LESSON MAKER PRO

Data Shape Detectives

Read the spread, shape, and unusual values in data.

GRADE 6 · MA.6.DP.1.4

MA.6.DP.1.4 "Given a histogram or line plot within a real-world context, qualitatively describe and interpret the spread and distribution of the data, including any symmetry, skewness, gaps, clusters, outliers and the range."

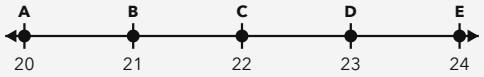
NAME _____ DATE _____

READ THE WHOLE DISPLAY

Range equals the greatest value minus the least value. A cluster is a group of nearby values, while a gap has no values and an outlier is far from the rest. A balanced display can be symmetric, but a long tail to one side shows skew.

WORKED EXAMPLE

Each labeled point on the line plot is one measurement. Describe the range and distribution.



1. Least value = 20; greatest value = 24.
2. Range = 24 - 20 = 4.
3. The values are balanced around 22.
4. There are no gaps, clusters, or outliers.

Answer: Range: 4. The distribution is symmetric, with no gaps, clusters, or outliers.

PRACTICE 4 problems

1 Data values: 4, 5, 5, 6, 6, 6, 7, 7, 8. Give the range and the cluster.

ANSWER _____

2 Data values: 2, 8, 9, 9, 10, 10, 11, 11, 12. Give the gap and the possible outlier.

ANSWER _____

3 Data values: 2, 3, 4, 4, 5, 5, 6, 6, 7, 8. Is the distribution symmetric? Give the range.

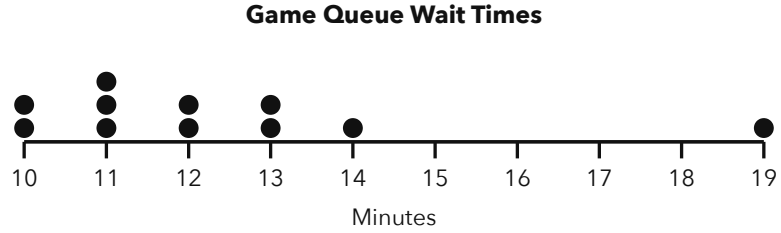
ANSWER _____

4 Data values: 1, 6, 7, 7, 8, 8, 8, 9. State the skew direction and one feature that supports it.

ANSWER _____

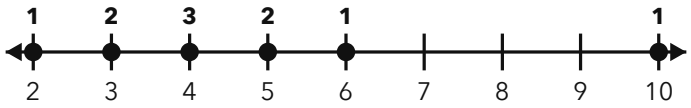
APPLY IT Show your work

1 The dot plot shows how many minutes students waited to play a new game at a school event. Describe the cluster, possible outlier, skew, and range.



ANSWER _____

2 A music club asked students how many songs they added to a playlist. The number beside each point tells how many students chose that number. Describe the cluster, gap, possible outlier, and range.



ANSWER _____

CHALLENGE One step up

A student says this data set is symmetric because most values are from 4 to 7: 4, 4, 5, 5, 6, 6, 7, 7, 15. In two sentences, explain why the student is incorrect.

WORK SPACE AND ANSWER

ANSWER KEY

Data Shape Detectives

GRADE 6 · MA.6.DP.1.4

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Data values: 4, 5, 5, 6, 6, 6, 7, 7, 8. Give the range and the cluster.	**Range: 4. Cluster: 5 to 7.**
2	Data values: 2, 8, 9, 9, 10, 10, 11, 11, 12. Give the gap and the possible outlier.	**Gap: 3 to 7. Possible outlier: 2.**
3	Data values: 2, 3, 4, 4, 5, 5, 6, 6, 7, 8. Is the distribution symmetric? Give the range.	**Yes, it is symmetric. Range: 6.**
4	Data values: 1, 6, 7, 7, 8, 8, 8, 9. State the skew direction and one feature that supports it.	**Skewed left. The value 1 is separated from the other values by a gap from 2 to 5.**

PART 2 · APPLY IT

1. **Cluster: 10 to 14 minutes. Possible outlier: 19 minutes. Skewed right. Range: 9 minutes.** The main group is from 10 through 14, while 19 is far to the right. Subtract 10 from 19 to find the range.
2. **Cluster: 2 to 6 songs. Gap: 7 to 9 songs. Possible outlier: 10 songs. Range: 8 songs.** Most choices are from 2 through 6, and no student chose 7, 8, or 9 songs. The value 10 is separated from the cluster.

CHALLENGE

The data cluster from 4 to 7, but 15 is an outlier separated by a gap from 8 to 14. The range is 11, and the single high value makes the distribution skewed right, not symmetric.

Accept equivalent wording for cluster, gap, outlier, symmetry, and skew. For qualitative features, accept "possible outlier" when students identify the isolated value.