

# Data Shape Detectives

*Describe the center, spread, and shape of data.*

**GRADE 6 • 6.SP.A.2**

**CCSS.Math.Content.6.SP.A.2** "Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape."

NAME \_\_\_\_\_

DATE \_\_\_\_\_

## PRACTICE: READ A DISTRIBUTION

A distribution shows how data values are arranged. Put the values in order, use the median to describe a center, and subtract the least value from the greatest value to find the range, or spread. Then describe the overall shape, such as symmetric or skewed right because of a long high-value tail.

## WORKED EXAMPLE

Describe the center, spread, and shape of this data set: 14, 16, 18, 20, 22, 24, 26

1. The data are already in order: 14, 16, 18, 20, 22, 24, 26.
2. The middle value is 20, so the median is 20.
3. Range = greatest value - least value =  $26 - 14 = 12$ .
4. The values pair evenly around 20, so the shape is symmetric.

**Answer: Median: 20; range: 12; shape: symmetric.**

## PRACTICE 6 problems

- 1** Find the median and range of this data set: 3, 5, 5, 7, 9.

**ANSWER** \_\_\_\_\_

- 2** Describe the center, spread, and overall shape of this data set: 1, 3, 5, 7, 9.

**ANSWER** \_\_\_\_\_

- 3** Describe the center, spread, and overall shape of this data set: 4, 4, 5, 5, 5, 6, 6, 13.

**ANSWER** \_\_\_\_\_

- 4** Data Set A is 30, 31, 32, 33, 34. Data Set B is 28, 30, 32, 34, 36. Which data set has the greater spread? Give each median and range.

**ANSWER** \_\_\_\_\_

- 5** Describe the center, spread, and overall shape of this data set: 40, 41, 42, 43, 44.

**ANSWER** \_\_\_\_\_

- 6** Describe the center, spread, and overall shape of this data set: 50, 51, 51, 52, 80.

**ANSWER** \_\_\_\_\_

## APPLY IT Show your work

- 1** At an esports club, five players record how many minutes they practiced during the week: 25, 32, 39, 46, 53. Describe the center, spread, and overall shape of the practice-time distribution.

WORK SPACE

ANSWER \_\_\_\_\_

- 2** A student council recycling drive records the number of bags collected by six homerooms: 8, 9, 9, 10, 11, 25. What is a typical number of bags collected, how much do the totals vary, and what is the shape of the distribution?

WORK SPACE

ANSWER \_\_\_\_\_

## CHALLENGE One step up

### CHALLENGE

Two groups track their quiz scores. Group A: 70, 72, 74, 76, 78. Group B: 65, 73, 74, 75, 83. Which group has more consistent scores? Explain by comparing the center, spread, and shape of both distributions.

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## PART 1 • PRACTICE

| # | PROBLEM                                                                                                                                | ANSWER                                                                                                                            |
|---|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 1 | Find the median and range of this data set: 3, 5, 5, 7, 9.                                                                             | <b>Median: 5; range: 6.</b>                                                                                                       |
| 2 | Describe the center, spread, and overall shape of this data set: 1, 3, 5, 7, 9.                                                        | <b>Median: 5; range: 8; shape: symmetric.</b>                                                                                     |
| 3 | Describe the center, spread, and overall shape of this data set: 4, 4, 5, 5, 5, 6, 6, 13.                                              | <b>Median: 5; range: 9; shape: skewed right.</b>                                                                                  |
| 4 | Data Set A is 30, 31, 32, 33, 34. Data Set B is 28, 30, 32, 34, 36. Which data set has the greater spread? Give each median and range. | <b>Both data sets have a median of 32. Data Set A has range 4, and Data Set B has range 8. Data Set B has the greater spread.</b> |
| 5 | Describe the center, spread, and overall shape of this data set: 40, 41, 42, 43, 44.                                                   | <b>Median: 42; range: 4; shape: symmetric.</b>                                                                                    |
| 6 | Describe the center, spread, and overall shape of this data set: 50, 51, 51, 52, 80.                                                   | <b>Median: 51; range: 30; shape: skewed right.</b>                                                                                |

## PART 2 • APPLY IT

- Median: 39 minutes; range: 28 minutes; shape: symmetric.** The middle value is 39, the range is  $53 - 25 = 28$ , and the values are evenly spaced around the median.
- Typical number, median: 9.5 bags; range: 17 bags; shape: skewed right.** Average the two middle values, 9 and 10, to get 9.5;  $25 - 8 = 17$ , and the high value of 25 creates a right tail.

## CHALLENGE

**Group A has more consistent scores. Both groups have a median of 74 and a symmetric shape, but Group A has range 8 while Group B has range 18.**

Accept equivalent wording such as “right-skewed” or “has a long tail to the right.” For the recycling problem, accept 9.5 or  $9\frac{1}{2}$  as the median.