

AP Statistics - Five-Number Summary, Boxplots and Comparing Distributions - Quiz

Common Core AP STAT 1.8, AP STAT 1.9, HSS-ID.A.1, HSS-ID.A.2 · maths-pdf.fr/en/

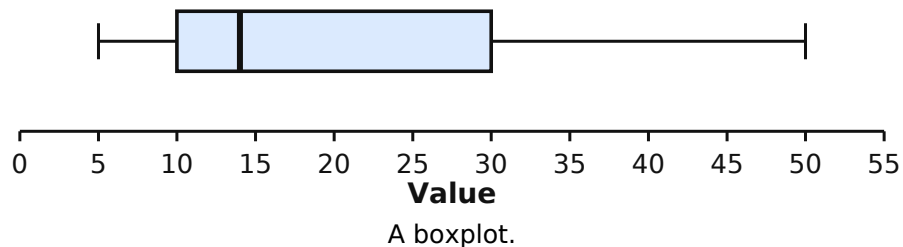
Name: _____ Class: _____ Date: ____/____/____

Ten multiple-choice questions check how to read boxplots and compare distributions. Study each explanation, especially for the questions that involve skew and outliers.

AP Statistics · Common Core State Standards: **AP STAT 1.8, AP STAT 1.9, HSS-ID.A.1, HSS-ID.A.2**

Questions

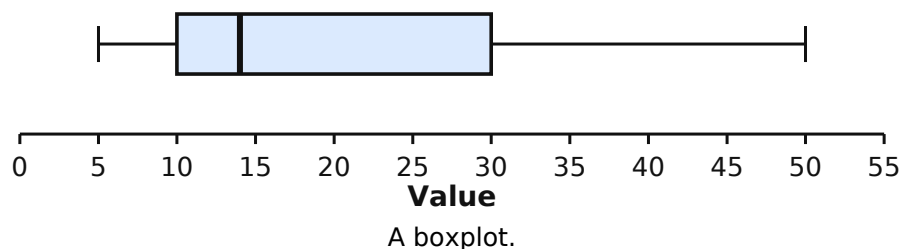
Question 1



What is the IQR shown in this boxplot?

- A. 45
- B. 20
- C. 14
- D. 35

Question 2

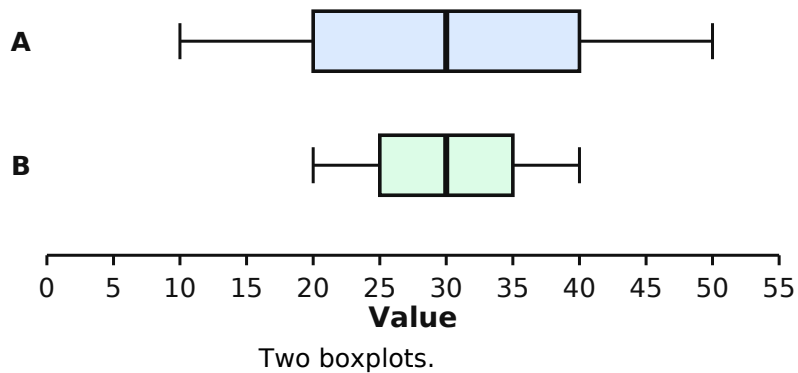


Which shape does this boxplot suggest?

- A. Skewed left

- B. Symmetric
- C. Skewed right
- D. Bimodal

Question 3



Which statement compares the two groups correctly?

- A. B has the larger median
- B. The medians are equal, but A is more variable than B
- C. B has the larger range
- D. The IQRs are equal

Question 4

A data set has $Q1 = 20$ and $Q3 = 36$. Which value is an outlier?

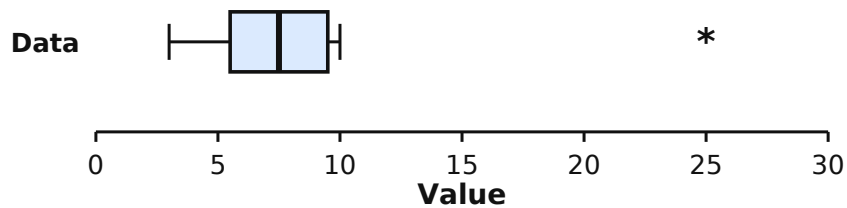
- A. 70
- B. 58
- C. 12
- D. 44

Question 5

About what percent of data lies between the minimum and the median?

- A. 25%
- B. 75%
- C. 50%
- D. 100%

Question 6



Boxplot with an outlier.

What does the star represent?

- A. The mean
- B. A value beyond a fence in the 1.5 IQR rule
- C. The mode
- D. The maximum, always

Question 7

Which is a good comparison sentence?

- A. City A has median 24 and City B has median 18
- B. City A is bigger
- C. A and B are different
- D. The median commute in City A (24 min) is greater than in City B (18 min), and A is more variable

Question 8

A boxplot cannot show:

- A. How many peaks the distribution has
- B. The median
- C. Outliers
- D. The IQR

Question 9

The five-number summary of a data set is 4, 10, 15, 22, 40. What is the upper fence?

- A. 40
- B. 22
- C. 37
- D. 58

Question 10

If the largest value in a data set is made much larger, which statistic is unchanged?

- A. The range
- B. The mean
- C. The standard deviation

D. The median

Answers

1. **B** - $IQR = Q3 - Q1 = 30 - 10 = 20$. The value 45 is the range.
2. **C** - The median is near $Q1$ and the upper whisker and upper half of the box are longer, so the data are skewed right.
3. **B** - Both medians are 30. A has IQR 20 and range 40, while B has IQR 10 and range 20.
4. **A** - $IQR = 16$, so the fences are $20 - 24 = -4$ and $36 + 24 = 60$. Only 70 is beyond a fence.
5. **C** - The median splits the ordered data in half, so 50% lies at or below it.
6. **B** - A star marks an outlier. Here the upper fence is below 25, so 25 is plotted separately.
7. **D** - A complete comparison uses comparison words, numbers, and context. Listing two numbers without comparing earns little credit.
8. **A** - Only the five-number summary and outliers appear. A histogram would be needed to see modes and gaps.
9. **A** - $IQR = 12$, and $22 + 1.5(12) = 40$. The maximum 40 sits exactly at the fence and is not an outlier.
10. **D** - The median depends on the middle position only. The other three include the extreme value.

Remember

- Five-number summary: minimum, $Q1$, median, $Q3$, maximum.
- Each quarter of the ordered data holds about 25% of the values.
- $IQR = Q3 - Q1$; outliers lie more than 1.5 IQR outside the box.
- Compare center, spread, shape, and unusual features using comparison words.
- Boxplots show skew and outliers but not the number of peaks.