Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS **0580/12**

Paper 1 (Core) **May/June 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.

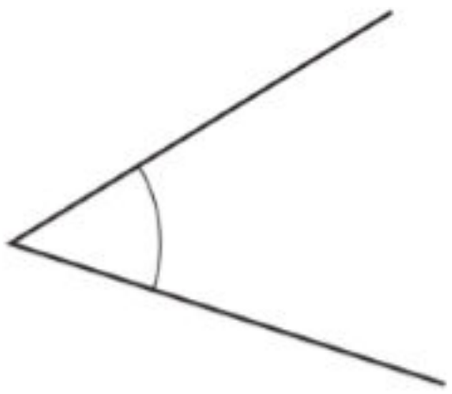
1 **(a)** Write in figures the number fifty-three thousand and thirty-five.

53 035 [1]

(b) Write 8379 correct to the nearest hundred.

8400 [1]

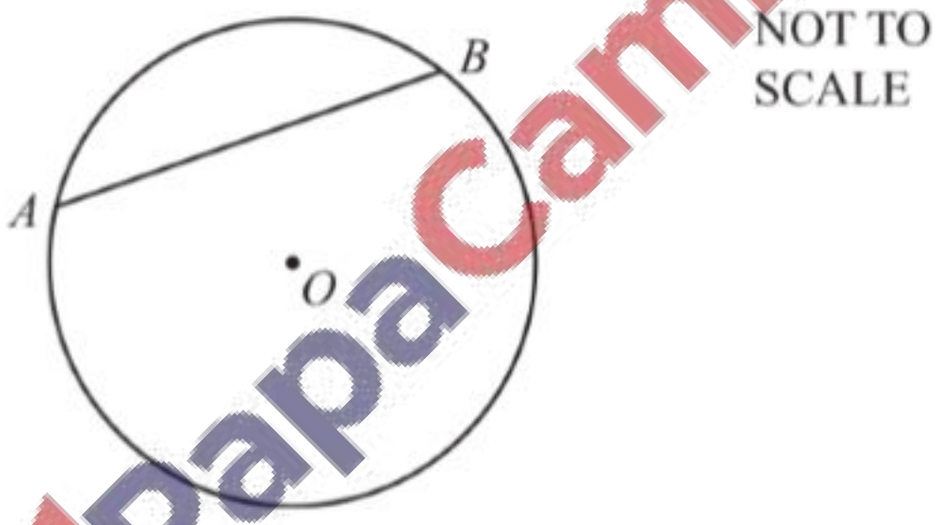
2 **(a)**



Write down the mathematical name for this type of angle.

Acute [1]

(b)



A and *B* lie on a circle, centre *O*.

(i) Write down the mathematical name for line *AB*.

Chord [1]

(ii) $OA = 8\,\text{cm}$

Write down the length of the diameter of this circle.

* 2 × 8 cm = 16 cm

16 cm [1]

3 Write down the reciprocal of 10.

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

4 **(a)** Find the value of $\sqrt{196}$.

14 [1]

(b) Calculate 15^3.

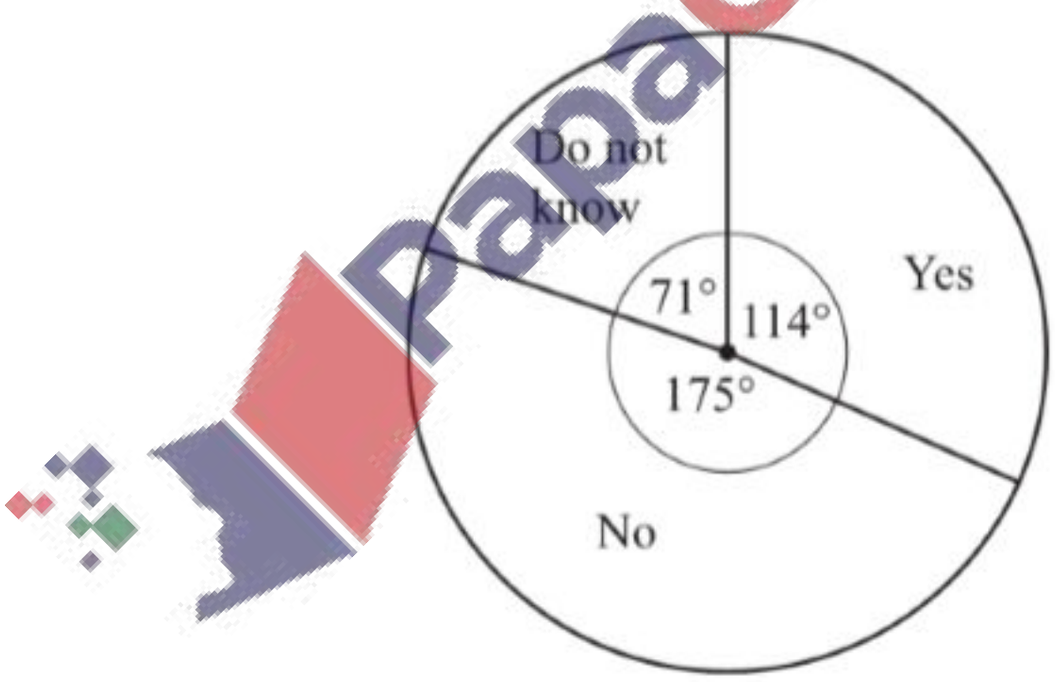
3375 [1]

5 Put one pair of brackets in each statement to make it correct.

(a) $16 \div 8 + 4 \times 2 = 1$ [1]

(b) $16 \div 8 + 4 \times 2 = 12$ [1]

6 The 840 students in a school are asked if they want a change of school uniform.
The results are shown in the pie chart.



Show that the number of students who said Yes is 266.

★ $N(\text{Yes}) = \frac{114°}{360°} \times 840 = 266$

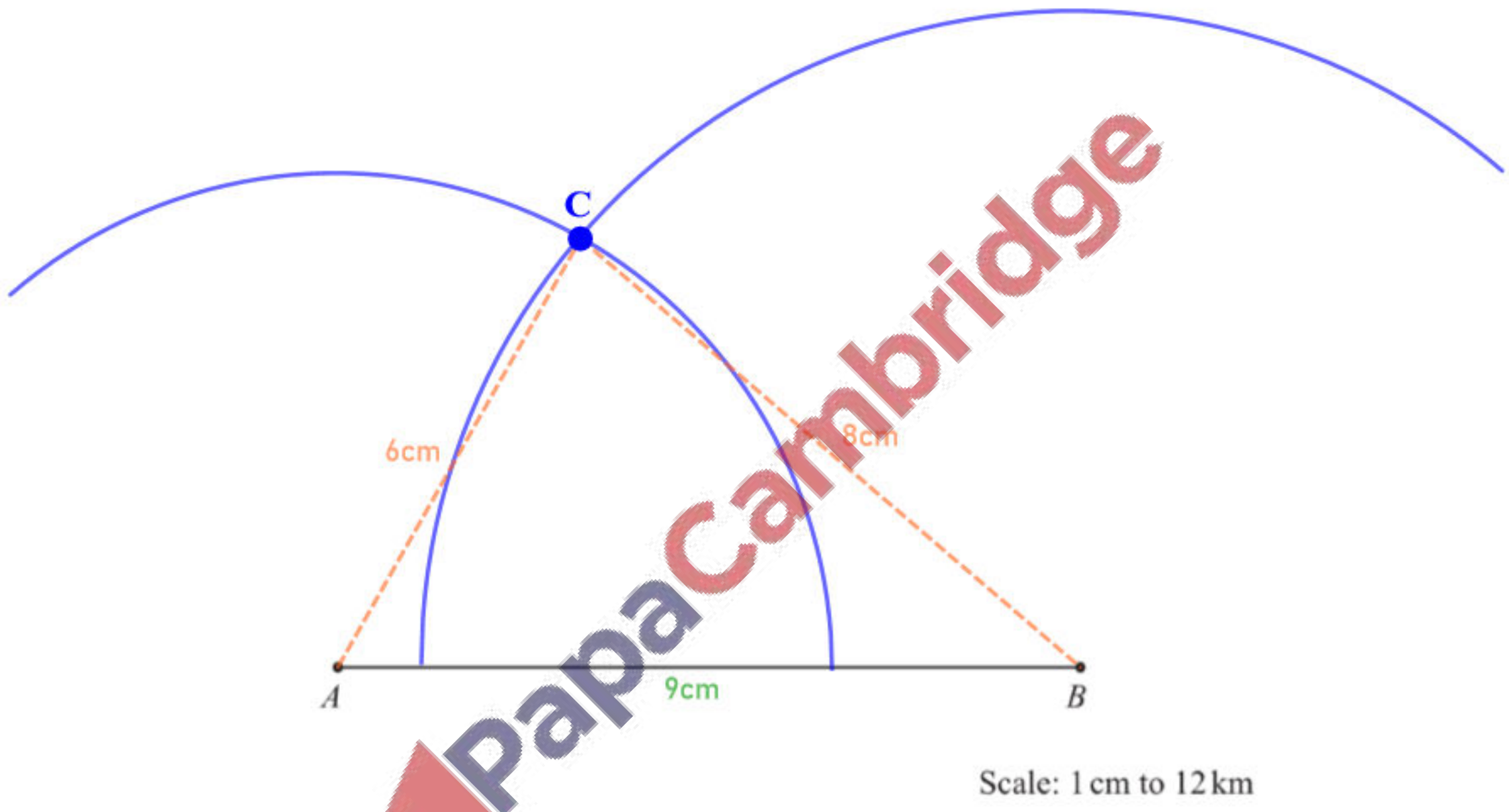
[1]

7 Change 5.3 kilometres into metres.

* 5.3 × 1000 m = 5300 m //

5300 ..... m [1]

8 The scale drawing shows the positions of town *A* and town *B*.
The scale is 1 cm represents 12 kilometres.



Scale: 1 cm to 12 km

(a) Find the actual distance between town *A* and town *B*.

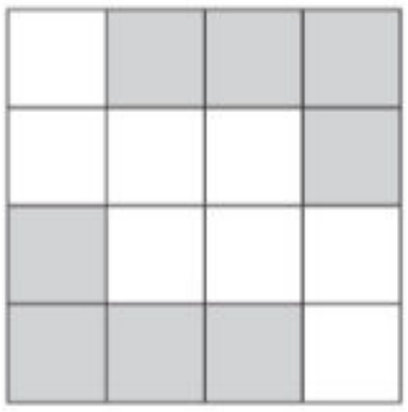
1 cm → 12 km
9 cm → x
⇒ x = 9 cm / 1 cm × 12 km = 108 km //

108 ..... km [2]

6cm 8cm
(b) Town *C* is 72 km from town *A* and 96 km from town *B*.

On the scale drawing, construct the position of town *C*. [3]

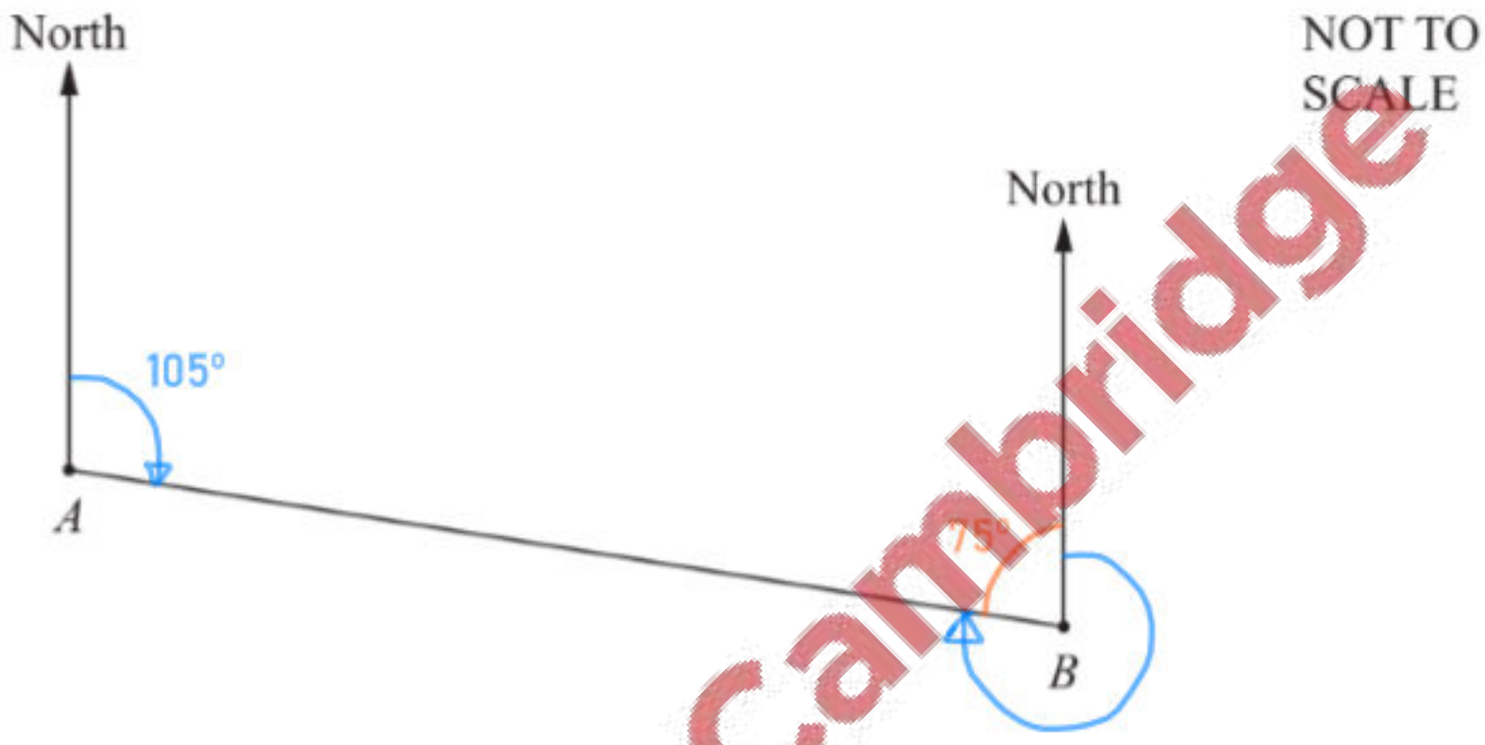
9



Write down the order of rotational symmetry of the diagram.

2 ..... [1]

10



The bearing of B from A is 105°.

Find the bearing of A from B.

* Bearing = 360° − 75° = 285°

285° ..... [2]

11 Write down

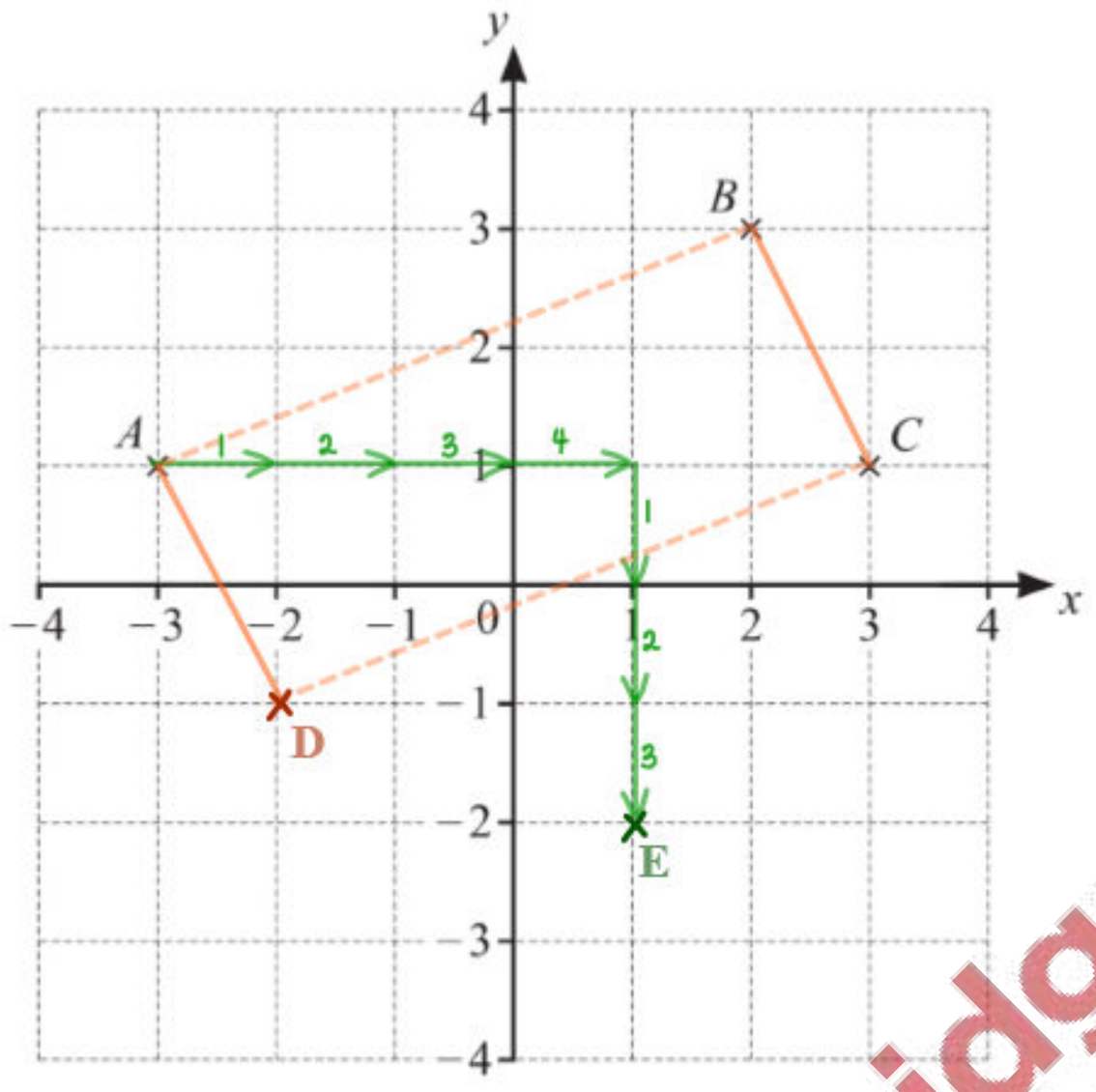
(a) a square number greater than 10,

16 ..... [1]

(b) an irrational number.

$\sqrt{2}$ ..... [1]

12



Points A, B and C are shown on the grid.

(a) Write down the coordinates of point C.

(3 , 1) [1]

(b) On the grid, plot point D so that $ABCD$ is a parallelogram. [1]

(c) On the grid, plot point E so that $\overrightarrow{EA} = \begin{pmatrix} -4 \\ 3 \end{pmatrix}$. [2]

* $\overrightarrow{AE} = \begin{pmatrix} 4 \\ -3 \end{pmatrix}$

13 The height, h metres, of a tower is 76.3 m, correct to 1 decimal place.

Complete this statement about the value of h.

* $h = 76.3\,\text{m} \pm \frac{0.1}{2}$

* $LB(h) = \left(76.3 - \frac{0.1}{2}\right)\text{m} = 76.25\,\text{m}$

* $UB(h) = \left(76.3 + \frac{0.1}{2}\right)\text{m} = 76.35\,\text{m}$

76.25 $\leqslant h <$ 76.35 [2]

14 Rovers, United and City are football teams.

Rovers scored x goals. x
United scored 8 goals more than Rovers. $x+8$
City scored 3 goals less than twice the number of goals scored by Rovers. $2x-3$

The three teams scored a total of 117 goals.

Write down and solve an equation to find the value of x.

* $x + x+8 + 2x-3 = 117$

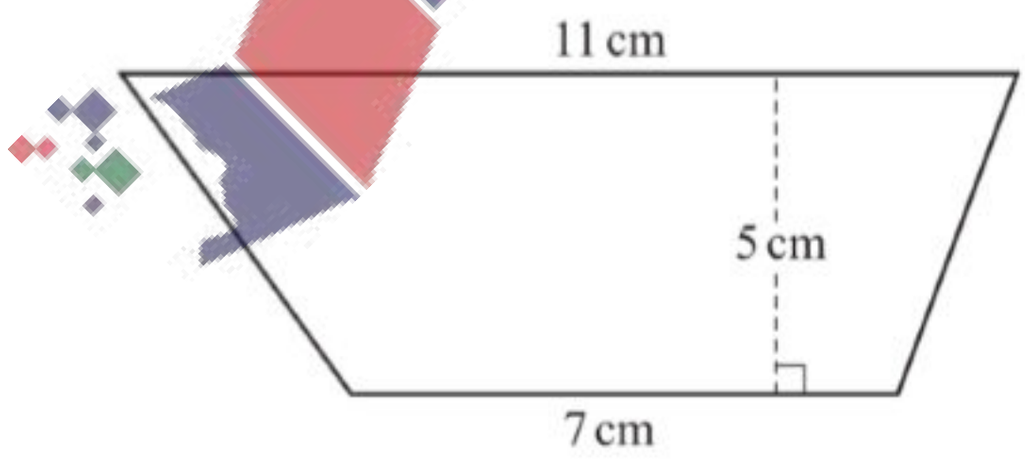
$\Rightarrow 4x + 5 = 117$

$\Rightarrow 4x = 112$

$\Rightarrow x = 28$

$x =$ ..... 28 ..... [4]

15



NOT TO SCALE

Calculate the area of the trapezium.

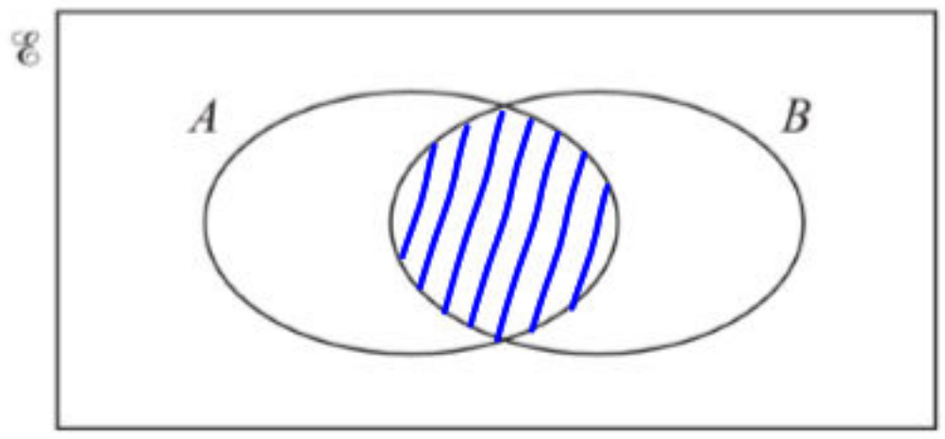
* $A = \frac{1}{2}(a+b) \times h$

$\Rightarrow A = \frac{1}{2}(11+7)\text{cm} \times 5\text{ cm}$

$\Rightarrow A = 45\text{ cm}^2$

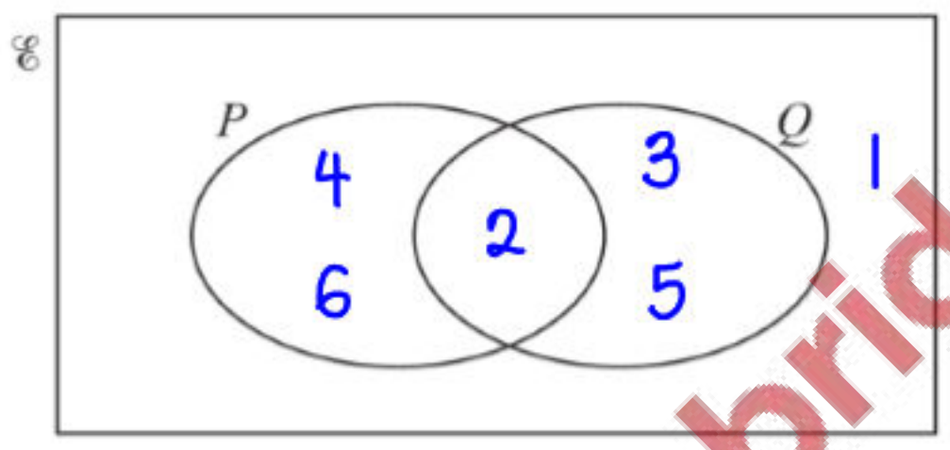
..... 45 ..... cm^2 [2]

16 (a)



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

(b) $\mathscr{E} = \{1, 2, 3, 4, 5, 6\}$
$P = \{x : x \text{ is an even number}\} = \{2, 4, 6\}$
$Q = \{x : x \text{ is a prime number}\} = \{2, 3, 5\}$



Complete the Venn diagram. [2]

17 Write 2^{-4} as a decimal.

0.0625 [1]

18 **Without using a calculator**, work out $1\frac{3}{4} - \frac{11}{12}$.
You must show all your working and give your answer as a fraction in its simplest form.

$\Rightarrow \frac{7}{4} - \frac{11}{12}$

$\Rightarrow \frac{21 - 11}{12}$

$\Rightarrow \frac{\cancel{10}^{5}}{\cancel{12}_{6}} = \frac{5}{6}$ //

..... $\frac{5}{6}$ [3]

19 Roberto buys a toy for $5.00 .
He then sells it for $4.60 .

Calculate his percentage loss.

* % Loss $= \frac{\$(5.00 - 4.60)}{\$5.00} \times 100\%$

$= 8\%$ //

..... 8 % [2]

20 Simplify $8t^8 \div 4t^4$.

$\Rightarrow (8 \div 4)\, t^{8-4}$

$\Rightarrow 2t^4$ //

..... $2t^4$ [2]

21 **(a)** Write 45 000 in standard form.

4 3 2 1
4 5 0 0 0
4.5×10^4

4.5×10^4 [1]

(b) Write 2.06×10^{-2} as an ordinary number.

0.0206 [1]

22 **(a)** Write down all the factors of 28.

1×28
2×14
4×7

1, 2, 4, 7, 14, 28 [2]

(b) Write 54 as a product of its prime factors.

54
2 27
3 9
3 3

* $54 = 2 \times 3 \times 3 \times 3$
$= 2 \times 3^3$

2×3^3 [2]

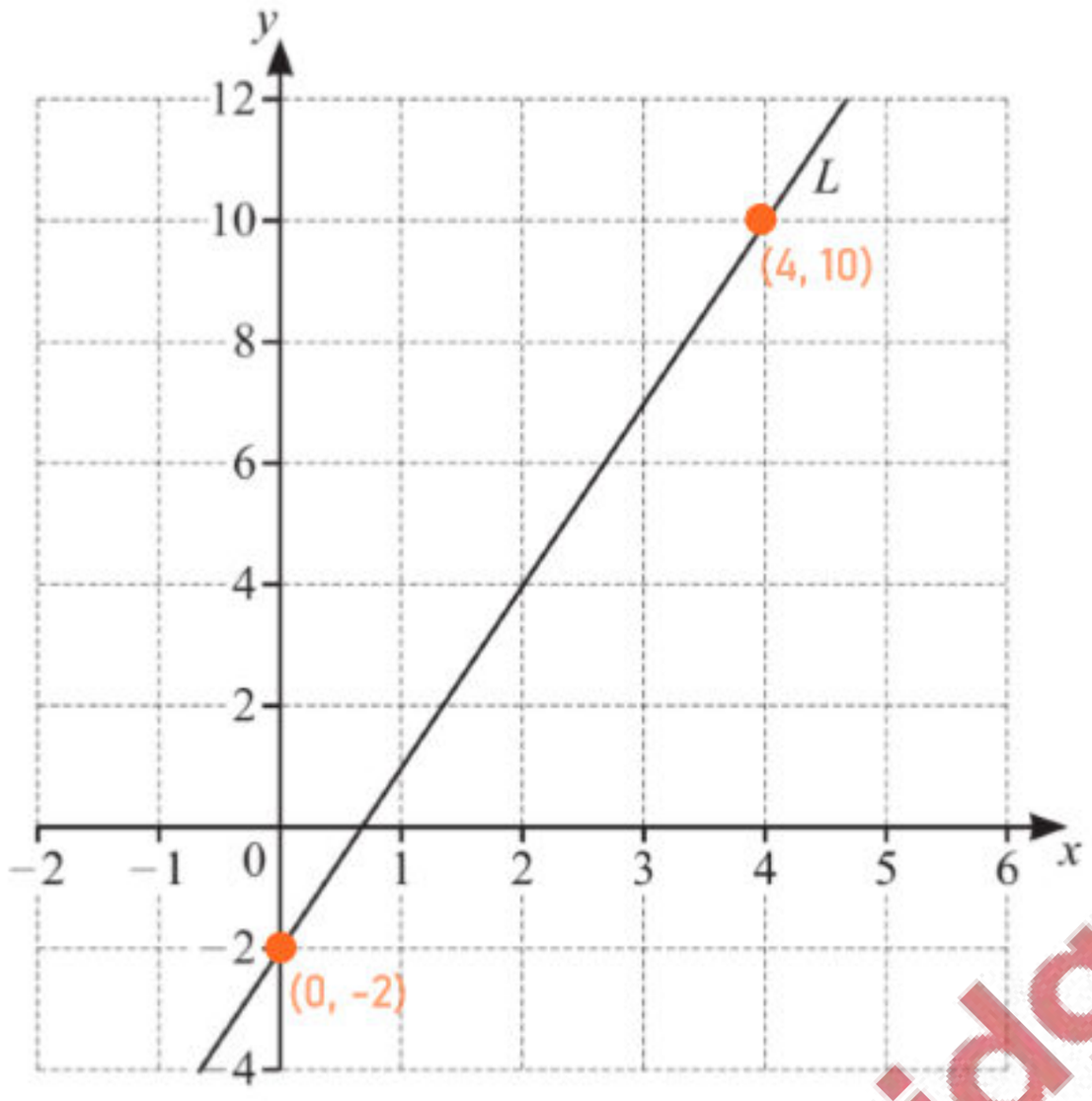
(c) Find the lowest common multiple (LCM) of 48 and 60.

48 = 48, 96, 144, 192, 240, 288, ...

60 = 60, 120, 180, 240, ...

240 [2]

23



(a) Find the gradient of line L.

★ $m = \frac{10-(-2)}{4-0} = 3$

..... 3 ..... [2]

(b) Write down the equation of line L in the form $y = mx + c$.

★ $y = mx + c$

• $m = 3$

• $c = -2$

$y =$ ..... $3x-2$ ..... [1]

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