Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
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10 – 11	
12 – 13	
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TOTAL	

AQA

General Certificate of Secondary Education
Higher Tier
November 2013

Mathematics 43601H

Unit 1

H

Wednesday 6 November 2013 9.00 am to 10.00 am

For this paper you must have:
- a calculator
- mathematical instruments.

Time allowed
- 1 hour

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 54.
- The quality of your written communication is specifically assessed in Questions 9 and 11. These questions are indicated with an asterisk (*).
- You may ask for more answer paper and graph paper. These must be tagged securely to this answer book.

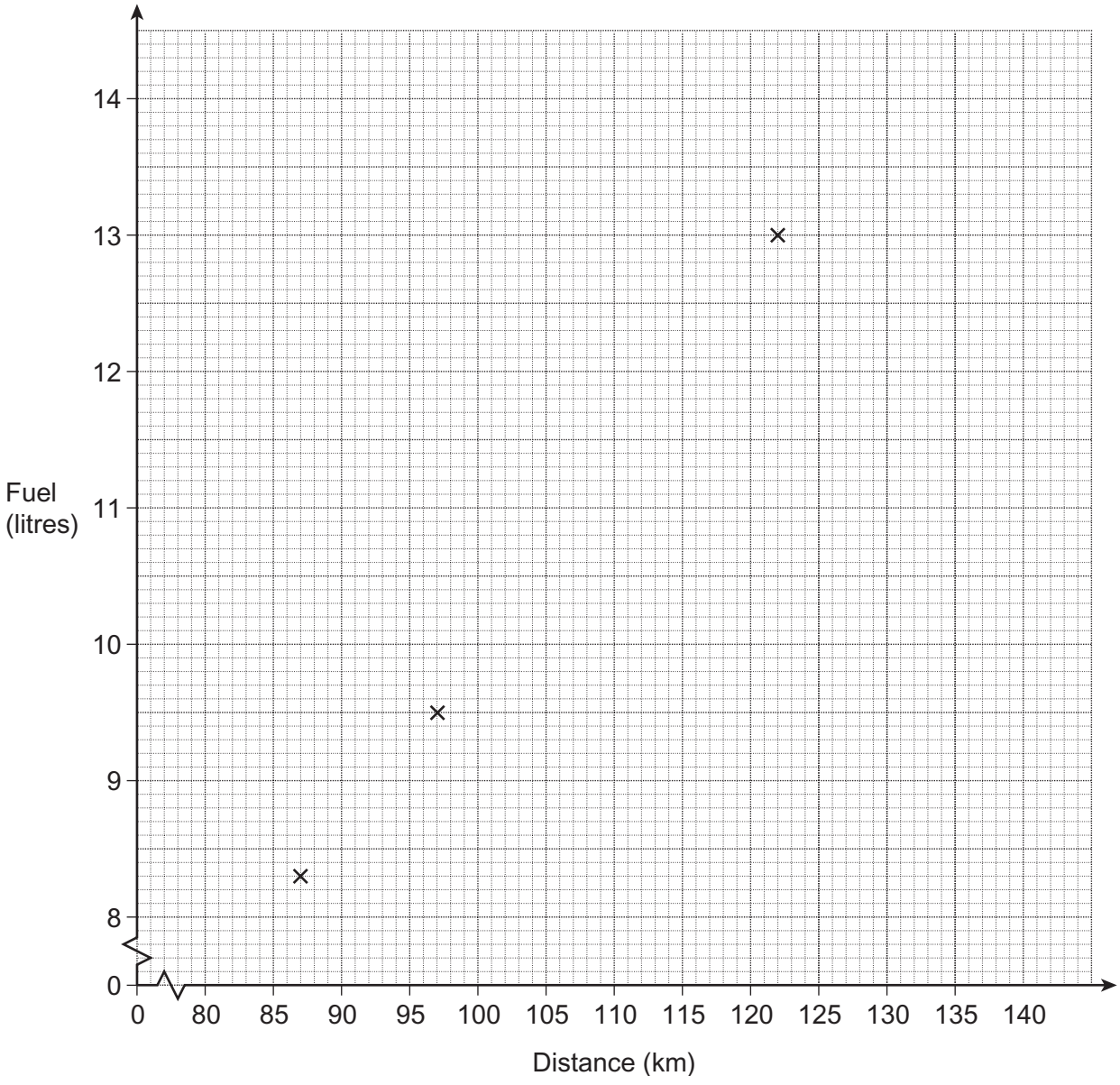
Advice
- In all calculations, show clearly how you work out your answer.

Answer **all** questions in the spaces provided.

1 Each day a taxi driver records the distance he travels.
He also records the amount of fuel his car uses.

Distance (km)	87	122	97	90	105	100	135	116
Fuel (litres)	8.3	13.0	9.5	9.4	11.2	9.9	14.0	12.0

1 (a) Complete the scatter graph.
The first three points have already been plotted.



(2 marks)

1 (b) Draw a line of best fit.

(1 mark)

1 (c) Use your line of best fit to predict the fuel used to travel 110 km.

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Answer ..... litres *(1 mark)*

Turn over for the next question

4

2 Here is some information about 50 houses.

Number of bedrooms	Number of houses
1	6
2	10
3	22
4	9
5	3
	Total = 50

Show that the mean number of bedrooms is less than 3.

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(3 marks)

3 Jake works in a bookshop.
People can pay by cash, card or token.

He wants to know if men and women pay in different ways.

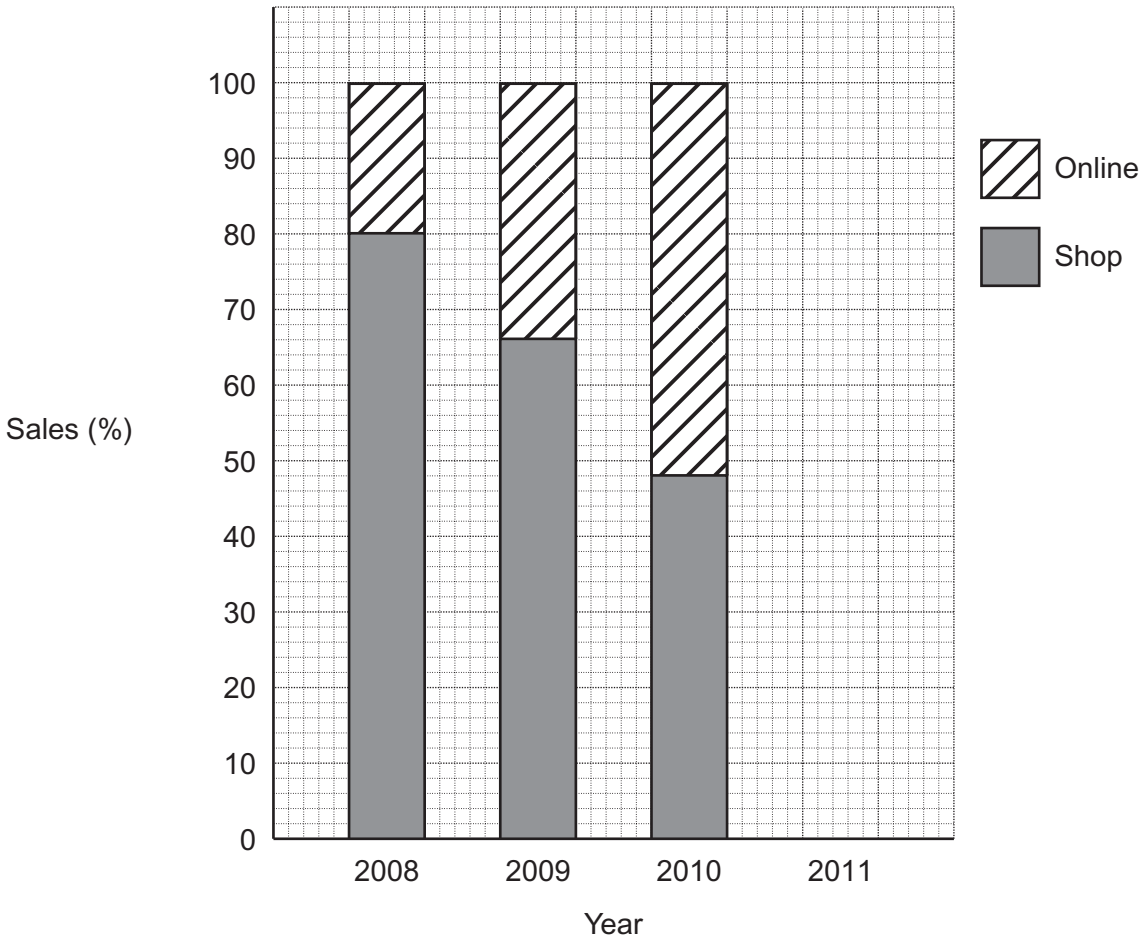
Design an observation sheet for him.

(2 marks)

Turn over for the next question

5

4 A company sells items online and in a shop.
This chart shows information about its sales.



4 (a) The table shows the sales for 2011.

	Sales (£ thousands)
Online	152
Shop	48
Total	200

Show the information for 2011 sales on the chart.

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(3 marks)

4 (b) Work out the ratio of online sales to shop sales for **2008**.
Give your answer in its simplest form.

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Answer ..... : ..... *(2 marks)*

4 (c) In 2012 online sales : shop sales = 3 : 1

What **fraction** of the 2012 sales were online?

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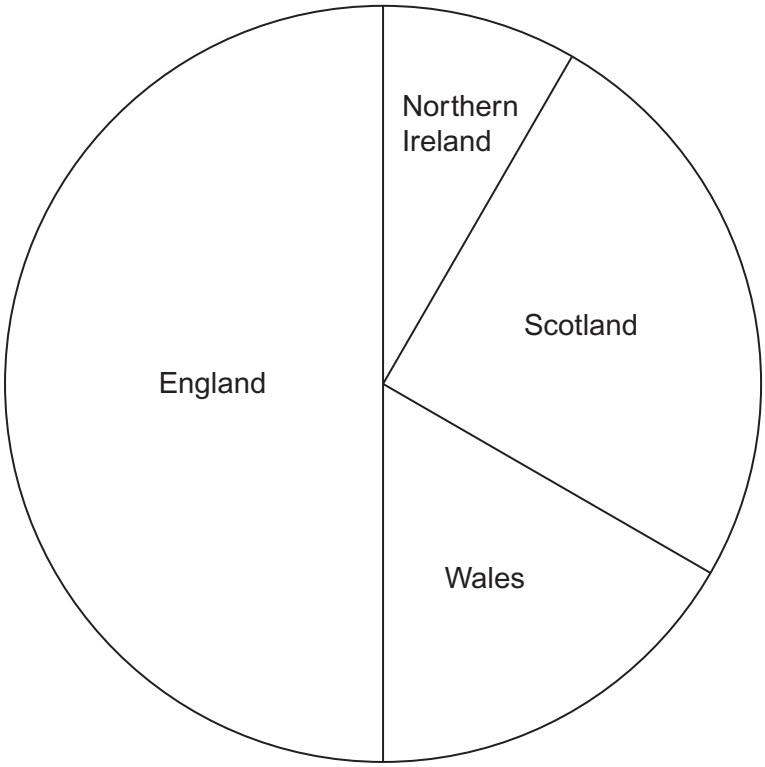
Answer ..... *(1 mark)*

Turn over for the next question

6

5 The pie chart shows information about the number of magazines sold in four countries.



30 000 magazines were sold in Wales.

How many magazines were sold in total?

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Answer ..... *(3 marks)*

6 Amina asks 50 people,

"What is your favourite pet?
Choose from cat, dog, rabbit or other."

6 (a) Which **two** words describe the type of data she collects from each person?
Circle your answers.

qualitative continuous primary secondary

(1 mark)

6 (b) Which **two** diagrams could she use to represent the data?
Circle your answers.

scatter graph pie chart bar chart stem-and-leaf

(1 mark)

Turn over for the next question

5

7 In a survey people had to choose A, B, C or D.

The percentages for B, C and D are shown.

A	B	C	D
	25%	35%	30%

150 people chose B.

How many people chose A?

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Answer ..... *(4 marks)*

8 David invests £5000 in a savings account.
The account pays 3.2% compound interest per year.

Work out the value of his investment after 3 years.
Give your answer to the nearest penny.

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Answer £ ..... *(4 marks)*

Turn over for the next question

8

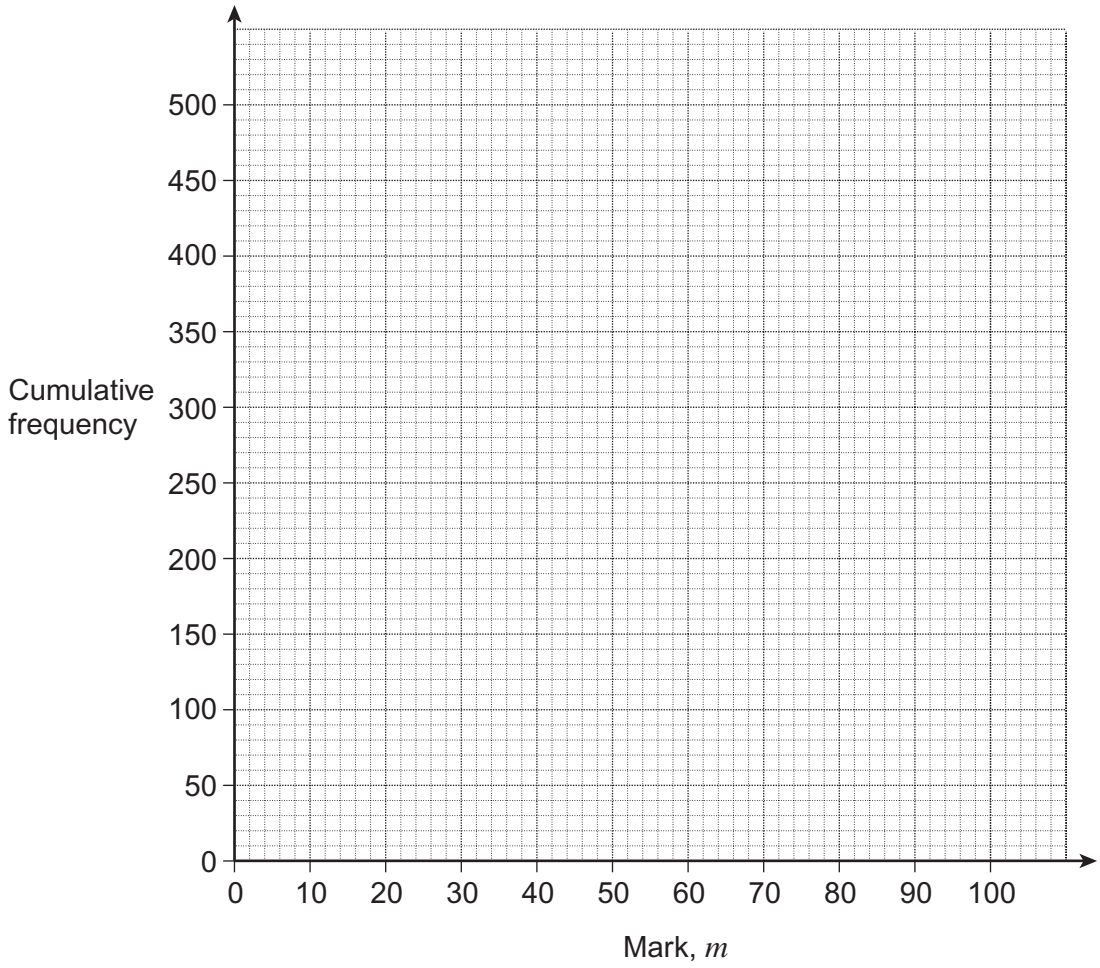
9 The table shows information about the marks of 500 students.

Mark, m	Frequency	Cumulative frequency
$15 < m \leqslant 40$	80	80
$40 < m \leqslant 60$	220	
$60 < m \leqslant 80$	125	
$80 < m \leqslant 100$	75	

9 (a) Complete the cumulative frequency column.

(1 mark)

***9 (b)** Show the information on a cumulative frequency graph.



(3 marks)

9 (c) The top 10% of the students are awarded a distinction.

Estimate the mark needed for a distinction.

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Answer ..... *(2 marks)*

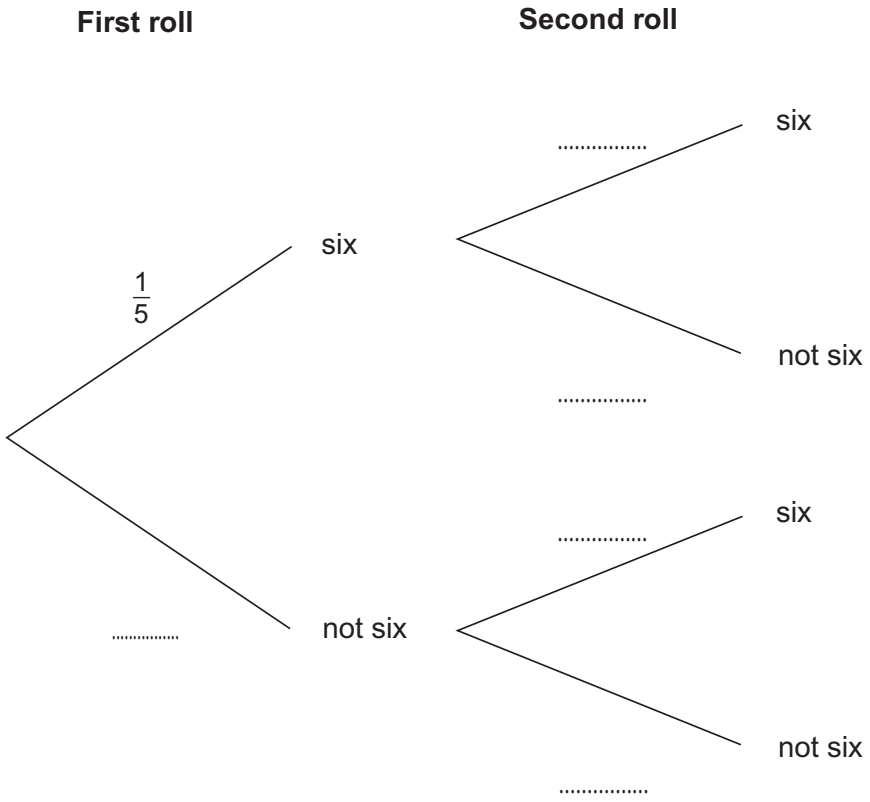
Turn over for the next question

6

10 The probability of rolling a six on a biased dice is $\frac{1}{5}$

The dice is rolled twice.

10 (a) Complete the tree diagram.



(2 marks)

10 (b) Work out the probability of rolling exactly one six.

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Answer ..... *(2 marks)*

***11** Here is a list of numbers.

1 000 000 4.6×10^4 63 000 5×10^3 1.7×10^5

Work out the range.
Write your answer in standard form.

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Answer ..... *(4 marks)*

Turn over for the next question

8

12 240 people visited a museum.
The cumulative frequency table shows information about their ages.

Age (years)	Cumulative frequency
$\leqslant 4$	0
$\leqslant 12$	65
$\leqslant 19$	175
$\leqslant 64$	215
$\leqslant 80$	240

12 (a) The museum has four types of ticket.

Ticket type	Child	Teenager	Adult	Senior
Age (years)	5 to 12	13 to 19	20 to 64	65 and over

Show that 110 teenagers visited the museum.

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(1 mark)

12 (b) The owner wants a sample of size 30, stratified by ticket type.

How many teenagers should be in the sample?

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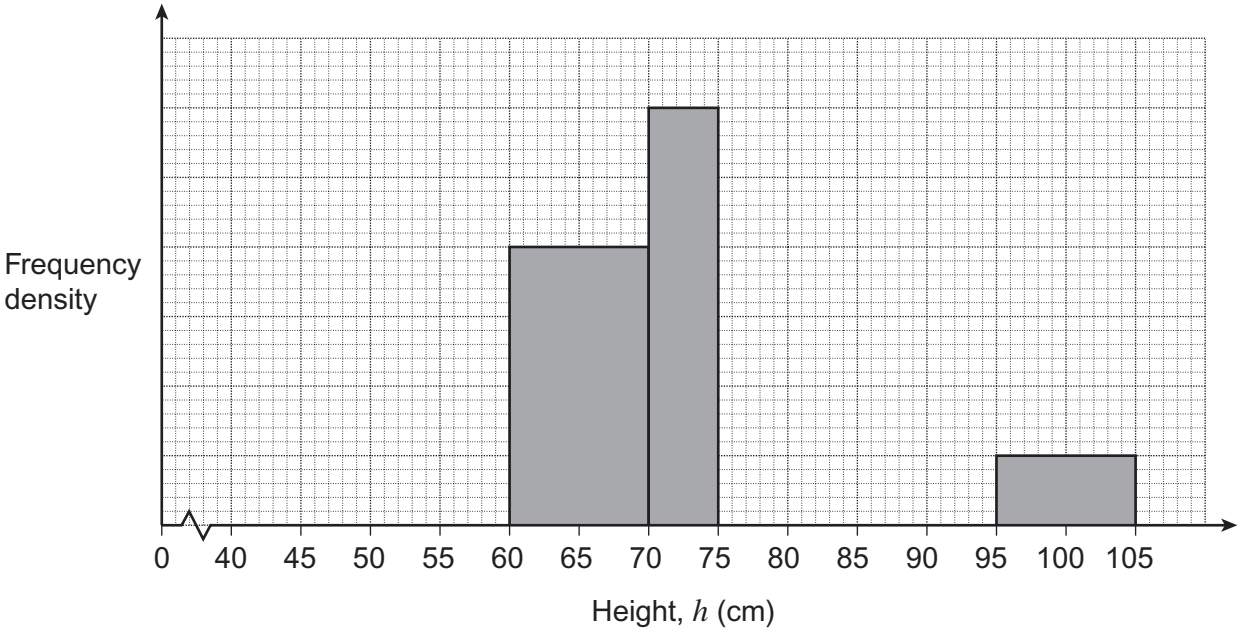
Answer ..... *(3 marks)*

13 The table and histogram give some information about the heights of 120 children.

Height, h (cm)	Frequency
$40 < h \leqslant 60$	30
$60 < h \leqslant 70$	20
$70 < h \leqslant 75$	
$75 < h \leqslant 95$	50
$95 < h \leqslant 105$	
	Total = 120



13 (a) Complete the table and the histogram. *(3 marks)*

13 (b) Calculate an estimate of the upper quartile of the heights of the 120 children.

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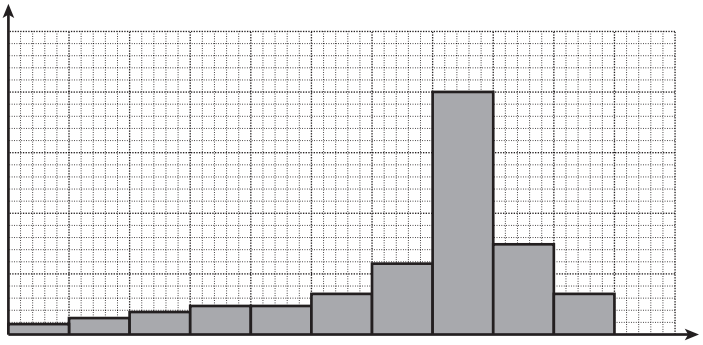
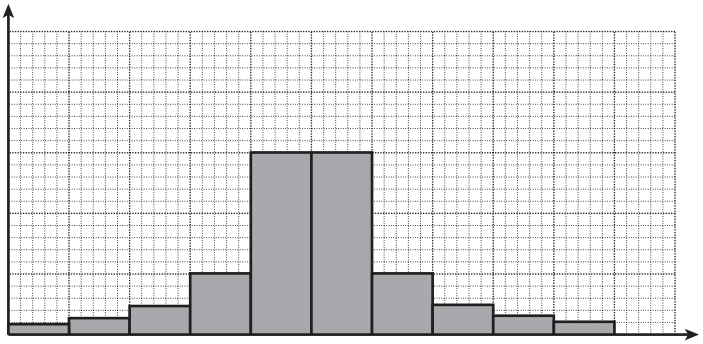
Answer ..... cm *(2 marks)*

9

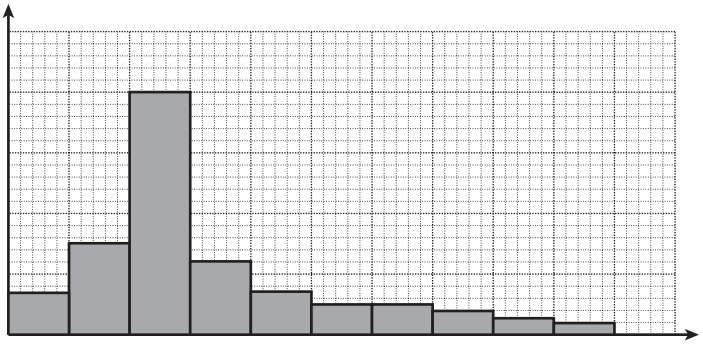
14 Here are the histograms for four different sets of data.
Each set of data has the same number of values.



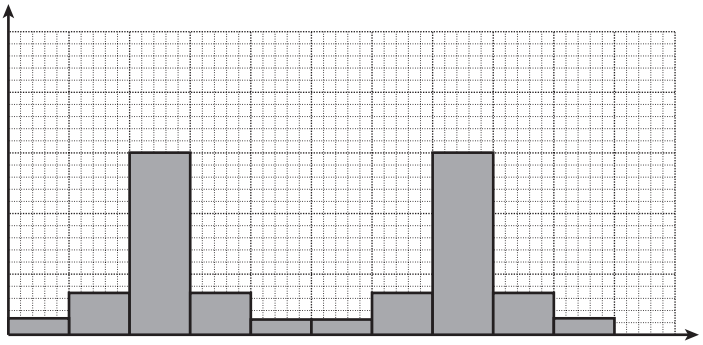
Histogram 1



Histogram 2



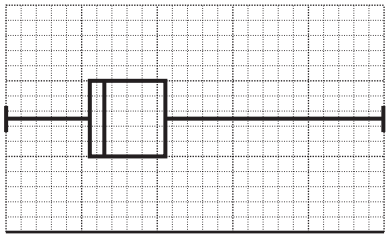
Histogram 3



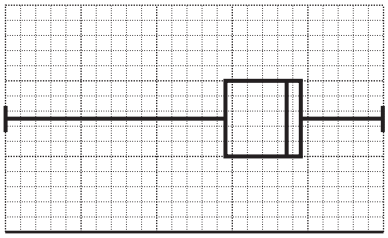
Histogram 4

Here are the box plots for the same four sets of data.

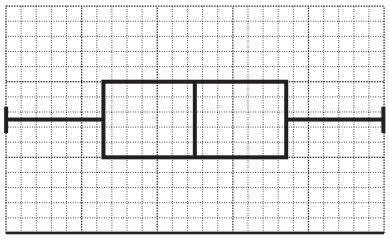
Box plot A



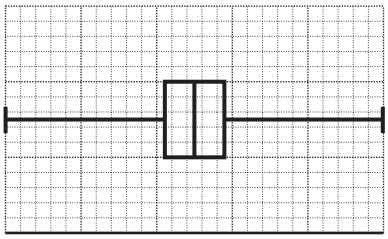
Box plot B



Box plot C



Box plot D



Complete the table to match each box plot to a histogram.

Histogram	Box plot
1	
2	
3	
4	

(3 marks)

END OF QUESTIONS

3

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED