Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS **0580/12**

Paper 1 (Core) **October/November 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 [ ].

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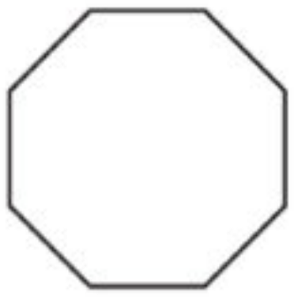
1 Write two hundred thousand and seventeen in figures.

200 017 [1]

2 Write 867 correct to the nearest ten.

870 [1]

3



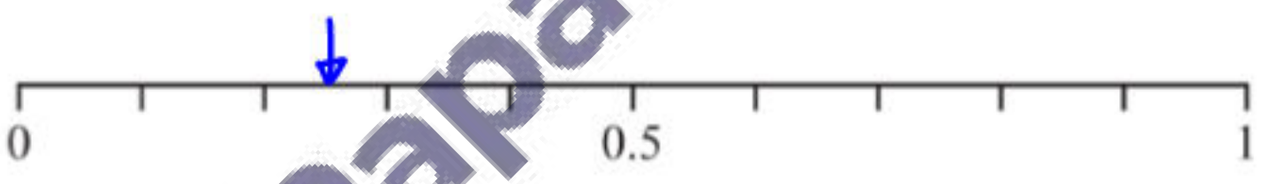
Write down the order of rotational symmetry of this regular octagon.

8 [1]

4 A bag contains 20 balls.
5 of these balls are red.
A ball is picked at random from the bag.

On the probability scale, draw an arrow (↓) to show the probability that this ball is red.

* $P = \frac{5}{20} = 0.25$ //



[1]

5 Work out the number of hours in 3 days.

* $3 \text{ days} \times 24 \frac{\text{h}}{\text{day}} = 72 \text{ h}$ //

72 hours [1]

6 Write these in order of size, starting with the smallest.

$\frac{11}{27}$ 41% 0.4 $\frac{16}{39}$

40.74% 41% 40% 41.03%

0.4 < $\frac{11}{27}$ < 41% < $\frac{16}{39}$ [2]

smallest

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7 Solve the equation.

$$6 - 2x = 3x$$

$\Rightarrow 6 = 5x$

$\Rightarrow x = 1.2$

$x =$ 1.2 [2]

8 Work out the difference in temperature between $-6\,°C$ and $5\,°C$.

* Difference $= 5°C - (-6°C) = 11°C$

11 °C [1]

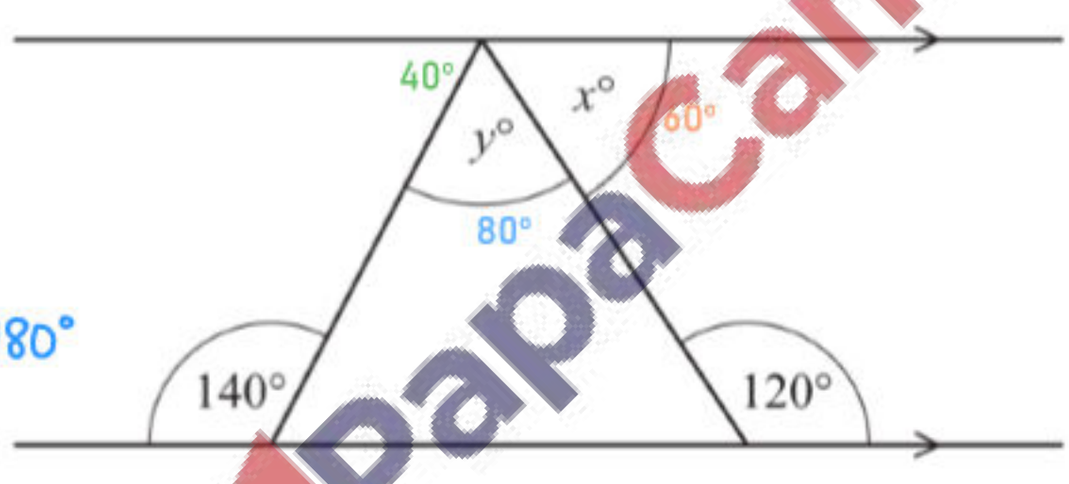
9 $A = \frac{1}{4}bc^2$

Calculate the value of A when $b = 3$ and $c = 6$.

$* A = \frac{1}{4}(3)(6)^2 = 27$

27 [2]

10



NOT TO SCALE

* $y + 60° + 40° = 180°$

$\Rightarrow y = 80°$

* $x + 120° = 180°$

$\Rightarrow x = 60°$

The diagram shows a triangle drawn between a pair of parallel lines.

Find the value of x and the value of y.

$x =$ 60

$y =$ 80 [3]

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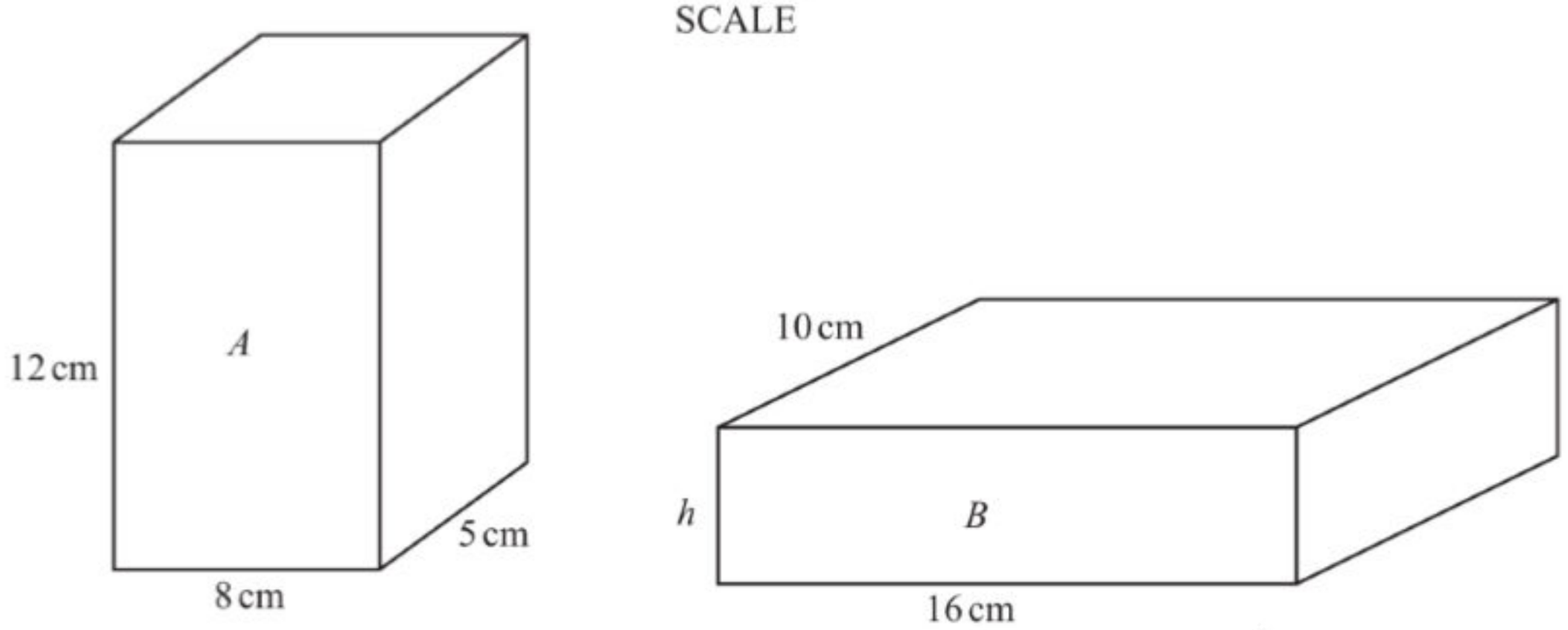
11

NOT TO SCALE



The diagram shows cuboid A and cuboid B.
Cuboid A has the same volume as cuboid B.

Calculate the height, h, of cuboid B.

* $V_A = V_B$

$\Rightarrow 12 \times 8 \times 5 = 10 \times 16 \times h$

$\Rightarrow 480 = 160h$

$\Rightarrow h = 3$

$h =$ 3 cm [3]

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12 Fernando records the favourite sport of each of 20 people.

football	cricket	rugby	cricket	rugby	rugby	football	football	rugby	football
cricket	rugby	tennis	football	tennis	football	rugby	cricket	football	cricket

(a) Complete the frequency table to show this information.
You may use the tally column to help you.

Favourite sport	Tally	Frequency
Cricket	𝍸	5
Football	𝍸 ||	7
Rugby	𝍸 |	6
Tennis	||	2

[2]

(b) Fernando wants to draw a pie chart to show this information.

Work out the sector angle for football.

* Sector angle $= \frac{7}{20} \times 360° = 126°$

126° [2]

13 Increase 42 by 16%.

* $\frac{116}{100} \times 42 = 48.72$

48.72 [2]

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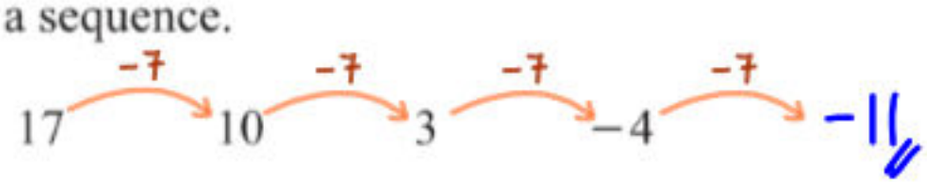
14 These are the first four terms of a sequence.



(a) (i) Find the next term.

-11 [1]

(ii) Write down the term to term rule for continuing this sequence.

Subtract 7 [1]

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

Find an expression for the nth term.

$* a_n = a_1 + (n-1)d$

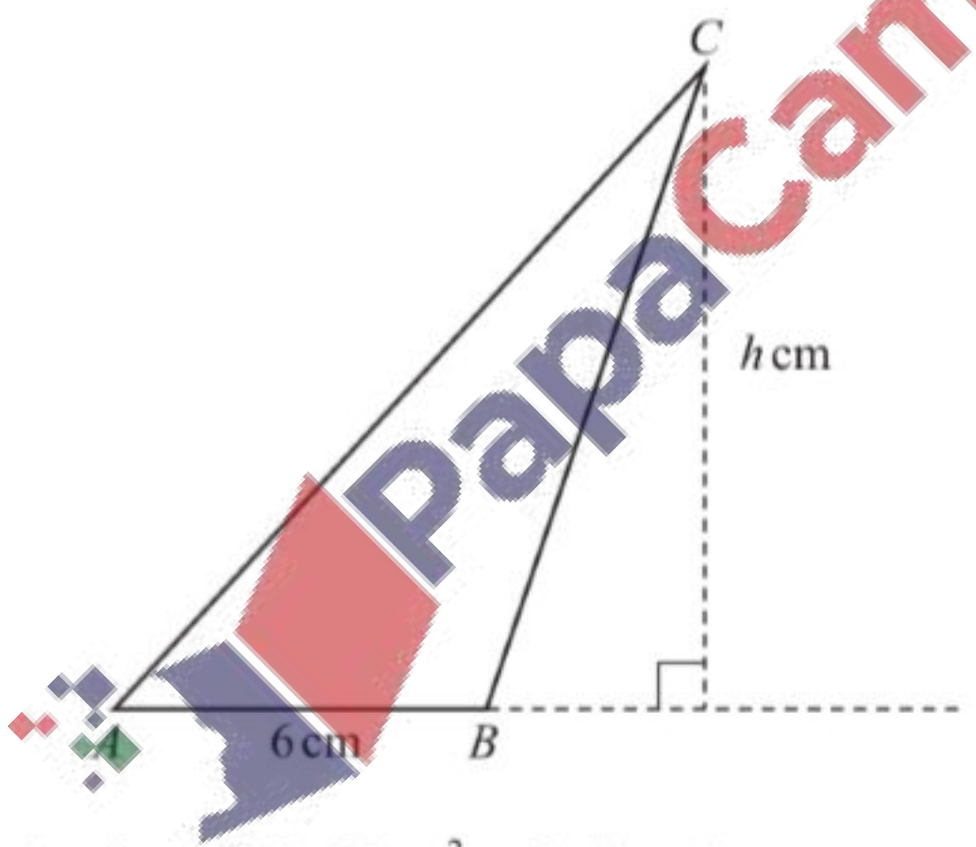
$\Rightarrow a_n = -2 + (n-1) \times 4$

$\Rightarrow a_n = -2 + 4n - 4$

$\Rightarrow a_n = 4n - 6$

4n-6 [2]

15



NOT TO SCALE

The area of triangle ABC is $27\,\text{cm}^2$ and $AB = 6\,\text{cm}$.

Calculate the value of h.

$* A = \frac{1}{2} \times b \times h$

$\Rightarrow h = \frac{2A}{b}$

$\Rightarrow h = \left(\frac{2 \times 27}{6}\right)\text{cm} = 9\,\text{cm}$

$h =$ 9 [2]

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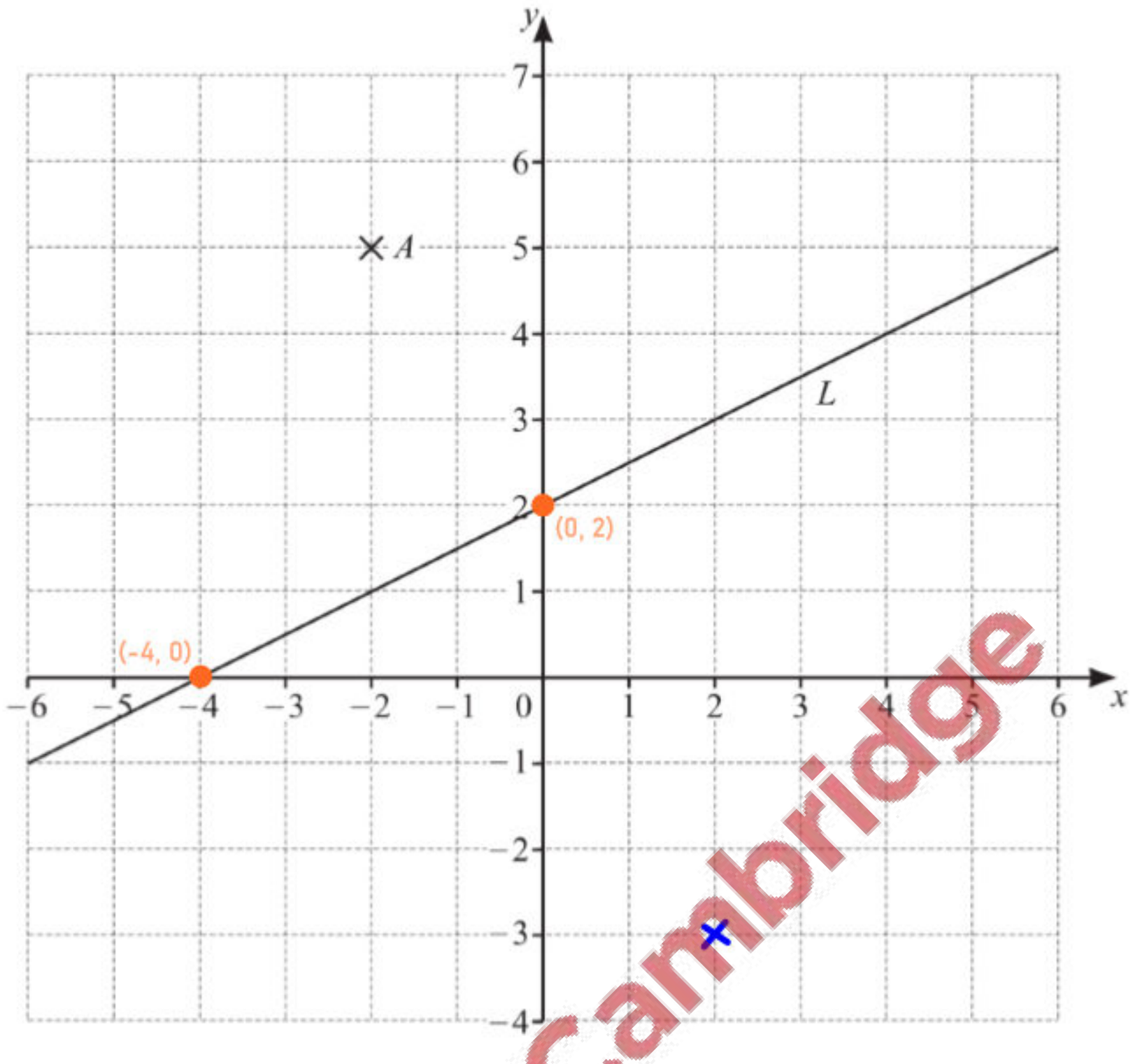
16 (a)



(i) Write down the coordinates of point A.

(..... -2 ..... , ... 5 .....) [1]

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

(iii) The line L is shown on the grid.

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

* $y = mx + c$

• $m = \frac{2-0}{0-(-4)} = 0.5$ // • $c = 2$ //

$y =$ ..... 0.5x + 2 ..... [2]

(b) Write down the equation of the line parallel to $y = 5x + 6$ that passes through $(0, -7)$.

* $y = mx + c$

• $m = 5$ //

• $c = -7$ //

$y =$ ..... 5x - 7 ..... [1]

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17 **Without using a calculator**, work out $\frac{5}{6} \div 1\frac{1}{3}$.
You must show all your working and give your answer as a fraction in its simplest form.

$\Rightarrow \frac{5}{6} \div \frac{4}{3}$

$\Rightarrow \frac{5}{\cancel{6}_2} \times \frac{\cancel{3}^1}{4}$

$\Rightarrow \frac{5}{8}$

..... $\frac{5}{8}$ ..... [3]

18 **(a)** The length, l cm, of a pencil is 18 cm, correct to the nearest centimetre.

Complete the statement about the value of l.

* $l = 18\,\text{cm} \pm \frac{1\,\text{cm}}{2}$

* $LB(l) = \left(18 - \frac{1}{2}\right)\text{cm} = 17.5\,\text{cm}$

* $UB(l) = \left(18 + \frac{1}{2}\right)\text{cm} = 18.5\,\text{cm}$

..... 17.5 ..... $\leqslant l <$ ..... 18.5 ..... [2]

(b) **(i)** Write 9.314×10^5 as an ordinary number.

..... 931 400 ..... [1]

(ii) Calculate $(4.1 \times 10^{-3}) \times (8.9 \times 10^7)$. = 364900
Give your answer in standard form.

3.649 00

3.649×10^5

..... 3.649×10^5 ..... [2]

(c) Calculate $\sqrt{(8 + 4 \times 75^{0.6})}$.

..... 7.83 ..... [1]

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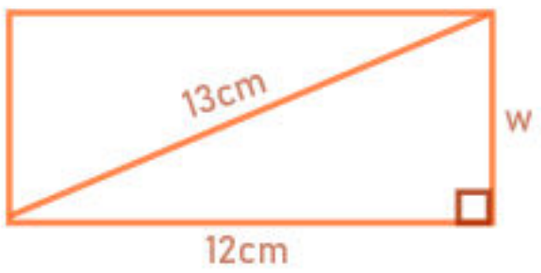
19 The length of one side of a rectangle is 12 cm.
The length of the diagonal of the rectangle is 13 cm.

Calculate the area of the rectangle.



* $A = l \times w$

Finding l

- $13^2 = w^2 + 12^2$

$\Rightarrow w = \sqrt{13^2 - 12^2}$

$\Rightarrow w = 5$

$\therefore A = 12\text{cm} \times 5\text{cm} = 60\text{cm}^2$

60 ..... cm^2 [3]

20 Alex and Chris share sweets in the ratio Alex : Chris = 7 : 3.
Alex receives 20 more sweets than Chris.

Work out the number of sweets Chris receives.

Alex Chris

$7 : 3$

$x+20 : x$

$\Rightarrow 7x = 3(x+20)$

$\Rightarrow 7x = 3x + 60$

$\Rightarrow 4x = 60$

$\Rightarrow x = 15$

15 ..... [2]

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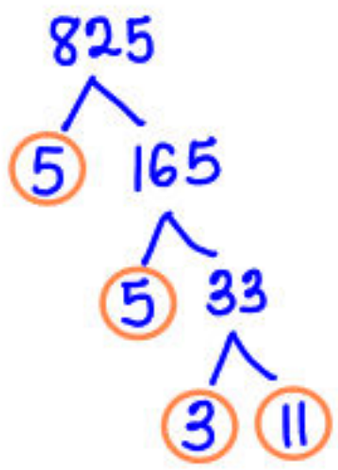
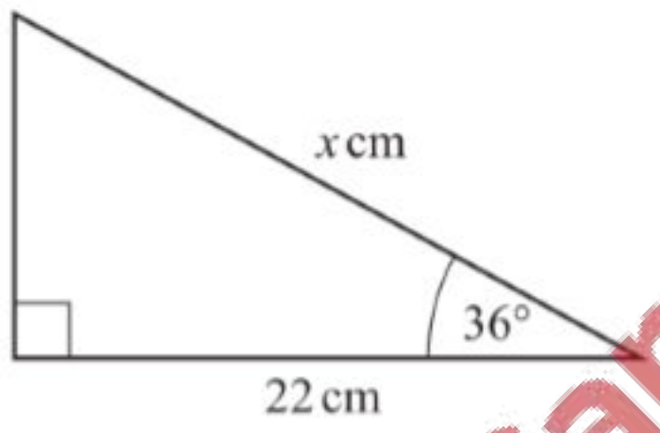
21 Write 825 as the product of its prime factors.



* 825 = 3 × 5 × 5 × 11
= 3 × 5² × 11 //

3 x 5² x 11 [2]

22



Show that the value of x is 27.2, correct to 3 significant figures.

* $\cos 36° = \frac{22\,cm}{x}$

$\Rightarrow x = \frac{22\,cm}{\cos 36°}$

$\Rightarrow x = 27.19...\,cm \approx 27.2\,cm$ (3 sig. figs.) //

[3]

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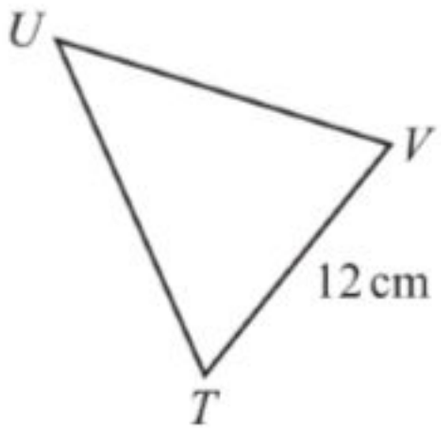
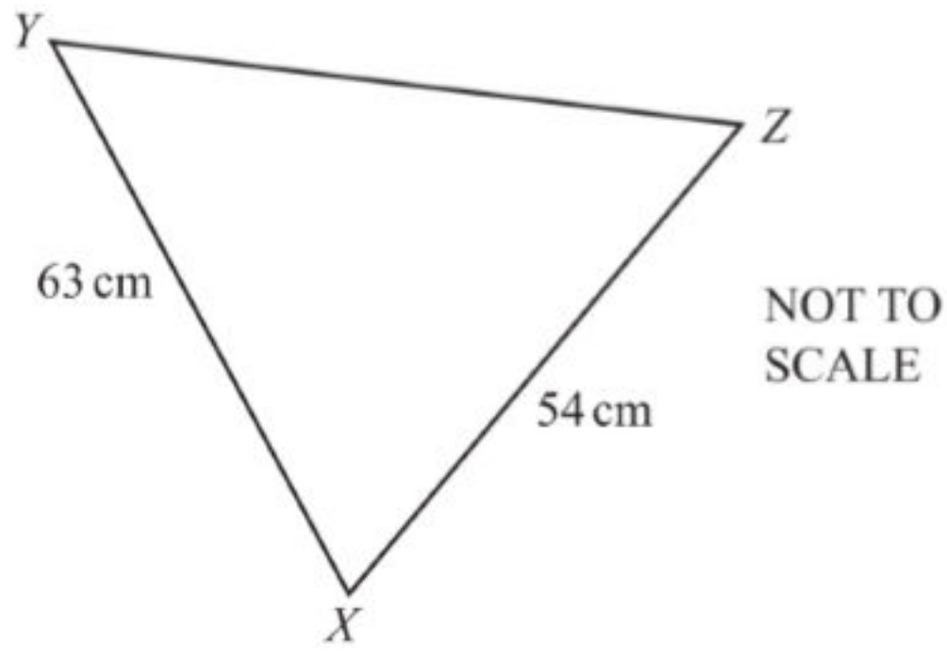
11

23





The diagram shows two similar triangles TUV and XYZ.

Calculate UT.

* $\frac{UT}{63cm} = \frac{12cm}{54cm}$

$\Rightarrow UT = \frac{12}{54} \times 63cm = 14cm$

$UT =$ ..... 14 ..... cm [2]

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