

Comparing box-and-whisker graphs (CSSI)

Compare each plot's Centre, Shape, Spread, and Interesting features.



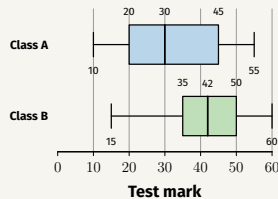
Name _____

Date _____

Reading a box-and-whisker plot

CSSI: **Centre** (median, mean), **Shape** (left skew/right skew/symmetric), **Spread** ($IQR = Q3 - Q1$, range = $\text{max} - \text{min}$), **Interesting** features (outliers, groups). The box spans $Q1$ to $Q3$; the line inside is the median; the whiskers reach the minimum and maximum.

Worked example Compare the median and IQR of Class A and Class B.

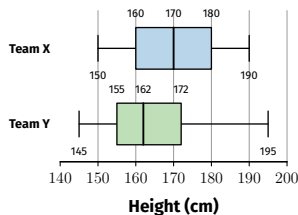


Median: Class A = 30, Class B = 42 — Class B scored higher by 12 marks.

IQR: Class A = $45 - 20 = 25$, Class B = $50 - 35 = 15$ — Class A was more spread out.

1. Which class has the higher median? By how much?

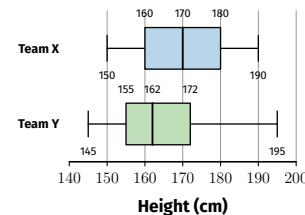
Solution: Team X's median (170) is higher than Team Y's (162) by 8cm.



Working

2. Which class has the greater spread (IQR)? What does that mean?

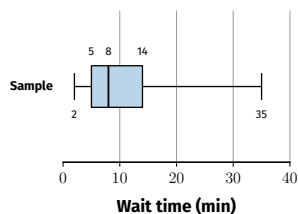
Solution: Team X: $IQR = 180 - 160 = 20$. Team Y: $IQR = 172 - 155 = 17$. Team X was slightly more spread out.



Working

3. Describe the shape of this distribution. Justify your answer.

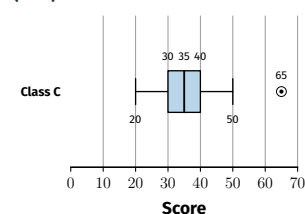
Solution: Right-skewed — the upper section (median to max = 8 to 35) is far larger than the lower section (min to median = 2 to 8).



Working

4. Identify any outliers shown on this plot.

Solution: One outlier at 65 — well above the upper whisker (50).



Working

Comparing box-and-whisker graphs (CSSI) (continued)



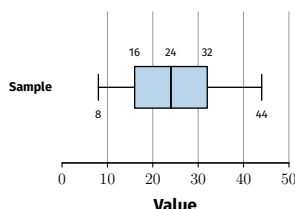
Compare each plot's Centre, Shape, Spread, and Interesting features.

Name _____

Date _____

5. Calculate the IQR and range for this distribution.

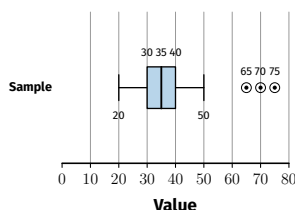
Solution: $IQR = 32 - 16 = 16$. $Range = 44 - 8 = 36$.



Working

7. This plot shows several outliers on one side. What might this suggest?

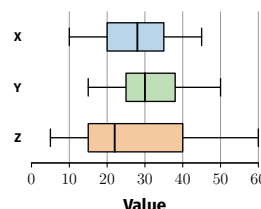
Solution: Several unusually high values suggest a separate subgroup within the data, or a genuine but rare high-value cluster worth investigating further.



Working

6. Compare the centre, shape, and spread of these three distributions.

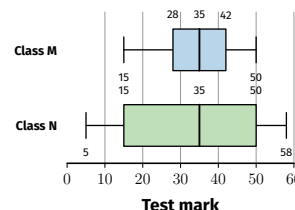
Solution: Medians: $Y (30) > X (28) > Z (22)$. Z has the greatest spread (IQR 25) and a long upper tail (right-skewed); Y has the smallest spread (IQR 13) and is most consistent.



Working

8. Two classes have the same median. Compare their spread and shape, and say which was more consistent.

Solution: Both medians are 35. Class M's IQR ($42 - 28 = 14$) is far smaller than Class N's ($50 - 15 = 35$) — Class M was much more consistent.



Working