



Name: _____

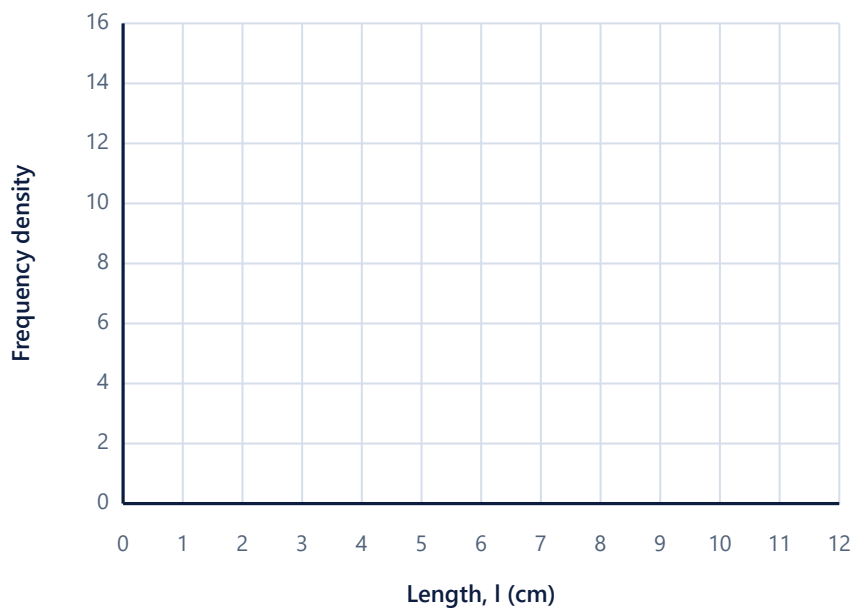
Date: _____

Score: _____ / 69

- 1** The lengths, l cm, of 60 leaves are summarised in the table.

Length, l (cm)	Frequency
$2 \leq l < 4$	6
$4 \leq l < 5$	9
$5 \leq l < 6$	15
$6 \leq l < 8$	18
$8 \leq l < 12$	12

- Calculate the frequency density for each class.
- Draw a histogram to represent the data on the grid.



(3 marks)

Answer _____

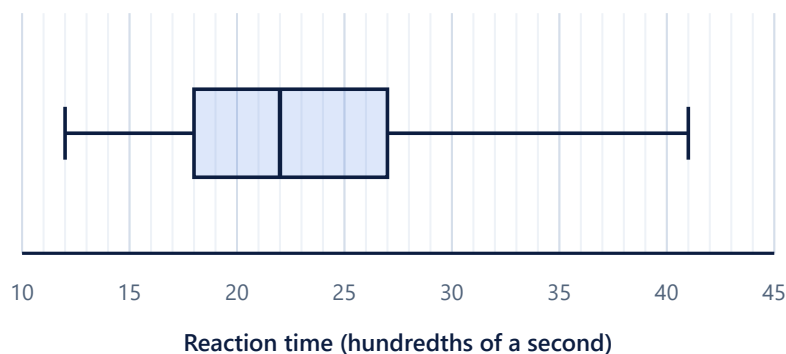
2

The box plot summarises the reaction times, in hundredths of a second, of a group of drivers in a simulator.

- Write down the median reaction time.
- Find the interquartile range.

An outlier is a value greater than $Q_3 + 1.5 \times (Q_3 - Q_1)$.

- Show that the longest reaction time is an outlier.
- State one reason why a value in a data set might be an outlier.



(4 marks)

Answer

3

The table shows the number of hours, h , that 70 students spent watching television in one week.

Hours, h	Frequency
$0 \leq h < 5$	10
$5 \leq h < 10$	18
$10 \leq h < 15$	22
$15 \leq h < 25$	14
$25 \leq h < 40$	6

A histogram is drawn to represent these data. The bar for $10 \leq h < 15$ is 2 cm wide and 8.8 cm tall.

- Find the width and the height of the bar for $15 \leq h < 25$
- Estimate the number of students who watched between 12 and 20 hours of television.

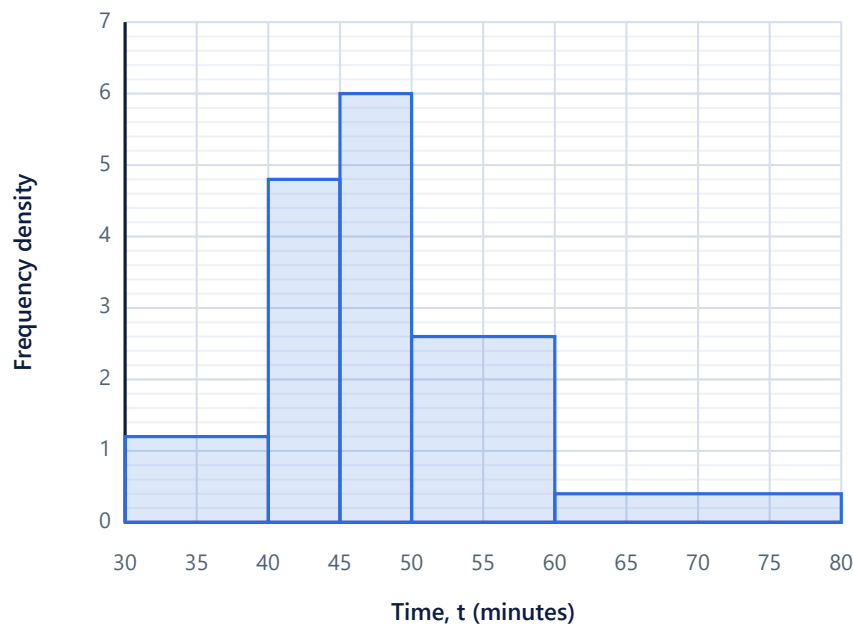
(5 marks)

Answer _____

4

The histogram shows the times, t minutes, taken by the runners in a 10 km race.

- Find the number of runners in the race.
- Estimate the number of runners who took less than 48 minutes.
- Use linear interpolation to estimate the median time.
- Estimate the mean time.



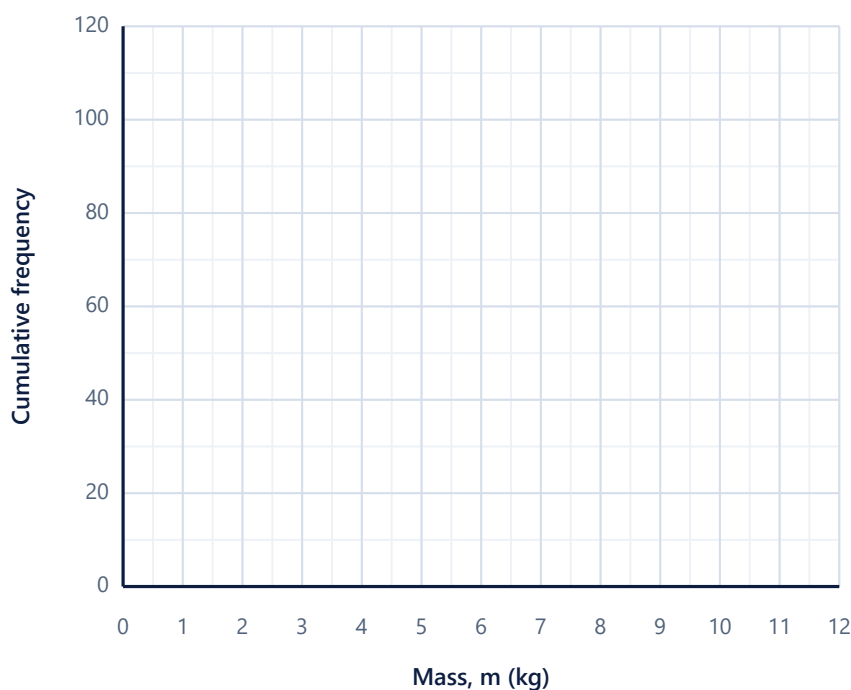
(7 marks)

Answer

- 5 The masses, m kg, of 120 parcels sent from a post office are summarised below.

Mass, m (kg)	Frequency
$0 < m \leq 2$	14
$2 < m \leq 4$	32
$4 < m \leq 6$	40
$6 < m \leq 8$	22
$8 < m \leq 12$	12

- On the grid, draw a cumulative frequency graph for these data, joining the points with straight lines.
- Use your graph to estimate the median and the interquartile range.
- Parcels heavier than 7 kg cost extra to send. Use your graph to estimate the number of parcels that cost extra.



(7 marks)

Answer _____

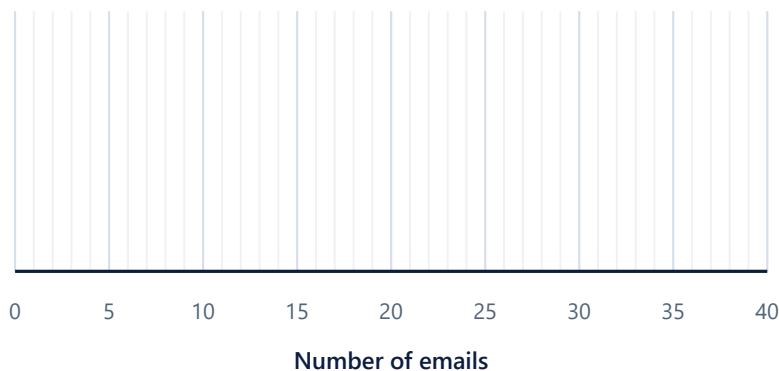
6

Priya records the number of emails she receives each working day for 30 days. Her results are summarised below.

Smallest	Lower quartile	Median	Upper quartile	Largest
4	11	15	19	38

The second largest value is 26. An outlier is a value more than $1.5 \times (Q_3 - Q_1)$ above Q_3 or below Q_1 .

- Show that 38 is the only outlier.
- On the grid, draw a box plot to represent these data.



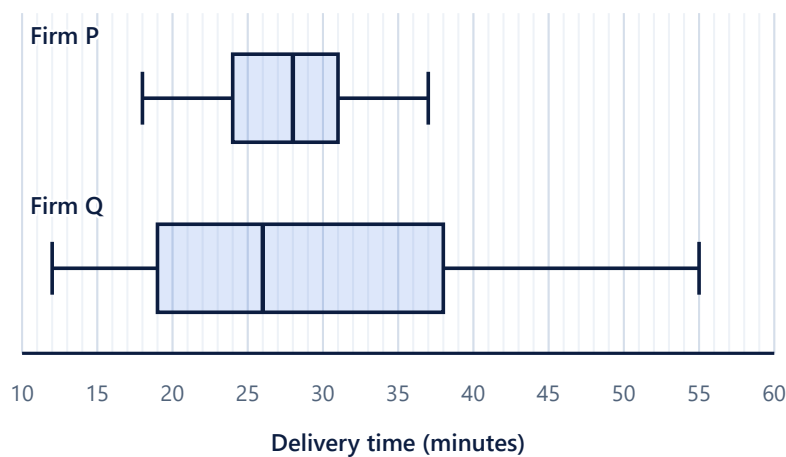
(4 marks)

 Answer

7

A café compares the delivery times, in minutes, of two delivery firms, P and Q . The box plots summarise the times for 40 deliveries by each firm.

- Find the interquartile range for each firm.
- Compare the delivery times of the two firms.
- The café wants a firm whose deliveries are reliably on time. State, giving a reason, which firm it should choose.



(5 marks)

Answer _____

8

The times, x seconds, taken by 25 students to solve a puzzle are summarised by

$$\Sigma x = 1150 \quad \Sigma x^2 = 55\,250$$

- a. Find the mean and the standard deviation of the times.

An outlier is a value more than 2 standard deviations from the mean. The fastest time was 24 seconds and the slowest time was 63 seconds.

- b. Show that 24 is an outlier and 63 is not.

- c. The outlier is removed. Find the mean and the standard deviation of the remaining 24 times.

(6 marks)

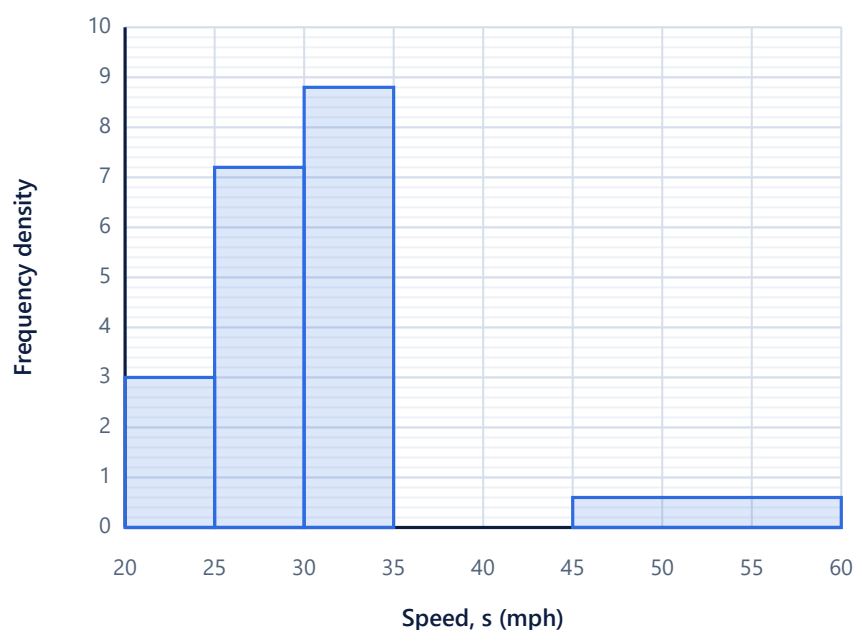
Answer

9

The speeds, s mph, of cars passing a speed camera were recorded. The table and the histogram are both incomplete.

Speed, s (mph)	Frequency
$20 \leq s < 25$	15
$25 \leq s < 30$	
$30 \leq s < 35$	44
$35 \leq s < 45$	30
$45 \leq s < 60$	9

- Use the histogram to complete the table.
- Complete the histogram.
- Estimate the proportion of these cars travelling at more than 40 mph.



(6 marks)

Answer _____

10

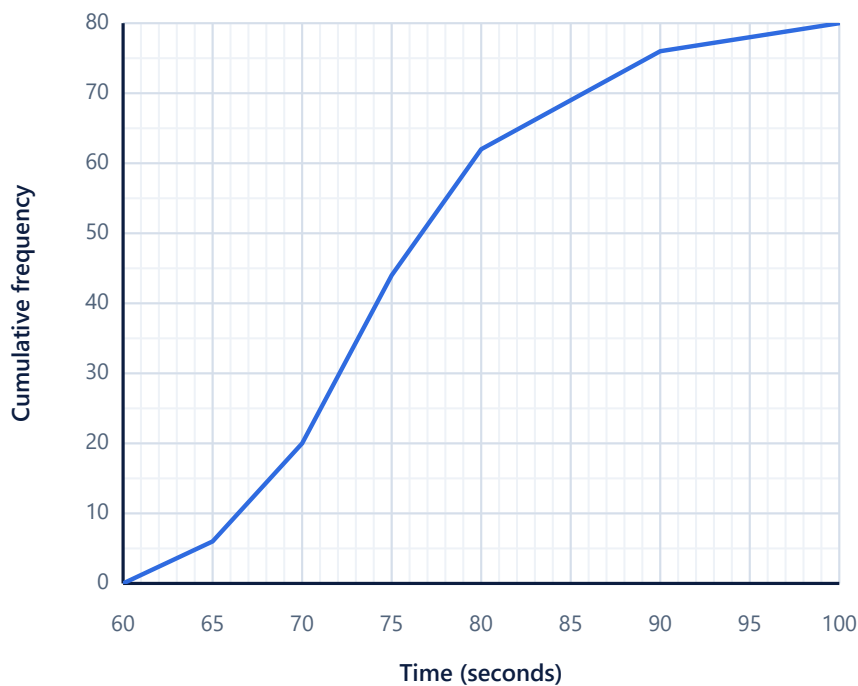
The cumulative frequency graph shows the times, in seconds, taken by 80 Year 12 boys to run 400 m.

a. Use the graph to estimate the median and the interquartile range of the times.

For the Year 12 girls the median time was 81 seconds and the interquartile range was 12 seconds.

b. Compare the times of the boys and the girls.

c. The coach chooses the fastest 25% of the boys for a relay squad. Estimate the slowest time that would get a boy into the squad.



(6 marks)

Answer _____

11

The box plot summarises the times, x minutes, taken by 31 people to assemble a flat-pack bookcase.

For these data $\Sigma x = 589$ and $\Sigma x^2 = 12\,469$

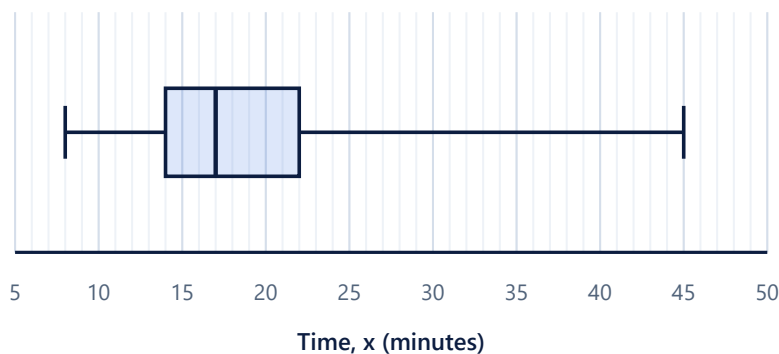
- Find the interquartile range.
- Calculate the mean and the standard deviation of the times.

Ellie defines an outlier as a value more than 2 standard deviations above the mean.

- State, giving a reason, whether there are any outliers in these data using Ellie's definition.

Two more people each take 17 minutes to assemble the bookcase.

- State, giving a reason, the effect of including their times on (i) the median, (ii) the mean.

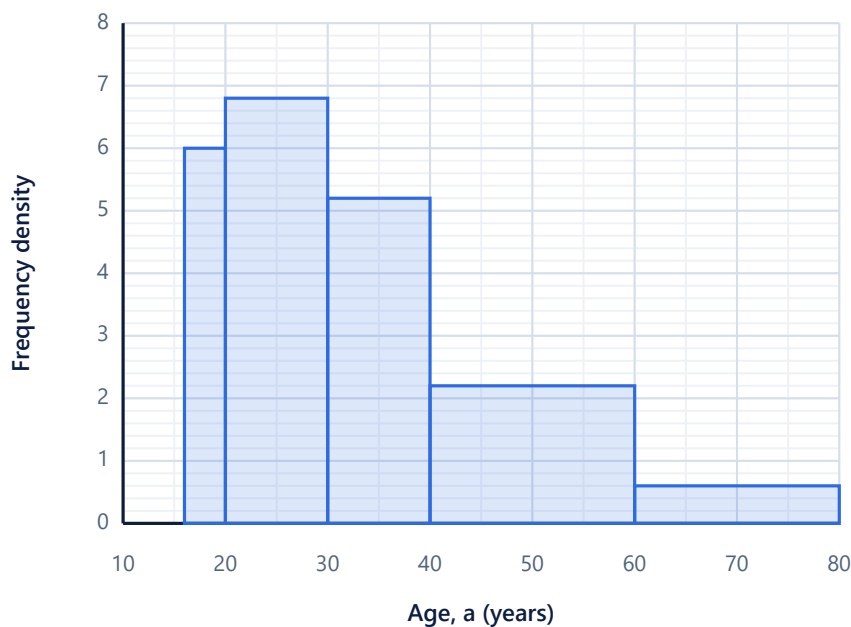


(8 marks)

Answer _____

12 The histogram shows the ages, a years, of the 200 members of a gym.

- Estimate the number of members aged between 25 and 45
- Use linear interpolation to estimate the median age.
- Two members are chosen at random. Estimate the probability that both are under 20
- An estimate of the mean age is 35.0 years. Explain, with reference to the histogram, why the mean is greater than the median.



(8 marks)

Answer _____

End of questions | Total 69 marks