Cambridge IGCSE™

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				
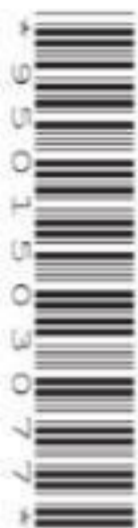
MATHEMATICS 0580/11

Paper 1 (Core) **May/June 2022**

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 Students at an activity centre choose one of four activities.
The bar chart shows some of their choices.
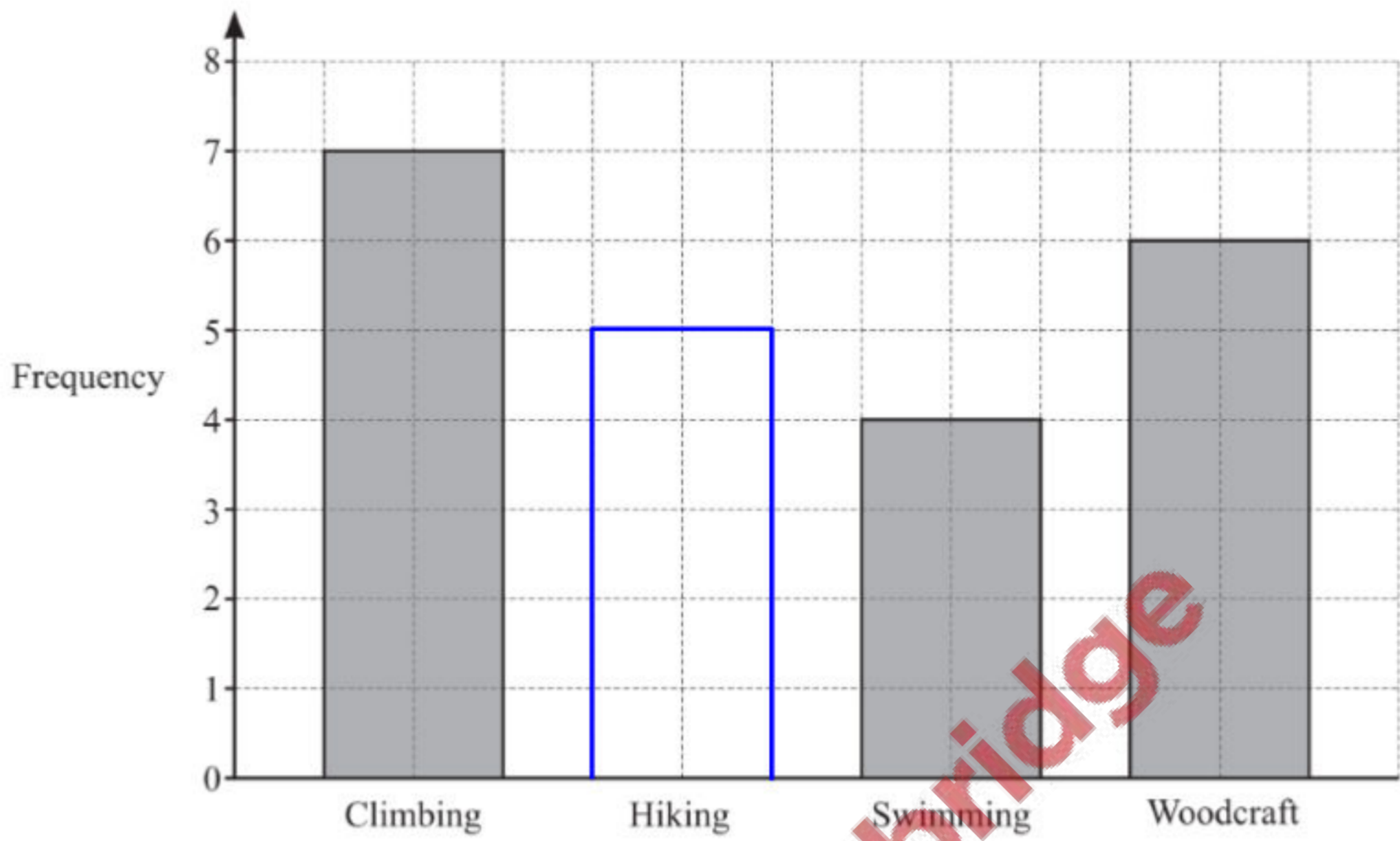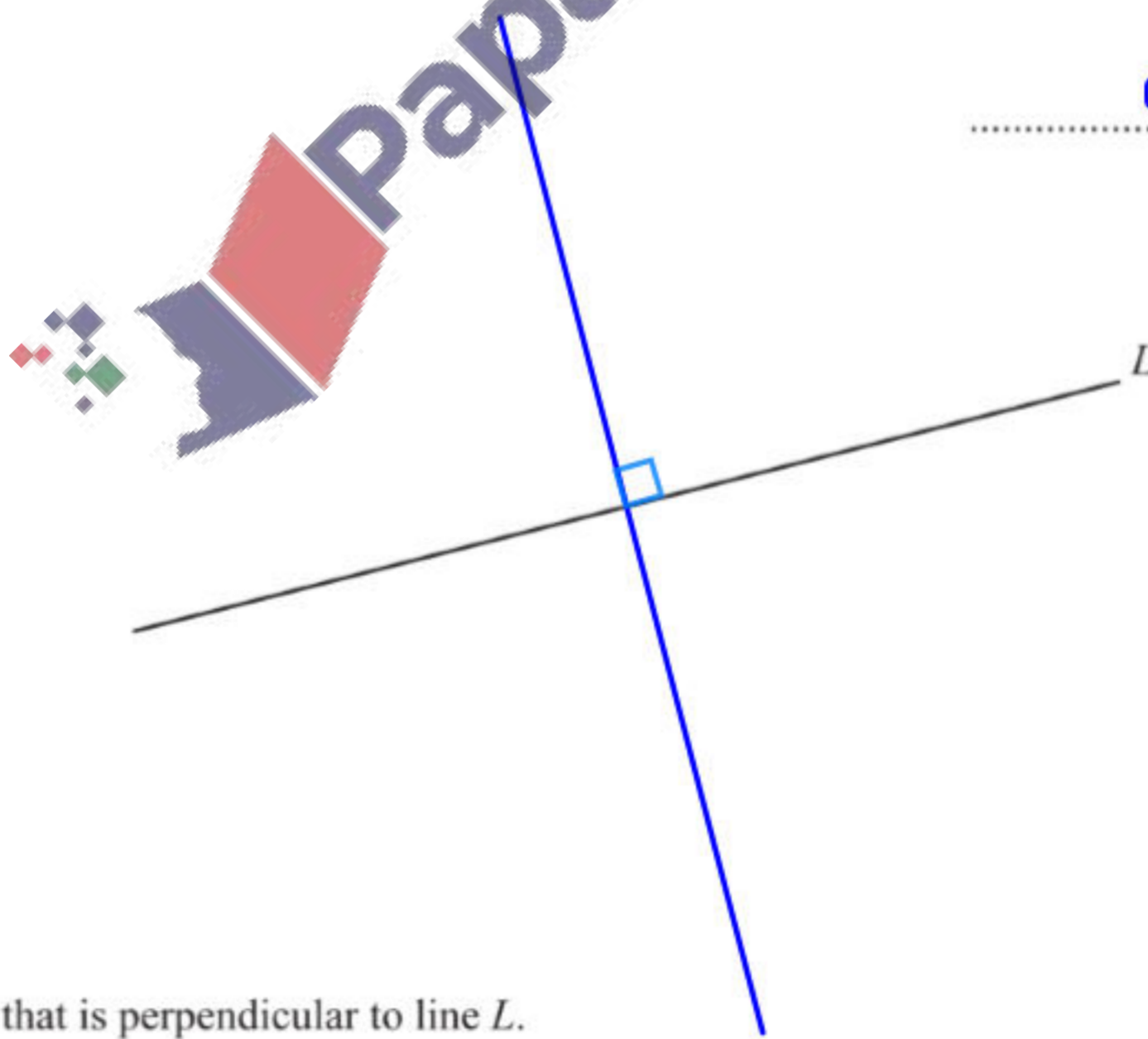

(a) 5 students choose hiking.

Complete the bar chart. [1]

(b) Write down the most popular activity.

.... **Climbing** .... [1]

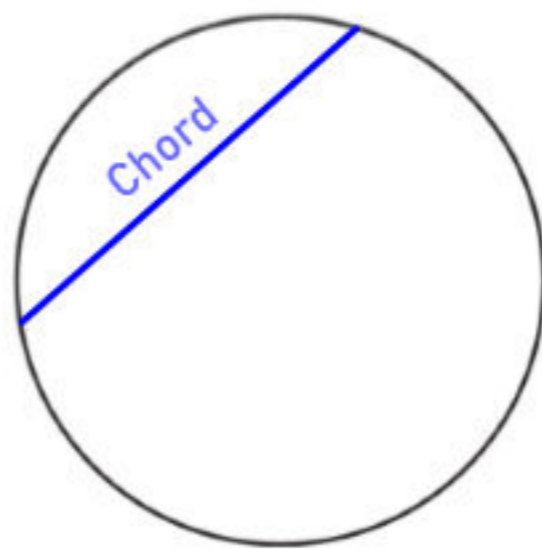2

Draw a line that is perpendicular to line *L*. [1]

3 (a)

The diagram shows a circle.

On the diagram, draw a chord. [1]

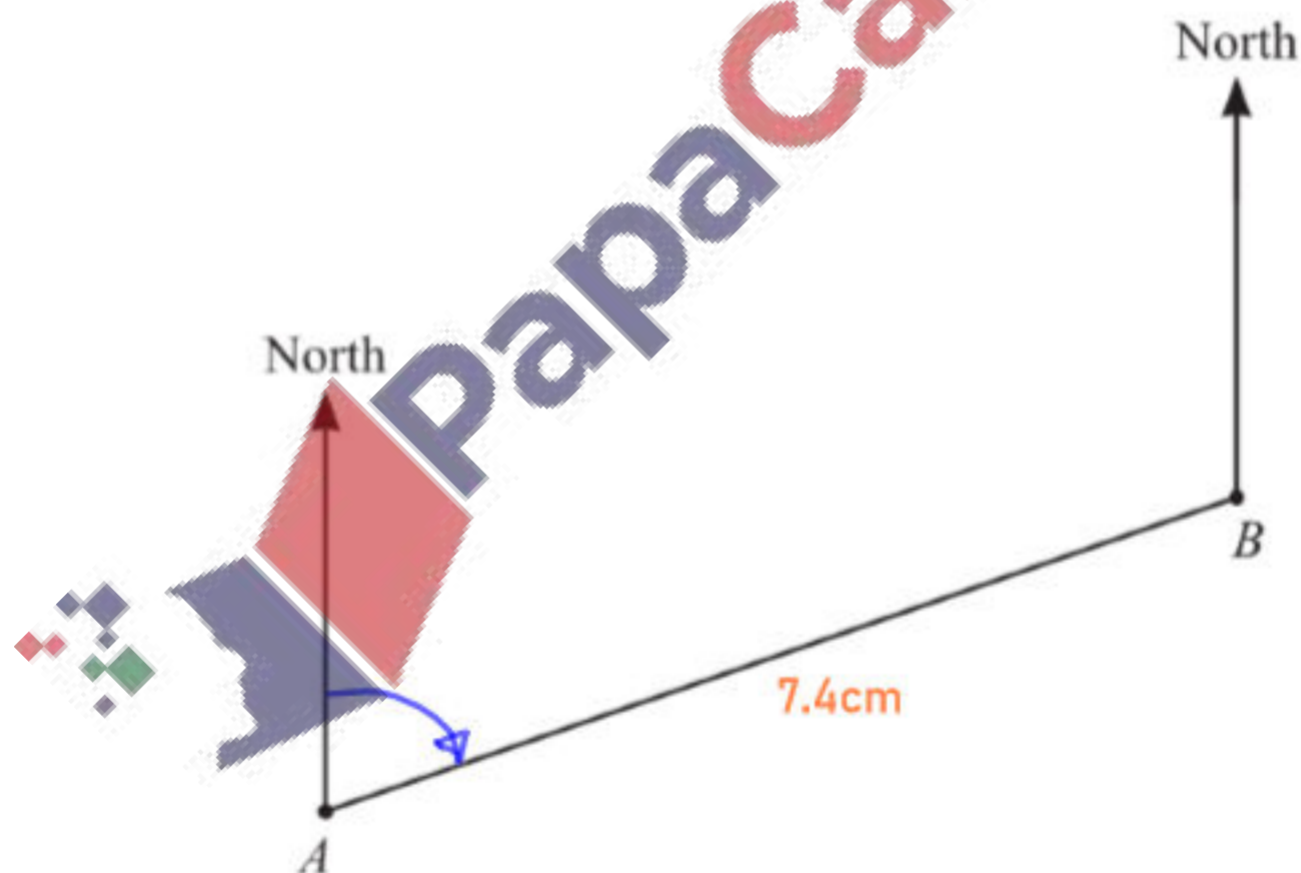(b) Another circle has a diameter of 28 cm.

Find the radius of this circle.

★ radius = $\frac{28cm}{2}$ = 14cm

.... 14 .... cm [1]

4 The scale drawing shows the positions of town A and town B.
The scale is 1 cm represents 15 km.

Scale: 1 cm to 15 km

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

1cm → 15km   ⟹ x = $\frac{7.4cm \times 15km}{1cm}$ = 111km

7.4cm → x

.... 111 .... km [2]

(b) Measure the bearing of town B from town A.

.... 071° .... [1]

        [Turn over

5   Change 0.56 kilometres into metres.

★ 0.56 × 1000m = 560m

.............................560............................. m [1]

6   Write these numbers in order, starting with the smallest.

$$\frac{6}{17} \qquad 34\% \qquad \frac{9}{25} \qquad 0.345$$

↓   ↓   ↓   ↓

35.3%   34%   36%   34.5%

......**34%**...... < ......**0.345**...... < ......$\frac{6}{17}$...... < ......$\frac{9}{25}$...... [2]
    smallest

7

y=68°

x + 68° = 180°
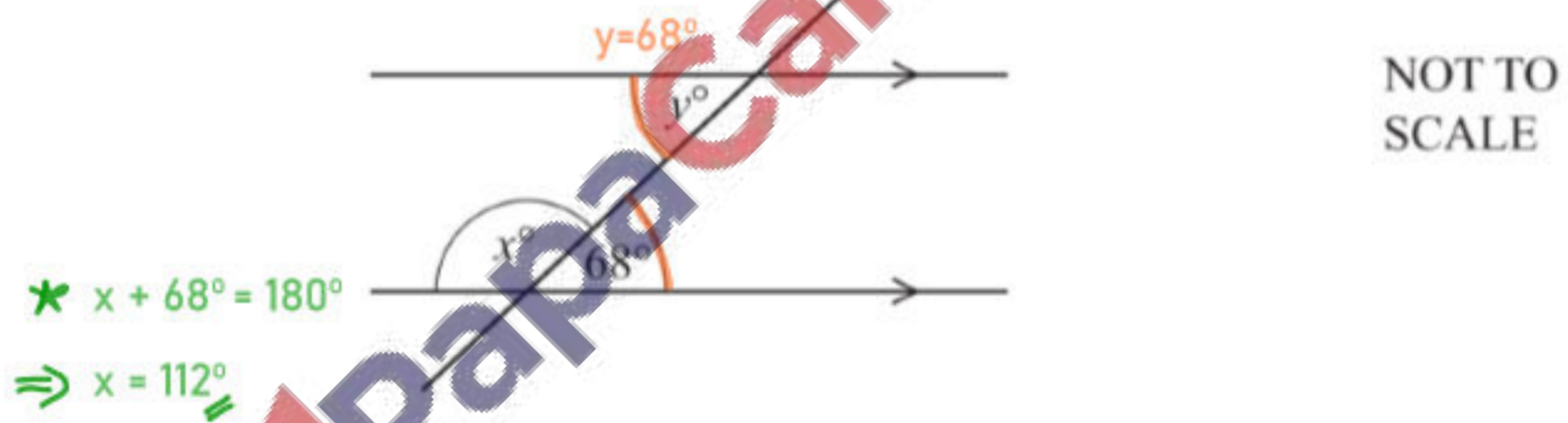
⟹ x = 112°

The diagram shows two parallel lines and a straight line crossing them.

Find the value of x and the value of y.

NOT TO SCALE

$x =$ ....**112**......................

$y =$ ....**68**...................... [2]

8   Here is some information about six numbers:

- The lowest number is 37.
- The range is 24.
- The mode is 43.
- The median is 46.
- One number is a multiple of 11.

Find the other five numbers.

✳ 24 = Highest no. – 37

⟹ Highest no. = 61 ✓

✳ $\dfrac{43 + x}{2} = 46$

⟹ x = 49 ✓

37, ...**43**......, ...**43**......, ...**49**......, ...**55**......, ...**61**...... [4]

9   Calculate $4^5 - 5^4$.

......................**399**...................... [1]

10 05   13 02

10 Jason starts a run at 10.05 am and finishes at 1.02 pm.

Work out the time Jason takes to complete the run.

hrs. mins.

¹²1̶3̶ 0̶2̶ ⁶²
− 10 05
──────────
  2 57
══════════

..........**2**.......... h ....**57**.......... min [1]

11 Calculate $\dfrac{1-0.7}{0.45-0.38}$, giving your answer correct to 4 significant figures.

.... 4.286 .... [2]

12 Kirsty changes $380.80 into pounds (£) when £1 = $1.19 .

Calculate the amount Kirsty receives.

£ 1 = $ 1.19

x = $ 380.80

⇒ x = $\dfrac{\$\,380.80 \times £1}{\$\,1.19}$ = £ 320

£ .... 320 .... [2]

13 A 4-sided spinner is numbered 1, 2, 3 and 4.
The table shows the probability of the spinner landing on 1, 2 and 4.

Number	1	2	3	4
Probability	0.27	0.18	0.23	0.32

P = 1 – (0.27 + 0.18 + 0.32) = 0.23

Complete the table.

[2]

14 **Without using a calculator,** work out $\dfrac{3}{7}-\dfrac{2}{21}$.

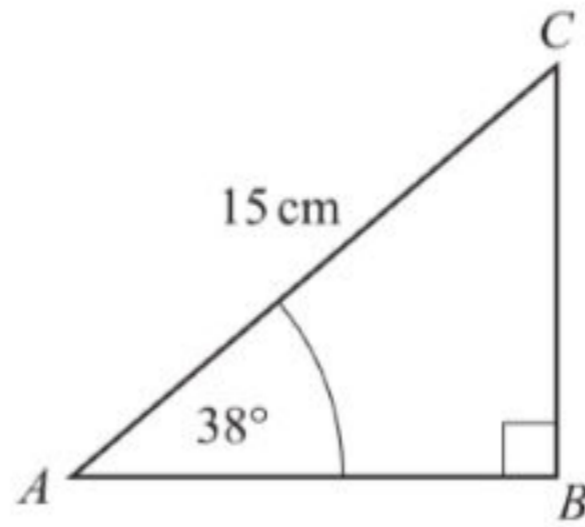You must show all your working and give your answer as a fraction in its simplest form.

⇒ $\dfrac{9-2}{21}$

⇒ $\dfrac{7}{21} = \dfrac{1}{3}$

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

15

NOT TO SCALE

The diagram shows a right-angled triangle, *ABC*.
AC = 15 cm and angle *BAC* = 38°.

Calculate *BC*.

$\star$ $\sin 38° = \dfrac{BC}{15cm}$

$\Rightarrow BC = (15 \sin 38°)cm$

$\Rightarrow BC = 9.23cm$ (3 sig. figs.)

BC = ...9.23.................... cm [2]

16 $v = 3 - 5t$

(a) Work out the value of *v* when *t* = 4.

$\star$ $v = 3 - 5(4) = -17$

v = ...−17.................... [1]

(b) Make *t* the subject of the formula.

$\star$ $v = 3 - 5t$

$\Rightarrow 5t = 3 - v$

$\Rightarrow t = \dfrac{3-v}{5}$

t = ...$\dfrac{3-v}{5}$.................... [2]

17 Kim has a 6-sided spinner numbered 1 to 6.
She spins it 63 times and her scores are shown in the table.

Score on spinner	1	2	3	4	5	6
Frequency	12	7	15	11	8	10

(a) Find the relative frequency of scoring a 5 with this spinner.

$$\frac{8}{63}$$

.... [1]

(b) Work out the mean score.

✱ Mean = $\dfrac{(1 \times 12) + (2 \times 7) + (3 \times 15) + (4 \times 11) + (5 \times 8) + (6 \times 10)}{63}$

⇒ Mean = 3.41 (3 sig. figs.)

.............3.41............... [3]

18 Factorise completely.
$$14xy - 7y^2$$

.............7y (2x − y)............... [2]

19 Lin invests \$16 000 at a rate of $r\%$ per year simple interest.
At the end of 5 years, she has a total amount of \$17 920.

Find the value of r.

★ A = P + I

⇒ A = P + $\dfrac{PRT}{100}$

⇒ R = $\dfrac{100 (A - P)}{PT}$

⇒ R = $\dfrac{100 (17\ 920 - 16\ 000)}{16\ 000 \times 5}$

⇒ R = 2.4

$r =$ .... 2.4 .... [3]

20

22, $\xrightarrow{-5}$ 17, $\xrightarrow{-5}$ 12, $\xrightarrow{-5}$ 7, $\xrightarrow{-5}$ 2, $\xrightarrow{-5}$ ... -3

(a) Find the next term of the sequence.

.... -3 .... [1]

(b) Find the nth term of the sequence.

★ $a_n = a_1 + (n - 1)d$

⇒ $a_n = 22 + (n - 1) \times -5$

⇒ $a_n = 22 - 5n + 5$

⇒ $a_n = 27 - 5n$

.... 27 -5n .... [2]

21 Write down an irrational number with a value between 10 and 20.

.... $\sqrt{105}$ .... [1]

22 The table shows the population and area of three countries in 2020.

Country	Population	Area (km^2)
Nigeria	2.06×10^8	9.11×10^5
Comoros	8.70×10^5	1.86×10^3
Vietnam	9.73×10^7	3.10×10^5

(a) Calculate the difference in population between Nigeria and Vietnam.

★ Population Difference = 2.06×10^8 – 9.73×10^7

= 108 700 000

.............................108 700 000............................. [1]

(b) Which of Comoros or Vietnam has the greater population density?
You must show all your working.

$$\left[\text{Population density} = \frac{\text{population}}{\text{area}(km^2)} \right]$$

★ PD (Comoros) = $\frac{8.70 \times 10^5}{1.86 \times 10^3} \approx 468$ (3 sig. figs.)

★ PD (Vietnam) = $\frac{9.73 \times 10^7}{3.10 \times 10^5} \approx 314$ (3 sig. figs.)

.............................Comoros............................. [3]

23

$$\bigstar\ 204^2 = 180^2 + x^2$$

$$\Rightarrow x = \sqrt{204^2 - 180^2}$$

$$\Rightarrow x = 96$$

204 mm

180mm

$x = 96$ mm

72 mm

b = (96 + 72)mm = 168mm

NOT TO SCALE

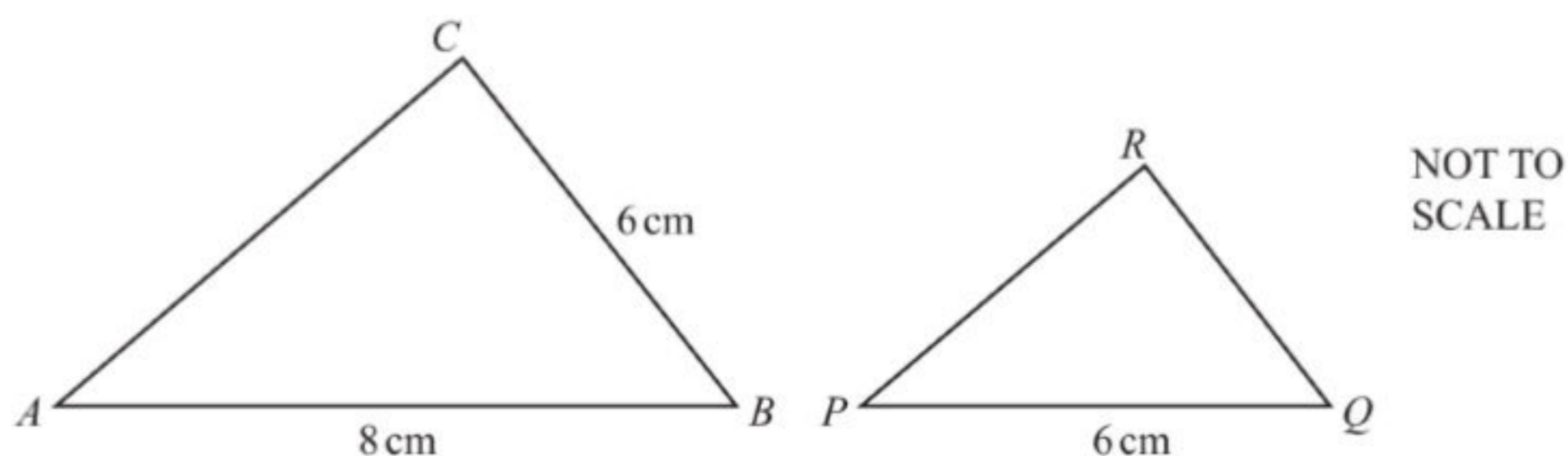a = 72 mm
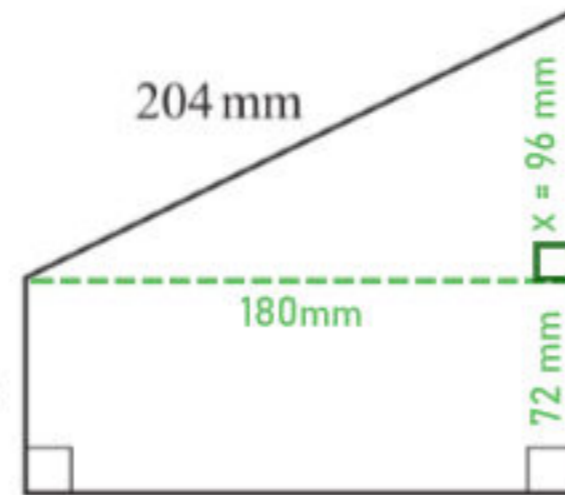
h = 180 mm

Work out the area of this trapezium.

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

$$\Rightarrow A = \frac{1}{2}(72 + 168)\text{mm} \times 180\text{mm}$$

$$\Rightarrow A = 21\,600\text{mm}^2$$

................21 600................ mm^2 [5]

Question 24 is printed on the next page.

24

NOT TO SCALE

Triangle *ABC* is mathematically similar to triangle *PQR*.

Calculate *QR*.

$\ast \quad \dfrac{QR}{6cm} = \dfrac{6cm}{8cm}$

$\Rightarrow QR = \dfrac{6}{8} \times 6cm = 4.5cm$

QR = ...4.5................. cm [2]