

Thursday 8 November 2012 – Afternoon

GCSE MATHEMATICS B

J567/02 Paper 2 (Foundation Tier)

Candidates answer on the Question Paper.

OCR supplied materials:

None

Other materials required:

- Geometrical instruments
- Tracing paper (optional)
- Scientific or graphical calculator

Duration: 1 hour 30 minutes



| | | | |
|--------------------|--|-------------------|--|
| Candidate forename | | Candidate surname | |
|--------------------|--|-------------------|--|

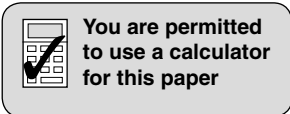
| | | | | | | | | | | | |
|---------------|--|--|--|--|--|--|------------------|--|--|--|--|
| Centre number | | | | | | | Candidate number | | | | |
|---------------|--|--|--|--|--|--|------------------|--|--|--|--|

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

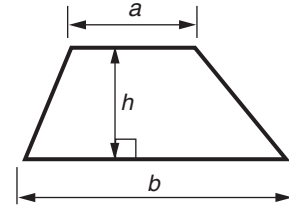
- The number of marks is given in brackets [] at the end of each question or part question.
- Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
- The total number of marks for this paper is **100**.
- This document consists of **24** pages. Any blank pages are indicated.



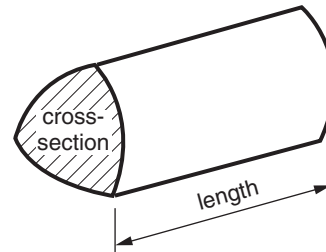
This paper has been pre modified for carrier language

Formulae Sheet: Foundation Tier

$$\text{Area of trapezium} = \frac{1}{2} (a + b)h$$



$$\text{Volume of prism} = (\text{area of cross-section}) \times \text{length}$$



PLEASE DO NOT WRITE ON THIS PAGE

Copyright Information

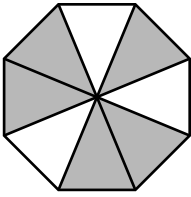
OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

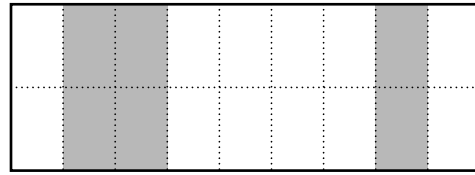
If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1GE.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.

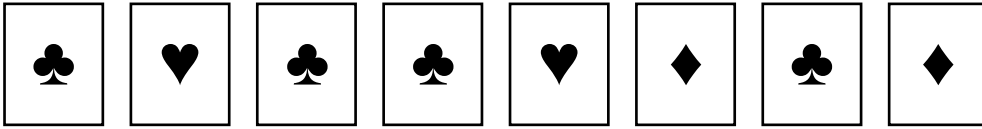
1 What fraction of each shape is shaded?





[2]

2 Bevan has these cards.



He chooses a card without looking.

Choose a word from the boxes below to complete each sentence.


likely


impossible


evens

unlikely

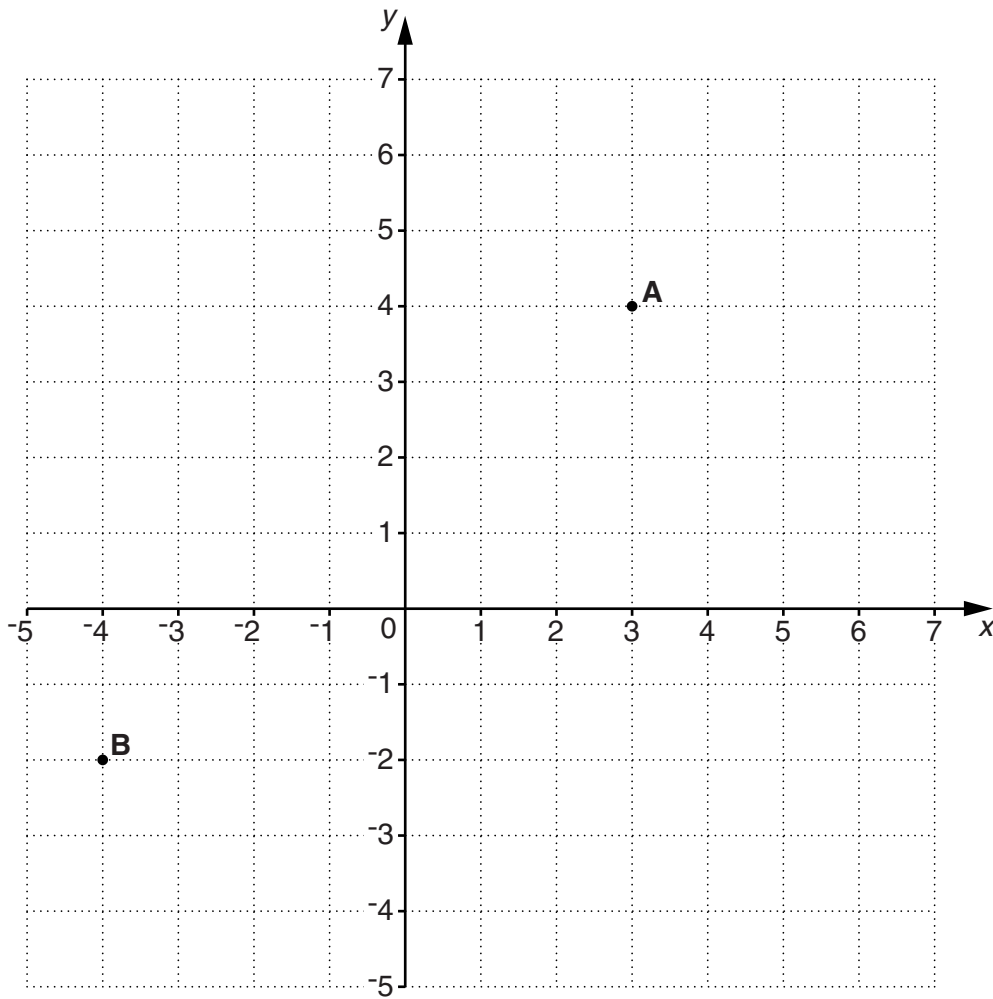
certain

(a) It is _____ he will choose a card with a . [1]

(b) It is _____ he will choose a card with a . [1]

(c) It is _____ he will choose a card with a . [1]

3 This is a coordinate grid.



(a) Write down the coordinates of point **A**.

(a) (_____ , _____) [1]

(b) Write down the coordinates of point **B**.

(b) (_____ , _____) [1]

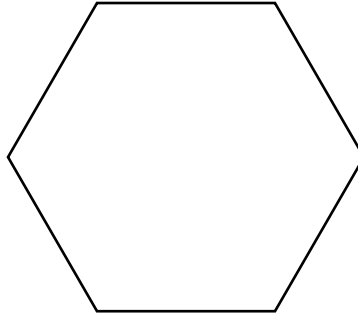
(c) (i) Plot and label point **C** at (3, -2). [1]

(ii) Join points **A**, **B** and **C** to make a triangle.

What is the name of this type of triangle?

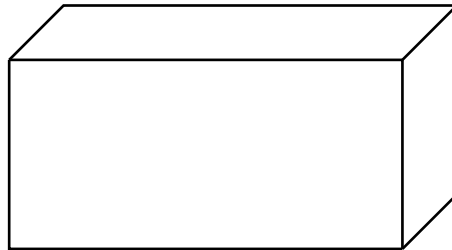
(c)(ii) _____ [1]

- 4 (a) What is the mathematical name of this shape?



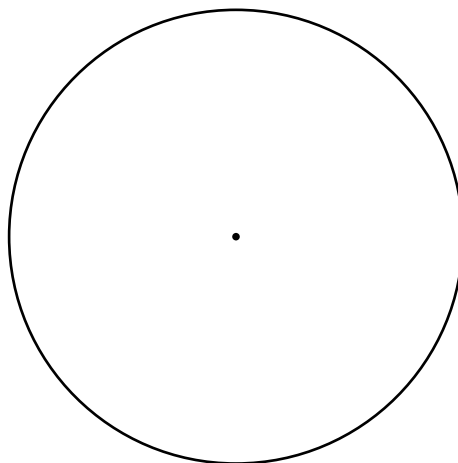
(a) _____ [1]

- (b) What is the mathematical name of this solid?



(b) _____ [1]

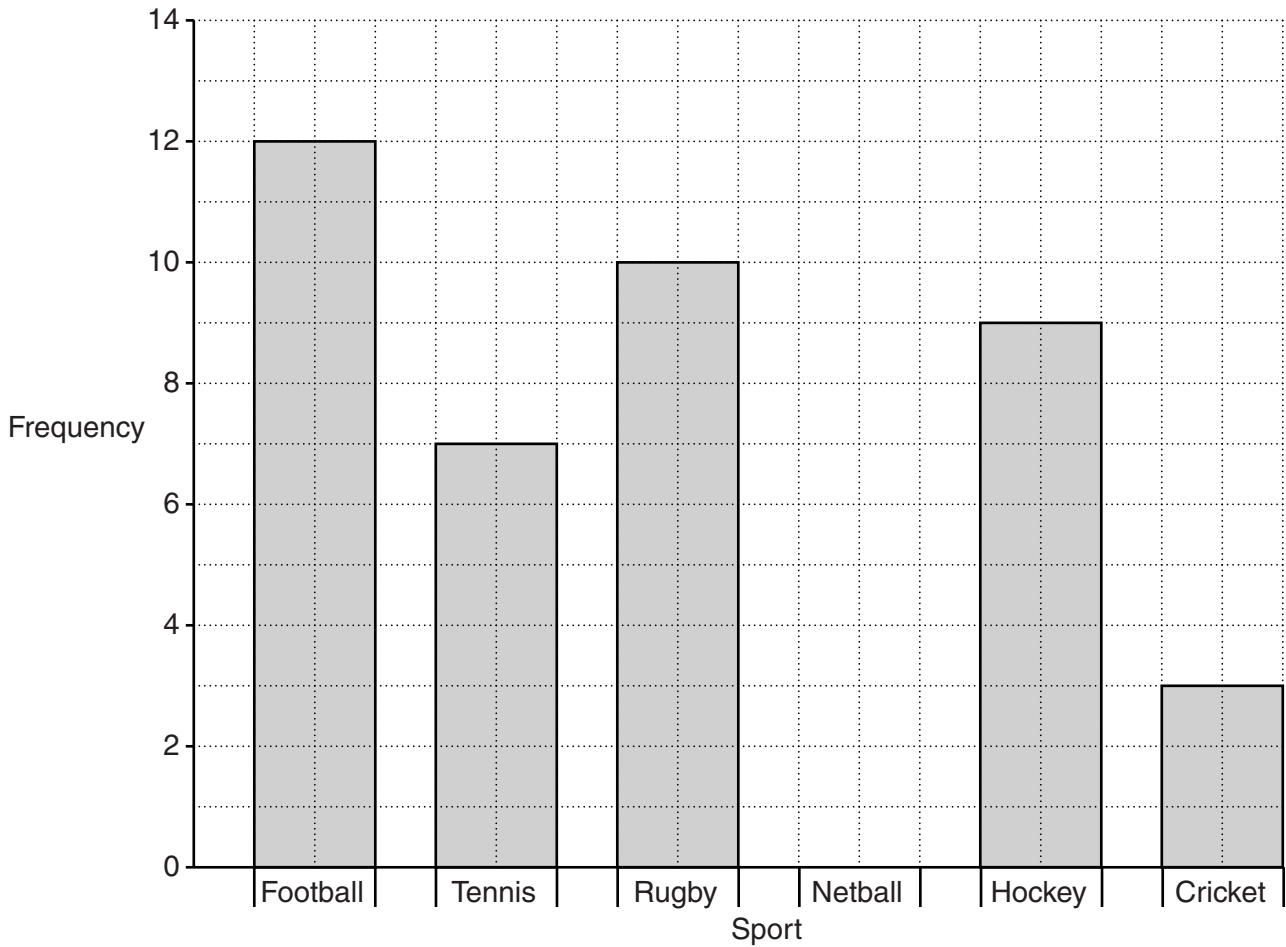
- (c) Here is a circle.



Complete this sentence.

The radius of this circle measures _____ cm. [1]

- 5 Dimitar asked all the pupils in his year to choose their favourite sport. The bar chart shows his results.



- (a) 5 pupils chose Netball as their favourite sport.

Show this on the bar chart.

[1]

- (b) Complete these sentences.

(i) _____ is the most popular sport.

[1]

(ii) _____ pupils chose Rugby.

[1]

(iii) _____ **more** pupils chose Hockey than Tennis.

[1]

- (c) How many pupils are in the year altogether?

(c) _____ [2]

6 Write 84267 correct to

(a) the nearest ten,

(a) _____ [1]

(b) the nearest thousand,

(b) _____ [1]

(c) one significant figure.

(c) _____ [1]

7 Write these decimals in order, smallest first.

4.17 4.079 4.712 4.072 4.7

_____ [2]
smallest

8

8 The number of bags checked in by some families at an airport is shown below.

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

(a) Complete the table below.

| Number of bags | Tally | Frequency |
|----------------|-------|-----------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |

[2]

(b) Write down the mode.

(b) _____ [1]

9 (a) Put brackets in these calculations to make them correct.

(i) $4 + 3 \times 8 - 13 = 43$ [1]

(ii) $5 + 3^2 \times 2 \div 8 = 16$ [1]

(b) Calculate.

(i) 18.4^2

(b)(i) _____ [1]

(ii) $\sqrt{3136}$

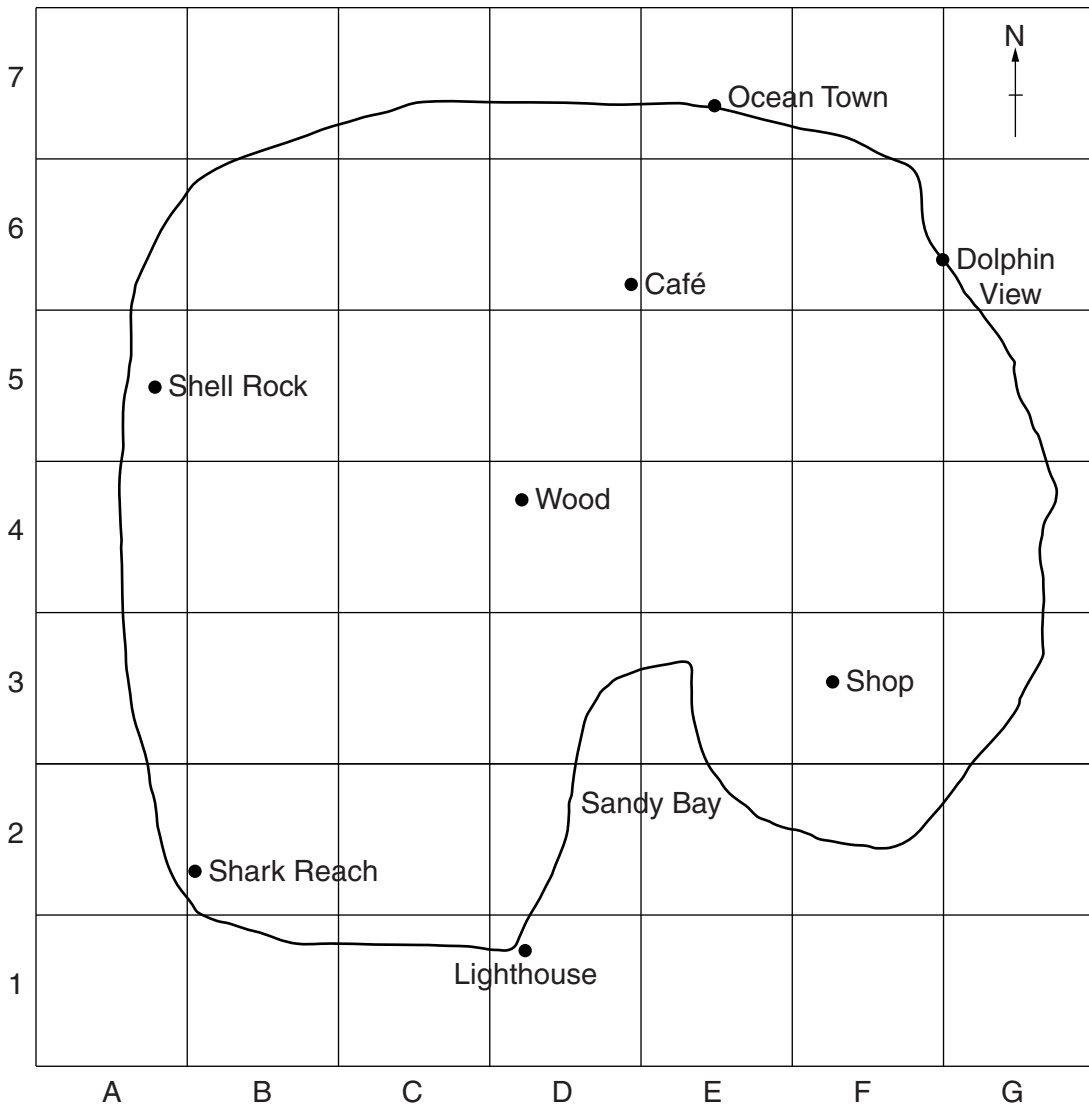
(ii) _____ [1]

(iii) $\frac{4.2 \times 1.8}{18.7 - 5.9}$

Give your answer correct to 3 decimal places.

(iii) _____ [2]

10 This grid shows a map of an island.



(a) (i) Write down the grid reference of the square containing the Wood.

(a)(i) _____ [1]

(ii) Alec walks from Shark Reach to the Wood.

In which compass direction does he walk?

(ii) _____ [1]

(iii) Karen sails from the Lighthouse to Ocean Town in an anticlockwise direction.

Draw an arrow on the map from the lighthouse to show the direction of her journey. [1]

(iv) Measure the bearing of the café from the shop.

(iv) _____ ° [1]

(v) Each grid square represents 4 km².

Estimate the area of the island.

(v) _____ km² [2]

(b) (i) In the café Tony bought 5 bottles of cola at £1.86 each and 15 sweets at 7p each.

How much did he spend altogether?

(b)(i) £ _____ [2]

(ii) Each bottle of cola contains 2 litres.

Tony drank $\frac{3}{4}$ of a bottle of cola.

Heather drank 62% of a bottle of cola.

How much **more** cola did Tony drink than Heather?

Give your answer in millilitres.

(ii) _____ ml [4]

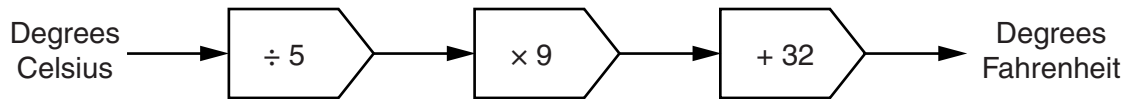
(c) Kevin recorded the temperature on the island five times last winter.
The temperatures he recorded, in degrees Celsius, are below.

7 -2 -4 0 5

Write the temperatures in order, starting with the coldest.

(c) _____, _____, _____, _____, _____ [1]
coldest

- 11 (a) This function machine can be used to convert between degrees Celsius ($^{\circ}\text{C}$) and degrees Fahrenheit ($^{\circ}\text{F}$).



Use the function machine to convert

- (i) 200°C to Fahrenheit,

(a)(i) _____ $^{\circ}\text{F}$ [1]

- (ii) 104°F to Celsius.

(ii) _____ $^{\circ}\text{C}$ [2]

- (b) Solve.

(i) $15x = 120$

(b)(i) $x =$ _____ [1]

(ii) $4x + 7 = 19$

(ii) $x =$ _____ [2]

(iii) $\frac{x}{2} - 1 = 5$

(iii) $x =$ _____ [2]

- 12** Robert has 20 pairs of socks in his drawer.
6 pairs are blue, 3 pairs are red, 4 pairs are green and the rest are black.
Robert takes a pair of socks from his drawer at random.

What is the probability that the pair he takes is

(a) red,

(a) _____ [1]

(b) black,

(b) _____ [1]

(c) **not** green?
Give your answer in its simplest form.

(c) _____ [2]

13 Luke went to the USA.

- (a)** He changed £650 into US dollars (\$) before he left England.
He received \$1.65 for every £1 he changed.

How many dollars did Luke receive?

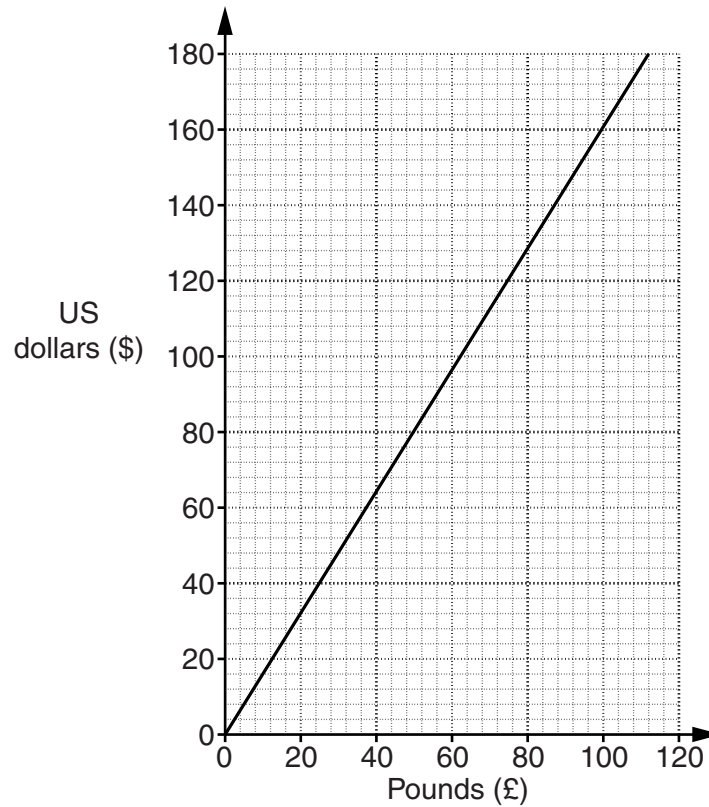
(a) \$ _____ [2]

- (b)** Luke bought a bottle of aftershave for \$82.
Sales tax of 6% was added on to this price.

How much did Luke pay in total?

(b) \$ _____ [2]

- (c) In the USA Luke needs some more dollars.
This conversion graph shows the exchange rate he gets now.



- (i) Luke changes £80 into US dollars.

Use the graph to find how many dollars he gets.

(c)(i) \$ _____ [1]

- (ii) Explain how Luke could use the graph to work out how many dollars he should get if he changes £250 into dollars.

_____ [1]

14 (a) Write each expression in its simplest form.

(i) $6r + 5r - 4r$

(a)(i) _____ [1]

(ii) $9s + 8t + 4s - 10t$

(ii) _____ [2]

(b) (i) Complete by filling in the box.

$$4 \times 4 \times 4 \times 4 \times 4 = 4 \square \quad [1]$$

(ii) Work out the value of x .

$$6^x = 6^4 \times 6^3$$

(b)(ii) $x =$ _____ [1]

- 15 An isosceles triangle has an angle of 38° .

What is the size of each of the other two angles?
There are two sets of answers.

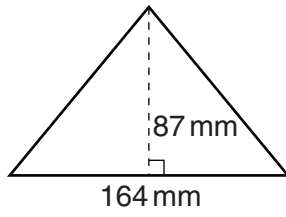
Triangle 1 38° ° °

Triangle 2 38° ° °

[3]

16 Calculate the area of each of these shapes.

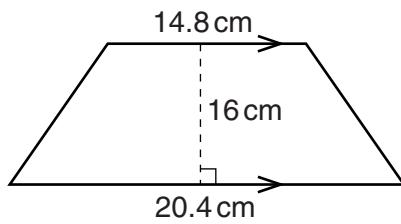
(a)



Not to scale

(a) _____ mm² [2]

(b)



Not to scale

(b) _____ cm² [2]

17 (a) This table shows the probability that a car is a certain colour.

| | | | | |
|-------------|-------|-------|------|-------|
| Colour | White | Green | Blue | Other |
| Probability | 0.38 | 0.17 | | 0.31 |

Calculate the probability that a car is blue.

(a) _____ [2]

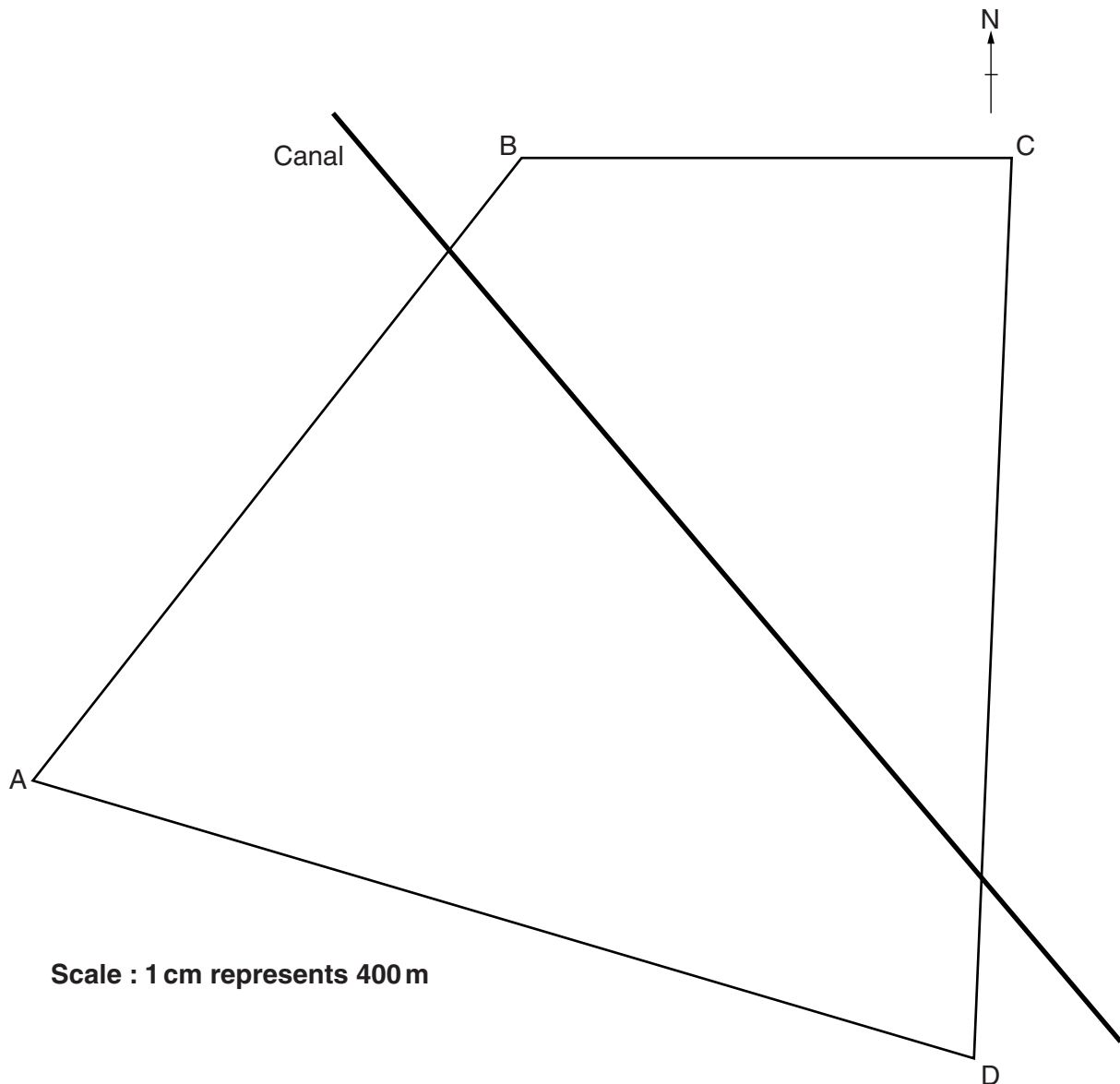
(b) One morning Sam records the number of people in each car passing his house. Here are his results.

| Number of people in a car | Frequency | |
|---------------------------|-----------|--|
| 1 | 26 | |
| 2 | 38 | |
| 3 | 24 | |
| 4 | 16 | |
| 5 | 8 | |

Calculate the mean number of people in the cars passing Sam's house.

(b) _____ [3]

18 Here is a scale diagram of a field ABCD with a canal crossing it.



The council want to put a runway inside the field.

The whole runway has to be:

- nearer to AB than to AD
- at least 800 m from the canal
- in an East-West direction
- 2000 m long.

Show that it is possible to put this runway inside the field.

You must leave in all your construction lines.

[4]

19* Teresa is moving packets of A4 paper using a trolley.
Each packet contains 500 sheets and each sheet measures 210 mm by 297 mm.
The paper has a density of 80 g per m².

Her trolley has a maximum safe load of 60 kg.

How many packets can the trolley hold safely?

[5]

20 Here are the first four terms of a sequence.

4 10 16 22

(a) Write down the next term of this sequence.

(a) _____ [1]

(b) Write an expression for the n th term of this sequence.

(b) _____ [2]

(c) Work out the 20th term of this sequence.

(c) _____ [1]

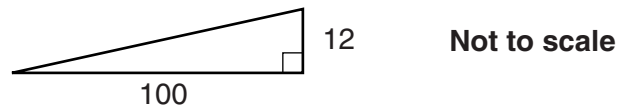
- 21 Amir is mixing antifreeze and water.
He has 6 litres of a mixture of antifreeze and water in the ratio 1 : 3.

How much antifreeze must he add to make the ratio 1 : 1?

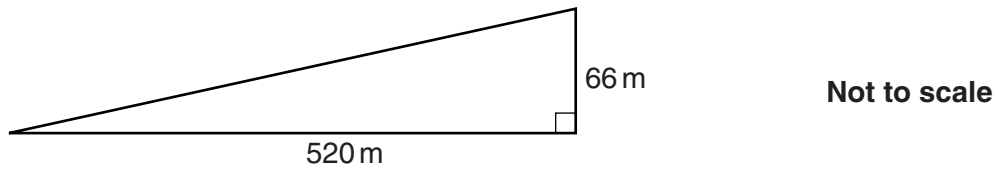
_____ litres [4]

TURN OVER FOR QUESTION 22

22 This diagram shows the steepest slope that a tram can go up.



The diagram below shows a slope for a planned tramline.



Can a tram go up this slope?
You must show your calculations.

_____ because _____
_____ [3]