Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS **0580/13**

Paper 1 (Core) **October/November 2021**

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 Write

(a) $\frac{1}{2}$ as a percentage,

50 % [1]

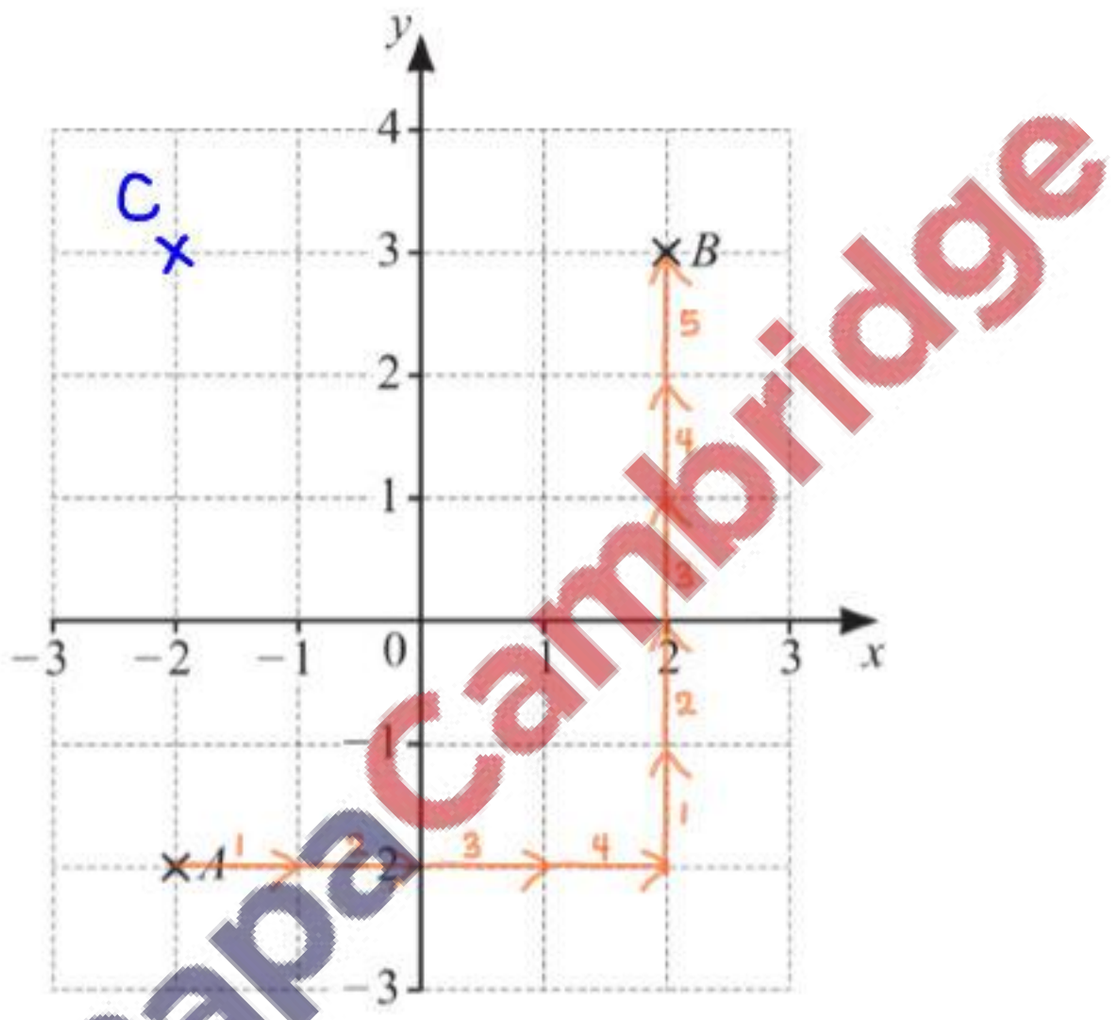
(b) 0.7 as a fraction,

$\frac{7}{10}$ [1]

(c) $\frac{11}{20}$ as a decimal.

0·55 [1]

2 Points A and B are plotted on the grid.



(a) Write down the coordinates of point B.

(2 , 3) [1]

(b) Write $\overrightarrow{AB}$ as a vector.

$\begin{pmatrix} 4 \\ 5 \end{pmatrix}$ [1]

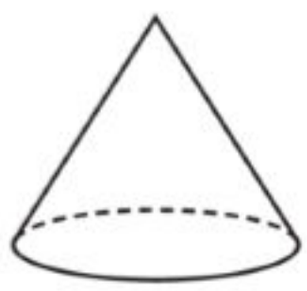
(c) On the grid, plot point C at $(-2, 3)$. [1]

3 Find the number of minutes in $4\frac{1}{2}$ hours.

* $4\frac{1}{2}$ x 60 mins. = 270 mins.//

270 ..... min [1]

4



Write down the mathematical name of this solid.

Cone ..... [1]

5 Cheng spins a fair 6-sided spinner numbered 1 to 6.

On the probability scale, draw an arrow (↓) to show the probability that the spinner lands on 4.

[1]

6

62	43	16	21	73	16	33	16	35
16	16	16	21	33	35	43	62	73

For this list of numbers find

(a) the mode,

16 ..... [1]

(b) the median.

33 ..... [2]

7 $r = 2t + 3u$

Work out the value of t when $r = 18$ and $u = 4$.

$\Rightarrow 18 = 2t + 3(4)$

$\Rightarrow 18 = 2t + 12$

$\Rightarrow 2t = 6$

$\Rightarrow t = 3$

$t =$ 3 [2]

8 The temperature at midnight was −8 °C.
The temperature at noon is 6 °C.

(a) Work out the difference between these two temperatures.

$*\ T_{diff} = 6°C - (-8°C)$

$= 14°C$

14 °C [1]

(b) The temperature at 7 am is 5 °C higher than the temperature at midnight.

Work out the temperature at 7 am.

$*\ T_{new} = -8°C + 5°C$

$= -3°C$

-3 °C [1]

9 The probability that it rains tomorrow is 0.47.

Find the probability that it does not rain tomorrow.

$*\ P = 1 - 0.47$

$= 0.53$

0.53 [1]

10 Write 26 g as a percentage of 208 g.

* Percentage = $\frac{26g}{208g} \times 100\% = 12.5\%$

.....12.5..... % [1]

11

11 13 15 17 19

From this list, write down the number that is both a prime number and a factor of 195.

.....13..... [1]

12 (a) = ≠ > <

Put a ring around each of the symbols that make this statement correct.

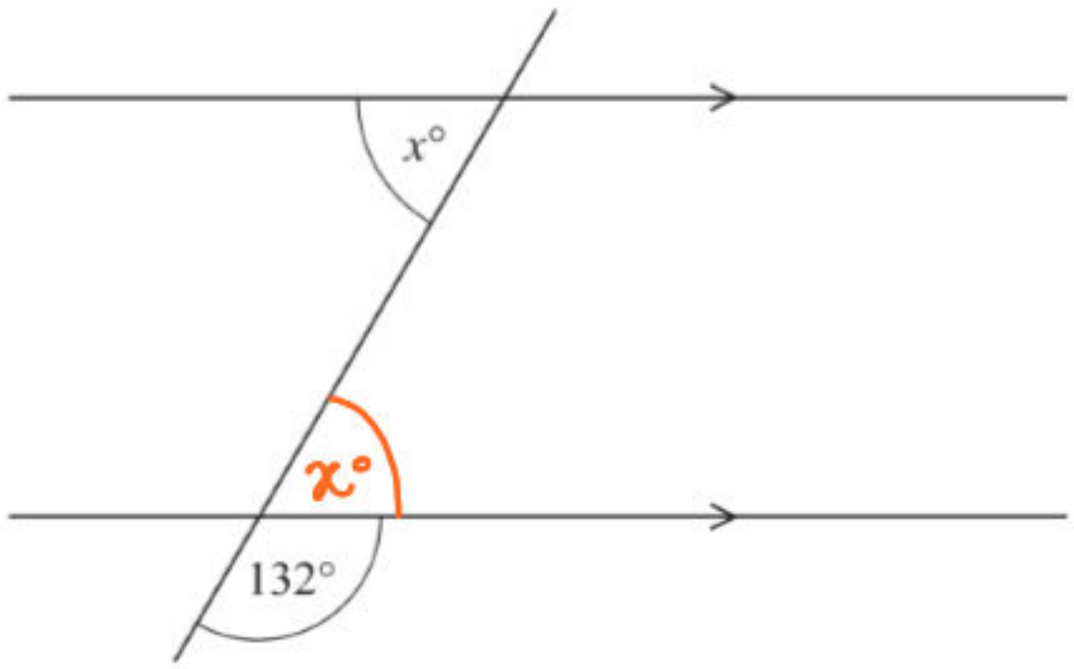
50%

0.5 ..... 5% [1]

(b) Insert one pair of brackets to make this statement correct.

$7 - (3 - 1) + 2 = 7$ [1]

13



NOT TO SCALE

The diagram shows two parallel lines intersecting a straight line.

Find the value of x.

$\star\ x + 132^\circ = 180^\circ$

$\Rightarrow x = 48^\circ$ //

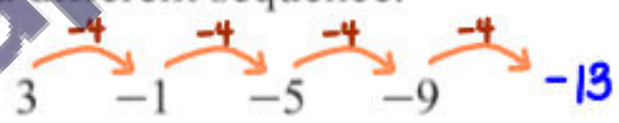
$x =$ 48 [2]

14 **(a)** These are the first four terms of a sequence.

Find the next term.

41 [1]

(b) These are the first four terms of a different sequence.



(i) Find the next term in this sequence.

−13 [1]

(ii) Find the nth term.

$\star\ a_n = a_1 + (n-1)d$

$\Rightarrow a_n = 3 + (n-1) \times -4$

$\Rightarrow a_n = 7 - 4n$ //

$7 - 4n$ [2]

15 Sara takes 5 tests.
Her mean score is 62.
She takes another test and her mean score is now 68.

Work out her score in the sixth test.

$\star$ Mean $= \frac{\text{Sum of scores}}{\text{No. of scores}}$

$\Rightarrow 68 = \frac{S_5 + x}{6}$

$\Rightarrow 408 = S_5 + x$

$\Rightarrow x = 408 - S_5$

$* 62 = \frac{S_5}{5}$

$\Rightarrow S_5 = 310$ //

$\Rightarrow x = 408 - 310$

$\Rightarrow x = 98$ //

98 ..... [3]

16 Nina changes 153 euros into dollars when the exchange rate is \$1 = 0.9 euros.

Calculate the amount Nina receives.

\$ 1 = 0·9 euros

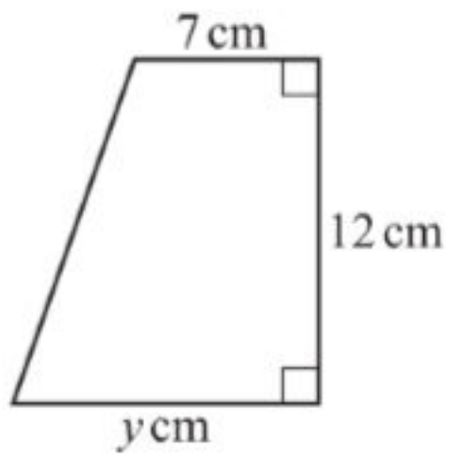
x = 153 euros

$\Rightarrow x = \frac{153 \text{ euros}}{0{\cdot}9 \text{ euros}} \times \$1$

$\Rightarrow x = \$170$ //

\$ 170 ..... [1]

17



NOT TO SCALE

The area of this trapezium is $96\,cm^2$.

Find the value of y.

$* A = \frac{1}{2}(a+b) \times h$

$\Rightarrow 96 = \frac{1}{2}(7+y) \times 12$

$\Rightarrow 96 = 6(7+y)$

$\Rightarrow 16 = 7+y$

$\Rightarrow y = 9$ //

$y =$ 9 [3]

18 Marek buys a computer for \$420.
He sells it at a loss of 15%.

Calculate the selling price of this computer.

$* P_S = \frac{85}{100} \times \$420$

$\Rightarrow P_S = \$357$ //

\$ 357 [2]

19 Calculate the radius of a circle with circumference 26 cm.

$* C = 2\pi r$

$\Rightarrow r = \frac{C}{2\pi}$

$\Rightarrow r = \frac{26\,cm}{2\pi}$

$\Rightarrow r = 4.14\,cm$ (3sig. figs.) //

4.14 cm [2]

20 By writing each number in the calculation correct to 1 significant figure, find an estimate for the value of

$$\frac{4.3 \times 30.7}{6.6 - 1.8}.$$

$\Rightarrow \frac{4 \times 30}{7 - 2}$

$\Rightarrow \frac{120}{5}$

$\Rightarrow 24$

.....24..... [2]

21 Find the interior angle of a regular 7-sided polygon.

* Interior angle $= \frac{180°(n-2)}{n}$

$\Rightarrow$ Interior angle $= \frac{180°(7-2)}{7} = 128.6°$ (1dp)

.....128.6°..... [2]

22 **Without using a calculator**, work out $\frac{11}{12} + \frac{3}{4}$.

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

* $\frac{11}{12} + \frac{3}{4}$

$\Rightarrow \frac{11+9}{12}$

$\Rightarrow \frac{\cancel{20}^{5}}{\cancel{12}_{3}} = 1\frac{2}{3}$

.....$1\frac{2}{3}$..... [3]

23 **(a)** Simplify.

$$32g^{32} \div 4g^{4}$$

$\Rightarrow (32 \div 4) g^{32-4}$

$\Rightarrow 8g^{28}$

$8g^{28}$ ..... [2]

(b) Factorise completely.

$$10j - 15j^{2}$$

$5j(2-3j)$ ..... [2]

(c) Expand the brackets and simplify.

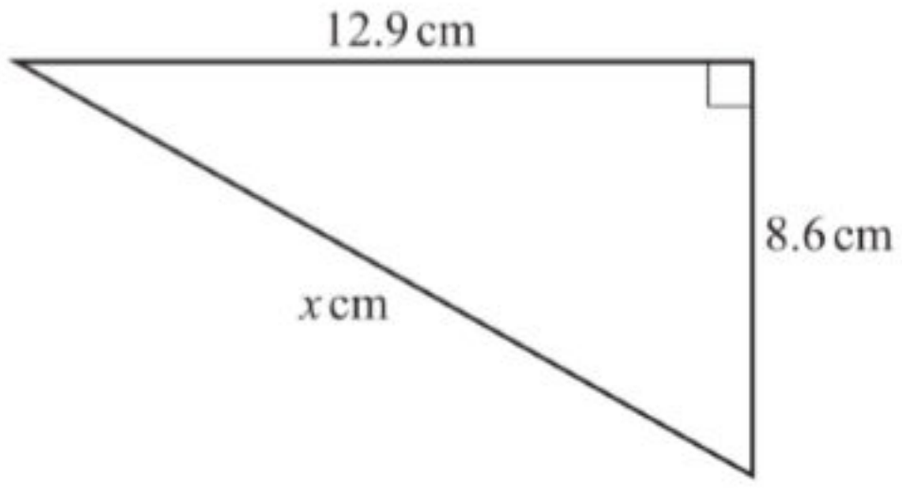
$$(x+7)(x+3)$$

$\Rightarrow x^2 + 3x + 7x + 21$

$\Rightarrow x^2 + 10x + 21$

$x^2 + 10x + 21$ ..... [2]

24 (a)



NOT TO SCALE

Calculate the value of x.

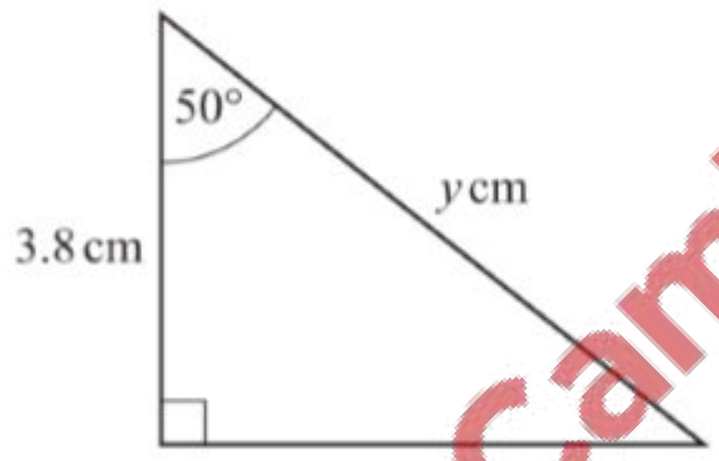
$\star\ x^2 = 8.6^2 + 12.9^2$

$\Rightarrow x = \sqrt{8.6^2 + 12.9^2}$

$\Rightarrow x = 15.5$ (3 sig. figs.)//

$x =$ ..... 15.5 ..... [2]

(b)



NOT TO SCALE

Show that the value of y is 5.9, correct to 2 significant figures.

$\star\ \cos 50° = \frac{3.8}{y}$

$\Rightarrow y = \frac{3.8}{\cos 50°}$

$\Rightarrow y = 5.91... \approx 5.9$ (2 sig. figs.)//

[3]

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