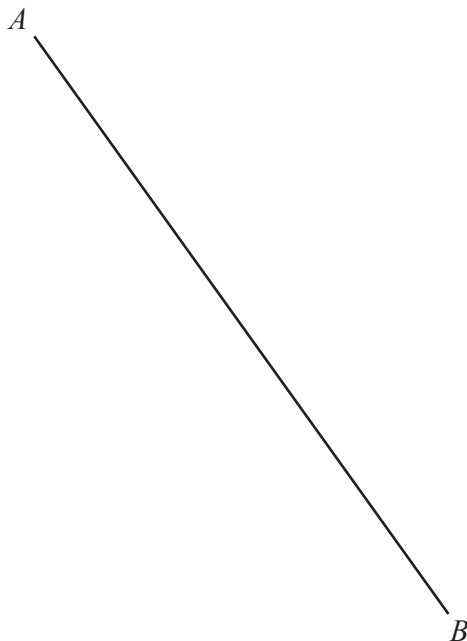
2

- 1** (a) Write 3.25 pm in the 24-hour clock.

..... [1]

- (b) Work out the time 7 hours and 36 minutes before 13 26.

..... [1]

2

- (a) Measure the length of the line AB in millimetres.

..... mm [1]

- (b) AB is the diameter of a circle.

Draw this circle.

[2]

3

- 3 (a) The temperature on Monday was -7°C .
 The temperature on Tuesday was 5°C lower than on Monday.
 The temperature on Wednesday was 8°C higher than on Tuesday.

Find the temperature on Wednesday.

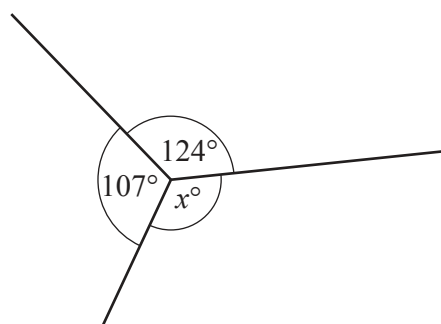
..... $^{\circ}\text{C}$ [2]

- (b) Kyra has a faulty thermometer.
 It always shows the temperature as 2°C higher than the actual temperature.
 The temperature on the thermometer is $T^{\circ}\text{C}$.

Write an expression, in terms of T , for the actual temperature.

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

4



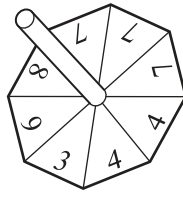
NOT TO
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Work out the value of x .
 Give a geometrical reason for your answer.

$x =$ because [2]

4

- 5** The diagram shows a fair 8-sided spinner.



The numbers on the spinner are 3, 4, 4, 7, 7, 7, 8 and 9.

- (a)** The spinner is spun once.

Write down the probability that the spinner lands on

- (i)** the number 7,

..... [1]

- (ii)** a number greater than 2.

..... [1]

- (b)** The spinner is spun 160 times.

Work out the expected number of times the spinner lands on the number 7.

..... [1]

- 6** The month of July has 31 days.

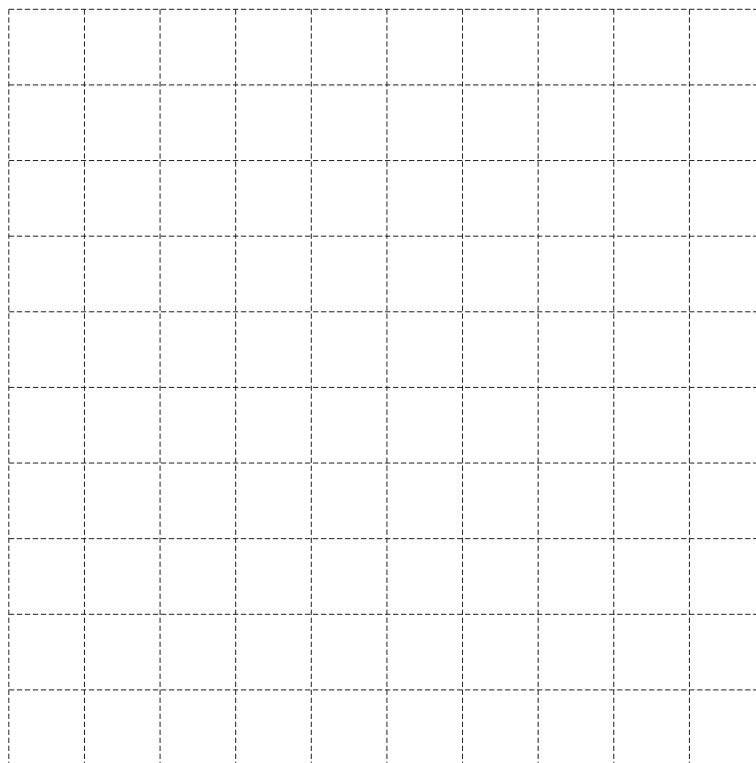
Calculate the number of seconds in the month of July.

..... seconds [2]

5

- 7** A cuboid has length 3 cm, width 2 cm and height 1 cm.

On the 1 cm^2 grid, draw a net of the cuboid.



[3]

- 8** (a) Write down the reciprocal of 40.

..... [1]

- (b) Calculate $\sqrt[3]{40}$.
Give your answer correct to 4 decimal places.

..... [2]

- (c) Write the number 40 in standard form.

..... [1]

6

9 (a) Write down the gradient of the line $y = 2x - 3$.

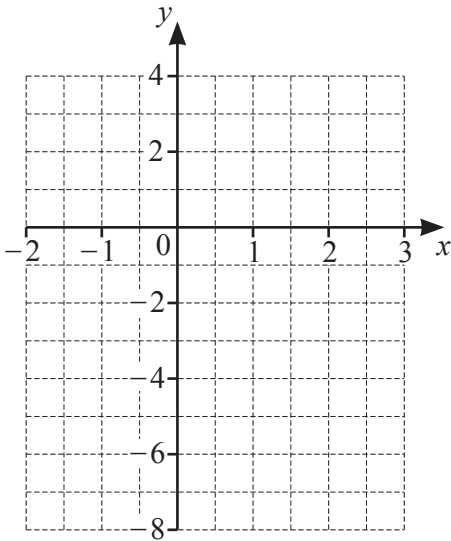
..... [1]

(b) Complete the table of values for $y = 2x - 3$.

x	-2	0	3
y			

[2]

(c) On the grid, draw the graph of $y = 2x - 3$ for $-2 \leq x \leq 3$.



[1]

10 Point A has coordinates $(6, 4)$ and point B has coordinates $(2, 7)$.

Write $\overrightarrow{AB}$ as a column vector.

$\overrightarrow{AB} = \begin{pmatrix} \\ \end{pmatrix}$ [1]

7

- 11** The number of people swimming in a pool is recorded each day for 12 days.

24 28 13 38 15 26
45 21 48 36 18 38

- (a)** Complete the stem-and-leaf diagram.

1	
2	
3	
4	

Key: 1 | 3 represents 13 swimmers

[2]

- (b)** Find the median number of swimmers.

..... [1]

- 12** A bag contains red marbles, green marbles and blue marbles only.
The ratio of the number of marbles of each colour is

$$\text{red} : \text{green} : \text{blue} = 12 : 5 : 2.$$

There are 112 more red marbles than green marbles.

Work out the number of blue marbles.

..... [2]

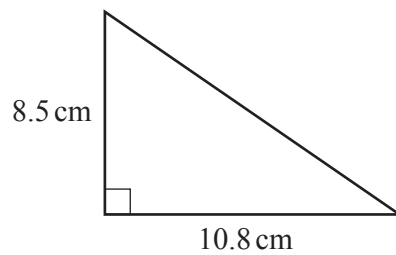
8

- 13 Without using a calculator, work out $\frac{15}{28} \div \frac{4}{7}$.

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

..... [3]

14



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The diagram shows a right-angled triangle.

- (a) Calculate the area.

..... cm² [2]

- (b) Calculate the perimeter.

..... cm [3]

- 15** Riya invests \$30 000 at a rate of 2.5% per year compound interest.

Calculate the value of her investment at the end of 7 years.
Give your answer correct to the nearest dollar.

\$ [3]

- 16 (a)** Simplify.

$$5 \times x^0$$

..... [1]

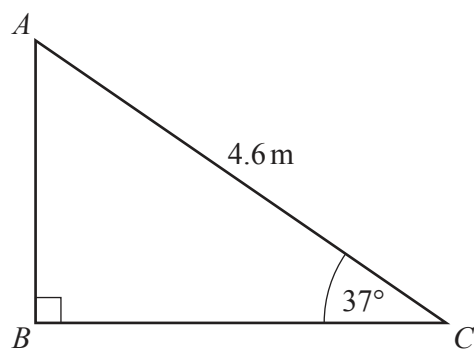
(b) $9^{12} \div 9^w = 9^4$

Find the value of w .

$w =$ [1]

10

17

NOT TO
SCALE

The diagram shows a right-angled triangle ABC .

Calculate AB .

$AB = \dots\dots\dots$ m [2]

18 (a) Factorise completely.

$$3x^2 - 12xy$$

$\dots\dots\dots$ [2]

(b) Expand and simplify.

$$(m - 3)(m + 2)$$

$\dots\dots\dots$ [2]

11

- 19** A car travels at a constant speed of 45 kilometres per hour for 5 minutes.
Each wheel of the car has radius 25 centimetres.

Calculate the number of complete revolutions that a wheel makes during the 5 minutes.

..... [5]

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