OCR
RECOGNISING ACHIEVEMENT

**F**

# 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

*J567702*

| 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**

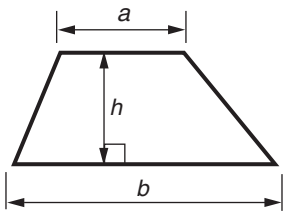
- The number of marks is given in brackets **[ ]** at the end of each question or part question.
- Use the $\pi$ button on your calculator or take $\pi$ to be 3.142 unless the question says otherwise.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
- The 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**

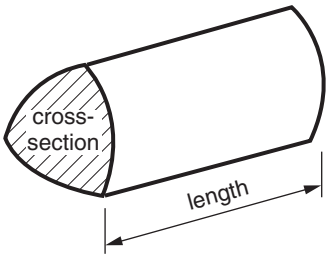
This paper has been pre modified for carrier language

# Formulae Sheet: Foundation Tier

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

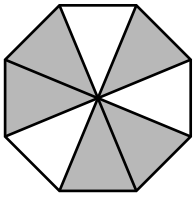


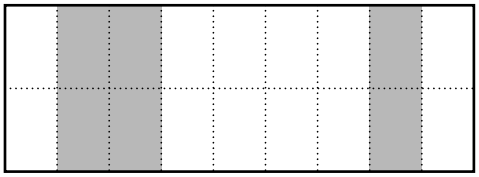

**Volume of prism** = (area of cross-section) × length




**PLEASE DO NOT WRITE ON THIS PAGE**

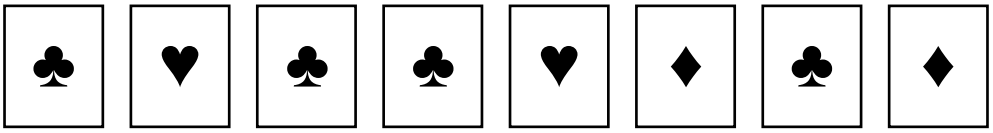
**1** What fraction of each shape is shaded?





_____ _____ **[2]**

**2** Bevan has these cards.



He chooses a card without looking.

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

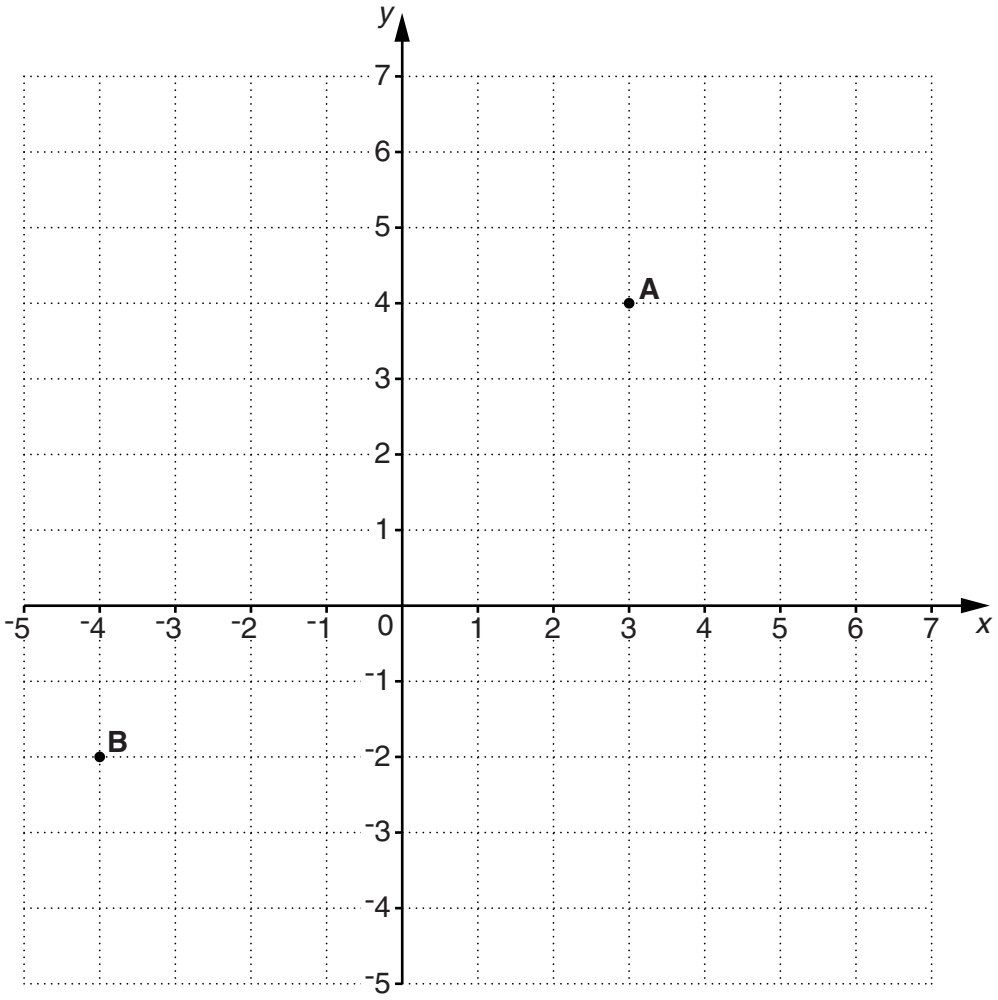
| | | |
|---|---|---|
| likely | impossible | evens |
| unlikely | certain | |

**(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]**

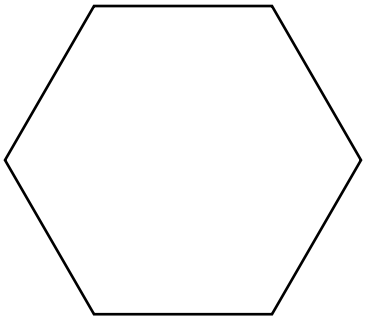
**(c) (i)** Plot and label point **C** at (3, -2). **[1]**

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

What is the name of this type of triangle?

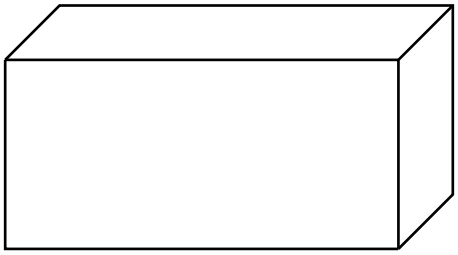
**(c)(ii)** _____ **[1]**

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



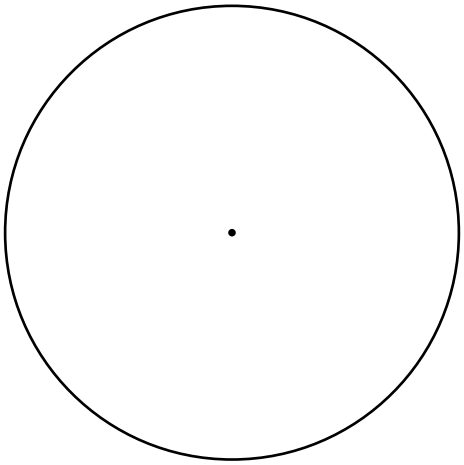
**(a)** _____ **[1]**

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



**(b)** _____ **[1]**

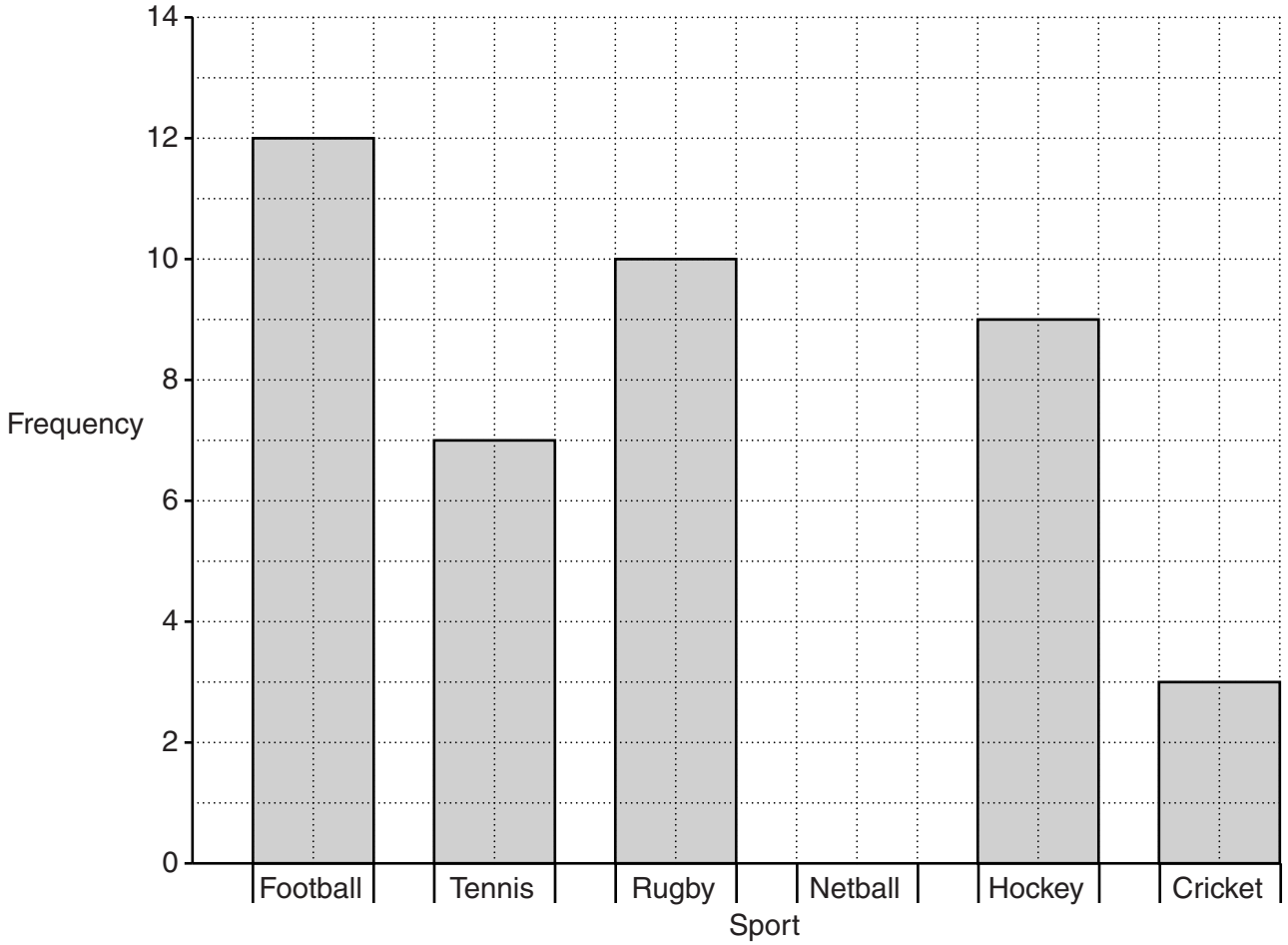
**(c)** Here is a circle.



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)** $\sqrt{3136}$

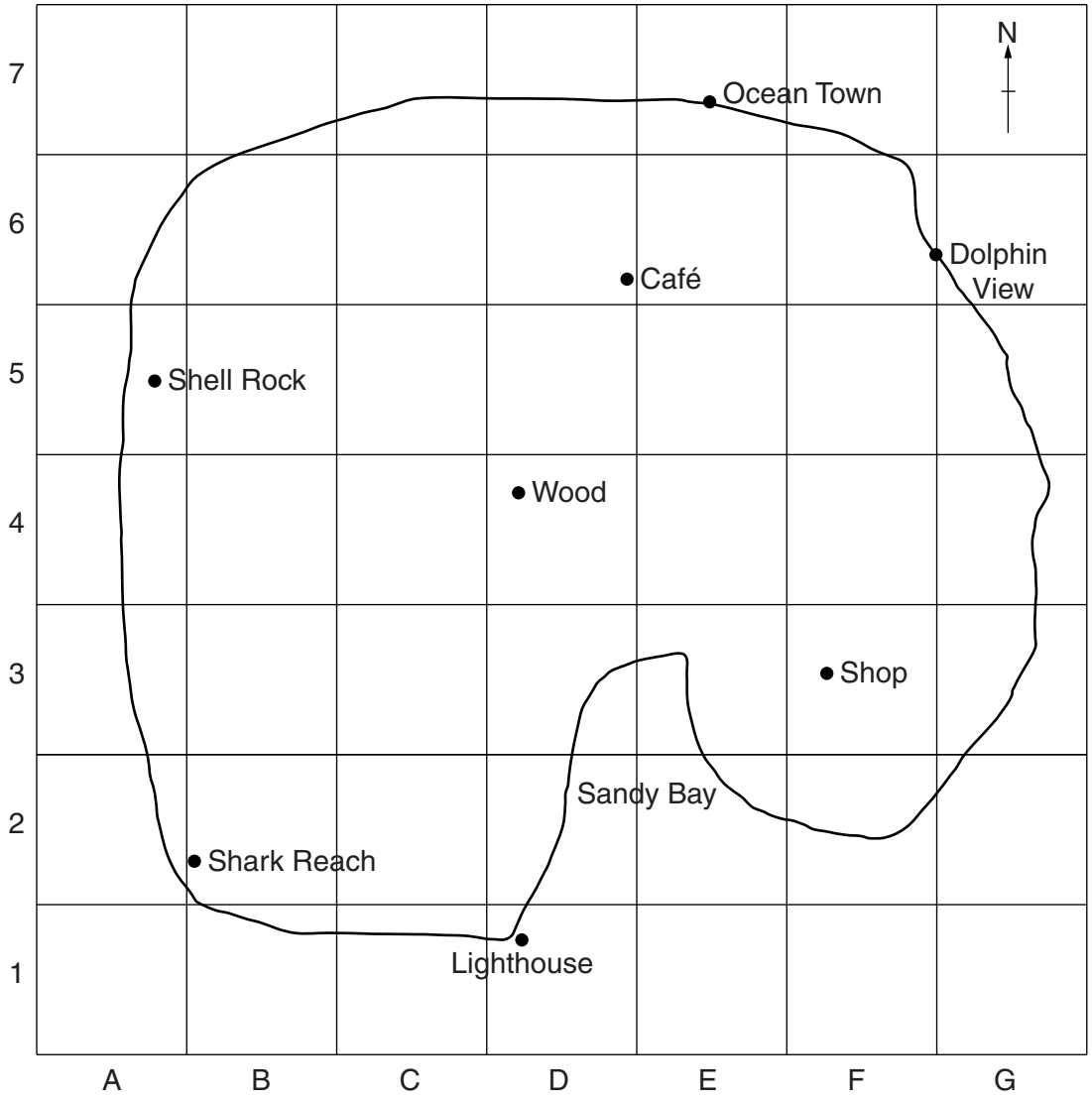
**(ii)** _____ **[1]**

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

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 $km^2$.

Estimate the area of the island.

**(v)** _____ $km^2$ **[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]**

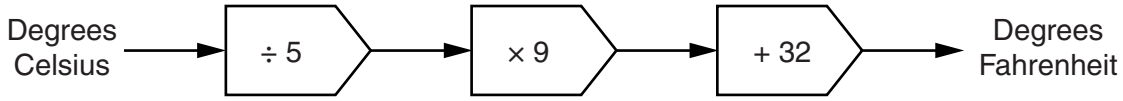
**(c)** Kevin recorded the temperature on the island five times last winter.
The temperatures he recorded, in degrees Celsius, are below.

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 (°C) and degrees Fahrenheit (°F).




Use the function machine to convert

**(i)** 200 °C to Fahrenheit,

**(a)(i)** _____ °F **[1]**

**(ii)** 104 °F to Celsius.

**(ii)** _____ °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?

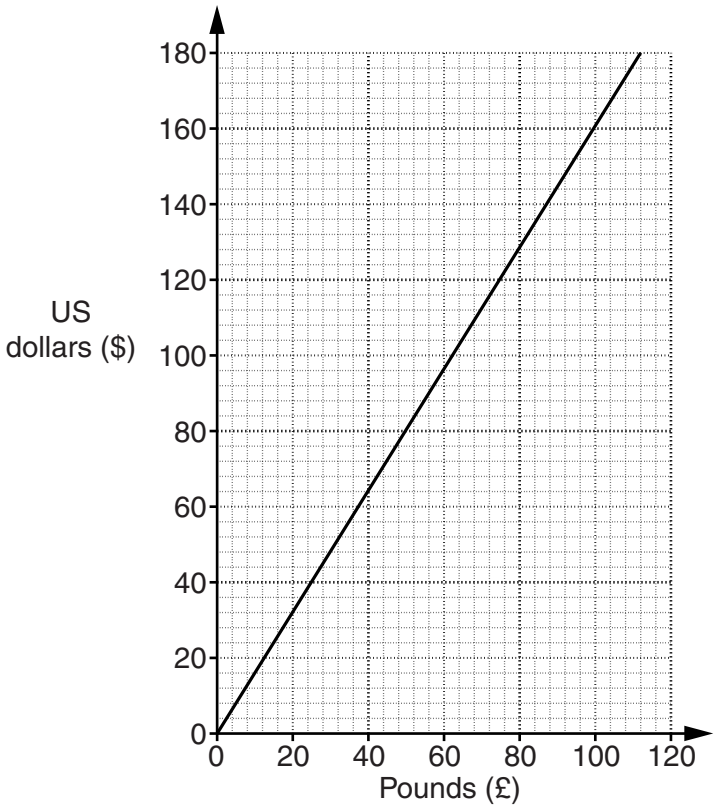
**(a)** $ _____ **[2]**

**(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.

$$4 \times 4 \times 4 \times 4 \times 4 = 4^{\square}$$ **[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°.

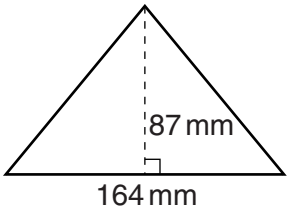
What is the size of each of the other two angles?
There are two sets of answers.

Triangle 1 ____38____° _____° _____°

Triangle 2 ____38____° _____° _____° **[3]**

**16** Calculate the area of each of these shapes.

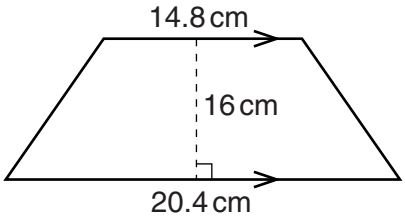
**(a)**




**Not to scale**

**(a)** _____ $mm^2$ **[2]**

**(b)**




**Not to scale**

**(b)** _____ $cm^2$ **[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]**

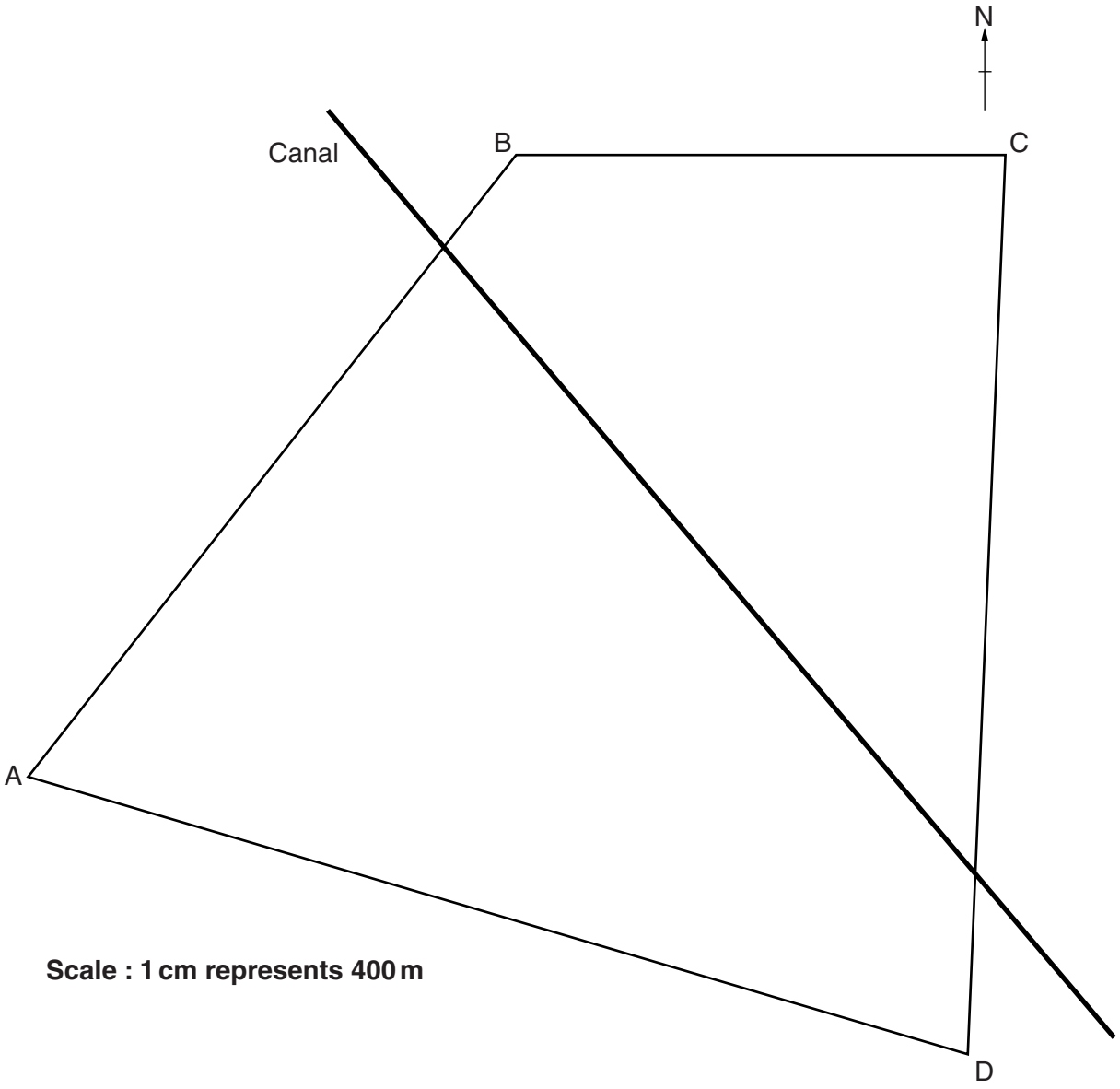
**(b)** One morning Sam records the number of people in each car passing his house.
Here are his results.

| 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.




**Scale : 1 cm represents 400 m**

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 $m^2$.

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]**

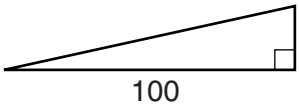
**21** Amir is mixing antifreeze and water.
He has 6 litres of a mixture of antifreeze and water in the ratio 1 : 3.

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

_____ litres **[4]**

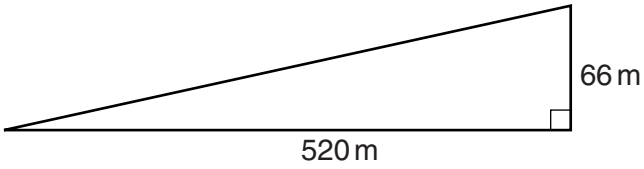
**TURN OVER FOR QUESTION 22**

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




**Not to scale**

The diagram below shows a slope for a planned tramline.




**Not to scale**

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

_____ because _____

_____ **[3]**