# Spot the Stray

Sort number lines by how their values are spread.

**S.DA.1** "Use distributions of quantitative and categorical data to identify the key features of the data collected in context. Summarize and represent the distribution for univariate quantitative data by describing and analyzing the shape of the..."

NAME _____ DATE _____

### HAS AN OUTLIER

Most values are close together, but one value is much farther away. That lone value is an outlier.

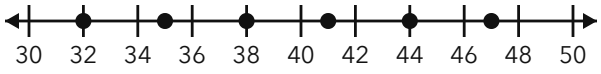
Practice A




### HAS NO OUTLIER

No single value is much farther from the others. The values may still have spaces between them.

Practice B




## 1 SORT

8 items

For Part 1, circle OUTLIER or NONE for each figure; for Part 2, pick two figures, one from each category, and explain how the spacing of the points helped you decide.

**1.**

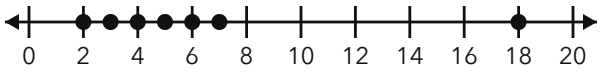



Figure 1

OUTLIER NONE

**2.**

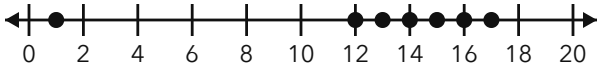



Figure 2

OUTLIER NONE

**3.**

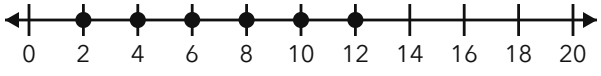



Figure 3

OUTLIER NONE

**4.**

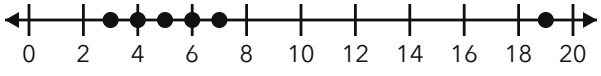



Figure 4

OUTLIER NONE

**5.**

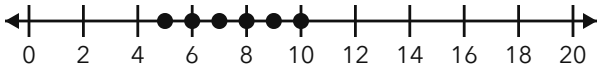



Figure 5

**OUTLIER** **NONE**

**6.**

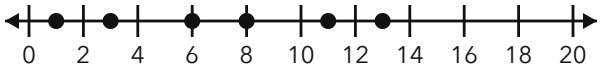



Figure 6

**OUTLIER** **NONE**

**7.**




Figure 7

**OUTLIER** **NONE**

**8.**

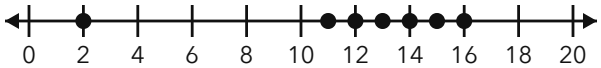



Figure 8

**OUTLIER** **NONE**

## 2 PROVE IT

Explain your thinking

Pick two figures, one from each category, and explain how the spacing of the points helped you decide.

**ITEM #** _____ **HOW I KNEW** _____

**ITEM #** _____ **HOW I KNEW** _____

## 3 MAKE YOUR OWN

One of each

Write two new sets of six different numbers from 0 to 20, one with a clear outlier and one with no outlier; list each set in order and label it.

**OUTLIER** _____

**NONE** _____

**CHALLENGE**

Choose a figure with an outlier, remove that value, and calculate how the mean and median change.

**ANSWER KEY** # Spot the Stray



## PART 1 · SORT

| # | ITEM | CATEGORY | WHY |
|---|---|---|---|
| 1 | Figure 1 (numberline) | **OUTLIER** | 18 is far from the group of values from 2 through 7. |
| 2 | Figure 2 (numberline) | **OUTLIER** | 1 is far from the group of values from 12 through 17. |
| 3 | Figure 3 (numberline) | **NONE** | The values are evenly spaced, with no lone value far from the others. |
| 4 | Figure 4 (numberline) | **OUTLIER** | 19 is far from the group of values from 3 through 7. |
| 5 | Figure 5 (numberline) | **NONE** | All six values are close together, with no lone value. |
| 6 | Figure 6 (numberline) | **NONE** | The spaces between neighboring values are similar, so no value stands apart. |
| 7 | Figure 7 (numberline) | **OUTLIER** | 15 is far from the group of values from 0 through 5. |
| 8 | Figure 8 (numberline) | **OUTLIER** | 2 is far from the group of values from 11 through 16. |

## PART 2 · PROVE IT

**Task:** Pick two figures, one from each category, and explain how the spacing of the points helped you decide.

Accept any explanation that names the deciding feature from the rule box for the chosen item.

## PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **OUTLIER**: 1, 2, 3, 4, 5, 20.
- **NONE**: 3, 6, 9, 12, 15, 18.

**Challenge:** Figure 1: Removing 18 changes the mean from 45 ÷ 7, or about 6.43, to 27 ÷ 6, or 4.5. The median decreases from 5 to 4.5.

The sort has five OUTLIER figures and three NONE figures. For Part 2, accept explanations that identify a large separation between one point and the rest, or note that no point has such a separation.