

Mean: 5

Got It? Do this problem to find out.

b. The graph shows the hours per week that dance students practice their dances. Describe the center and spread of the distribution. Justify your response based on the shape of the distribution. Round to the nearest tenth if necessary.

Symmetry



5-5
5-5
5-5

7, 7, 8

2, 3, 3, 4, 4, 5, 5, 5, 5, 5, 6, 6, 6, 6

3, 2, 2, 1, 1, 1, 1, 0, 0, 0, 0, 0, 1, 1, 1, 1, 3
= 20 / 7 ≈ 1.2

Guided Practice

- The number of nachos stand is shown in the li
 - Describe the shape (clusters, gaps, peaks

Show your work.

b. _____

Handwritten blue lines on a lined background.



100%



1. The number of nachos sold at the football concession stand is shown in the line plot at the right.

Number of Nacho Bowls Sold
Each Night at Concession Stand



- a. Describe the shape of the distribution. Identify any clusters, gaps, peaks, or outliers. (Example 1)

- b. Describe the center and spread of the distribution. Justify your response based on the shape of the distribution. (Example 2)

$20, 20, 23, 23, 24, 24, 24, 24, 25, 25, 25, 26, 27, 27, 27, 27, 29, 30, 30, 31$
 24
 Q1
 NOT symmetrical
 → IQR, Median
 IQR: $27 - 24 = 3$
 27
 Q-3

2. **e** **Building on the Essential Question** Why is the median used to describe the center of a non-symmetric distribution instead of the mean?

Rate Yourself!

How confident are you about

Guided Practice



1. The number of nachos sold at the football concession stand is shown in the line plot at the right.

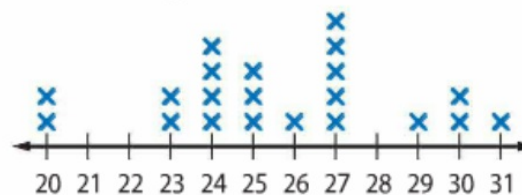
a. Describe the shape of the distribution. Identify any clusters, gaps, peaks, or outliers. (Example 1)

The distribution is not symmetric. There is a cluster from 23–27 and from 29–31, and a peak at 27. There is a gap between 20 and 23 and between 27 and 29. There are no outliers.

b. Describe the center and spread of the distribution. Justify your response based on the shape of the distribution. (Example 2)

The distribution is not symmetric, so the median and interquartile range are appropriate measures to use. The data are centered around the median of 25. The spread of the data around the center is 3.

Number of Nacho Bowls Sold Each Night at Concession Stand



2. **e Building on the Essential Question** Why is the median used to describe the center of a non-symmetric distribution instead of the mean?

Sample answer: A non-symmetric distribution can contain an outlier. The mean is greatly influenced by an outlier so the median is used to describe the center.

Independent Practice

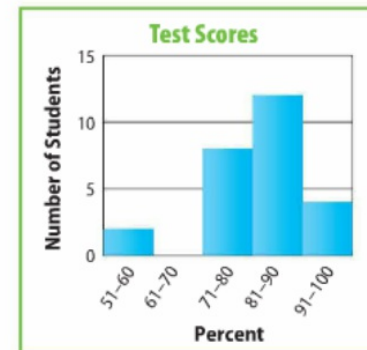
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- i** The scores for Ms. Hermes math class are shown in the histogram. Describe the shape of the distribution shown. Identify any clusters, gaps, peaks, or outliers. (Example 1)

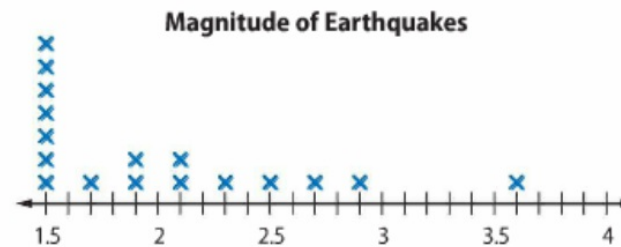
The distribution is not symmetric. There is a cluster from 71–100 and a peak at the interval 81–90. The distribution has a gap from 61–70 percent. There are no outliers.

Show your work.



2. The magnitude of several earthquakes is shown in the line plot at the right.


- a. Describe the shape of the distribution shown. Identify any clusters, gaps, peaks, or outliers. (Example 1)



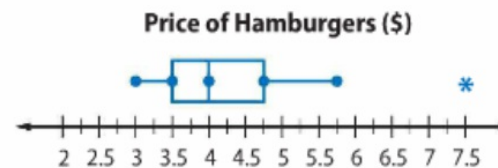
The distribution is not symmetric. There are no clusters. There is a peak at 1.5. The distribution has a gap from 2.9 to 3.6. There are no outliers.

- b. Describe the center and spread of the distribution. Justify your response based on the shape of the distribution. (Example 2)

The distribution is not symmetric, so the median and interquartile range are appropriate measures to use. The data are centered around the median of 1.9. The spread of the data around the center is 0.9.

3  The box plot shows the prices of hamburgers at different restaurants.

- a. Describe the shape of the distribution using symmetry and outliers. (Example 1)

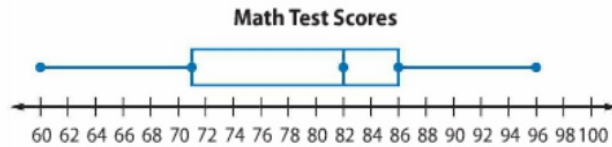


Sample answer: The distribution is not symmetric since the lengths of each box and each whisker are not the same. There is an outlier at 7.5.

- b. Describe the center and spread of the distribution. Justify your response based on the shape of the distribution. (Example 2)

Sample answer: The distribution is not symmetric. So, the median and interquartile range are appropriate measures to use. The data are centered around the median of \$4. The spread of the data around the center is \$1.25.

4. **CCSS Make a Conjecture** A distribution that is not symmetric is called *skewed*. A distribution can be skewed left or right. It is skewed left if the data are more spread out on the left side than the right side. Is the distribution shown skewed left or skewed right? Explain your reasoning to a classmate.

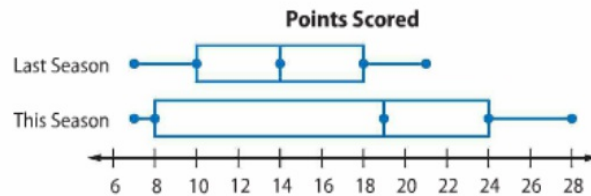


Sample answer: The distribution is skewed left because the data are more spread out on the left side due to the longer box and whisker.



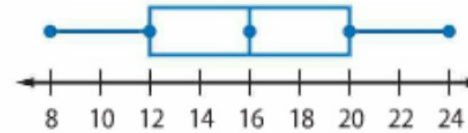
H.O.T. Problems Higher Order Thinking

5. **CCSS Persevere with Problems** The double box plot shows scores for a football team.



- a. Choose the measures that are appropriate to describe the center and spread of each box plot. Explain. **The distribution in the top box plot is symmetric, so you would use the mean and the mean absolute deviation. The distribution in the bottom box plot is not symmetric, so you would use the median and the interquartile range.**
- b. Is it possible to find each value? Explain. **It is not possible to find mean and mean absolute deviation. It is possible to find the median and interquartile range.**

6. **CCSS Persevere with Problems** Explain why you cannot describe the specific location of the center and spread of the box plot shown using the most appropriate measures.



Sample answer: The distribution is symmetric. The appropriate measures to describe the center and spread are the mean and mean absolute deviation.
A box plot shows the location of the median and interquartile range but it does not show the location of the mean or the mean absolute deviation.