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Statistics Review Problem Set 1

1a. 200 people were asked the amount of time T (minutes) they had spent in the supermarket. The results are represented in the table below. *[1 mark]*

Time (T)	$0 < T \leq 10$	$10 < T \leq 20$	$20 < T \leq 30$	$30 < T \leq 40$	$40 < T \leq 50$
Number of people	23	57	93	21	6

State if the data is discrete or continuous.

1b. State the modal group. *[1 mark]*

1c. Write down the midpoint of the interval $10 < T \leq 20$. *[1 mark]*

1d. Use your graphic display calculator to find an estimate for *[3 marks]*

(i) the mean;

(ii) the standard deviation.

1e. The results are represented in the cumulative frequency table below, with upper class boundaries of 10, 20, 30, 40, 50. *[2 marks]*

Upper class boundaries	10	20	30	40	50
Cumulative frequency	23	80	173	q	r

Write down the value of

(i) q;

(ii) r.

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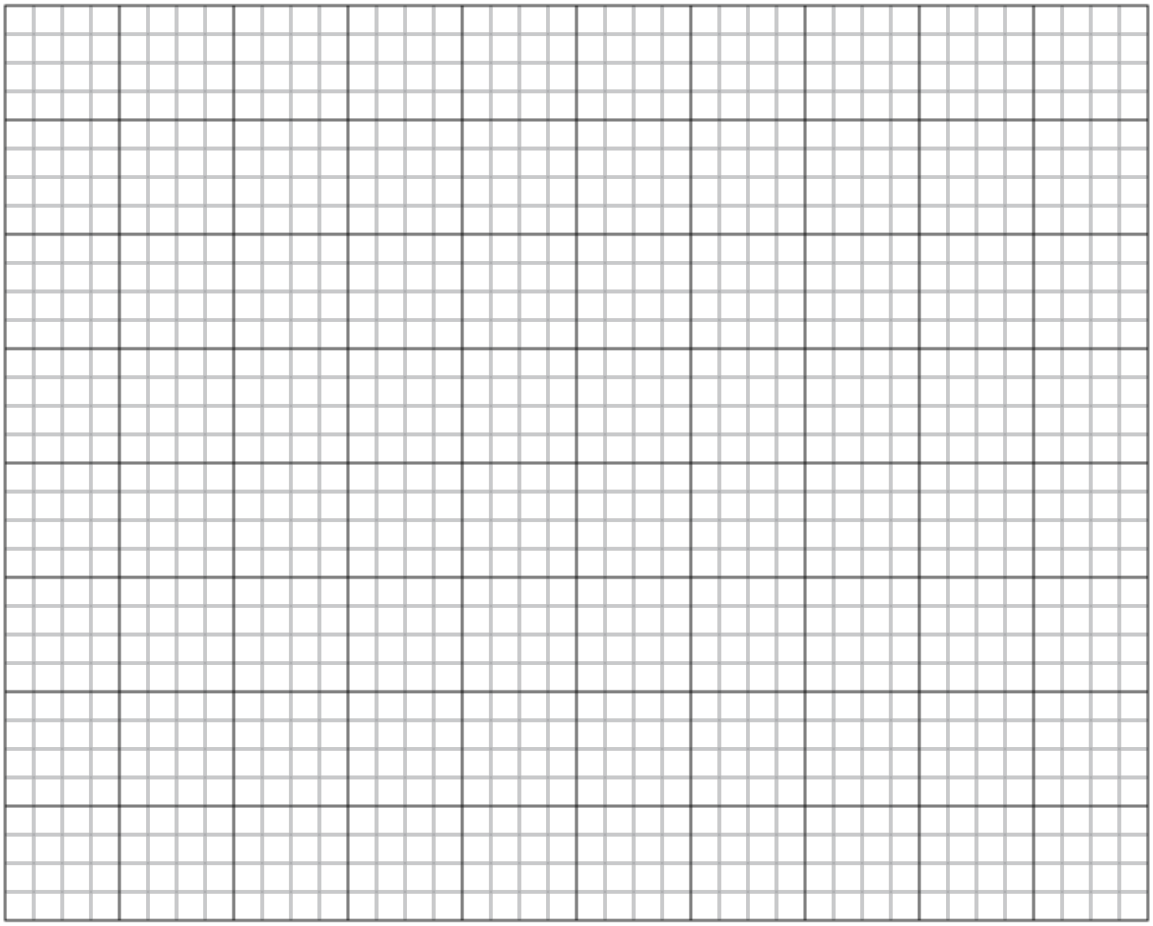
1f. The results are represented in the cumulative frequency table below, with upper class boundaries of 10, 20, 30, 40, 50. *[4 marks]*

Upper class boundaries	10	20	30	40	50
Cumulative frequency	23	80	173	q	r

On the graph paper below, draw a cumulative frequency graph for the table above.



1g. **Use your graph** from part (f) to estimate *[6 marks]*

(i) the median;

(ii) the 90^{th} percentile of the results;

(iii) the number of people who shopped at the supermarket for more than 15 minutes.

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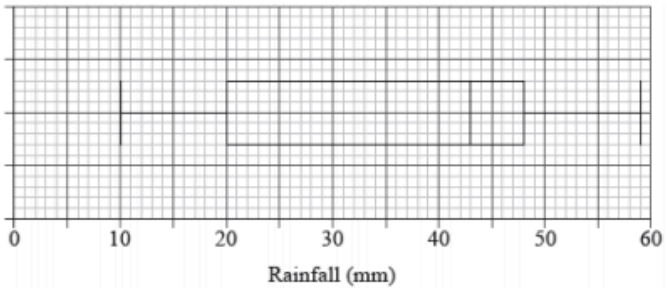
2a. The distribution of rainfall in a town over 80 days is displayed on the following box-and-whisker diagram. *[1 mark]*



Write down the median rainfall.

2b. Write down the minimum rainfall. *[1 mark]*

2c. Find the interquartile range. *[2 marks]*

2d. Write down the number of days the rainfall will be *[2 marks]*

(i) between 43 mm and 48 mm;

(ii) between 20 mm and 59 mm.

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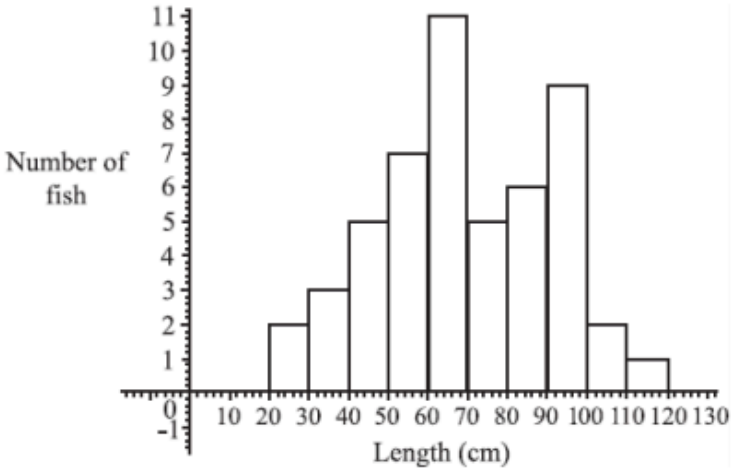
4a. The figure below shows the lengths in centimetres of fish found in the net of a small trawler. *[2 marks]*



Find the total number of fish in the net.

4b. Find (i) the modal length interval, *[5 marks]*

(ii) the interval containing the median length,

(iii) an estimate of the mean length.

4c. (i) Write down an estimate for the standard deviation of the lengths. *[3 marks]*

(ii) How many fish (if any) have length **greater than** three standard deviations **above** the mean?

4d. The fishing company must pay a fine if more than 10% of the catch have lengths less than 40cm. *[2 marks]*

Do a calculation to decide whether the company is fined.

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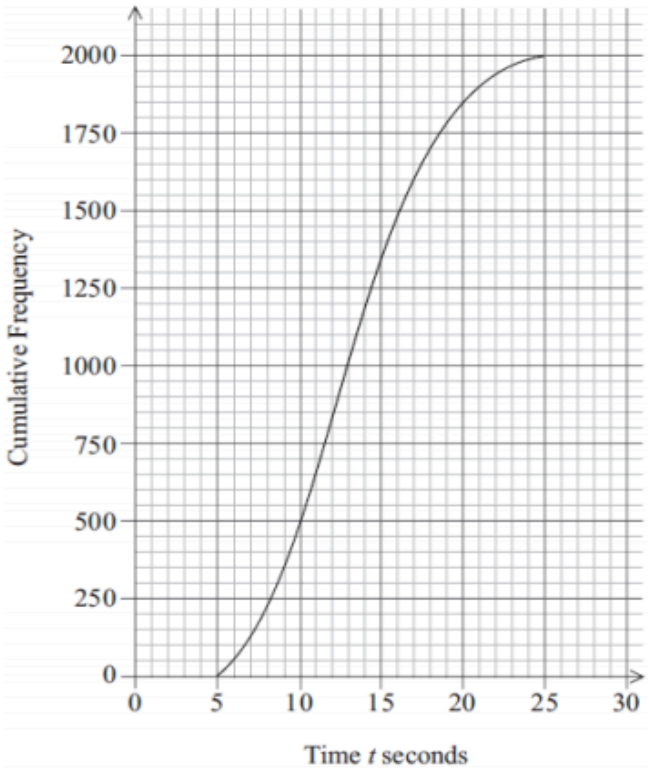
3a. The diagram shows the cumulative frequency graph for the time t taken to perform a certain task by 2000 men. *[1 mark]*



Use the diagram to estimate the median time.

3b. Use the diagram to estimate the upper quartile and the lower quartile. *[2 marks]*

3c. Use the diagram to estimate the interquartile range. *[1 mark]*

3d. Find the number of men who take **more than** 11 seconds to perform the task. *[3 marks]*

3e. 55 % of the men took less than p seconds to perform the task. Find p. *[2 marks]*

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5a. The lengths (l) in centimetres of 100 copper pipes at a local building supplier were measured. The results are listed in the table below. *[1 mark]*

Length l (cm)	Frequency
17.5	12
32.5	26
47.5	32
62.5	21
77.5	9

Write down the mode.

5b. Using your graphic display calculator, write down the value of *[4 marks]*

(i) the mean;

(ii) the standard deviation;

(iii) the median.

5c. Find the interquartile range. *[2 marks]*

5d. Draw a box and whisker diagram for this data on the graph below. *[4 marks]*