

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.

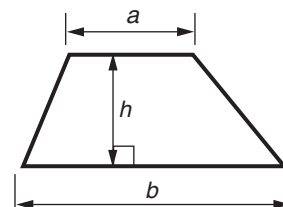


**You are permitted
to use a calculator
for this paper**

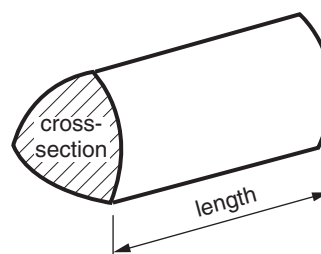
This paper has been pre modified for carrier language

Formulae Sheet: Foundation Tier

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



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



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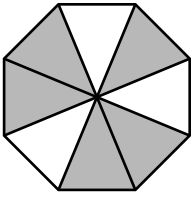
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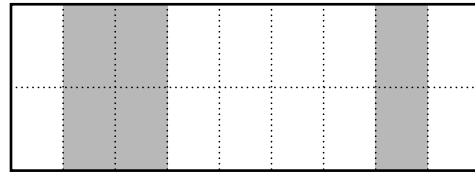
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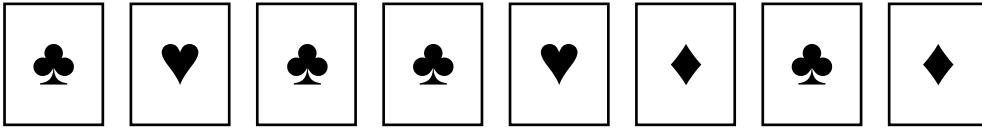
1 What fraction of each shape is shaded?





[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]

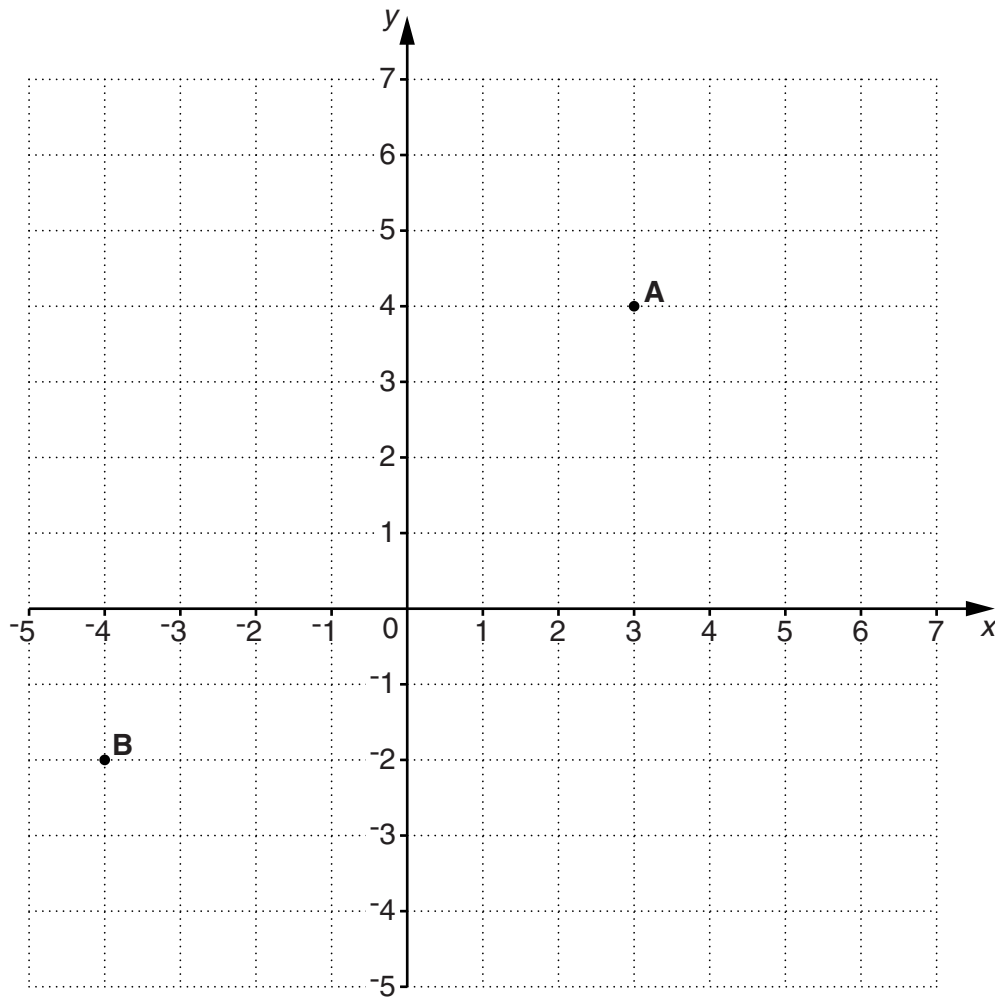
(b) It is _____ he will choose a card with a .

[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]

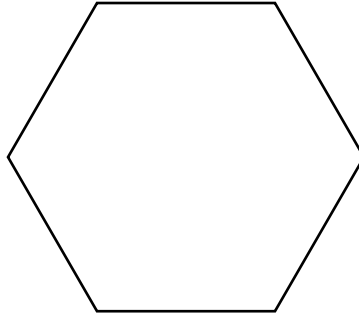
(c) (i) Plot and label point **C** at (3, -2). [1]

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

What is the name of this type of triangle?

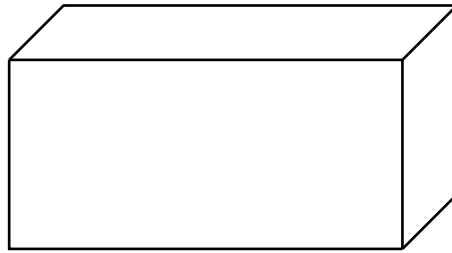
(c)(ii) _____ [1]

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



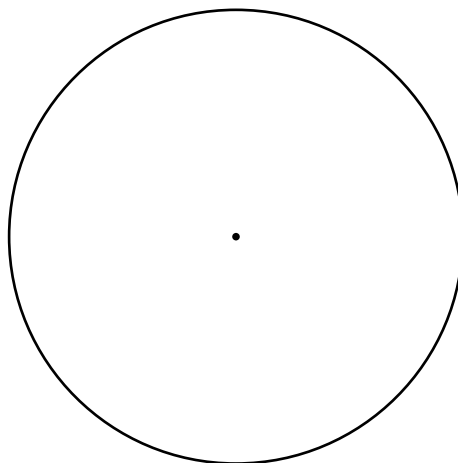
(a) _____ [1]

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



(b) _____ [1]

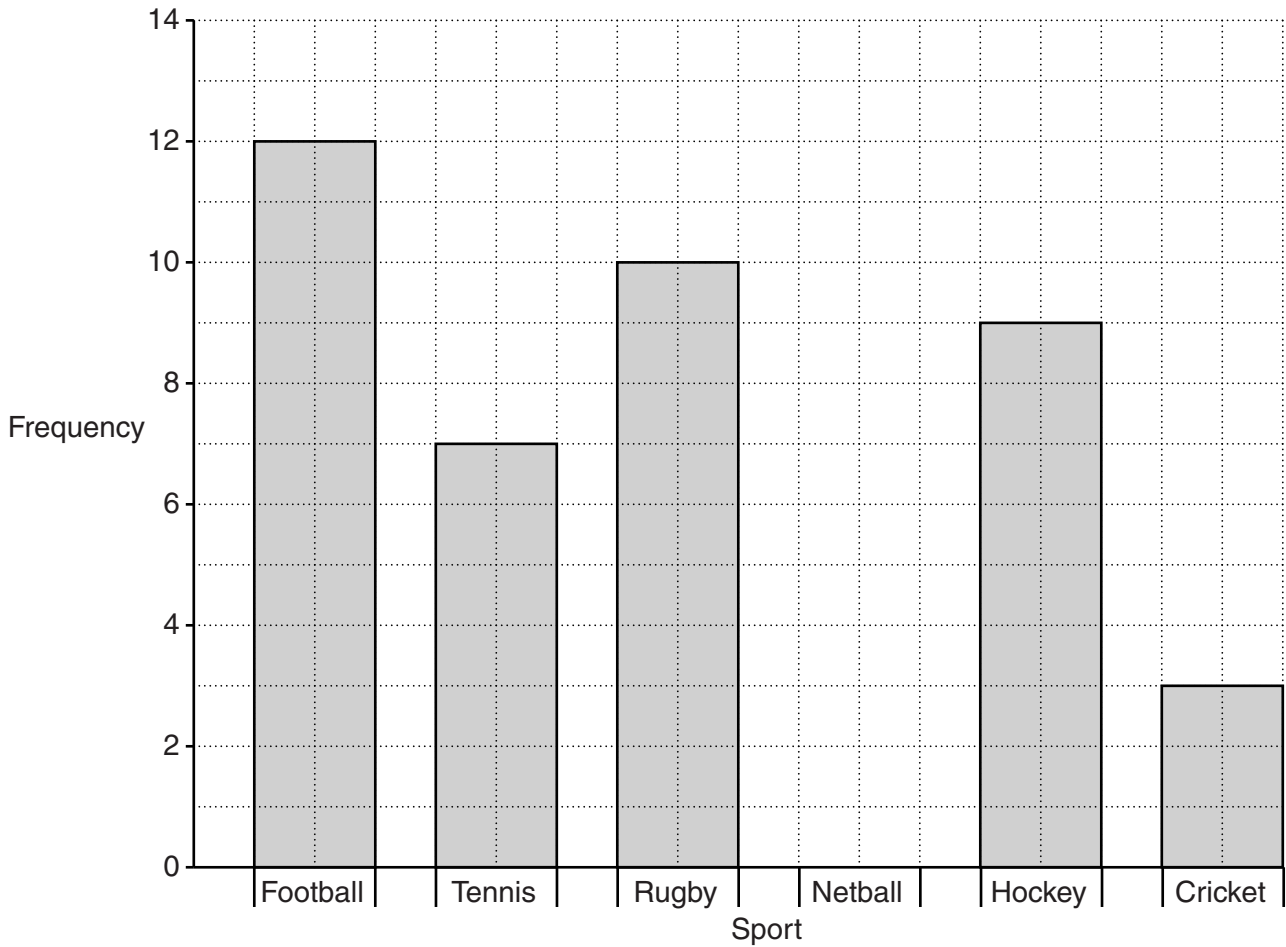
- (c) Here is a circle.



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 84 267 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 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]

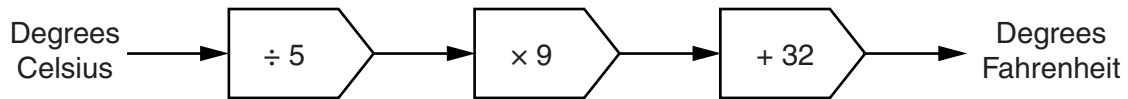
- (c) Kevin recorded the temperature on the island five times last winter.
The temperatures he recorded, in degrees Celsius, are below.

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?

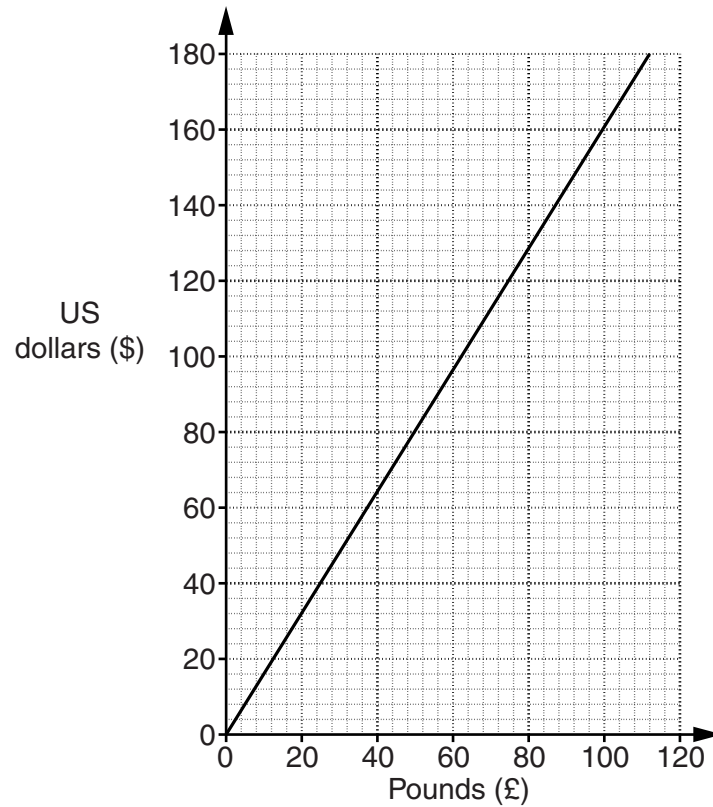
(a) \$ _____ [2]

- (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.

$$4 \times 4 \times 4 \times 4 \times 4 = 4 \boxed{} \quad [1]$$

(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.

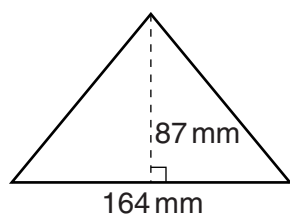
Triangle 1 38 $^\circ$ $^\circ$ $^\circ$

Triangle 2 38 $^\circ$ $^\circ$ $^\circ$

[3]

16 Calculate the area of each of these shapes.

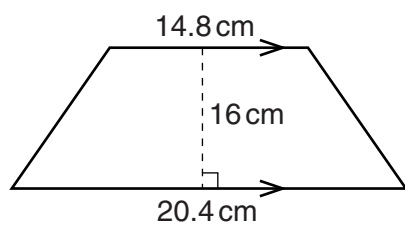
(a)



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]**

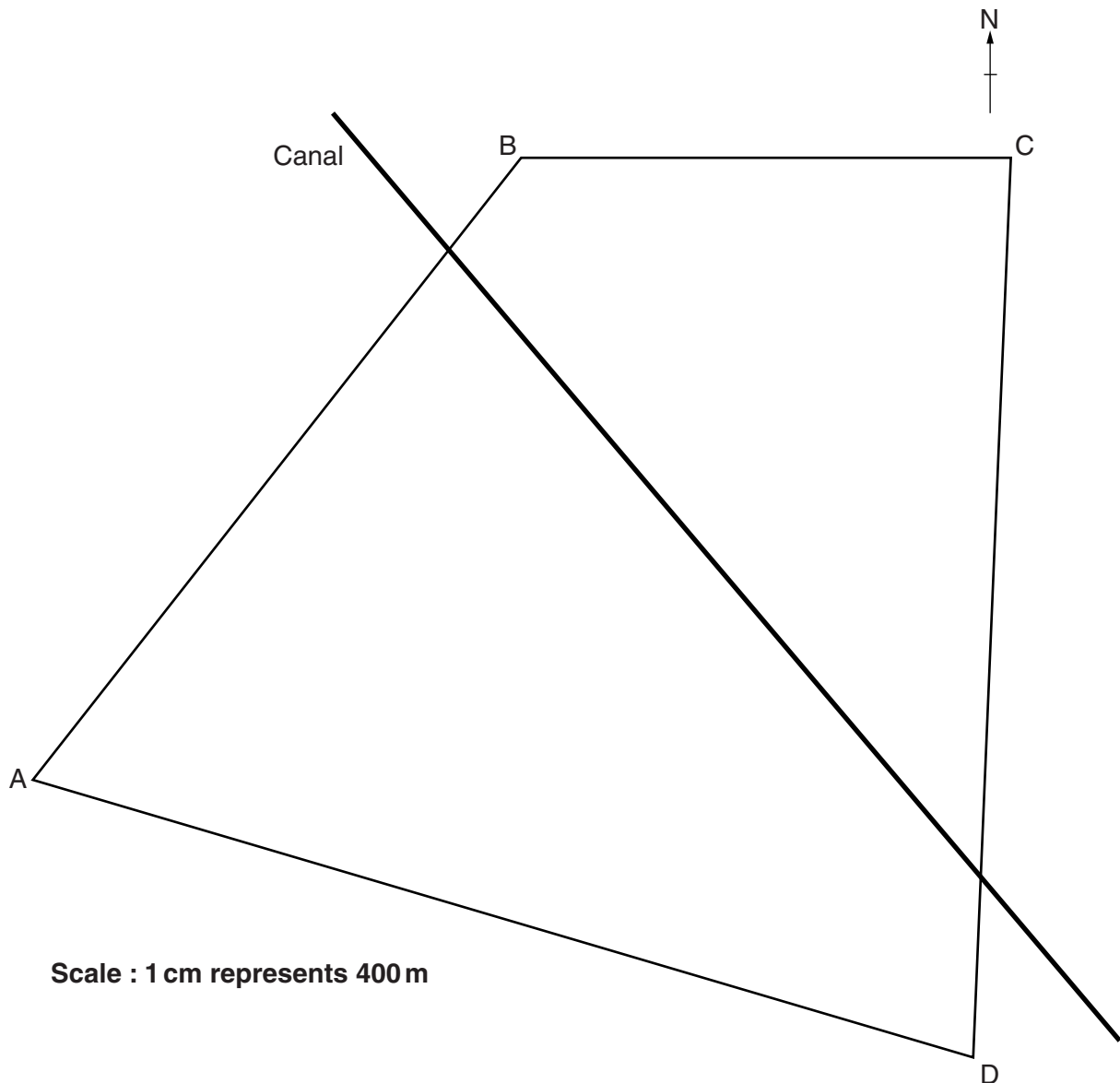
- (b)** One morning Sam records the number of people in each car passing his house. Here are his results.

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.

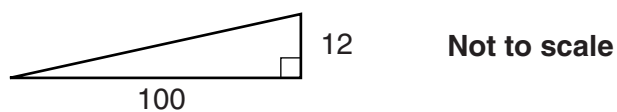
(c) _____ [1]

- 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?

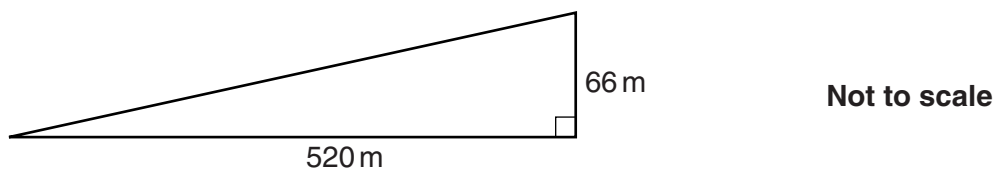
_____ litres **[4]**

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]