

Data Showdown

Compare actual dot plots and box plots using center, spread, and shape.

GRADE 7 • TEKS 7.12.A

7.12.A "Excerpt: compare two groups of numeric data using comparative dot plots or box plots"

NAME _____

DATE _____

Read, compare, justify

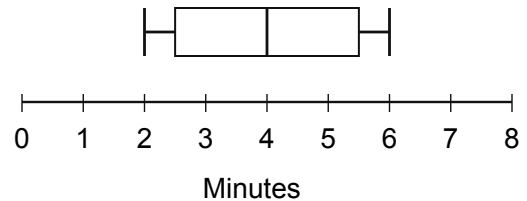
Compare center with the median, and spread with range or IQR ($Q3 - Q1$). Describe visible clusters, gaps and symmetry. Dot plots show individual observations; box plots show five-number summaries. Random samples support cautious estimates, not certainty.

Worked example

Read the example box plot. Find the median and range.

The middle line marks the median. The whiskers show minimum and maximum. Median 4 minutes; range $6 - 2 = 4$ minutes.

Example sample



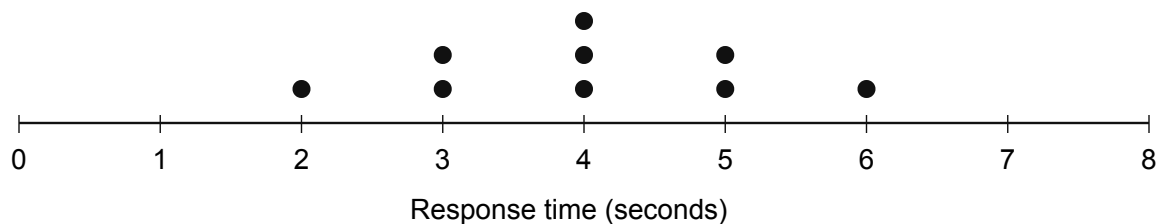
Use the printed plots and tables. Name both groups, include units, and support each comparison with values. Refer back to a numbered task when directed.

1. Know what a box plot cannot show

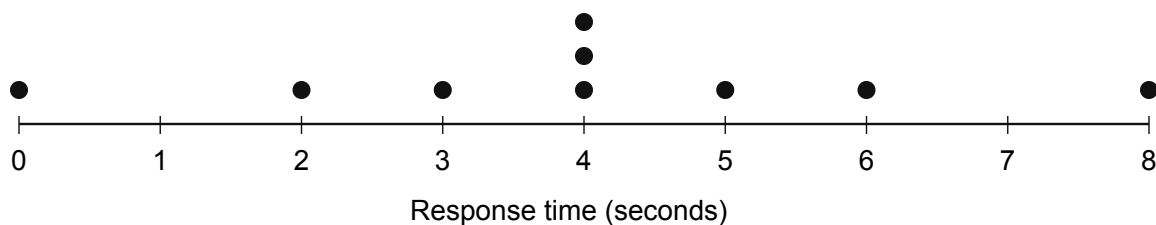
Use the worked-example box plot. Can you tell its most frequent exact time? Explain what the median line shows and why it does not identify the most frequent time.

2. Same center, different spread

Use the comparative dot plots to find each median and range. Which group has less variable response times?

Group A

Key: one dot = one observation

Group B

Key: one dot = one observation

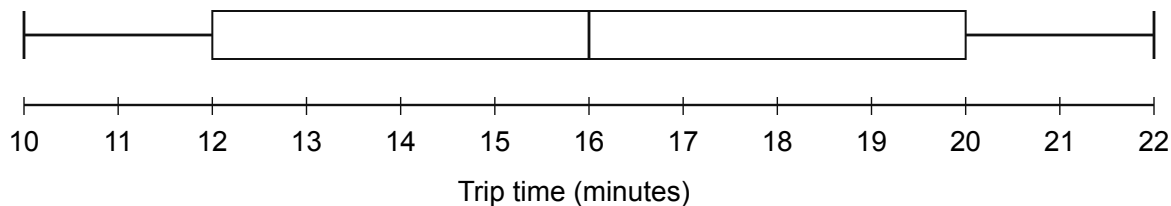
3. Describe the shapes

Refer to Task 2. Compare the shapes and identify any gaps. Give numerical evidence, not just "they look different."

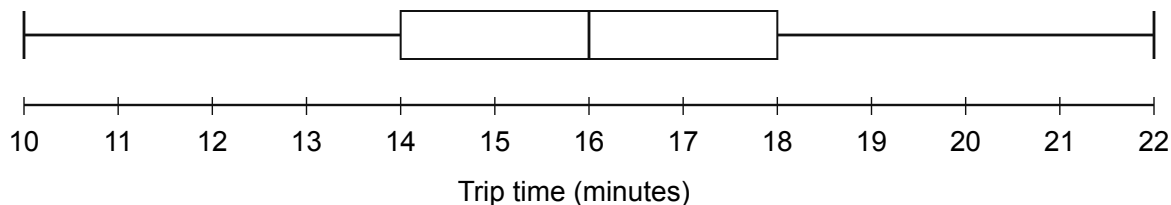
4. Read comparative box plots

Find both medians, IQRs and ranges. Which route has the smaller spread in its middle half?

Route C



Route D

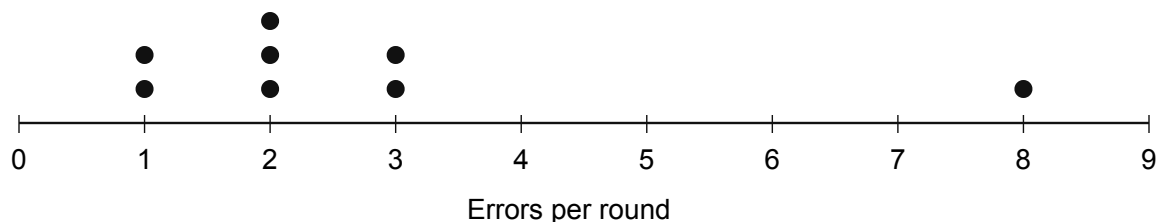
**5. Choose the relevant spread**

A commuter cares about the middle half of trip times. Using Task 4, recommend a route for more consistent middle-half travel and explain why the equal ranges do not settle the question.

6. Compare clusters and isolated values

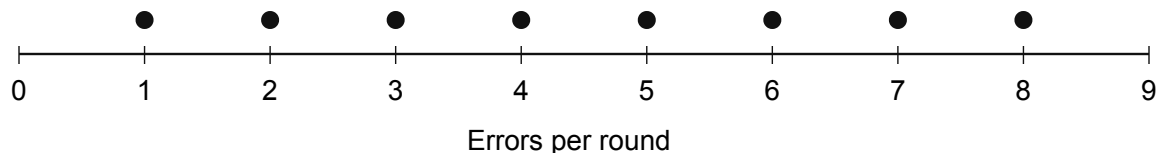
Use the dot plots. Describe each shape and find both medians. Explain which team usually made fewer errors.

Team E



Key: one dot = one observation

Team F



Key: one dot = one observation

7. Test a range-only claim

Use Task 6. A coach says equal ranges mean the teams performed the same. Find both ranges, then use center and shape to evaluate the claim.

TEACHER NOTES

All paired plots use matching scales and units. Dot plots show each observation. Box plots show min/Q1/median/Q3/max with the median excluded when forming odd-sized halves. Accept equivalent supported shape descriptions; an isolated value is not automatically a proven formal outlier.

TASK 1

No. The median line marks the middle of the ordered data, not the most frequent value. The box plot does not show individual frequencies.

TASK 2

Both medians are 4 seconds. A range = $6 - 2 = 4$; B range = $8 - 0 = 8$ seconds. A is less variable by range.

TASK 3

Both are symmetric around 4, with 3 observations at 4. A has values at every integer from 2 through 6. B extends from 0 to 8 but has gaps at 1 and 7; A is more tightly clustered.

TASK 4

Both medians: 16 minutes. C: IQR $20 - 12 = 8$; D: $18 - 14 = 4$. Both ranges: $22 - 10 = 12$ minutes. D has the smaller middle-half spread.

TASK 5

Recommend D: its IQR is 4 minutes, compared with C's 8. Both have median 16 and range 12, but range uses only extremes; the smaller IQR describes a tighter middle half. Use the paired plots to support your comparison.

TASK 6

E clusters at 1-3 with an isolated 8 and a gap at 4-7; median 2. F has one observation at every integer 1-8; median $(4 + 5)/2 = 4.5$. E usually made fewer errors by median. Check that the representation and explanation agree with the given quantities.

TASK 7

Both ranges are $8 - 1 = 7$ errors. The claim is false: E median is 2 versus F 4.5, and E clusters low with an isolated high value while F is evenly spread. Check that the representation and explanation agree with the given quantities.