

Center, Spread and Data Displays Compared

Grade 9 – Algebra 1 math · Test · Standards: S-ID.A.1, S-ID.A.2, S-ID.A.3

Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points. Allow 45 minutes and work without notes. A calculator is allowed. Show the sorted data and each summary value so that partial credit can be given.

Standards: S-ID.A.1, S-ID.A.2, S-ID.A.3 · **Level:** Grade 9 Algebra 1

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Mean and Median (2 points)

Find the mean and the median of 18, 22, 15, 35, 25.

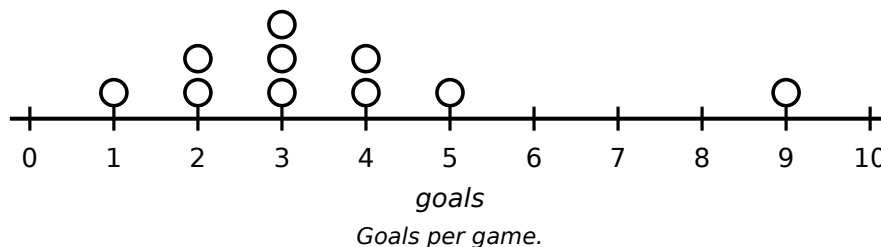
Question 2 Five-Number Summary (3 points)

Consider the data 12, 15, 15, 18, 21, 22, 26, 30, 41.

- Give the five-number summary. (2 points)
- Find the IQR and use the $1.5 \times \text{IQR}$ rule to decide whether 41 is an outlier. (1 point)

Question 3 Dot Plot with an Extreme Value (3 points)

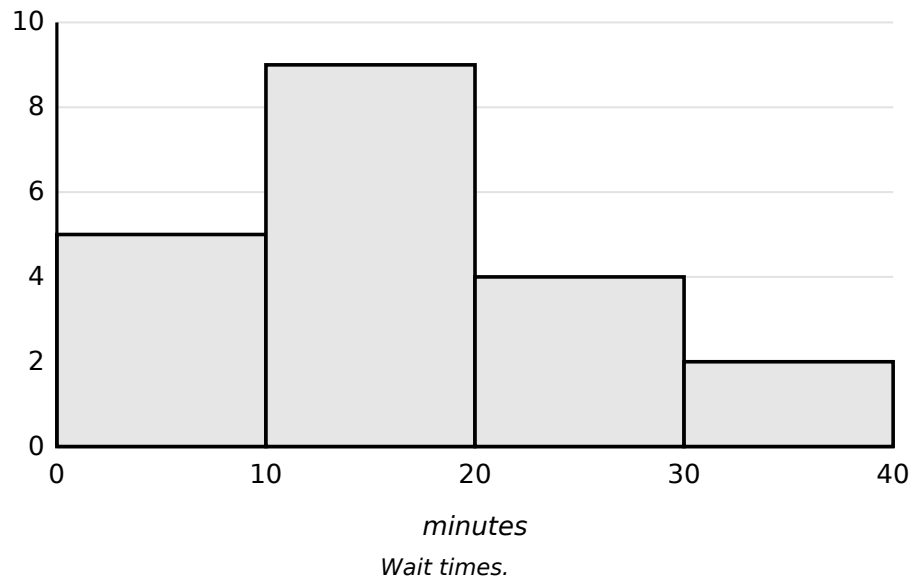
The dot plot shows the goals scored by a team in 10 games.



- Find the median and the range. (1 point)
- Use the $1.5 \times \text{IQR}$ rule to decide whether 9 is an outlier. (1 point)
- Find the mean with and without 9, and tell which of the mean and the median is affected by 9. (1 point)

Question 4 Histogram Reading (2 points)

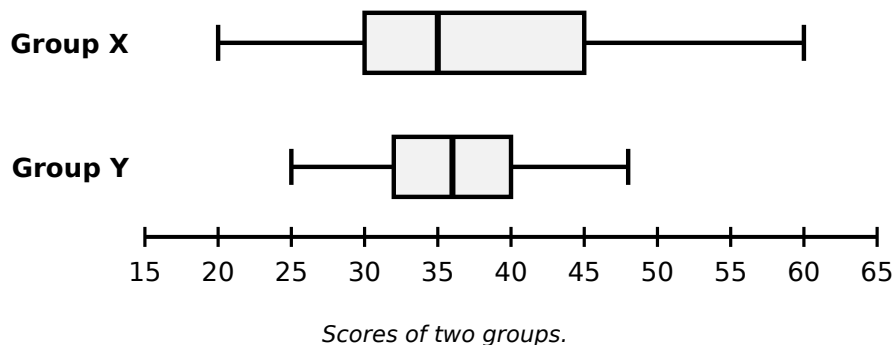
The histogram shows the wait times of 20 customers.



- Which interval contains the median? Justify with counts. (1 point)
- Describe the shape of the distribution. (1 point)

Question 5 Compare Two Groups (3 points)

The box plots show the scores of two groups.



- Which group has the greater median? (1 point)
- Find the IQR of each group. (1 point)
- Which group is more consistent? Explain. (1 point)

Question 6 Standard Deviation by Reasoning (2 points)

Set A = {18, 20, 22} and set B = {10, 20, 30} both have a mean of 20. Without calculating, which set has the greater standard deviation? Explain.

Question 7 Missing Score (3 points)

The mean of five test scores is 84. Four of the scores are 80, 92, 76 and 88.

- a. Find the fifth score. *(2 points)*
- b. Find the median of the five scores. *(1 point)*

Question 8 Typical Salary (2 points)

The salaries (in thousands of dollars) of six employees are 38, 41, 43, 45, 46 and 140.

- a. Find the mean (to the nearest tenth) and the median. *(1 point)*
- b. Which better describes a typical salary? Explain. *(1 point)*