Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

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 [ ].

DC (LK/SW) 182801/1

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

3 25
1200

1525

..... [1]

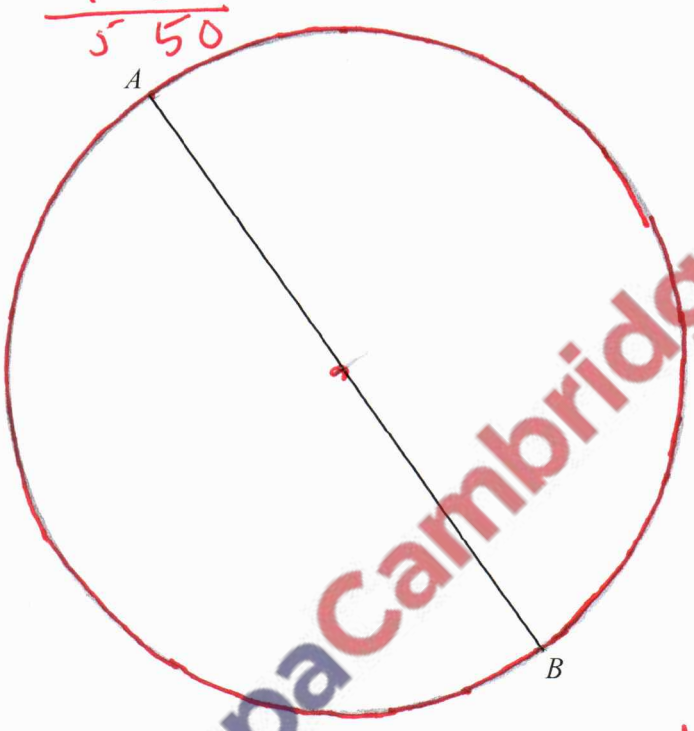
(b) Work out the time 7 hours and 36 minutes before 13 26.

12 60
~~13~~ 26
7 36
5 50

05 50

..... [1]

2



radius 47mm

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

94

..... mm [1]

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

Draw this circle. [2]

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.

Tuesday $-7-5 = -12°C$
Wednesday $= -12°C + 8$
$-4°C$

..... °C [2]

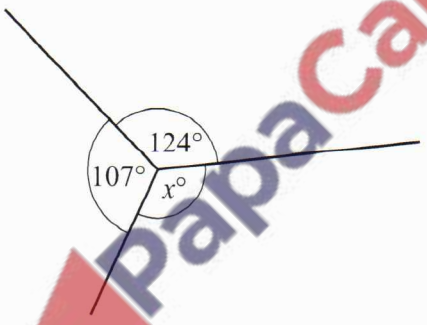
(b) Kyra has a faulty thermometer.
It always shows the temperature as 2 °C higher than the actual temperature.
The temperature on the thermometer is T°C.

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

$T-2$

..... °C [1]

4



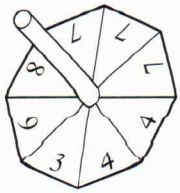
NOT TO SCALE

Work out the value of x.
Give a geometrical reason for your answer.

$x = 360 - (107+124)$

$x =$ 129 because Angles at a point add up to 360 [2]

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,

3/8

..... [1]

(ii) a number greater than 2.

all greater than 2 1

..... [1]

(b) The spinner is spun 160 times.

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

3/8 X 160

60

..... [1]

6 The month of July has 31 days.

Calculate the number of seconds in the month of July.

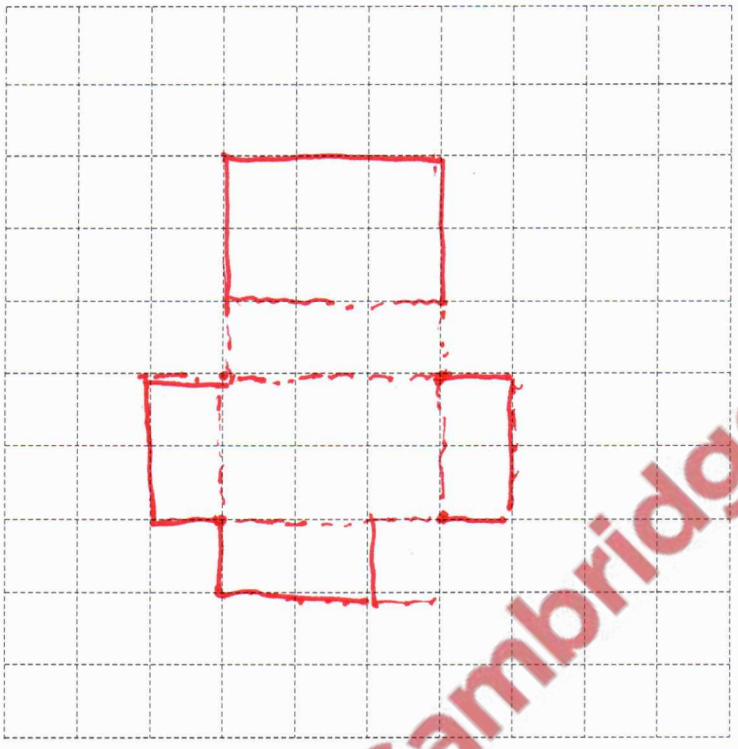
31 X 24 X 3,600

↓ Days ↓ Seconds

2,678,400 seconds [2]

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.

$\frac{1}{40}$ or 0.025 [1]

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

3.4200 [2]

(c) Write the number 40 in standard form.

4.0×10^1 [1]

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

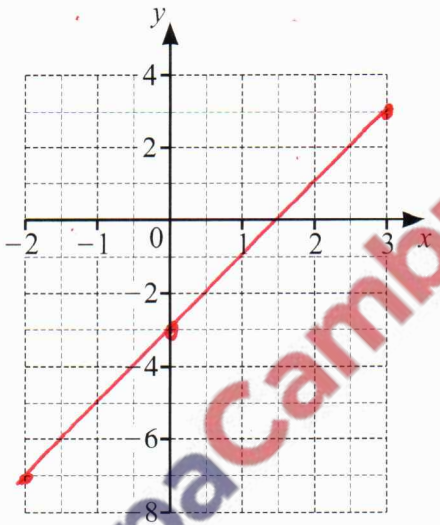
$y = mx + c$ 2 ..... [1]

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

x	-2	0	3
y	-7	-3	3

[2]

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



[1]

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

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

$\overrightarrow{AB} = \underline{b} - \underline{a} = \begin{pmatrix} 2 \\ 7 \end{pmatrix} - \begin{pmatrix} 6 \\ 4 \end{pmatrix}$

$\overrightarrow{AB} = \begin{pmatrix} -4 \\ 3 \end{pmatrix}$ [1]

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	3 5 8
2	1 4 6 8
3	6 8 8
4	5 8

Key: 1 | 3 represents 13 swimmers

[2]

(b) Find the median number of swimmers.

$\frac{1}{2} \times 13 \rightarrow n+1 = 6.5$

$6^{th} + 7^{th}$

$\frac{26+28}{2}$

.....27..... [1]

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

red : green : blue = 12 : 5 : 2.

There are 112 more red marbles than green marbles.

Work out the number of blue marbles.

$112 = (12-5)$

$7 = 112$

$2 = ?$

$\frac{2 \times 112}{7}$

.....32..... [2]

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

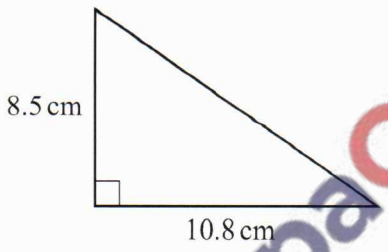
You must show all your working and give your answer as a fraction in its simplest form.

$\frac{15}{28} \times \frac{7}{4}$

$= \frac{15}{16}$

..... $\frac{15}{16}$ ..... [3]

14



NOT TO SCALE

The diagram shows a right-angled triangle.

(a) Calculate the area.

$\frac{1}{2} \times b \times h = \frac{1}{2} \times 8.5 \times 10.8$

..... 45.9 ..... cm^2 [2]

(b) Calculate the perimeter.

$c^2 = 8.5^2 + 10.8^2$

$c = \sqrt{8.5^2 + 10.8^2}$

..... 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.

$A = P\left(1 \pm \frac{r}{100}\right)^n \quad A = 30{,}000\left(1 + \frac{2.5}{100}\right)^7$

$= 35660.57$

\$ 35,661 ..... [3]

16 **(a)** Simplify.

$5 \times x^0$ $\quad 5 \times 1$

5 ..... [1]

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

Find the value of w.

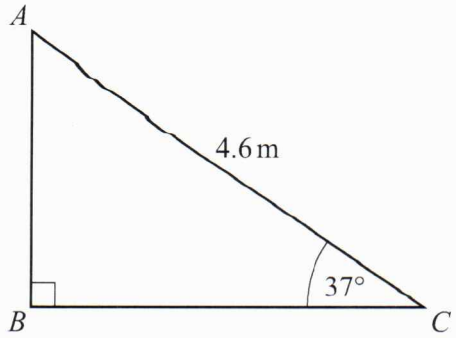
$9^{12-w} = 9^4$

subtract

$12 - w = 4$

$w =$ 8 ..... [1]

17



NOT TO SCALE

The diagram shows a right-angled triangle ABC.

Calculate AB.

$\sin 37 = \frac{AB}{4.6}$

$AB = 4.6 \sin 37 = 2.768$

$AB =$ 2.77 m [2]

18 **(a)** Factorise completely.

$3x^2 - 12xy$

$3x(x - 4y)$

$3x(x-4y)$ [2]

(b) Expand and simplify.

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

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

$m^2 + 2m - 3m - 6$

$m^2 - m - 6$ [2]

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.

45km for 1hr (60mins)

45 = 60min

1 = 5min

distance covered in 5mins ← $45 \div 5/60$

Circumfere of a wheel ← $2 \times \pi \times (25 \div 100{,}000)$

$= 2387.32$

changing cm to km (1km = 100,000cm)

2387 ..... [5]