Spot the Outlier

Sort number-line data sets, prove your choices, and create new data sets.

CCSS.Math.Content.HSS-ID.A.3 "Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers)."

NAME _____ DATE _____

HAS AN OUTLIER

One value is much farther from the rest of the data. This value can pull the mean toward itself and make the range larger.

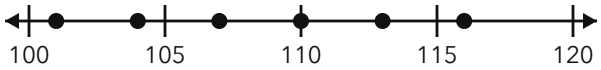
Example



NO CLEAR OUTLIER

No single value is much farther from all the other values. The data may spread out, but the dots do not show one isolated value.

Example



1 SORT

8 items

Circle one category for each figure; in Part 2, choose two figures, name each category, and explain the spacing of the dots that proves your choice.

1.

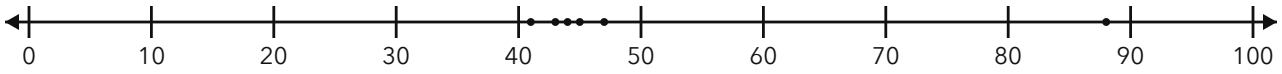


Figure 1

OUTLIER NO OUTLIER

2.



Figure 2

OUTLIER NO OUTLIER

3.



Figure 3

OUTLIER NO OUTLIER

4.



Figure 4

OUTLIER **NO OUTLIER**

5.



Figure 5

OUTLIER **NO OUTLIER**

6.

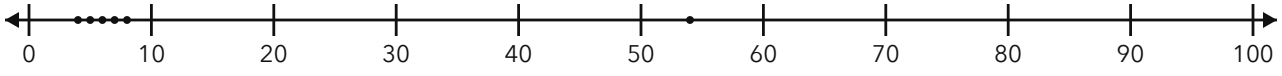


Figure 6

OUTLIER **NO OUTLIER**

7.



Figure 7

OUTLIER **NO OUTLIER**

8.

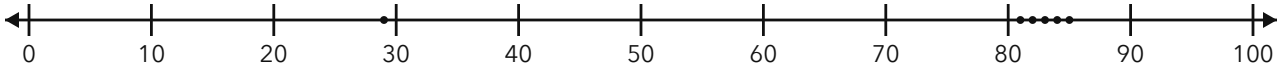


Figure 8

OUTLIER **NO OUTLIER**

2 PROVE IT

Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Draw one new number-line data set for OUTLIER and one new number-line data set for NO OUTLIER.

OUTLIER

NO OUTLIER

CHALLENGE

Choose your OUTLIER data set. In one or two sentences, explain how its outlier changes the mean and the range.

ANSWER KEY # Spot the Outlier

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Figure 1 (numberline)	**OUTLIER**	88 is separated far to the right of the cluster from 41 to 47.
2	Figure 2 (numberline)	**NO OUTLIER**	The values are evenly spaced with no isolated value.
3	Figure 3 (numberline)	**NO OUTLIER**	All values are close together in one group.
4	Figure 4 (numberline)	**OUTLIER**	15 is far to the left of the cluster from 70 to 76.
5	Figure 5 (numberline)	**OUTLIER**	38 is far to the left of the cluster from 93 to 97.
6	Figure 6 (numberline)	**OUTLIER**	54 is far to the right of the cluster from 4 to 8.
7	Figure 7 (numberline)	**NO OUTLIER**	The values extend steadily from 30 to 50 with no isolated value.
8	Figure 8 (numberline)	**OUTLIER**	29 is far to the left of the cluster from 81 to 85.

PART 2 · PROVE IT

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

PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **OUTLIER**: Draw dots at 14, 15, 16, 17, 18, and 71.
- **NO OUTLIER**: Draw dots at 55, 58, 61, 64, 67, and 70.

Challenge: The outlier pulls the mean toward its value and makes the range larger.

The correct categories are shown for each figure. In Part 2, students should identify the isolated value for an outlier or explain that no value is isolated for a no-outlier figure.