Range, quartiles and interquartile range

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Find the range of 3,4,7,8,20. [2 marks]

20−3=17.

Answer: 17.

2. Find the five-number summary of 2,4,6,8,10,12,14. [2 marks]

The median is 8; half medians are 4 and 12.

Answer: (2,4,8,12,14).

3. Find the IQR of 1,2,4,5,7,9,11,15. [2 marks]

Q1=(2+4)/2=3; Q3=(9+11)/2=10.

IQR 10−3=7.

Answer: 7.

4. A box plot has summary(5,8,11,16,25). State the median, IQR and range. [2 marks]

IQR 16−8=8; range 25−5=20.

Answer: Median 11; IQR 8; range 20.

5. Replace the largest observation 30 in 1,3,5,7,9,11,30 with 100. Compare range and IQR. [3 marks]

Median 7; Q1=3 and Q3=11 in both samples.

Changing only the extreme leaves the central-half summary unchanged.

Answer: Range rises from 29 to 99; IQR stays 8.

6. Two sets have the same five-number summary. Must their means be equal? Explain. [3 marks]

The summary fixes only selected positions and endpoints, not every intermediate observation.

Different intermediate values can change the total and mean.

Answer: No.