

Monday 11 June 2012 – Afternoon

GCSE MATHEMATICS A

A502/01 Unit B (Foundation Tier)

Candidates answer on the Question Paper.

OCR supplied materials:

None

Other materials required:

- Geometrical instruments
- Tracing paper (optional)

Duration: 1 hour



Candidate forename		Candidate surname	
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Centre number							Candidate number				
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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.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
- The total number of marks for this paper is **60**.
- This document consists of **16** pages. Any blank pages are indicated.

WARNING

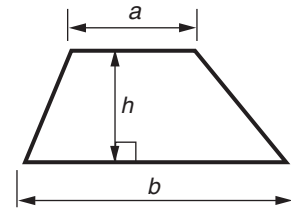


No calculator can be used for this paper

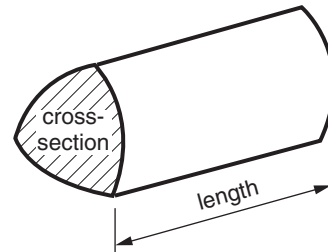
This paper has been pre modified for carrier language

Formulae Sheet: Foundation Tier

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

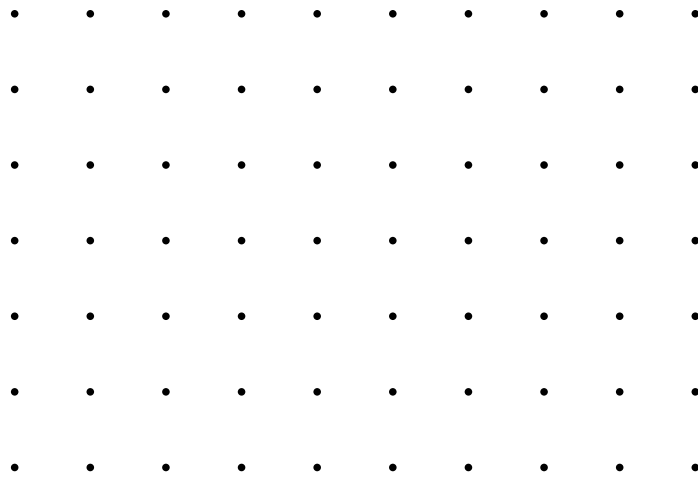


Volume of prism = (area of cross-section) \times length



PLEASE DO NOT WRITE ON THIS PAGE

- 1 (a) On the centimetre square dotted grid, draw a rectangle that has sides of 7 cm and 4 cm.



[2]

- (b) Draw in the diagonals of your rectangle in part (a).

[1]

- (c) (i) On the centimetre square dotted grid below, draw a square and its diagonals.



[2]

- (ii) For any square, its diagonals are the same length. This is also true for any rectangle.

Write down one **difference** between the diagonals of any square and the diagonals of any rectangle.

[1]

2 (a) Calculate.

$$1.6 \times 4$$

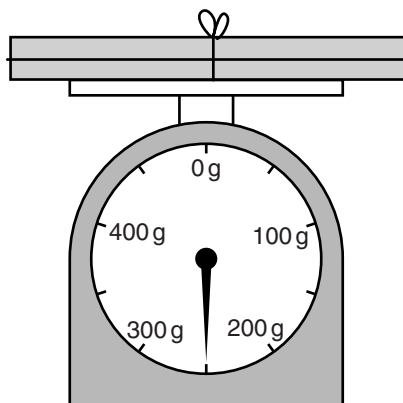
(a) _____ [2]

(b) Calculate.

$$81.9 \div 3$$

(b) _____ [2]

- 3 (a) Darla lives in Hong Kong.
She wants to post a copy of her book to each of 5 friends.
Darla weighs one parcel.



What is the weight of Darla's parcel?

(a) _____ g [1]

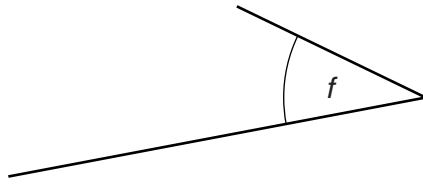
(b)* These are the prices to post one parcel.

Maximum weight	First Class	Economy
30g	\$1.40	\$1.29
50g	\$2.20	\$1.94
100g	\$3.00	\$2.52
150g	\$3.70	\$3.07
200g	\$4.00	\$3.32
250g	\$4.40	\$3.61
500g	\$8.20	\$6.90
1 kg	\$16.40	\$11.00

How much less does Darla pay to post all 5 parcels if she uses **Economy** instead of **First Class**?

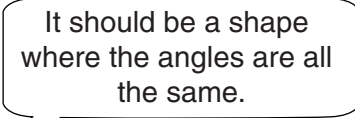
(b) \$ _____ [4]

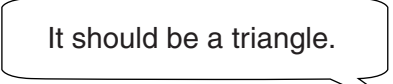
- 4 (a) Write down the mathematical name for angle f .



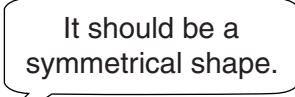
(a) _____ [1]

- (b) Ruby is going to make a badge.
She asks her friends what shape they would like it to be.

Tam says 



Ann says

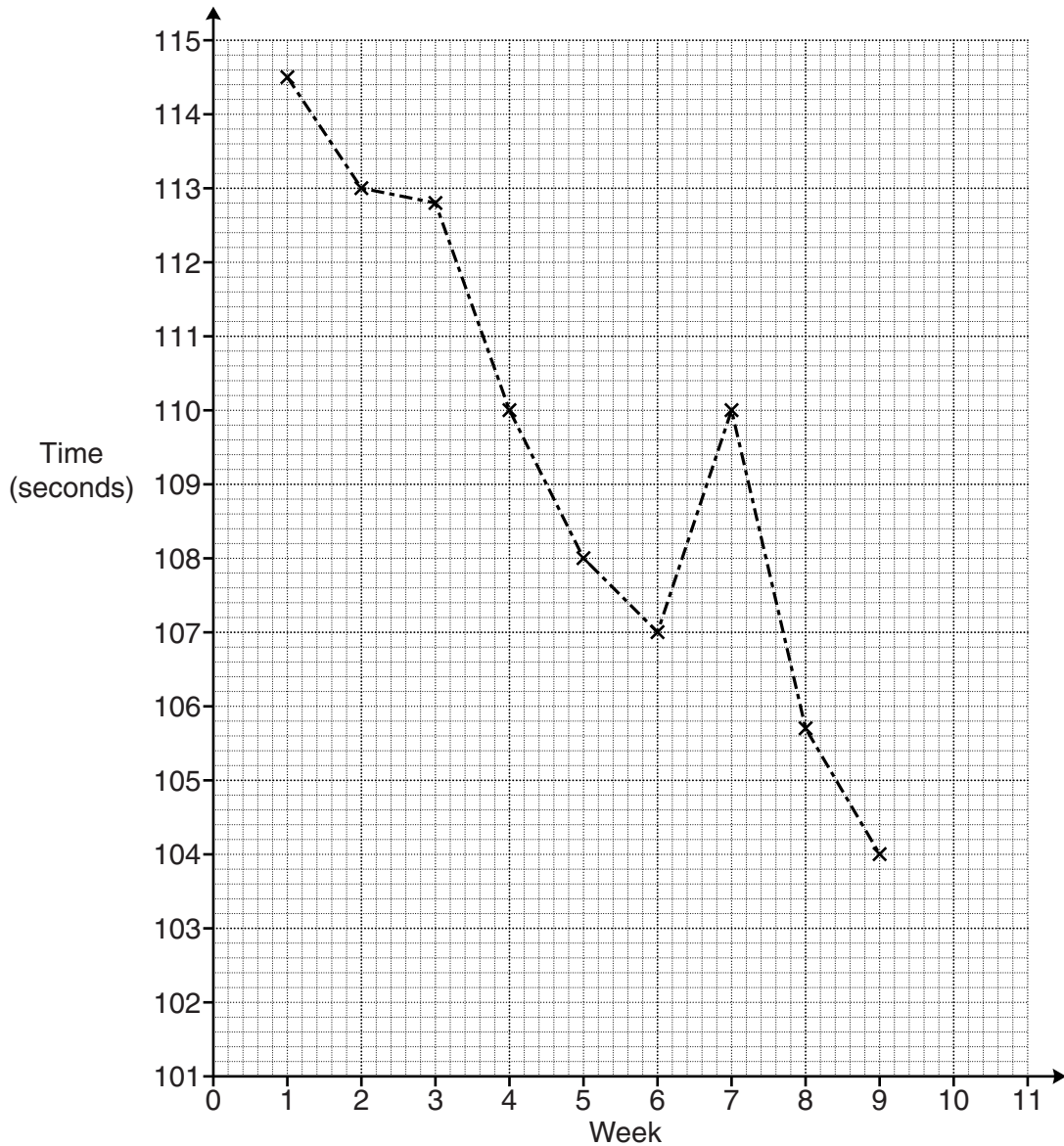
Ben says 

Ruby makes the badge so that her three friends are all happy.

Sketch the badge and mark its lines of symmetry.

[2]

- 5 Chen is training for the Olympic Games 200m freestyle swimming event. He records the time of his fastest swim at the end of each week. This graph shows his times.



- (a) The time of his fastest 200m swim in week 10 was 1 second less than in week 9.

Complete the graph for week 10.

[1]

- (b) During one week Chen injured his shoulder.

Which week was this?

Give your reasons.

Week _____ because _____

[2]

- 6 (a) Graham has a recipe for making bread.
The recipe uses this amount of salt.

1 tablespoon and 1 teaspoon of salt

Graham finds this information.

1 tablespoon = 3 teaspoons
1 tablespoon of salt weighs 24 g

Show that the weight of salt used in the recipe is 32 g.

[2]

- (b) Another ingredient in the recipe is milk.

580 g of milk

5% of this milk is fat.

What is 5% of 580 g?

(b) _____ g [2]

(c) These are all the ingredients in the recipe.

580g of milk

43g of unsalted butter

25g of sugar

7g of yeast

5 cups of flour

32g of salt

1 cup of flour weighs 115g

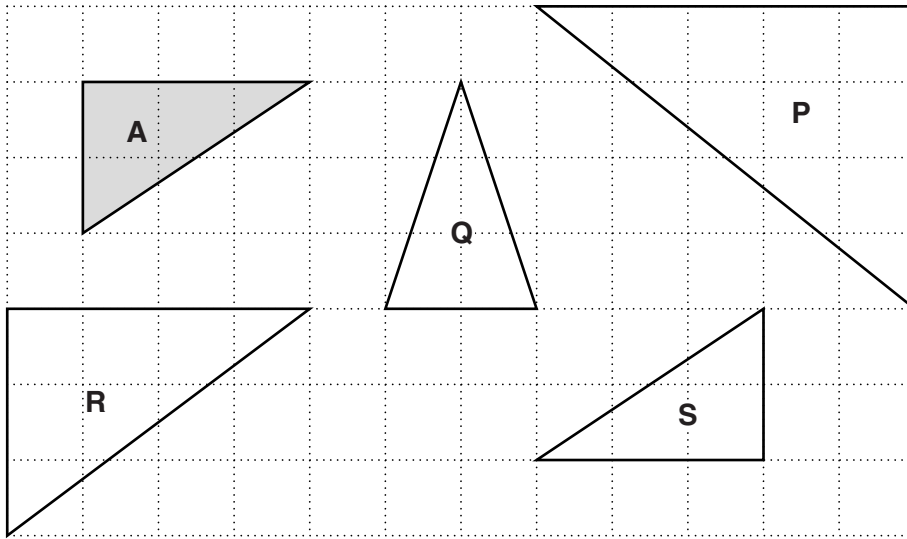
My ingredients weigh
just over 1.4 kg.



Decide whether Graham is correct.
Show your calculations.

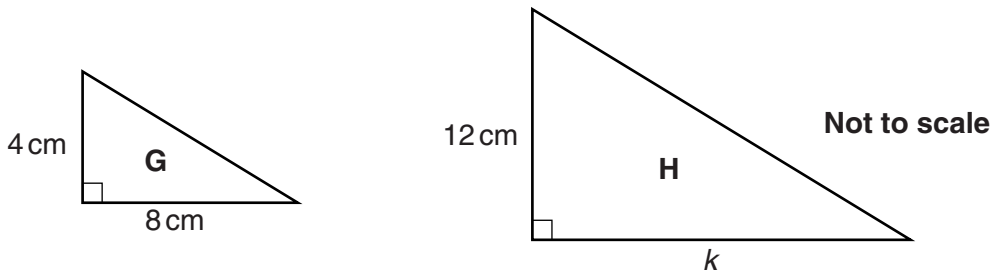
[5]

7 (a) Write down the letter of the triangle that is congruent to triangle A.



(a) _____ [1]

(b) Triangle H is an enlargement of triangle G.



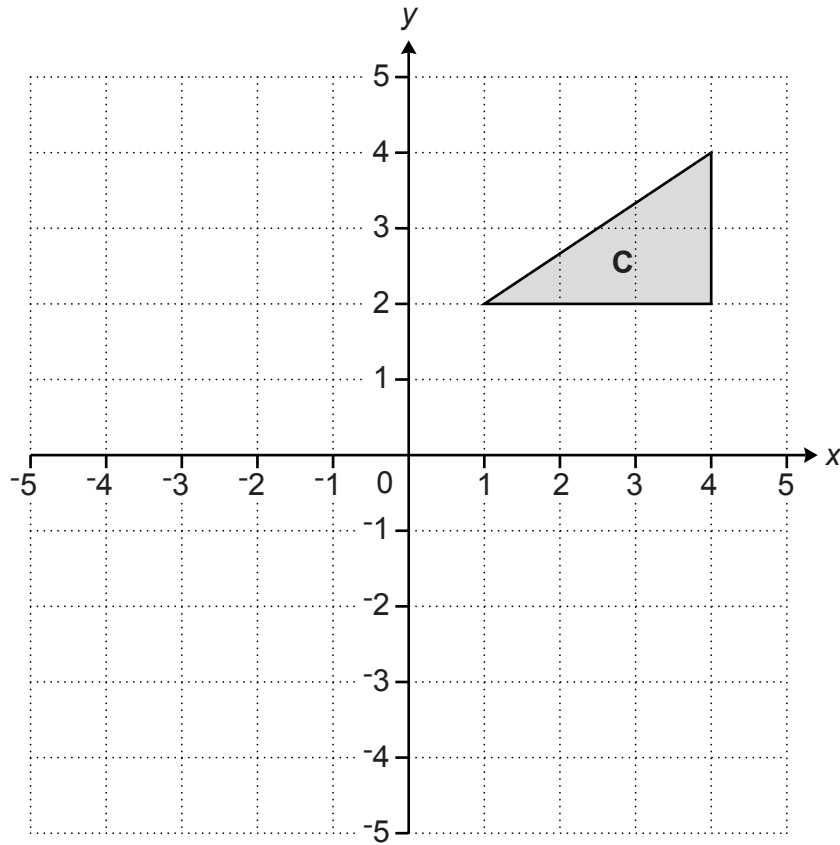
(i) Write down the scale factor of the enlargement.

(b)(i) _____ [1]

(ii) Work out the length k .

(ii) _____ cm [2]

(c) This grid shows a triangle labelled **C**.



(i) Reflect triangle **C** in the y -axis.
Label the image **D**.

[1]

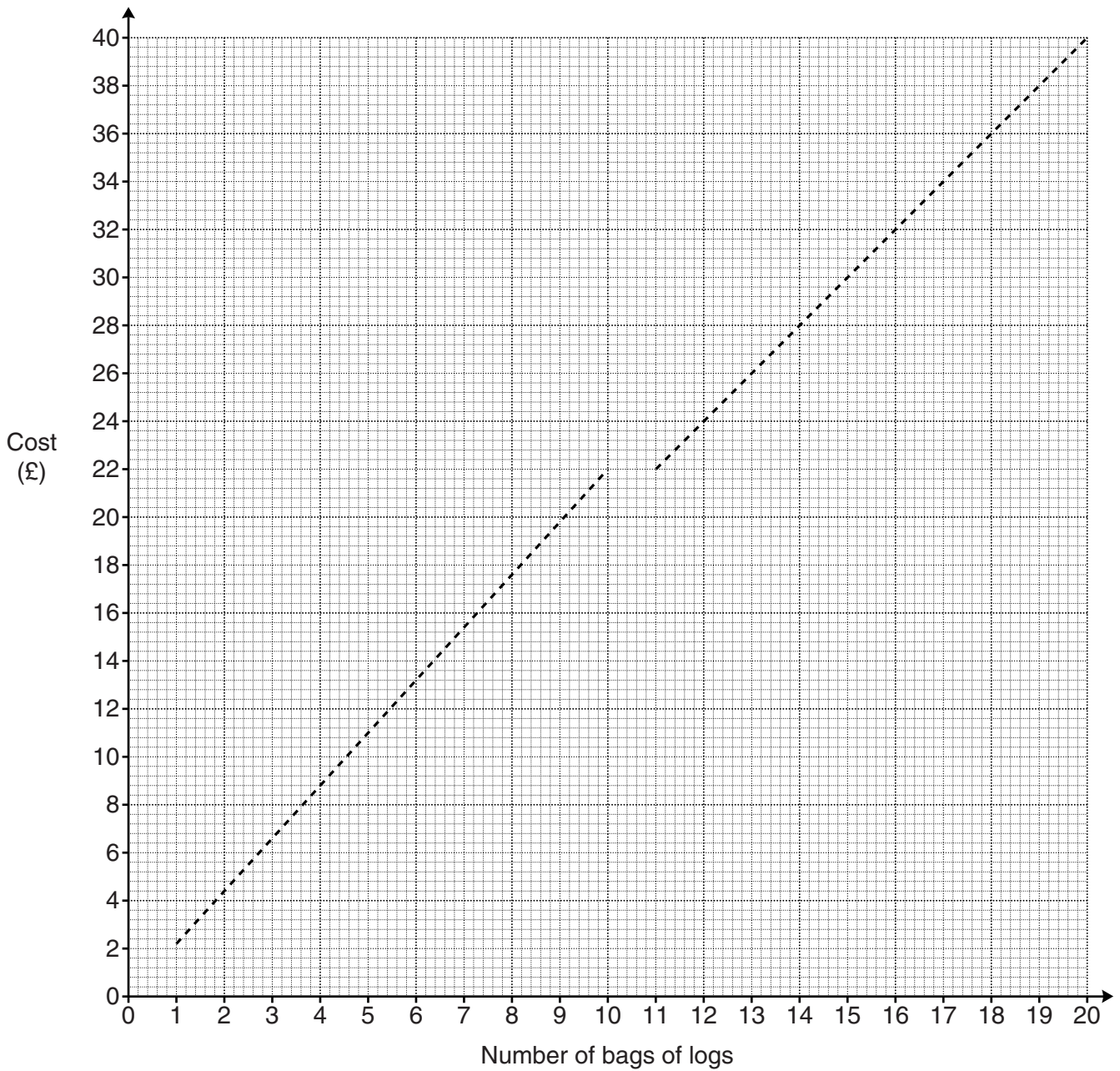
(ii) Tick each statement that is **true** for triangles **C** and **D**.

The smallest angle in **C** is the same size as the smallest angle in **D**.

The perimeter of **C** is longer than the perimeter of **D**.

[2]

- 8 Filipa buys bags of logs for her fire. She can only buy whole bags of logs. She pays one price for **each bag** when she orders 10 bags or fewer. When she orders more than 10 bags she pays a lower price for **each bag**. This graph shows some costs for different numbers of bags of logs.



- (a) Use the graph to complete this table.

Number of bags	5	8	10	12	
Cost (£)	11.00		22.00	24.00	36.00

[2]

- (b) What is the price of each bag of logs when Filipa buys from 1 to 10 bags?

(b) £ _____ [1]

- (c) b is the number of bags of logs and C is the total cost of the bags of logs in £.

Write a formula connecting C and b when the total number of bags is more than 10.

(c) _____ [2]

- (d) Filipa writes this formula connecting C and b when the total number of bags is from 1 to 10.

$$C = 2.2b$$

- (i) Find the value of b when $C = 15.40$.

(d)(i) _____ [2]

- (ii) Why could C never be 27.50?
You must explain your answer.

[2]

- (e) Would you recommend Filipa to buy 10 bags of logs from this supplier?
Explain your answer.

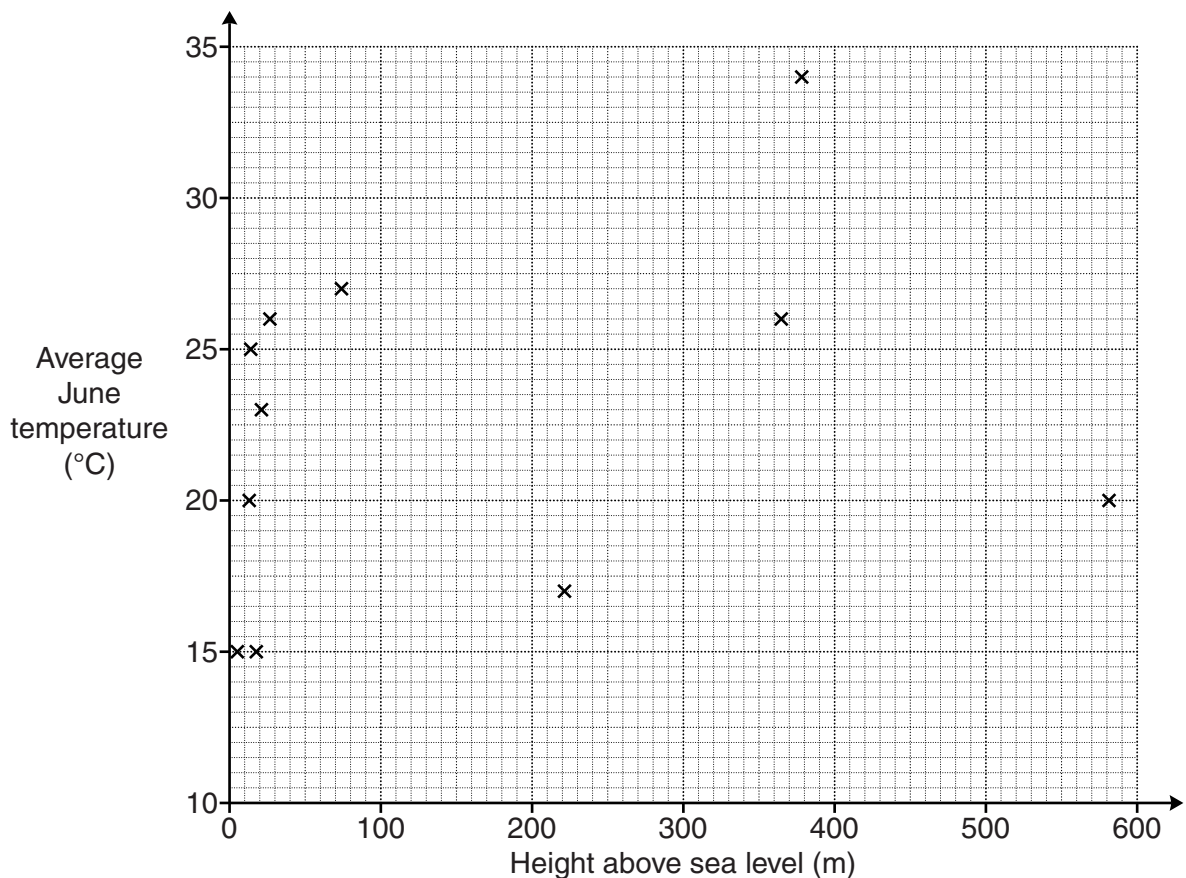
[1]

- 9 Lizzie and Sam discuss where to go on holiday. They collect this data about cities in the Northern Hemisphere from the Internet.

City	Latitude (degrees)	Average June temperature (°C)	Height above sea level (m)
Oslo	59	15	17
Copenhagen	55	15	4
Dijon	47	17	221
Rome	41	20	13
Madrid	40	20	581
Athens	37	23	21
Cairo	30	27	74
Khartoum	15	34	379
Freetown	8	26	27
Bangui	4	26	365
Libreville	0	25	14

- (a) Lizzie wants to go to somewhere that is near to sea level as she thinks places that are higher will be cooler.

Lizzie draws a scatter graph of average June temperature against height above sea level for these cities.



- (i) Describe the relationship between height above sea level and average June temperature shown on the scatter diagram.

(a)(i) _____ [1]

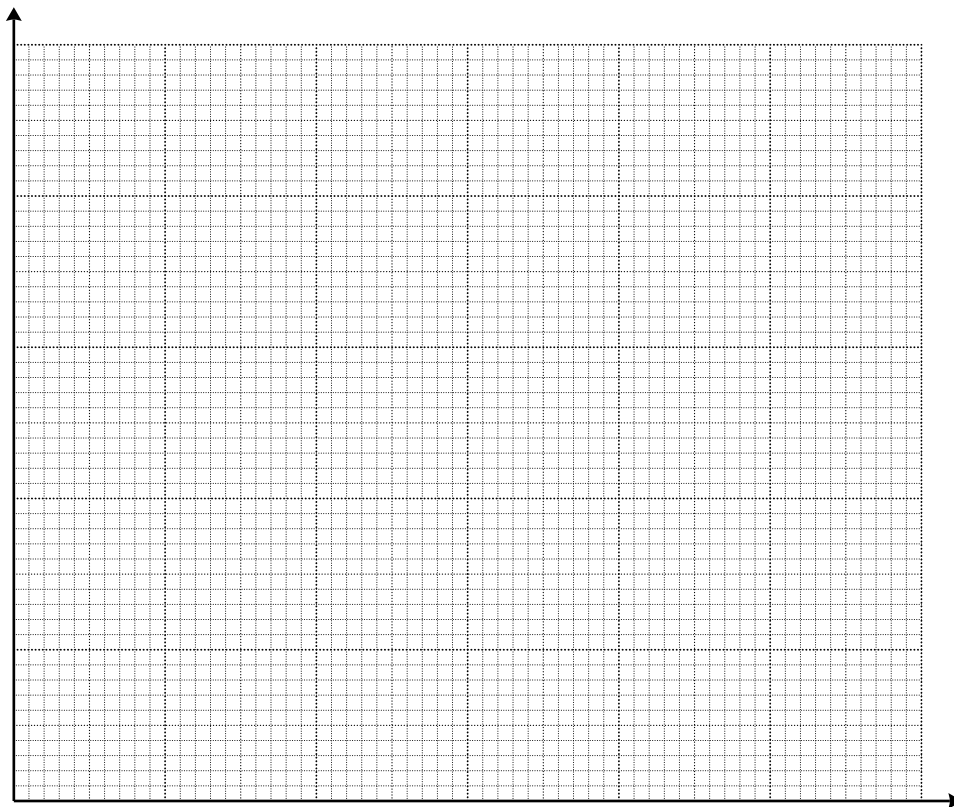
- (ii) Does the scatter diagram support Lizzie’s view about the relationship between temperature and height above sea level? Explain your answer.

_____ because _____
_____ [1]

- (b) Sam wants to go somewhere near the equator as he thinks these places will be warmer.

‘Latitude’ gives information about how far from the equator you are. So Libreville, at latitude 0 degrees, is on the equator and Oslo, at latitude 59 degrees, is a long way north of the equator.

- (i) Use Latitude and Average June temperatures to draw and label another scatter diagram to test Sam’s idea.



[4]

- (ii) Does your scatter diagram support Sam’s view about the relationship between temperature and distance from the equator? Explain your answer.

_____ because _____
_____ [2]

10 (a) Work out.

$$\frac{5}{8} - \frac{1}{3}$$

(a) _____ [2]

(b) Work out.

$$\frac{5}{6} \times 4$$

Give your answer as a mixed number in its simplest form.

(b) _____ [3]



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