Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS **0580/11**

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 [ ].

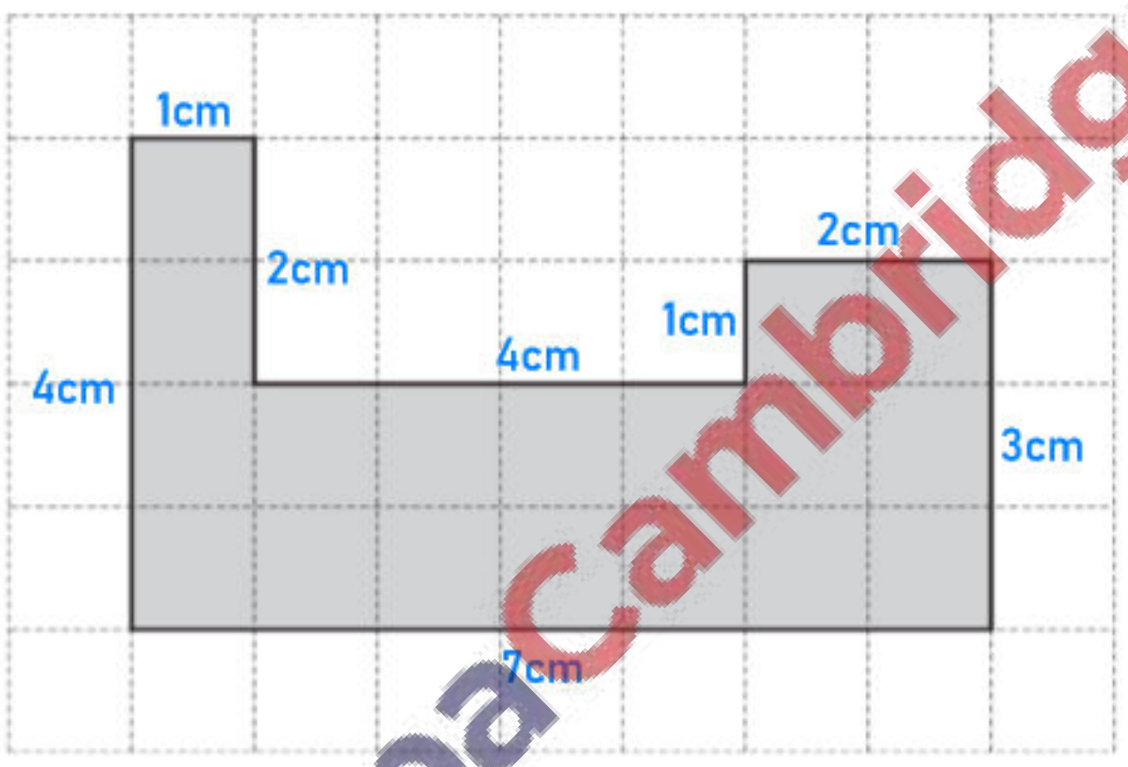
This document has **12** pages. Any blank pages are indicated.

1

Fraction		Decimal		Percentage
$\frac{1}{2}$	=	0.5	=	50
$\frac{1}{4}$	=	0.25	=	25
$\frac{1}{5}$	=	0.2	=	20

Complete the table. [3]

2



This shape is drawn on a 1 cm^2 grid.

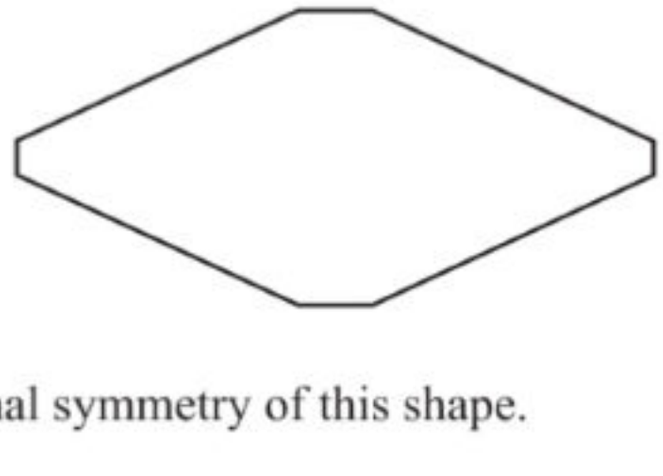
Find the perimeter of the shape.

* P = (4 + 1 + 2 + 4 + 1 + 2 + 3 + 7) cm

⇒ P = 24 cm

24 cm [1]

3

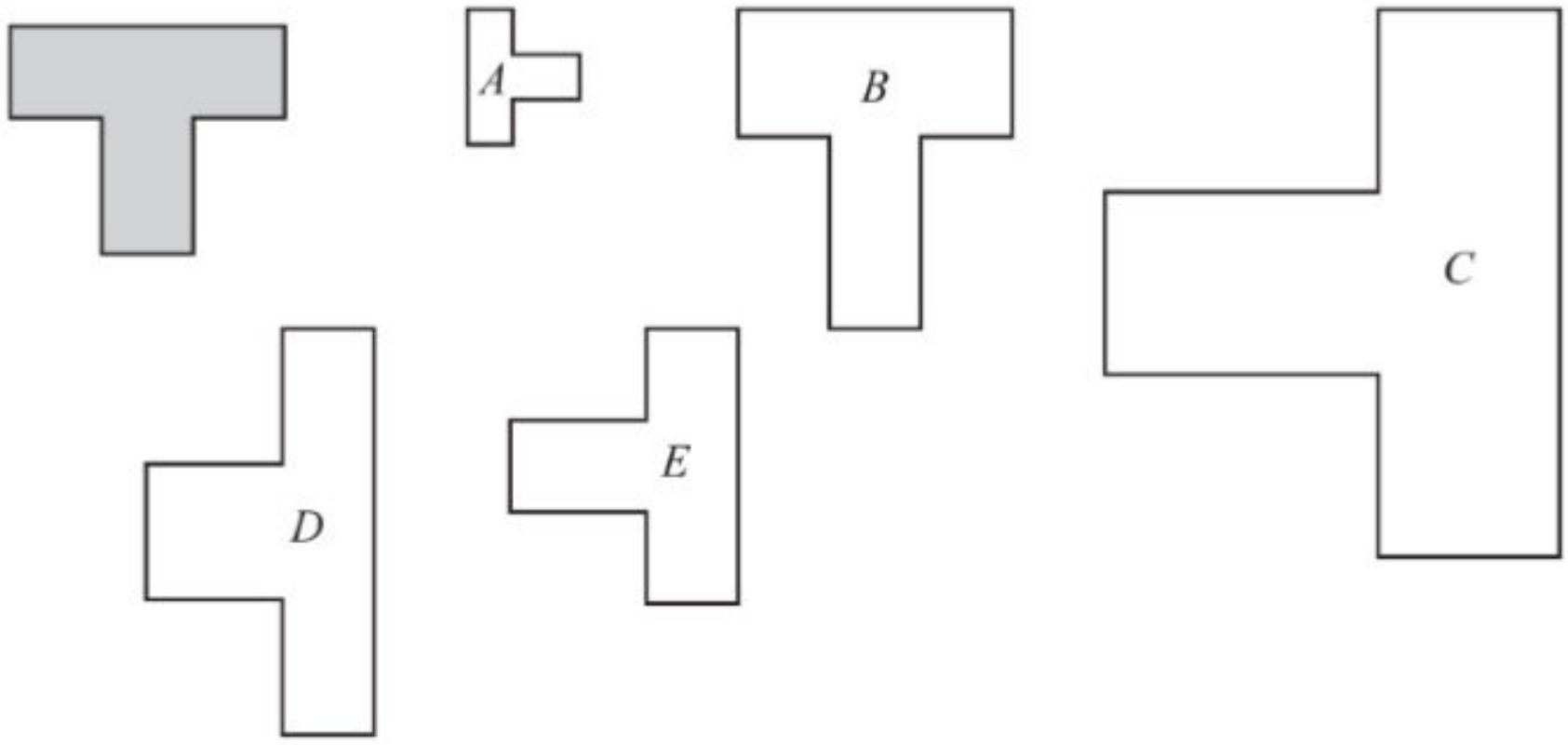


Write down the order of rotational symmetry of this shape.

2 [1]

3

4



Write down the letter of the shape that is congruent to the shaded shape.

E ..... [1]

5 The number of items that each of 22 people buy in a supermarket is shown in the stem-and-leaf diagram.

1	1	3	6	6			
2	0	2	2	2	4	8	9
3	1	1	5	8	9	9	
4	2	4	6	7	8		

Key: 1 | 1 represents 11 items

(a) Find the mode.

22 ..... [1]

(b) Find the median.

* Median = $\frac{29+31}{2} = 30$

30 ..... [1]

6 **(a)** Change 2.7 kilometres into metres.

★ $2.7 \times 10^3 m = 2700 m$ //

..... 2700 ..... m [1]

(b) Find the number of hours in 5 days.

★ 5×24 hours $= 120$ hours //

..... 120 ..... h [1]

7 Hank flies from Los Angeles to Shanghai.

(a) The flight departs on Friday 22 July at 2140.
The flight takes 13 hours 35 minutes.
The local time in Shanghai is 15 hours ahead of the local time in Los Angeles.

Find the day, date and time in Shanghai when Hank's flight arrives.

Days	Hrs.	Mins.
00^{+1}	21^{+1}	40
+ 00	13	35
1	11	15

Sat. 23rd July 11 15

Days	Hrs.	Mins.
01^{+1}	11	15
+	15	00
2	2	15

Sun. 24th July 02 15

Day ..... Sunday ....., Date ..... 24 July ....., Time ..... 02 15 ..... [3]

(b) The cost of the flight is $920.
The exchange rate is $1 = 6.87 Chinese yuan.

Find the cost of the flight in yuan.

$\$1 = 6.87 CY \Rightarrow x = \frac{\$920}{\$1} \times 6.87 CY$

$\$920 = x$

$\Rightarrow x = 6320.40 CY$ (2 dp) //

..... 6320.40 ..... yuan [1]

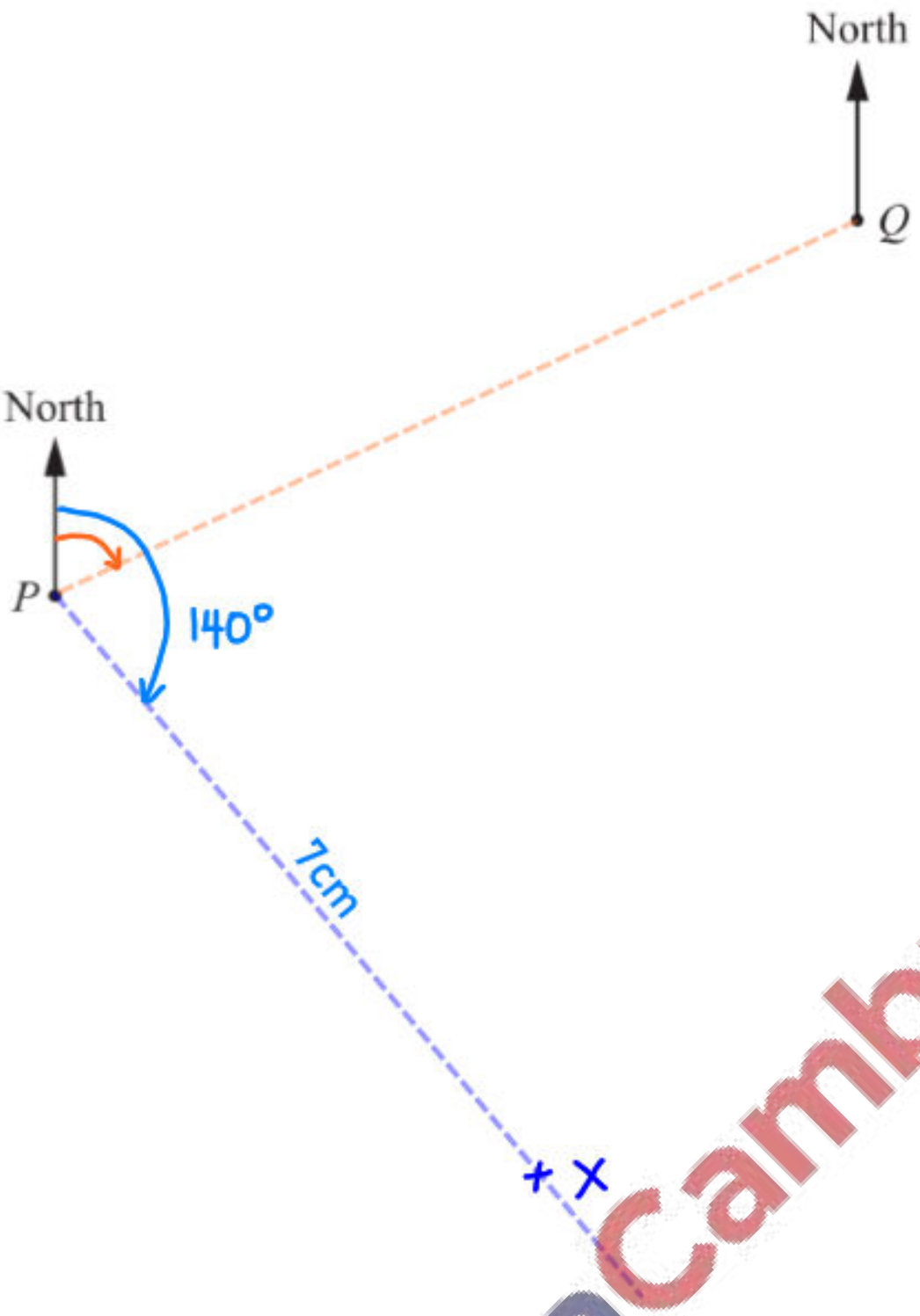
8 $P = 2n - 3t$

Find the value of n when $P = 9$ and $t = 8$.

$\Rightarrow 9 = 2n - 3(8)$
$\Rightarrow 9 = 2n - 24$
$\Rightarrow 2n = 33$
$\Rightarrow n = 16.5$ //

$n =$ ..... 16.5 ..... [3]

9 The scale drawing shows the positions of two towns, P and Q.
The scale is 1 cm represents 4 km.



Scale: 1 cm to 4 km

(a) Find the actual distance between town P and town Q.

1 cm → 4 km ⇒ $x = \frac{8.2\text{cm}}{1\text{cm}} \times 4\text{km} = 32.8\text{ km}$//
8.2 cm → x

32.8 km [2]

(b) Measure the bearing of town Q from town P.

065° [1]

(c) Town X is 28 km from town P on a bearing of 140°.

On the scale drawing, mark the position of town X. [2]

1 cm → 4 km ⇒ $x = \frac{28\text{km}}{4\text{km}} \times 1\text{cm} = 7\text{cm}$//
x → 28 km

10 Chung invests \$2460 at a rate of 3.5% per year simple interest.

Calculate the total amount of his investment at the end of 4 years.

★ Total = Principal + Interest

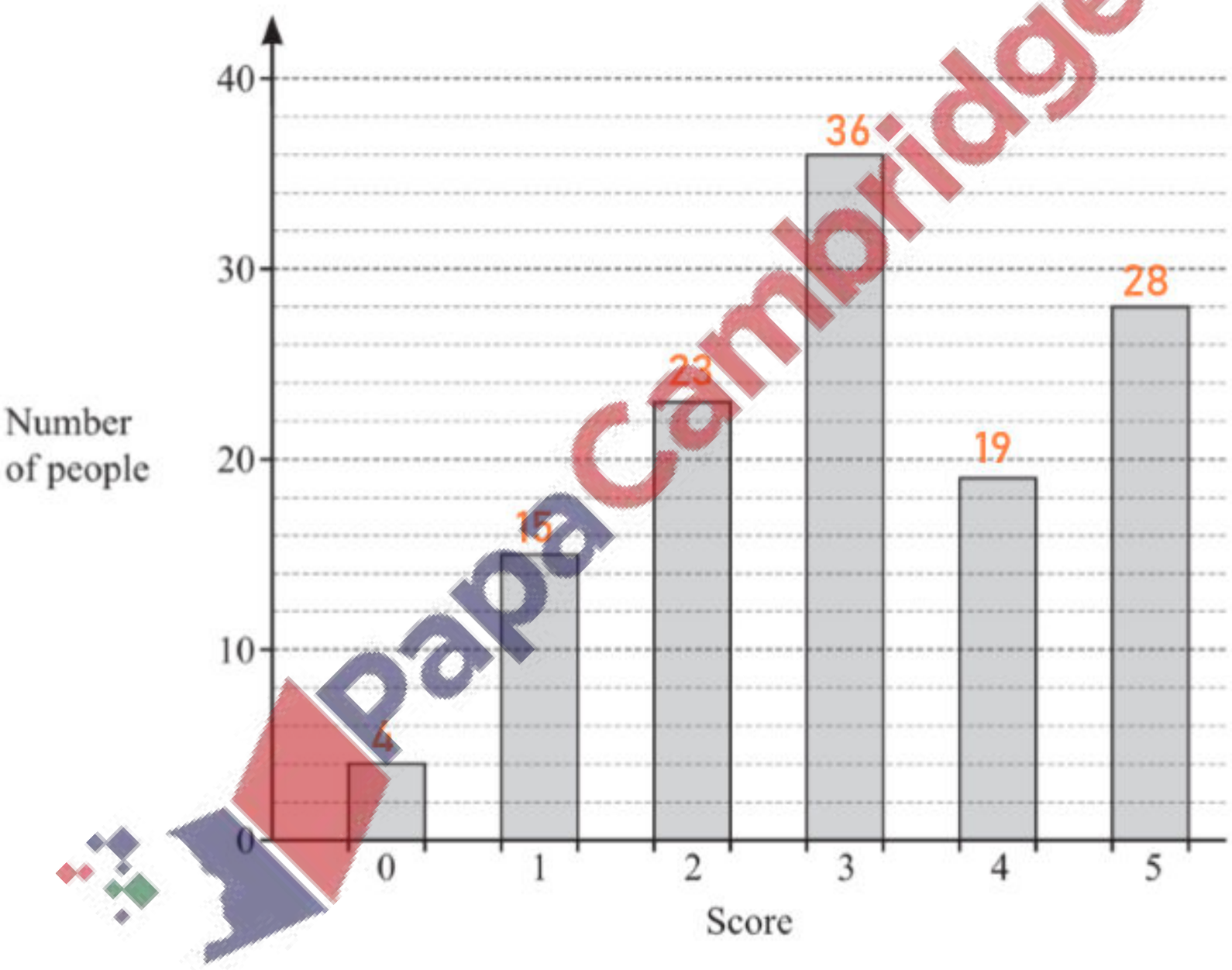
⇒ Total = Principal + $\frac{P \times R \times T}{100}$

⇒ Total = \$2460 + $\frac{\$2460 \times 3.5 \times 4}{100}$

⇒ Total = \$2804.40 //

\$ 2804.40 [3]

11 125 people taste a new drink.
Each person gives a score out of 5.
The bar chart shows the results.



Calculate the mean score.

★ $\bar{x} = \frac{\Sigma f(x)}{\Sigma f}$

⇒ $\bar{x} = \frac{(0\times4)+(1\times15)+(2\times23)+(3\times36)+(4\times19)+(5\times28)}{125}$

⇒ $\bar{x} = 3.08$ //

3.08 [3]

12 **(a)** 7, 13, 19, 25, 31 (+6, +6, +6, +6)

Find the next term in this sequence.

31 [1]

(b) 30, 26, 22, 18, … (−4, −4, −4)

Write down the term to term rule for this sequence.

Subtract 4 [1]

(c) −1, 1, 3, 5, … (+2, +2, +2)

Find the *n*th term for this sequence.

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

$\Rightarrow a_n = -1 + (n-1) \times 2$

$\Rightarrow a_n = -1 + 2n - 2$

$\Rightarrow a_n = 2n - 3$ //

2n − 3 [2]

13 A circular disc has circumference 250 cm.

Calculate the radius of the disc.

$\star\ C = 2\pi r$

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

$\Rightarrow r = \frac{250\text{ cm}}{2\pi}$

$\Rightarrow r = 39.8\text{ cm}$ // (3 sig. figs.)

39.8 cm [2]

14 **(a)** Factorise completely.

$18x^2 - 12x$

6x(3x − 2) [2]

(b) Expand and simplify.

$(x+5)(x-3)$

$\Rightarrow x^2 - 3x + 5x - 15$

$\Rightarrow x^2 + 2x - 15$ //

$x^2 + 2x - 15$ [2]

15 Sophie buys 73 books for her school.
Each book costs $21.95 .

(a) By rounding each number correct to 1 significant figure, estimate the total cost of these books.

* Total cost = 70 × $20

⇒ Total cost = $1400

$ 1400 [1]

(b) Write down whether this estimate is greater or less than the exact cost.

Explain how you decide, without working out the exact cost.

Less than because both values are rounded down.

[1]

16 Calculate the size of one interior angle of a regular octagon.

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

⇒ Interior angle = $\frac{180°(8-2)}{8} = 135°$

135° [2]

17 The table shows the relative frequency of the games won by a football team.

Result of game	won	lost	drawn
Relative frequency	0.1	0.6	0.3

The number of games lost is twice the number of games drawn.

Complete the table.

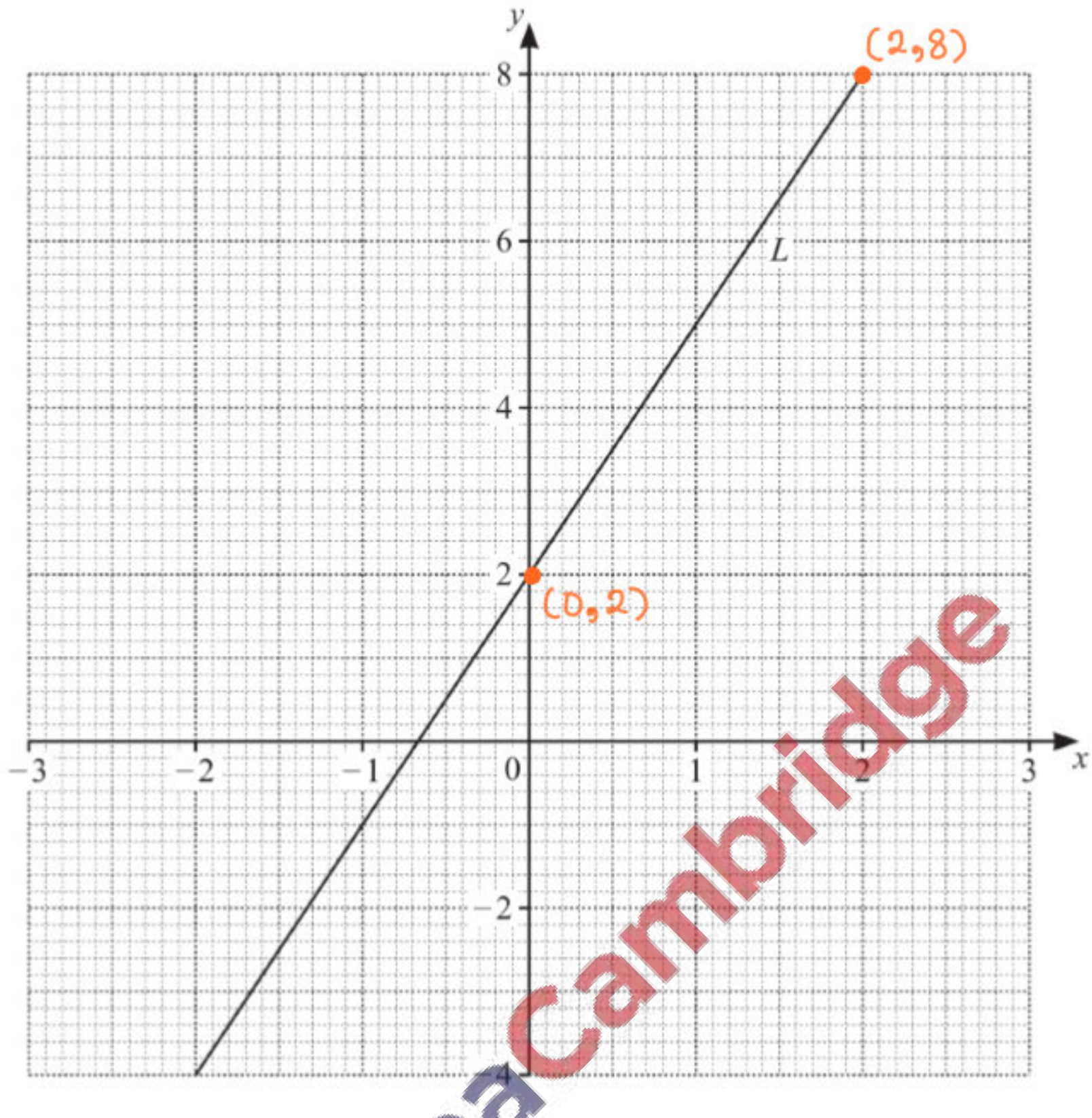
[3]

18 **Without using a calculator**, work out $1\frac{5}{6}+\frac{2}{5}$.

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

$2\frac{7}{30}$ [3]

19



Find the equation of line L.
Give your answer in the form $y = mx + c$.

★ $y = mx + c$

• $m = \frac{8-2}{2-0} = 3$ //

• $2 = 3(0) + c$

$\Rightarrow c = 2$ //

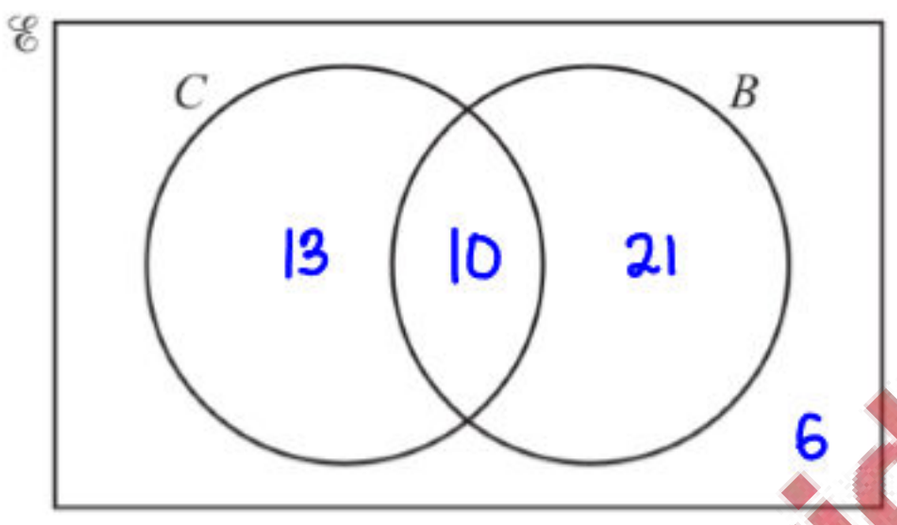
$y =$ 3x + 2 [3]

20 There are 50 families in a village.

C = {families who own a car}
B = {families who own a bicycle}

23 families own a car.
10 families own a car and a bicycle.
6 families own no cars and no bicycles.

(a) Complete the Venn diagram.

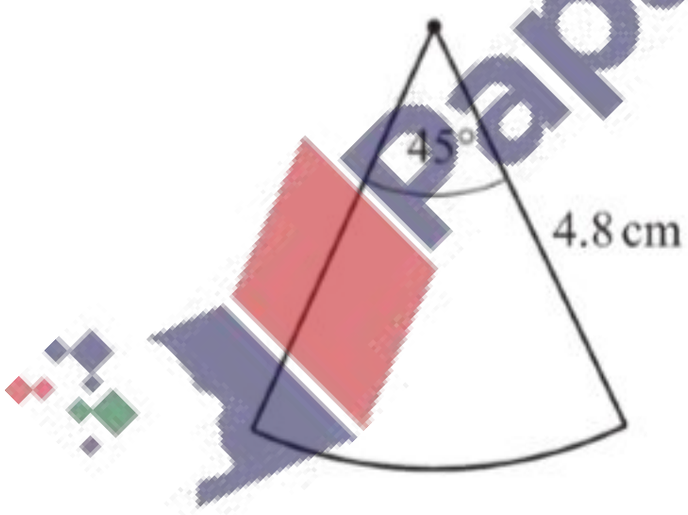


[2]

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

44 [1]

21



NOT TO SCALE

The diagram shows a sector of a circle with radius 4.8 cm and sector angle 45°.

Calculate the area of the sector.

$\star\ A = \frac{45°}{360°} \times \pi(4{\cdot}8\,\text{cm})^2$

$\Rightarrow A = 9{\cdot}05\,\text{cm}^2$ // (3 sig. figs.)

9.05 cm^2 [2]

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