

# Displaying Data: Histograms and Box Plots

Algebra 1 • Section 10.2

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 12

## Quick Review and Helpful Hints

Data questions are about choosing the right summary. Read the labels carefully, identify the total or condition being used, and connect each statistic to what it tells about the data.

▷ **Example:** Find the mean of 6, 8, 10, 12.

**Work:** Add the values to get 36, then divide by 4 values.

★ **Answer:** 9

## ◆ Practice Problems

Solve each problem. Show enough work that another student could follow your thinking.

- |  |   |
|--|---|
| 1. Find the range of data 4, 7, 9, 12, 15.<br>_____          | 6. Which plot groups data into intervals?<br>_____                        |
| 2. Find the median of 3, 8, 10, 14, 20.<br>_____             | 7. A histogram bin 10-19 has frequency 6. What does that mean?<br>_____   |
| 3. Find $Q_1$ and $Q_3$ for 2, 4, 6, 8, 10, 12, 14.<br>_____ | 8. Find the five-number summary for 1, 3, 5, 7, 9.<br>_____               |
| 4. Find the IQR if $Q_1 = 9$ and $Q_3 = 22$ .<br>_____       | 9. If a box plot has a long right whisker, what does it suggest?<br>_____ |
| 5. Which plot best shows quartiles?<br>_____                 | 10. Find the median of 6, 9, 12, 15.<br>_____                             |

## ◆ Word Problems

11. Scores are grouped 60-69: 3, 70-79: 8, 80-89: 5. Which interval has most scores?  
\_\_\_\_\_
12. A box plot has min 5,  $Q_1 = 8$ , median 12,  $Q_3 = 18$ , max 20. Find IQR.  
\_\_\_\_\_



## Answer Keys

- 11
- 10
- $Q_1 = 4, Q_3 = 12$
- 13
- Box plot
- Histogram
- 6 data values are from 10 to 19
- 1, 3, 5, 7, 9
- Right-skewed data
- 10.5
- 70-79
- 10

### Step-by-Step Explanations

- Range just measures the full spread — take the biggest minus the smallest:  $15 - 4 = 11$ .
- With the data already in order, the median is whatever sits dead center — here that's 10.
- Quartiles are medians of the halves: split at the center, then find the middle of each side.
- The IQR captures the middle stretch of the data — just subtract:  $22 - 9 = 13$ .
- A box plot is built around quartiles — the box edges and whiskers map out exactly where they fall.
- Histograms bundle values into bins, so each bar covers a whole interval rather than a single point.
- A bar's height is a count — it tells you how many data points landed inside that interval.
- For this neat little set, the min,  $Q_1$ , median,  $Q_3$ , and max happen to be each value in turn.
- A stretched-out right whisker means the larger values are spread thin — that lopsidedness is right skew.
- With an even count there's no single middle, so average the two central values:  $(9 + 12)/2 = 10.5$ .
- Just compare the frequencies — 8 is the biggest, so that interval holds the most scores.
- IQR ignores the whiskers and measures the box itself:  $Q_3 - Q_1 = 18 - 8 = 10$ .



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