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Oxford Cambridge and RSA

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Thursday 9 June 2016 – Morning

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.
- 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

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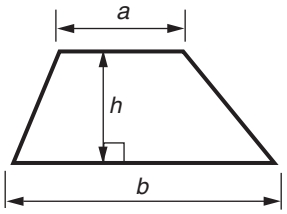
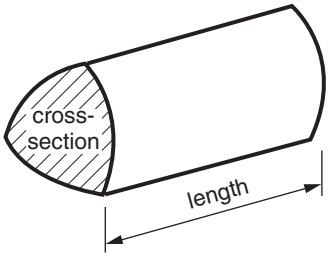
Formulae Sheet: Foundation Tier

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



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



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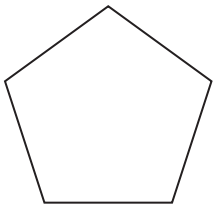
Answer **all** the questions.

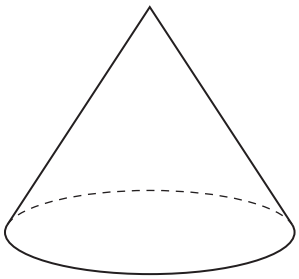
1 **(a)** What is the mathematical name of this shape?



(a) ..... **[1]**

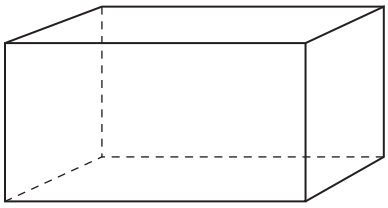
(b) What are the mathematical names of these solids?

(i)



(b)(i) ..... **[1]**

(ii)



(ii) ..... **[1]**

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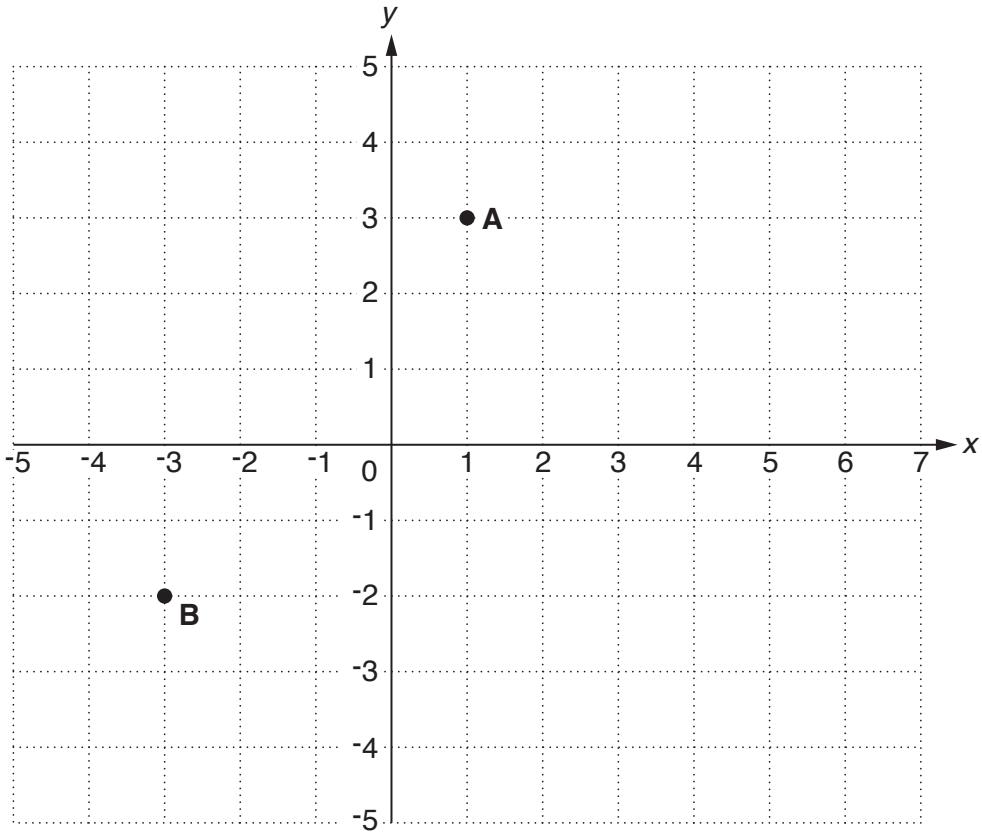
2 Points **A** and **B** are marked on this grid.



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

(a) (..... , ...) **[1]**

(b) Plot point **C** at (5, ⁻2). **[1]**

(c) What type of triangle is **ABC**?

(c) ..... **[1]**

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3 Choose a value from each list to complete the following sentences.

(a) 400 cm 400 g 40 kg 4 g

The weight of a tin of soup is about ..... **[1]**

(b) 60 g 600 ml 60 litres 600 kg

When full, the fuel tank of a car holds about ..... **[1]**

(c) 300 ml 30 kg 300 cm 30 litres

A can of cola holds ..... **[1]**

4 Nico reads this description of a quadrilateral to Emma.

- Opposites sides are equal
- Opposite angles are equal
- The diagonals bisect at 90° but are not equal

(a) Emma says "This quadrilateral is a square".

Explain why she is wrong.

.....

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

(b) What is the correct name of this quadrilateral?

(b) ..... **[1]**

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5 **(a)** Write down **all** the factors of 18.

(a) ..... **[2]**

(b) Write down **two** multiples of 7.

(b) .... **[1]**

(c) Write down a prime number between 6 and 15.

(c) ..... **[1]**

6 Morgan has 60 sweets.
She gives one fifth of the sweets to Phoebe.
Morgan then eats one third of the remaining sweets.

How many sweets does Morgan have left?

..... **[3]**

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7 **(a)** Write these numbers in order of size, smallest first.

7.037 7.307 7.30 7.737 7.37

.... **[2]**
smallest

(b) Calculate.

(i) $(11 - 7) \div 2 + 25$

(b)(i) ..... **[1]**

(ii) $16^3 - \sqrt{324}$

(ii) ..... **[2]**

(c) Write $6 \times 6 \times 6 \times 6 \times 6$ as a power of 6.

(c) ..... **[1]**

(d) Calculate 17% of 2863.

Give your answer correct to 2 significant figures.

(d) ..... **[3]**

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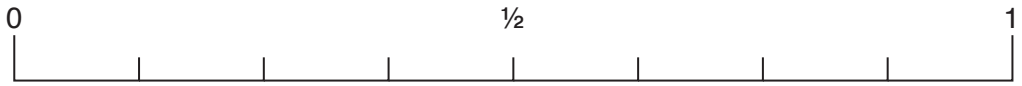
8 A fruit bowl contains 48 pieces of fruit.

3 Apples 6 Bananas 5 Plums 4 Oranges 30 Peaches

A piece of fruit is taken from the bowl at random.
Use arrows to mark the following on the probability line below.

(a) The probability that it is a banana.
Label this arrow **B**. **[1]**

(b) The probability that it is a peach.
Label this arrow **P**. **[1]**



9 **(a)** One morning the temperature in Helsinki was ⁻8 °C.
By 2pm the temperature had risen by 5°.

What was the temperature at 2pm?

(a) ..... °C **[1]**

(b) One morning the temperature in Tallinn was ⁻4 °C.
At 2pm the temperature was 3 °C.

By how many degrees had the temperature risen?

(b) ..... °C **[1]**

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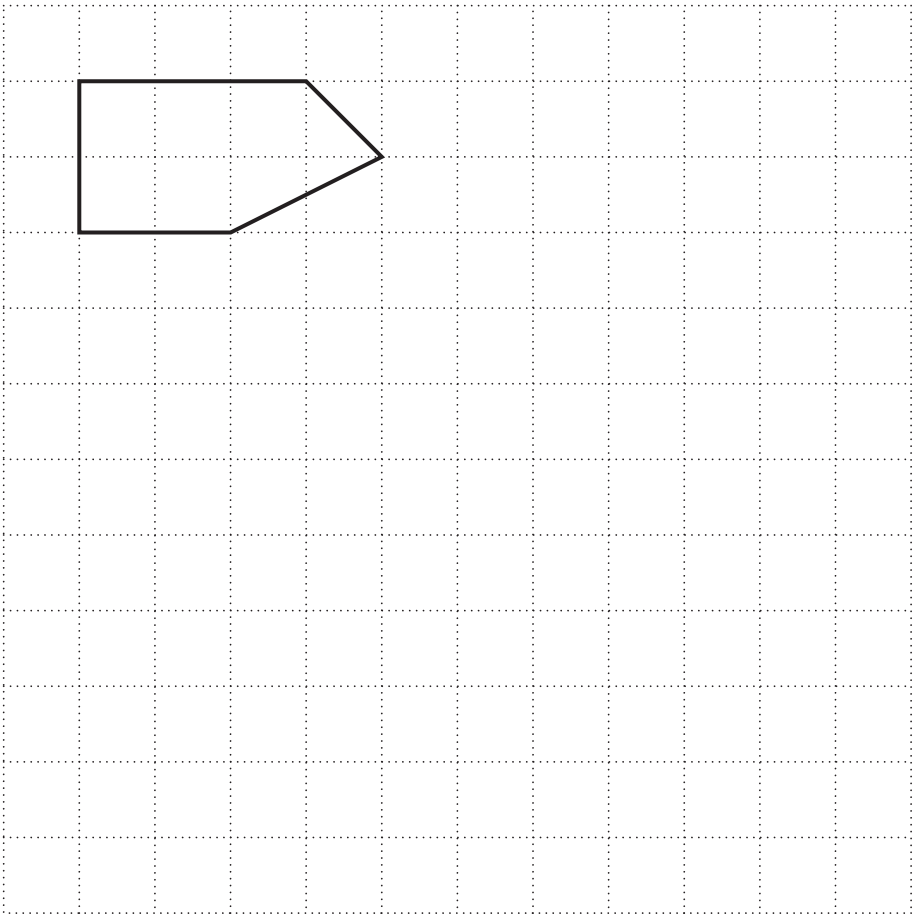
10 Enlarge the shape below with scale factor 2.



[3]

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11 This table shows the distance in miles between some cities.

	London	Manchester	Cambridge	Edinburgh	Cardiff
Manchester	208				
Cambridge	100	162			
Edinburgh	413	218	350		
Cardiff	150	302	188	393	
Newcastle	275	143	193	120	315

(a) **(i)** How many miles is it between London and Edinburgh?

(a)(i) ..... **[1]**

(ii) Colin drives from London to Cambridge and then from Cambridge to Manchester.
How many miles does he drive?

(ii) ..... **[2]**

(b) Diesel costs £1.15 per litre.
Alec pays £74.75 for diesel.

How many litres does he buy?

(b) ..... **[2]**

(c) Tony is making a journey of 180 miles.
He stops after 36 miles.

What percentage of the journey has he completed?

(c) ..... % **[2]**

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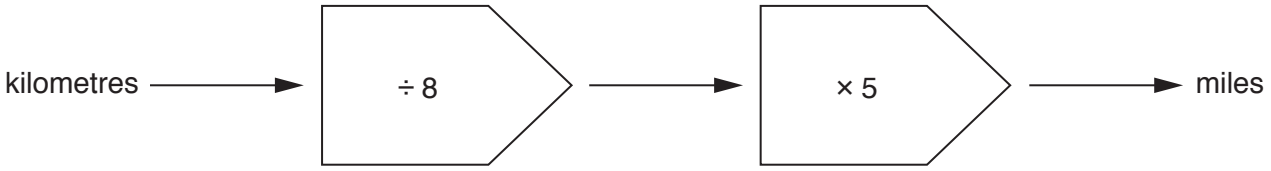
(d) This function machine can be used to convert kilometres into miles.



Use the function machine to convert

(i) 256 kilometres to miles,

(d)(i) ..... miles **[1]**

(ii) 200 miles to kilometres.

(ii) ..... km **[2]**

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12 **(a)** Simplify.

(i) $5j - 3j + 8j$

(a)(i) ..... **[1]**

(ii) $3r - 2s - 5r + 6s$

(ii) ..... **[2]**

(b) Solve.

(i) $12x = 60$

(b)(i) $x =$ ..... **[1]**

(ii) $8x - 12 = 24$

(ii) $x =$ ..... **[2]**

(iii) $4x > 8$

(iii) ..... **[1]**

(c) Expand.

$5(x + 4)$

(c) ..... **[1]**

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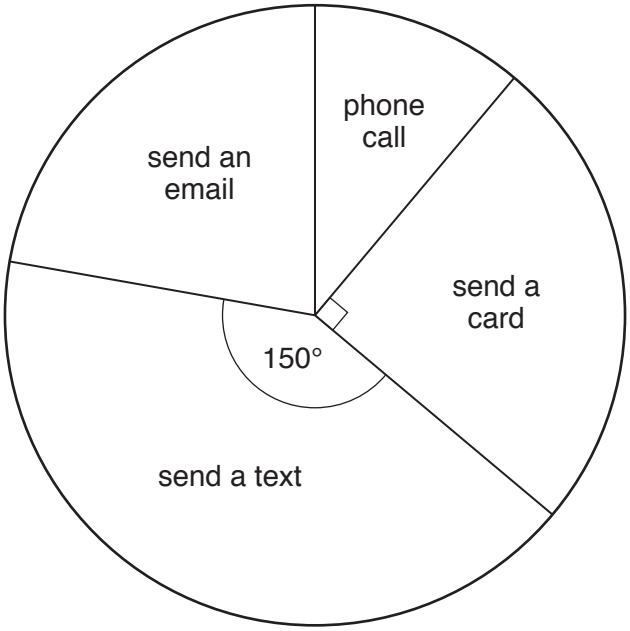
13 The pie chart represents the way 144 people wish their friends Happy Birthday.



(a) What fraction of the people send a card?

(a) ..... **[1]**

(b) How many of the 144 people send a text?

(b) ..... **[3]**

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14 These are some of the ingredients used to make Bolognese sauce.

Bolognese sauce
Serves 4

400 g	Mince
200 g	Tomatoes
50 g	Mushrooms
2	Onions

(a) Marco is making Bolognese sauce to serve 16 people.

How many grams of mushrooms should he use?

(a) ..... g **[1]**

(b) Gordon is making Bolognese sauce to serve 18 people.

(i) How many kilograms of mince should he use?

(b)(i) ..... kg **[2]**

(ii) Mince costs £8.75 per kilogram.
Gordon buys the mince and pays with £20.

How much change should he receive?

(ii) £ ..... **[3]**

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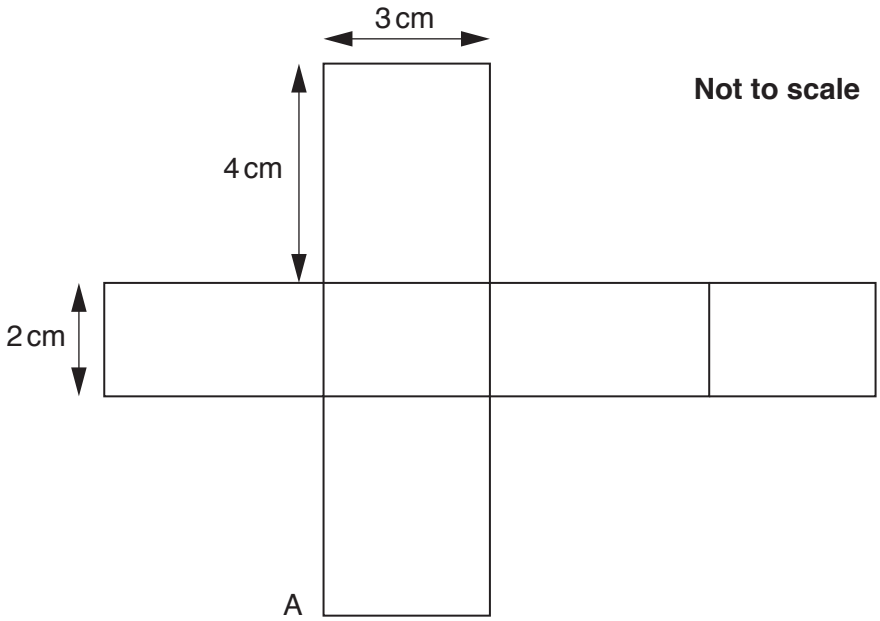
15 The net of a cuboid is drawn below.

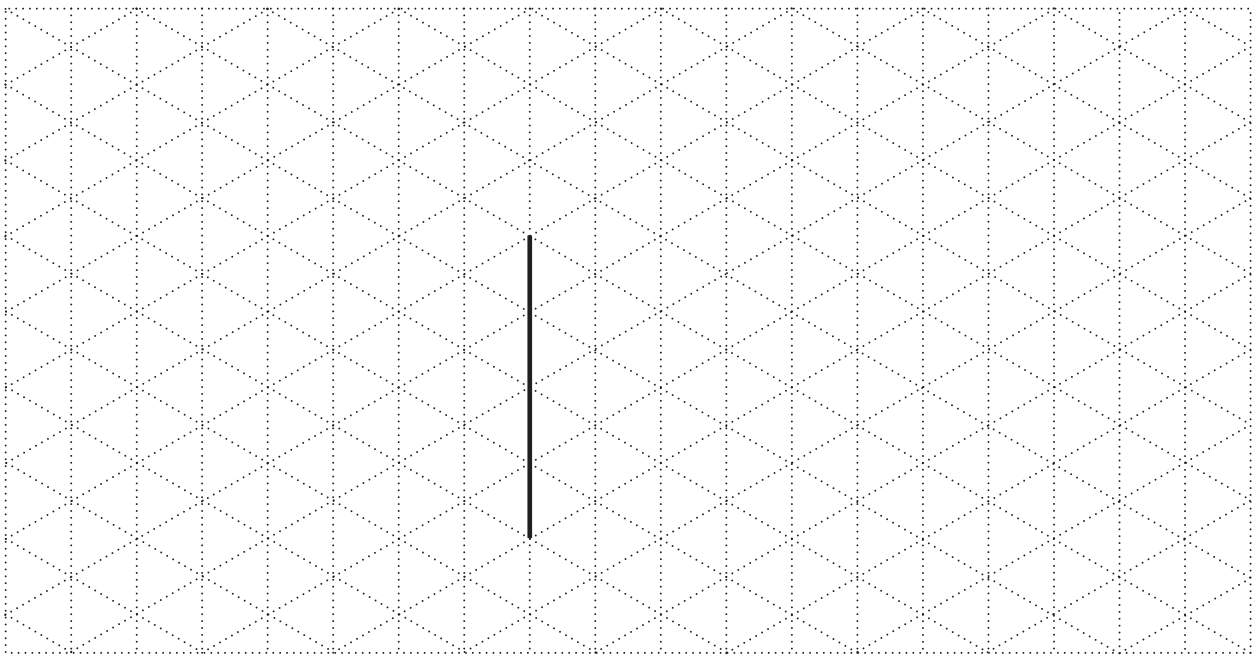


Not to scale

(a) The net is folded into a cuboid.

Mark on the net the **two** other points that will meet vertex A. **[1]**

(b) Draw this cuboid on the isometric grid below.
One line has been drawn for you.



[3]

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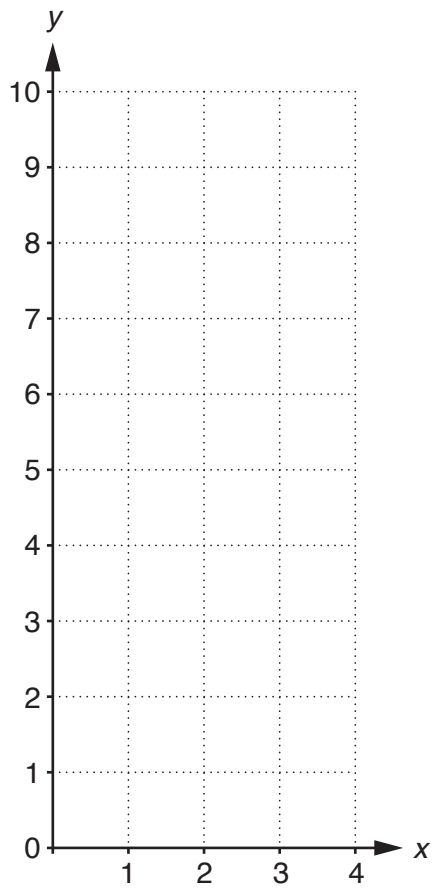
16 **(a)** Complete this table for $y = 2x + 1$.

x	0	1	2	3	4
y		3		7	

[2]

(b) Use the table above to draw the graph of $y = 2x + 1$.



[2]

17 Calculate.

$$\sqrt{\frac{18.62}{2.78 + 6.72}}$$

..... **[2]**

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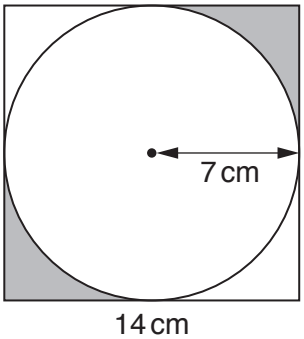
18 In a game Ted can win, draw or lose.
The probability that he wins is 0.38.
The probability that he draws is 0.47.

Work out the probability that Ted loses.

..... **[2]**

19 This diagram shows a circle inside a square.



Not to scale

The radius of the circle is 7 cm.
The length of a side of the square is 14 cm.

Calculate the shaded area.

..... cm^2 **[4]**

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20 Alan grows one group of tomato plants using fertiliser A and a second group of tomato plants using fertiliser B.

(a)* The stem and leaf diagrams show the heights, in centimetres, of the plants after a certain time.

Fertiliser A

16	1	3	8	9			
15	0	2	2	3	8	9	
14	0	1	2	3	6	7	9
13	1	1	4	7	8		
12	9						

Fertiliser B

16	0	5	5					
15	0	1	2	5				
14	1	2	2	3	6	7	9	
13	1	3	3	4	6	7	7	8
12								

Key: 16 | 3 = 163

Make two different comparisons between the **heights** of the plants in the two groups.
Give evidence to support your comparisons.

.....

.....

.....

.....

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..... **[6]**

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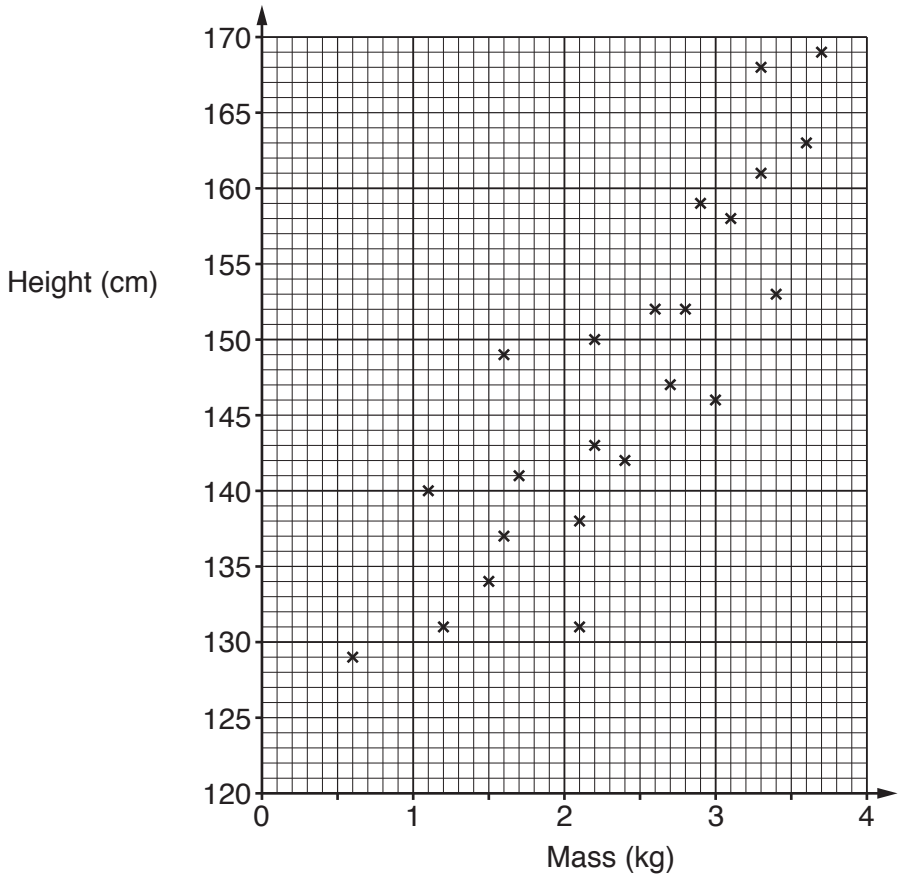
(b) The scatter diagram shows the height of each plant and the mass, in kilograms, of tomatoes it produces when fertiliser A was used.



(i) Write down the greatest mass of tomatoes produced by one of these plants.

(b)(i) ..... kg **[1]**

(ii) How many of these plants produced at least 2.5 kg of tomatoes?

(ii) ..... **[1]**

(iii) Describe the correlation.

(iii) ..... **[1]**

(iv) Draw a line of best fit on the diagram. **[1]**

(v) Estimate the mass of tomatoes produced by a plant of height 155 cm.

(v) ..... kg **[1]**

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21 The equation $x^3 + 6x = 500$ has a solution between $x = 7$ and $x = 8$.

Find this value of x correct to 1 decimal place.
Show clearly your trials and the values of their outcomes.

..... **[3]**

22 A suitcase weighs 23 kilograms, correct to the nearest kilogram.

Write down the smallest possible weight and the largest possible weight of the suitcase.

smallest ..... kg

largest ..... kg
[2]

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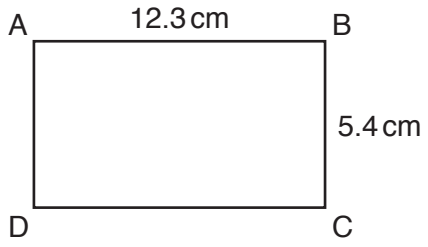
23 ABCD is a rectangle.



Not to scale

Calculate the length of a diagonal.

..... cm **[3]**

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24 Here are parts of three recipes for fruit punch.

Recipe A	Recipe B	Recipe C
150 ml pineapple juice …… …… makes 850 ml	220 ml pineapple juice …… …… makes 1200 ml	175 ml pineapple juice …… …… makes 1 litre

Which of these three has the highest **proportion** of pineapple juice?
Show clearly how you decide.

..... **[3]**

END OF QUESTION PAPER

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