

Cumulative Frequency, Box Plots and Histograms

Year 9 · Statistics · y9-stat

Name: _____

Date: _____

Class: _____

Score: ____ / ____

Instructions

Answer every question in Practice. Try the Challenge section once Practice is complete. 10 questions in total.

Practice

1. A cumulative frequency graph plots 40 data points. To estimate the median, you read off the value at cumulative frequency position $n/2$. What position is that?

2. A box plot has upper quartile $Q3 = 45$ and lower quartile $Q1 = 18$. What is the interquartile range ($IQR = Q3 - Q1$)?

3. A frequency table shows value 2 with frequency 5, value 4 with frequency 8, value 6 with frequency 7. What is the mean? $((2 \times 5 + 4 \times 8 + 6 \times 7) \div 20)$

4. A histogram bar has frequency 24 and class width 8. Frequency density = frequency $\div$ class width. What is the frequency density?

5. A grouped frequency table has class midpoints 10, 30, 50 with frequencies 5, 8, 7. Estimate the mean using $\text{sum}(\text{freq} \times \text{midpoint}) \div \text{total frequency}$.

6. The median position on a cumulative frequency graph is found at $n/2$ of the total data points. A survey has 60 respondents. What cumulative frequency position estimates the median?

7. The interquartile range measures the spread of the middle 50% of data: $IQR = Q3 - Q1$. A box plot shows $Q3 = 52$ and $Q1 = 20$. What is the IQR?

8. On a histogram, the vertical axis shows frequency density, not frequency directly: frequency density = frequency $\div$ class width. A bar has frequency 32 and class width 4. What is its frequency density?

Challenge

1. A grouped frequency table has class midpoints 15, 25, 35 with frequencies 6, 9, 5. Estimate the mean using $\text{sum}(\text{freq} \times \text{midpoint}) \div \text{total frequency}$.

2. A box plot shows $Q1 = 29$ and $Q3 = 68$. Any value more than $1.5 \times IQR$ beyond $Q3$ may be an outlier. What is the IQR here?
