Worked answers | Statistics and data analysis

Mean, median and range in continuous distributions

6 questions | 15 marks

Equivalent correct methods earn the corresponding marks.

1. Find the mean of the lengths 2.4, 2.8, 3.2 and 3.6 cm. [2 marks]

The total is 12.0 cm.

$12.0 \div 4 = 3.0$ cm.

Answer: 3.0 cm

2. Find the median and range of 8.2, 7.5, 9.0, 8.4 and 7.9 seconds. [2 marks]

Order 7.5, 7.9, 8.2, 8.4, 9.0.

The middle is 8.2 and $9.0 - 7.5 = 1.5$.

Answer: Median 8.2 s; range 1.5 s

3. Find the mean and median of 1.2, 1.4, 1.5, 1.7 and 9.2 kg. Which is more typical of the four smaller masses? [3 marks]

The sum is 15.0, so the mean is 3.0.

The middle value is 1.5; 9.2 pulls the mean upward.

Answer: Mean 3.0 kg; median 1.5 kg; median is more typical.

4. Estimate the mean waiting time for the table. Explain why it is not exact. [3 marks]

Waiting times

Interval(min)	Frequency
$0 \le t < 10$	7
$10 \le t < 20$	2
$20 \le t < 30$	1

Midpoints are 5, 15, 25.

$(5\times7+15\times2+25\times1)\div10=90\div10=9$.

Answer: Estimated mean 9 minutes; interval midpoints replace unknown individual times.

5. One class has mean height 1.55 m. Another has median height 1.55 m. Does this prove their height distributions are the same? [2 marks]

The summaries measure different features.

Different data sets can share a summary without sharing spread or shape.

Answer: No.

6. A runner's five times have mean 14.2 s. Four times total 55.9 s. Find the fifth time. [3 marks]

The five times total $5\times14.2=71.0$ s.

$71.0-55.9=15.1$ s.

Answer: 15.1 s