Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS **0580/12**

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.

1 **(a)** Write the number four hundred thousand and four hundred in figures.

400 400 ..... [1]

(b) Write 60 287 correct to the nearest ten.

60 290 ..... [1]

2 Find the value of $\sqrt{345.96}$.

18.6 ..... [1]

3

Write down the mathematical name for this type of angle.

Acute ..... [1]

4 **(a)** Write 9% as a decimal.

0.09 ..... [1]

(b) Write 0.6 as a fraction in its simplest form.

3/5 ..... [1]

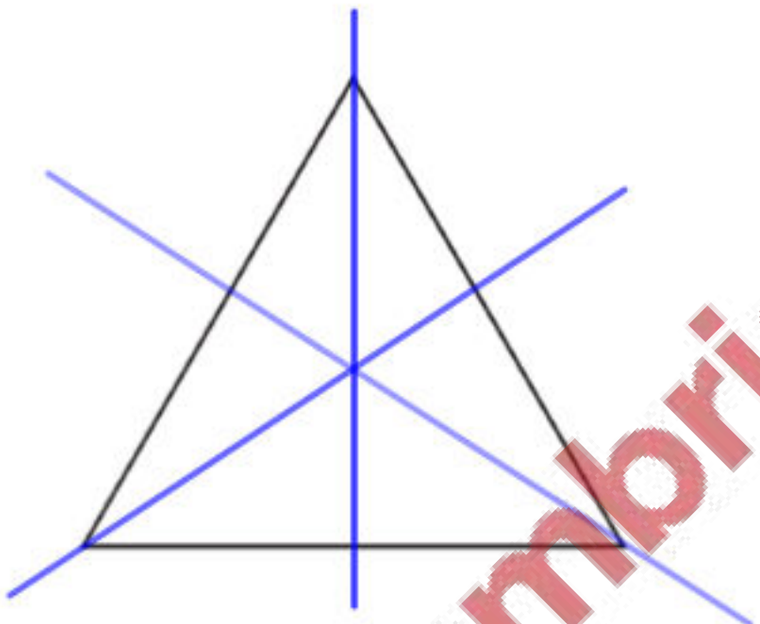
5 Write down the reciprocal of 20.

1/20 ..... [1]

6 **(a)** Write down the order of rotational symmetry of a rectangle.

2 ..... [1]

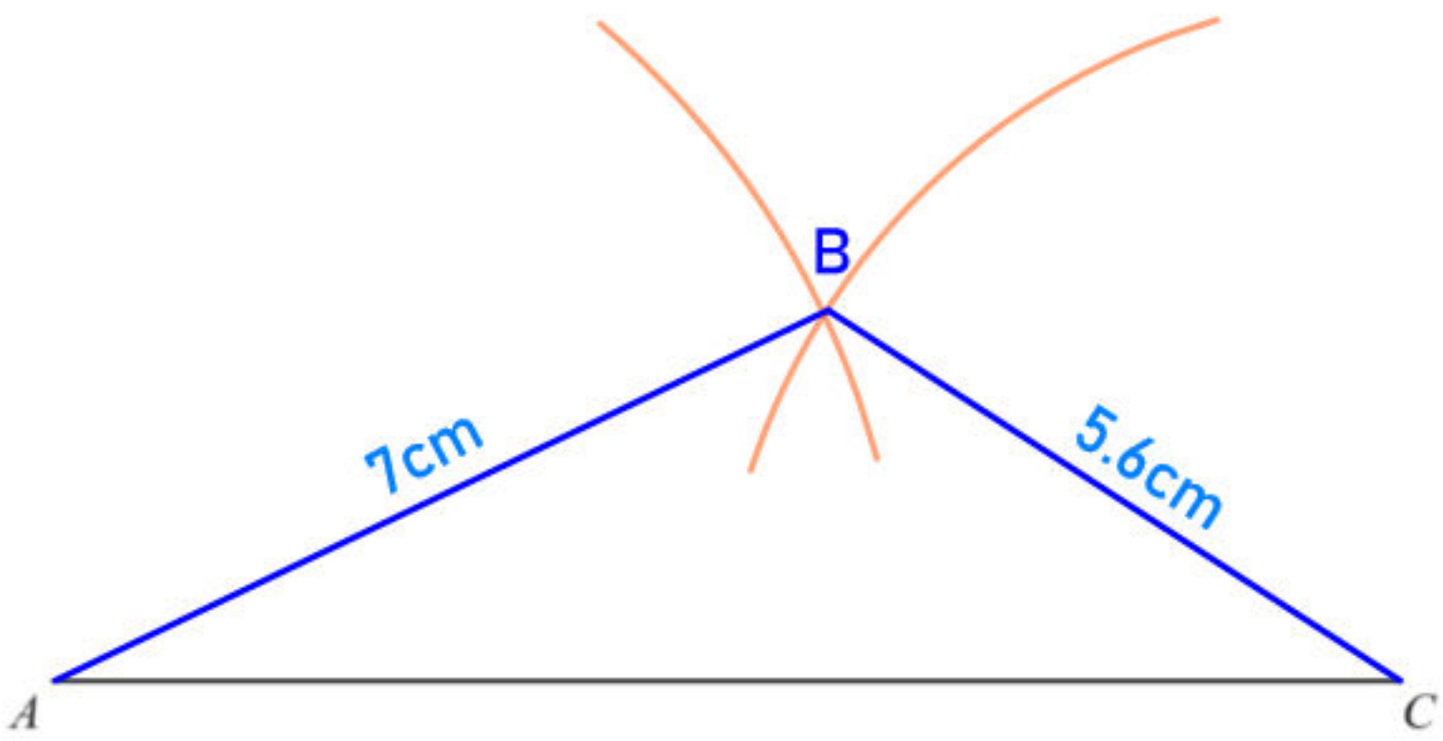
(b)



Draw all the lines of symmetry on this equilateral triangle. [2]

7 In triangle ABC, $AB = 7$ cm and $BC = 5.6$ cm.

Using a ruler and compasses only, construct triangle ABC.
Leave in your construction arcs.
The line AC has been drawn for you.



[2]

8 The temperature at midnight is −8.5 °C.
The temperature at 11 am is −1 °C.

Work out the difference between the temperature at midnight and the temperature at 11 am.

* $T_{diff} = -1°C - (-8{\cdot}5°C)$

$\Rightarrow T_{diff} = 7{\cdot}5°C$

7·5 ..... °C [1]

9 Change 0.3 metres into centimetres.

* $0{\cdot}3 \times 100cm = 30cm$

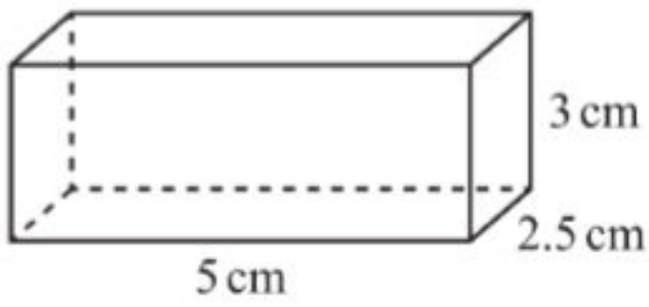
30 ..... cm [1]

10

Write down the mathematical name of this polygon.

Pentagon ..... [1]

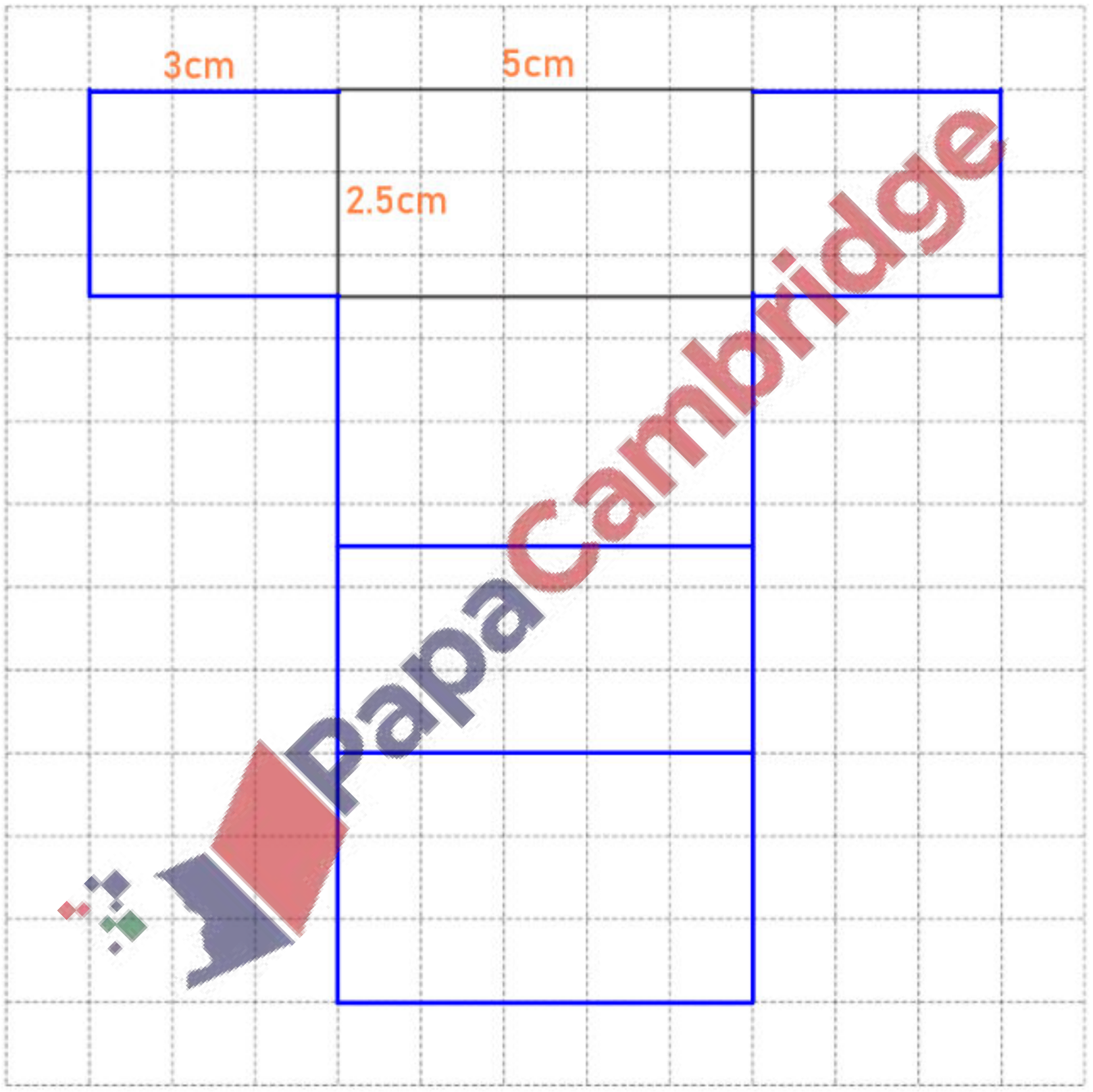
11



NOT TO SCALE

The diagram shows a cuboid.

On the 1cm^2 grid, draw an accurate net of this cuboid.
One face has been drawn for you.



[3]

12 The stem-and-leaf diagram shows the age, in years, of each of 15 women.

3	1	5	8	9			
4	1	1	2	3	5	6	9
5	0	2	3	8			

Key: 3 | 1 represents 31 years

Complete these statements.

The modal age is ..... 41 .....

The median age is ..... 43 .....

* $P = \frac{3}{15} \times 100\% = 20\%$

The percentage of women that are older than 51 years is ..... 20 ..... %. [3]

13 The price of a coat is 84.60 euros.

Find the price of the coat in dollars when the exchange rate is 1 euro = \$1.15 .

$1 \text{ euro} = \$1{\cdot}15$

$84{\cdot}60 \text{ euros} = x$

$\Rightarrow x = \frac{84{\cdot}60 \text{ euros}}{1 \text{ euro}} \times \$1{\cdot}15$

$\Rightarrow x = \$97{\cdot}29$

\$ ..... 97·29 ..... [1]

14 Work out.

(a) $\begin{pmatrix} 3 \\ -2 \end{pmatrix} + \begin{pmatrix} -5 \\ 7 \end{pmatrix} = \begin{pmatrix} 3+(-5) \\ -2+7 \end{pmatrix}$

$= \begin{pmatrix} -2 \\ 5 \end{pmatrix}$

$\begin{pmatrix} -2 \\ 5 \end{pmatrix}$ [1]

(b) $5\begin{pmatrix} 3 \\ -1 \end{pmatrix} = \begin{pmatrix} 5\times 3 \\ 5\times -1 \end{pmatrix}$

$= \begin{pmatrix} 15 \\ -5 \end{pmatrix}$

$\begin{pmatrix} 15 \\ -5 \end{pmatrix}$ [1]

15 Change 2.15 hours into minutes.

★ 2·15 × 60 mins = 129 mins.

..... 129 ..... min [1]

16 **(a)** Solve.

$7x + 18 = 4$

⇒ $7x = -14$

⇒ $x = -2$

$x =$ ..... -2 ..... [2]

(b) $7^y \times 7^6 = 7^{18}$

Find the value of y.

⇒ $7^{y+6} = 7^{18}$

Since the bases are equal,

⇒ $y + 6 = 18$

⇒ $y = 12$

$y =$ ..... 12 ..... [1]

17 These are the first four terms of a sequence.

(a) Write down the next term.

31 [1]

(b) Write down the term to term rule.

Add 7 [1]

(c) Find the nth term.

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

$\Rightarrow a_n = 3 + (n-1) \times 7$

$\Rightarrow a_n = 3 + 7n - 7$

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

7n − 4 [2]

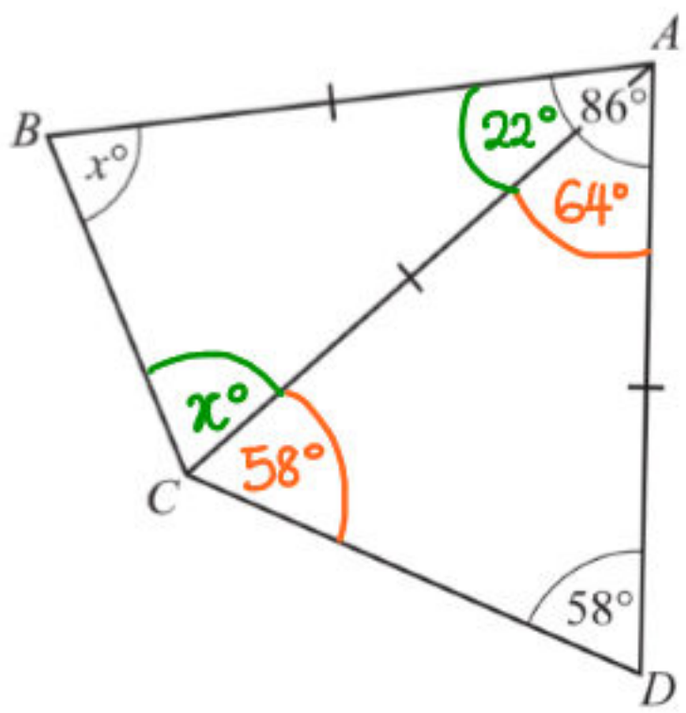
(d) Find the 40th term.

$\star\ a_{40} = 7(40) - 4$

$\Rightarrow a_{40} = 276$ //

276 [2]

18



NOT TO SCALE

Triangle ABC and triangle ACD are isosceles.
Angle $DAB = 86°$ and angle $ADC = 58°$.

Find the value of x.

$\star\ 22° + 2x = 180°$

$\Rightarrow 2x = 158°$

$\Rightarrow x = 79°$ //

$x =$ ..... 79 ..... [3]

19 Angelique rents a room for a party.
The cost of renting the room is \$15.50 for the first hour and then \$7.25 for each additional hour.
She pays \$95.25 in total.

Work out the total number of hours she rents the room for.

$\star\ 15{\cdot}50 + 7{\cdot}25x = 95{\cdot}25$

$\Rightarrow 7{\cdot}25x = 79{\cdot}75$

$\Rightarrow x = 11$ //

$\therefore$ Total no. of hours $= 11 + 1 = 12$ //

..... 12 ..... hours [3]

20 **Without using a calculator**, work out $\frac{1}{3} \div \frac{7}{6} + \frac{1}{5}$.

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

$\star \left(\frac{1}{3} \div \frac{7}{6}\right) + \frac{1}{5}$

$\Rightarrow \left(\frac{1}{3} \times \frac{6}{7}\right) + \frac{1}{5}$

$\Rightarrow \frac{2}{7} + \frac{1}{5}$

$\Rightarrow \frac{10+7}{35}$

$\Rightarrow \frac{17}{35}$ //

$\frac{17}{35}$ ..... [4]

21 Work out the size of one interior angle of a regular 10-sided polygon.

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

$\Rightarrow$ Interior angle $= \frac{180°(10-2)}{10} = 144°$ //

144 ..... [2]

22 In a group of 650 people, 117 are left-handed.

Find the expected number of left-handed people in a group of 5000 people.

$650 \rightarrow 117$

$5000 \rightarrow x$

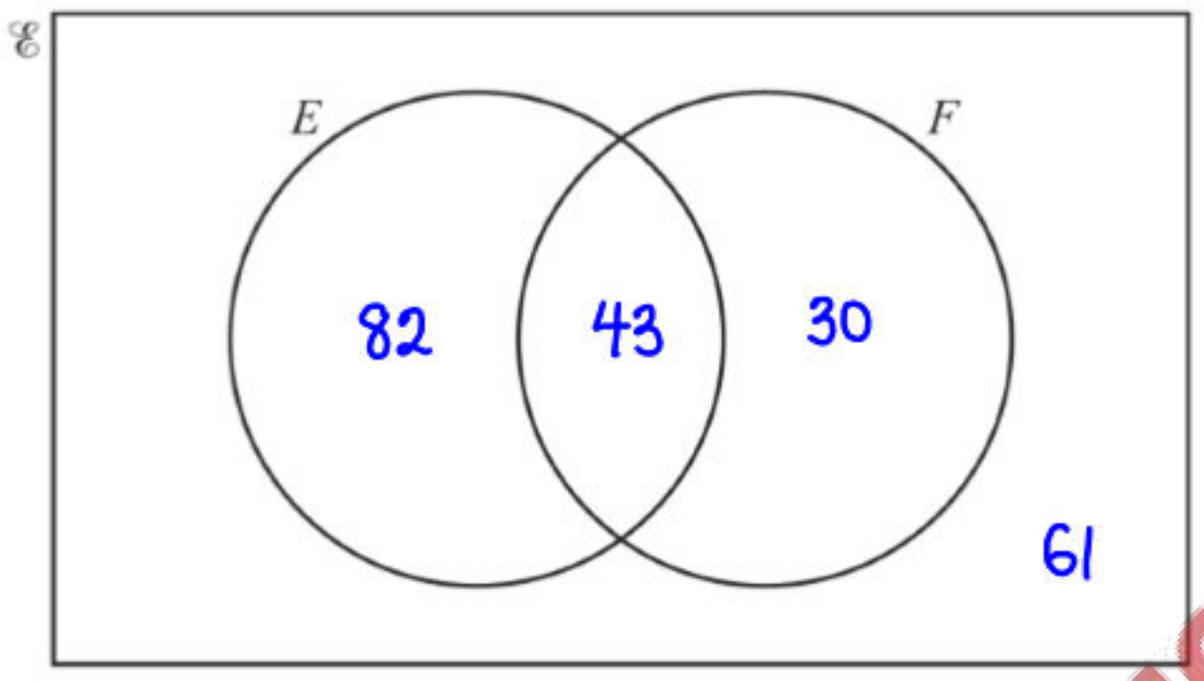
$\Rightarrow x = \frac{5000}{650} \times 117$

$\Rightarrow x = 900$ //

900 ..... [2]

23 **(a)** At an airport, 216 people are asked whether they speak English (E) or French (F).

125 speak English.
43 speak both English and French.
61 do not speak English or French.

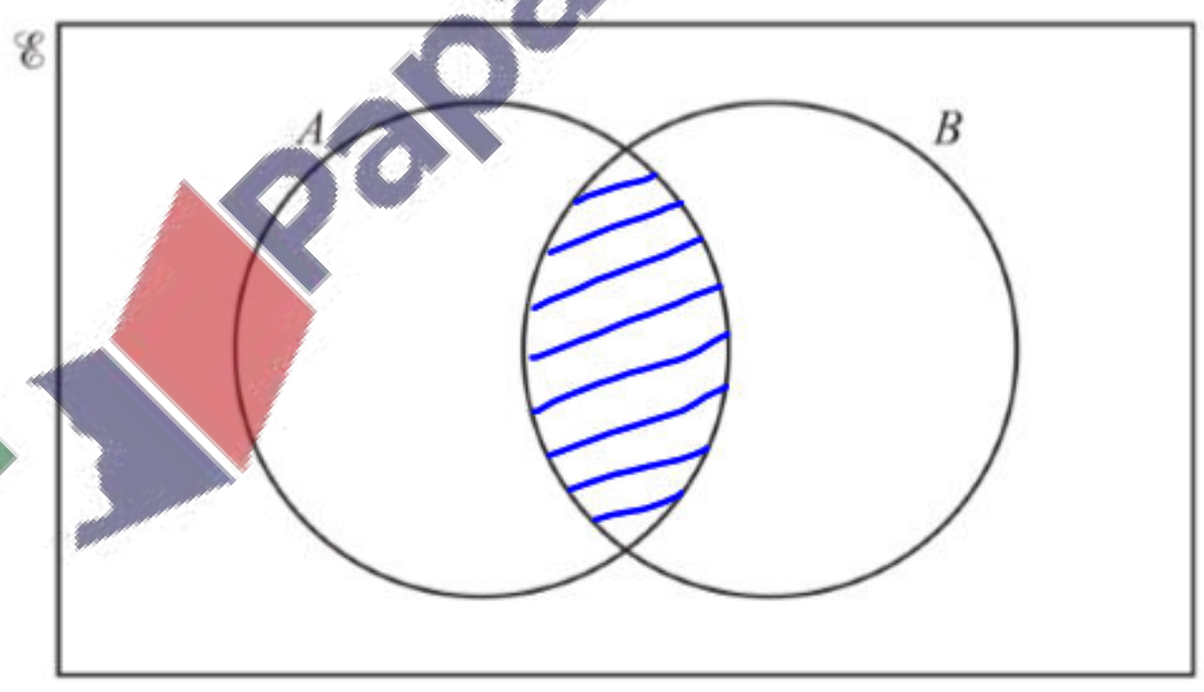


(i) Complete the Venn diagram. [2]

(ii) Find n(F).

73 [1]

(b)



On this Venn diagram, shade the region $A \cap B$. [1]

Question 24 is printed on the next page.

24 Yasmin has 4 white flowers, 3 red flowers and x yellow flowers.
She picks a flower at random.

The probability that it is white is $\frac{1}{5}$.

Find the probability that it is yellow.

$\star\ P(Y) = \frac{n(Y)}{n(\text{Total})} = \frac{x}{4+3+x} = \frac{x}{7+x}$

$\bullet\ \frac{1}{5} = \frac{4}{7+x}$

$\Rightarrow 7+x = 20$

$\Rightarrow x = 13$

$\therefore P(Y) = \frac{13}{7+13} = \frac{13}{20}$

$\frac{13}{20}$ ..... [4]