

**Thursday 21 May 2015 – Morning**

**GCSE MATHEMATICS B**

**J567/01** Paper 1 (Foundation Tier)

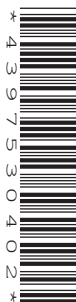
Candidates answer on the Question Paper.

**OCR supplied materials:**  
None

**Other materials required:**

- Geometrical instruments
- Tracing paper (optional)

**Duration:** 1 hour 30 minutes



|                       |  |                      |  |
|-----------------------|--|----------------------|--|
| Candidate<br>forename |  | Candidate<br>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.
- 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 **20** pages. Any blank pages are indicated.

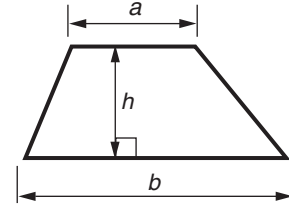
**WARNING**



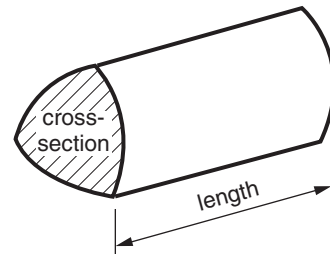
No calculator can be  
used for this paper

## Formulae Sheet: Foundation Tier

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



**Volume of prism** = (area of cross-section)  $\times$  length

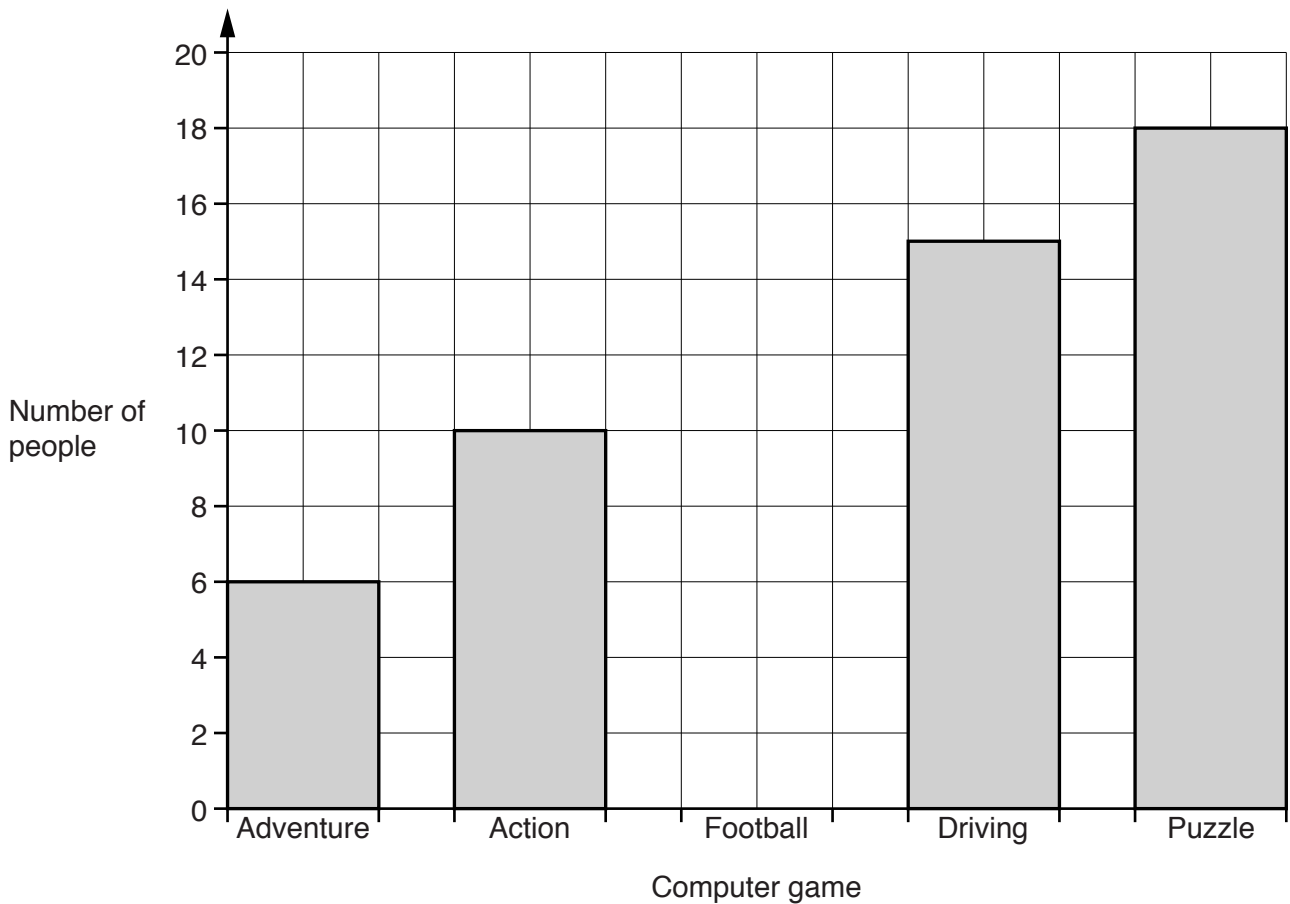


**PLEASE DO NOT WRITE ON THIS PAGE**

Answer **all** the questions.

- 1 Leonie asked 60 people what their favourite type of computer game was.

She recorded her results on the bar chart below.



- (a) How many people answered Driving?

(a) \_\_\_\_\_ [1]

- (b) 9 people answered Football.

Show this on the bar chart.

[1]

- (c) What was the least popular type of game?

(c) \_\_\_\_\_ [1]

- (d) How many **fewer** people chose Action than Puzzle?

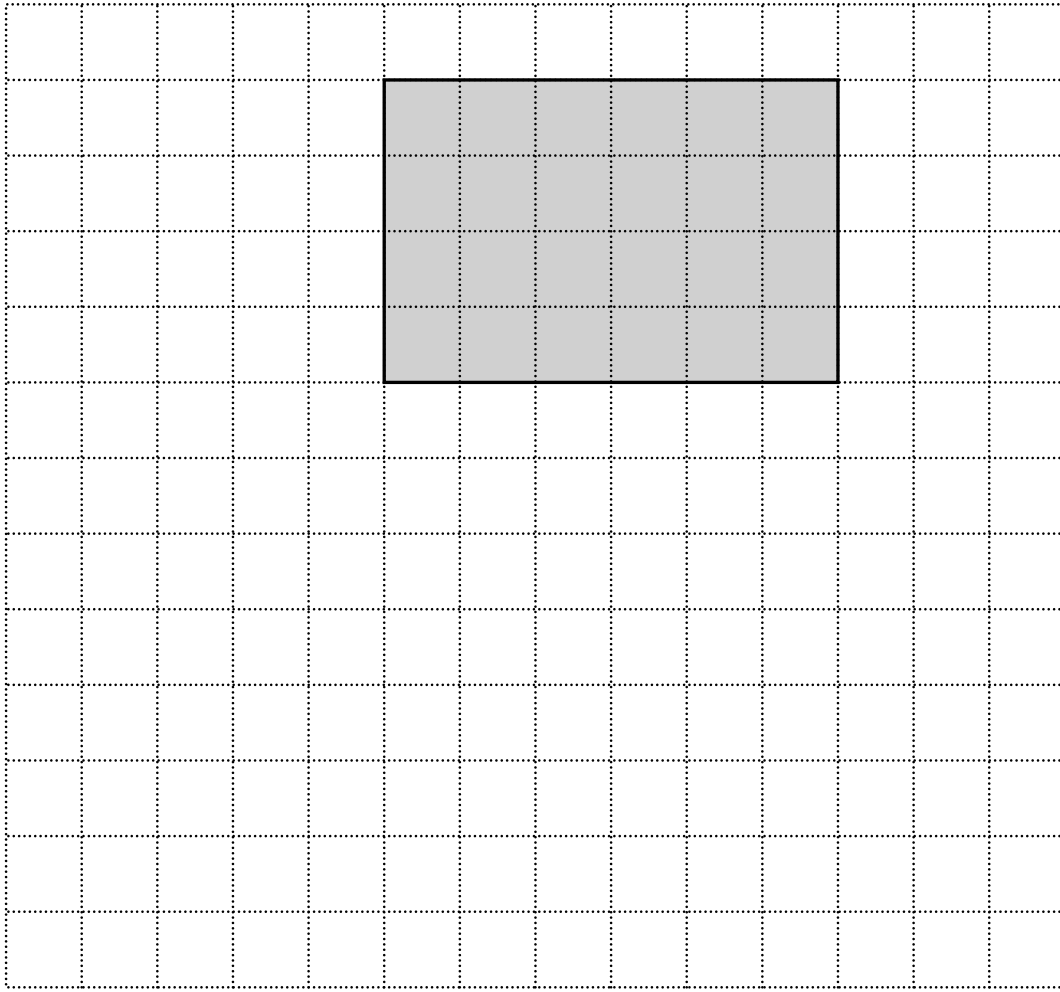
(d) \_\_\_\_\_ [1]

- (e) How many people did not answer?

(e) \_\_\_\_\_ [2]

Turn over

- 2 A rectangle has been drawn on a one-centimetre square grid.



- (a) (i) What is the perimeter of the rectangle?

(i) \_\_\_\_\_ cm [1]

- (ii) On the grid draw a different rectangle with the same perimeter. [2]

5

- (b) Rupert wants to draw a rectangle with an area of  $30 \text{ cm}^2$ .  
The lengths of all the sides will be whole numbers.

Find the difference between the smallest and largest perimeters of the rectangles he could draw.

Show all your working.

(b) \_\_\_\_\_ cm [4]

**3** Work out.

**(a)**  $872 + 236$

**(a)** \_\_\_\_\_ [1]

**(b)**  $629 - 447$

**(b)** \_\_\_\_\_ [1]

**(c)**  $6.02 \times 100$

**(c)** \_\_\_\_\_ [1]

**(d)**  $72.548 \div 1000$

**(d)** \_\_\_\_\_ [1]

**(e)** 30% of 520

**(e)** \_\_\_\_\_ [2]

(f)  $254 \times 32$

(f) \_\_\_\_\_ [3]

- 4 (a) Write the following temperatures, in
- $^{\circ}\text{C}$
- , in order starting with the coldest.

6       $-8$        $-11$       0       $-2$ 

\_\_\_\_\_ [1]  
*coldest*

- (b) The temperature at 6 am was
- $-3^{\circ}\text{C}$
- .
- 
- By lunch time the temperature had risen by
- $5^{\circ}$
- .

What was the temperature at lunch time?

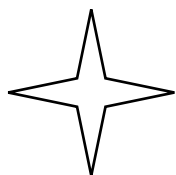
(b) \_\_\_\_\_  $^{\circ}\text{C}$  [1]

- (c) The temperature in Katie's fridge is
- $2^{\circ}\text{C}$
- .
- 
- The temperature in her freezer is
- $-21^{\circ}\text{C}$
- .

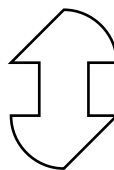
How much colder is the freezer than the fridge?

(c) \_\_\_\_\_  $^{\circ}\text{C}$  [1]

- 5 What is the order of rotation symmetry of each of these shapes?



\_\_\_\_\_



\_\_\_\_\_

[2]

6 (a) Simplify.

$$7j - 6k - 5j + 4k$$

(b) Solve.

(i)  $3c = 18$

(a) \_\_\_\_\_ [2]

(b)(i)  $c =$  \_\_\_\_\_ [1]

(ii)  $7d + 16 = 51$

(ii)  $d =$  \_\_\_\_\_ [2]

(iii)  $\frac{x}{100} - 14 = 36$

(iii)  $x =$  \_\_\_\_\_ [2]

(c) Work out the value of  $5g + 3h$  when  $g = 7$  and  $h = 4$ .

(c) \_\_\_\_\_ [2]

(d) Multiply out.

$$3(2x + 4)$$

(d) \_\_\_\_\_ [1]

- 7 (a) Here are the first four terms of a sequence.

18      10      2      -6

- (i) Write down the next term of the sequence.

(a)(i) \_\_\_\_\_ [1]

- (ii) Explain how you worked out your answer.

\_\_\_\_\_ [1]

- (b) The expression for the  $n$ th term of a different sequence is  $6n - 4$ .

Write down the first three terms of this sequence.

(b) \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ [2]

- 8 Here is a list of numbers.

18    7    40    32    7    11    18    67    11    7    46

- (a) Find the mode.

(a) \_\_\_\_\_ [1]

- (b) Find the range.

(b) \_\_\_\_\_ [1]

- 9 (a) Charlie (C), Max (M) and Sophie (S) are travelling by plane to St Petersburg. Their seats are in a row of 3.

Complete the table to show where they could sit.  
The first one has been done for you.

| Seat 1 | Seat 2 | Seat 3 |
|--------|--------|--------|
| C      | M      | S      |
|        |        |        |
|        |        |        |
|        |        |        |
|        |        |        |
|        |        |        |

[2]

- (b) The area of St Petersburg is  $605.8 \text{ km}^2$ .

Write 605.8 correct to the nearest ten.

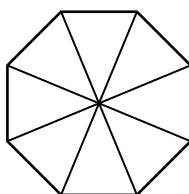
(b) \_\_\_\_\_ [1]

- (c) In 2010 the population of St Petersburg was 4 840 000.

Write 4 840 000 correct to one significant figure.

(c) \_\_\_\_\_ [1]

- 10 (a) Shade  $\frac{1}{4}$  of this shape.



[1]

- (b) Pierre has 36 sweets. He gives  $\frac{2}{3}$  of his sweets to his sister.

How many sweets does Pierre give to his sister?

(b) \_\_\_\_\_ [2]

- 11 (a) Write down two factors of 10.

(a) \_\_\_\_\_, \_\_\_\_\_ [1]

- (b) Write down the square root of 36.

(b) \_\_\_\_\_ [1]

- (c) Work out  $10^3 - 10^2$ .

(c) \_\_\_\_\_ [2]

- (d) Write down the reciprocal of 7.

(d) \_\_\_\_\_ [1]

- (e) Wayne did this calculation and got the answer wrong.

$$6 + 4^2 - (7 \times 2) = 86$$

- (i) Work out the correct answer.

(e)(i) \_\_\_\_\_ [1]

- (ii) Show how Wayne could have got the answer 86. [1]

- 12 (a)** Ruth is cooking Christmas dinner.  
She has a turkey of weight 5.5 kilograms.  
The turkey needs to be cooked for 40 minutes per kilogram.

For how long does the turkey need to be cooked?

**(a)** \_\_\_\_\_ minutes [2]

- (b)** Roast potatoes take 50 minutes to cook.  
Ruth puts them in the oven at 1.25 pm.

At what time will the potatoes be cooked?

**(b)** \_\_\_\_\_ [1]

- (c)** The number of sprouts that Bill and Ruth eat is in the ratio 3:2.  
Bill eats 12 sprouts.

How many sprouts are eaten altogether?

**(c)** \_\_\_\_\_ [2]

- (d)** Bill opens a bottle containing 1.5 litres of orange juice.

How many glasses, each holding 250 millilitres, can he fill from the bottle?

**(d)** \_\_\_\_\_ [2]

- (e)** Ruth watches a film lasting 3 hours 15 minutes.  
The film ends at 17:40.

At what time did the film start?

**(e)** \_\_\_\_\_ [1]

- 13** Jemima's dogs eat half a kilogram of dog food in total each day.  
Dog food is sold in two different size bags.

|          |
|----------|
| Dog Food |
| 20 kg    |
| £25      |

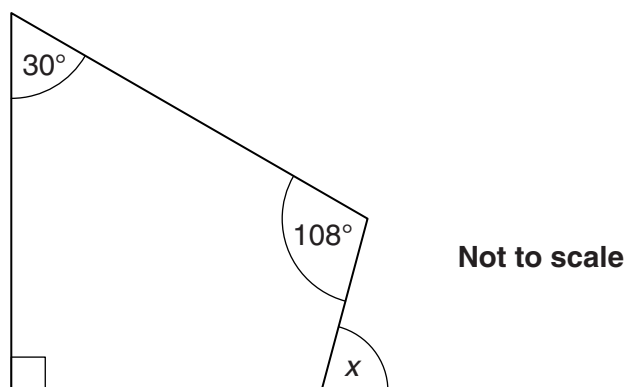
|          |
|----------|
| Dog Food |
| 5 kg     |
| £6       |

Work out the cheapest cost for Jemima to feed her dogs for 40 days.  
You must show how you decide.

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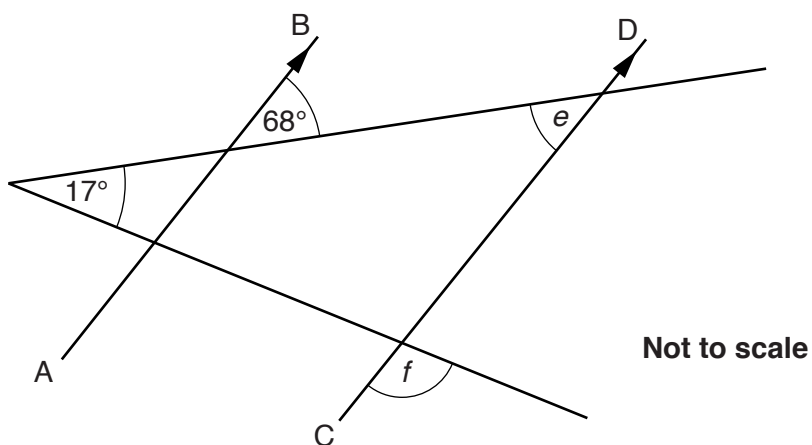
[3]

14 (a) Work out angle  $x$ .



(a) \_\_\_\_\_ ° [3]

(b) In the diagram  $AB$  is parallel to  $CD$ .

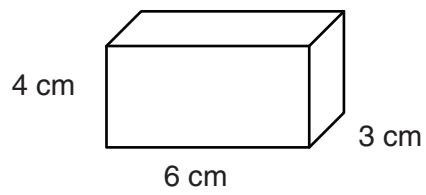


Work out the following angles, giving reasons for each answer.

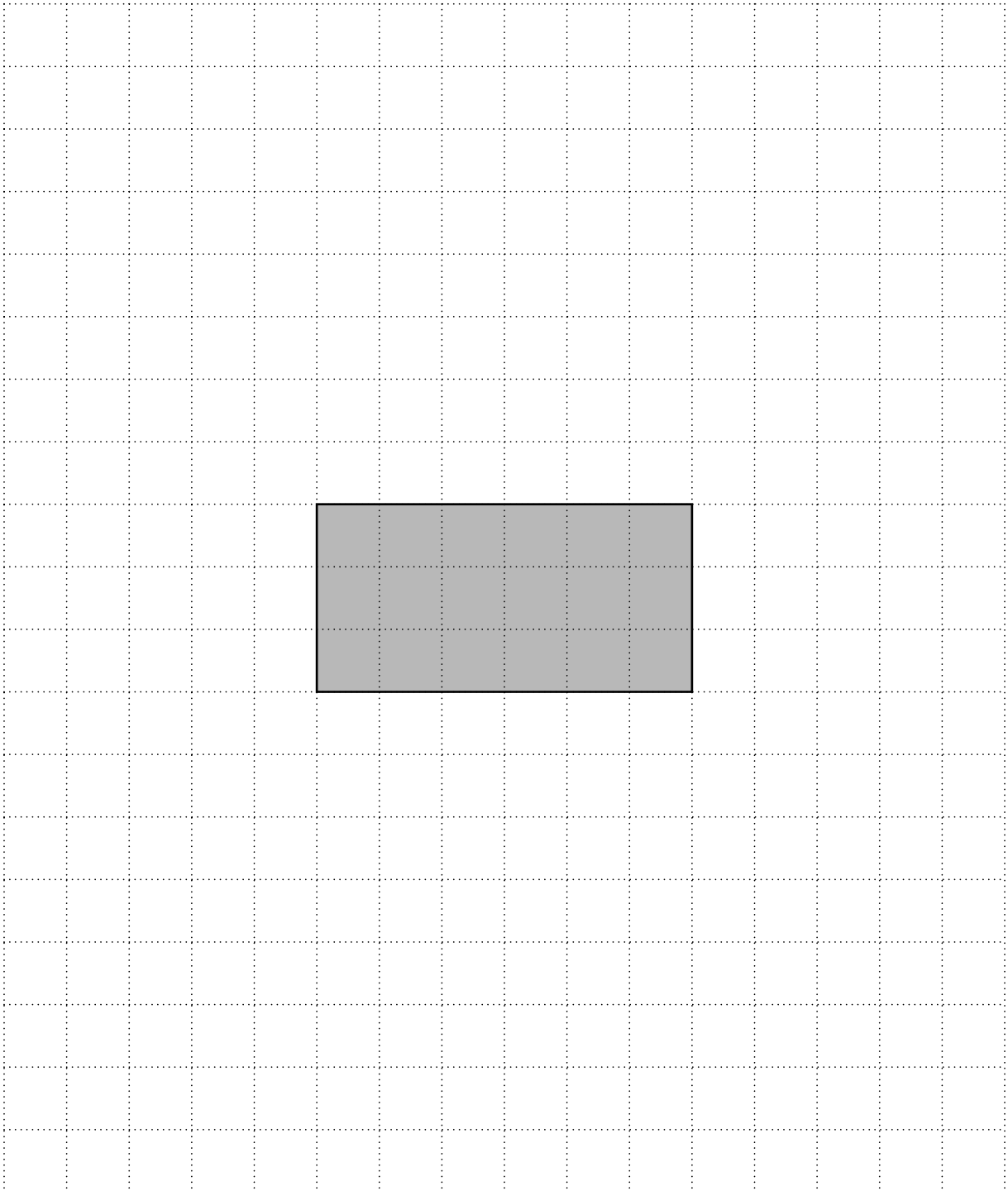
(i) Angle  $e$  = \_\_\_\_\_ ° because \_\_\_\_\_  
 \_\_\_\_\_ [1]

(ii) Angle  $f$  = \_\_\_\_\_ ° because \_\_\_\_\_  
 \_\_\_\_\_ [3]

15 The diagram shows a cuboid.



Complete the net of this cuboid on the one-centimetre square grid below.



[3]

**16\*** A family has four daughters, Molly, Daisy, Rosie and Tilly.

- Daisy is six years older than Molly.
- Molly is four years younger than Tilly.
- Rosie is one year older than double Molly's age.
- The total of their ages is 51.

Find the age of each of the four girls.

**[5]**

**17** Magda is conducting a survey on travel.

**(a)** Here is one of her questions.

|                                                                              |     |                          |    |                          |            |
|------------------------------------------------------------------------------|-----|--------------------------|----|--------------------------|------------|
| Do you agree that public transport is better now than it was five years ago? |     |                          |    |                          |            |
| <input type="checkbox"/>                                                     | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Don't know |

Explain what is wrong with her question.

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[1]

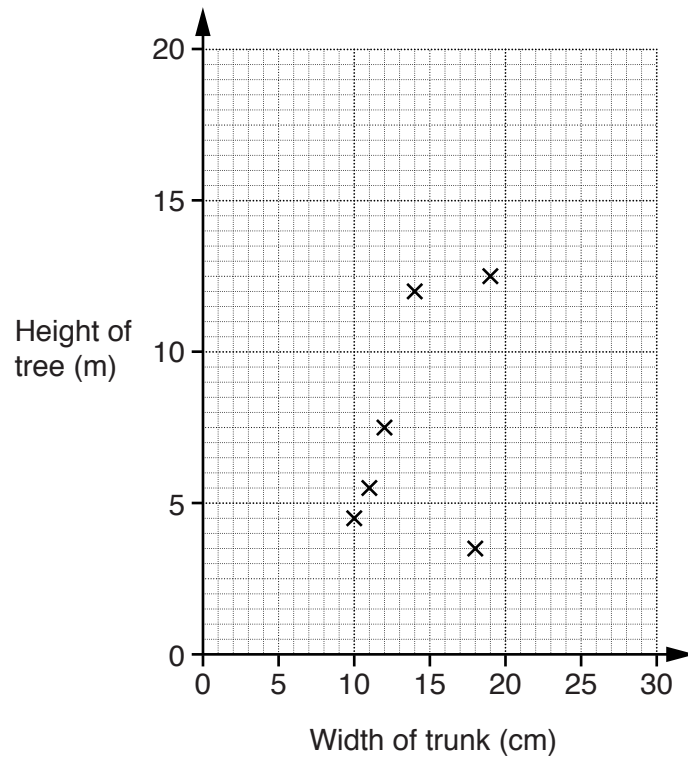
**(b)** Write a suitable question, with response boxes, to find out how many train journeys a person takes in a month.

Use 20 journeys as a maximum number.

[2]

- 18** Amber measures the heights of some young trees and the widths of their trunks. The results are shown in the table below.

|                     |     |     |     |    |     |      |      |    |    |    |
|---------------------|-----|-----|-----|----|-----|------|------|----|----|----|
| Width of trunk (cm) | 10  | 11  | 12  | 14 | 18  | 19   | 22   | 23 | 28 | 29 |
| Height of tree (m)  | 4.5 | 5.5 | 7.5 | 12 | 3.5 | 12.5 | 11.5 | 16 | 15 | 18 |



- (a)** The first six points have been plotted on the scatter diagram.

Complete the diagram by plotting the last four points.

**[2]**

- (b)** State the correlation shown by the scatter diagram.

**(b)** \_\_\_\_\_ **[1]**

- (c)** Use your diagram to describe the relationship between the width of a tree trunk and the height of the tree.

\_\_\_\_\_ **[1]**

(d) (i) Draw a line of best fit on the diagram. [1]

(ii) Amber has a tree with a trunk width of 25 cm.

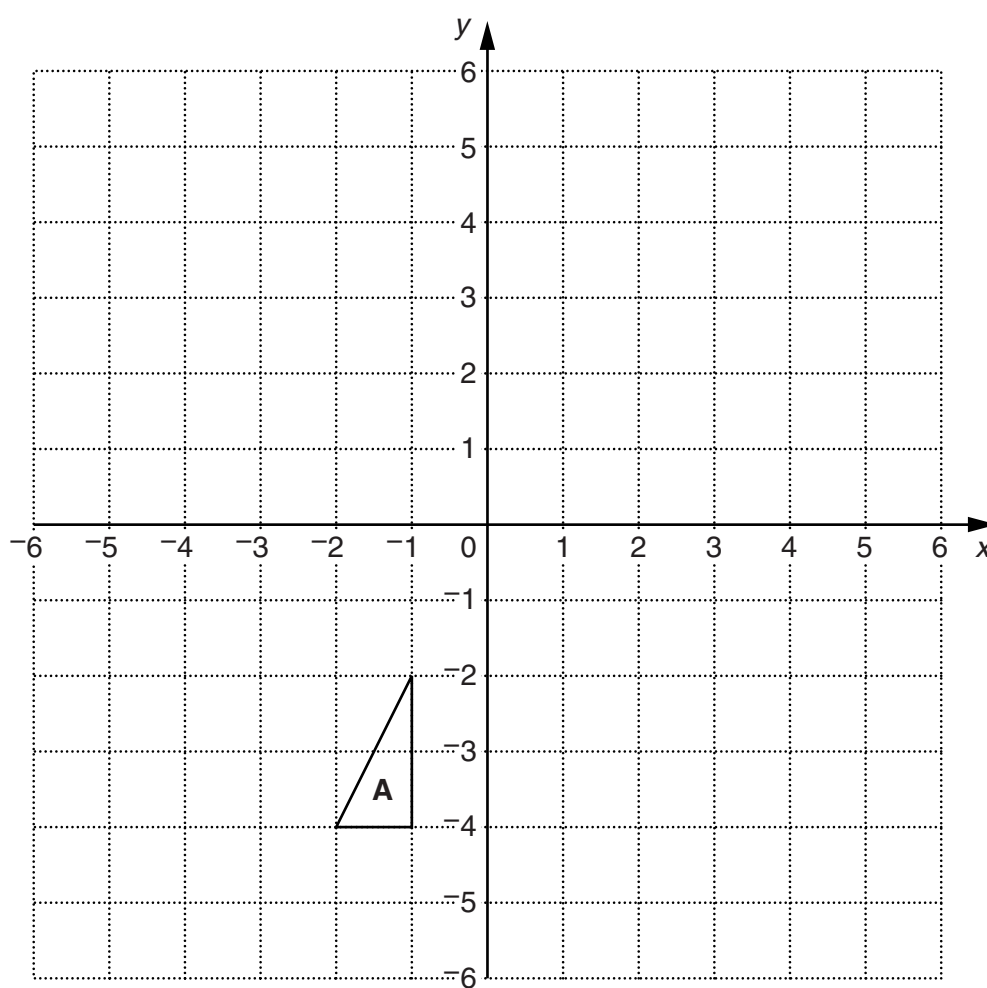
Use your diagram to estimate the height of this tree.

(d)(ii) \_\_\_\_\_ m [1]

(e) One of these trees is from a different species.

On the diagram put a circle around the point for that tree. [1]

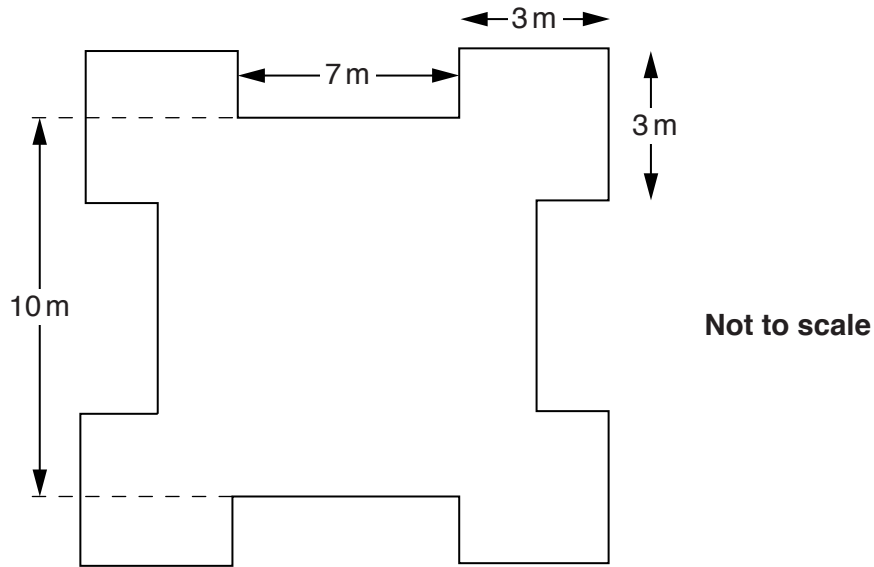
19 Shape **A** is drawn on a one-centimetre square grid.



Enlarge shape **A** with scale factor 2 and centre  $(-3, -5)$ .

[3]

- 20 The diagram shows the plan of a castle.  
The plan has four lines of symmetry.



Work out the area of the plan.

\_\_\_\_\_ m<sup>2</sup> [4]

**END OF QUESTION PAPER**

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