

9-7

Shape of Distributions

© CONTENT STANDARDS

6.SP.2, 6.SP.5.d

What You'll Learn

To relate the shape of a data display to how the data is distributed

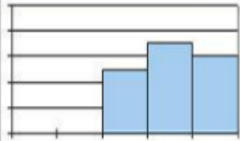
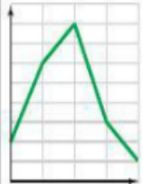
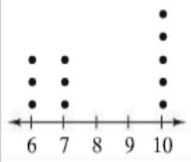
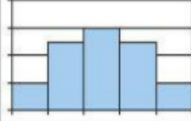
Why Learn This?

The shape of data, such as the daily mileage of a cyclist, can give you information about how the data are grouped.

You can describe data by its overall shape or by how it is distributed. Some data shapes are symmetrical; others are higher on the right or on the left. Some data values are grouped around a certain value.



KEY CONCEPTS

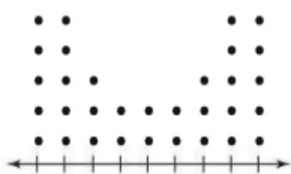
Definition	Sample
Several data points that lie close together within a small interval cluster	
In an ordered set of data, a value that is greater than its neighboring values on either side peak	
A large space where there is no data between sets of data values gap	
Distribution of data that have the same shape on either side of the center symmetry	

Take a snapshot of this for your notes

EXAMPLE

1 Describe the shape of each distribution using the terms *gap*, *peak*, and *symmetry*.

a.



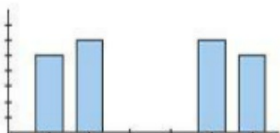
2 peaks; symmetric around the midpoint; no gaps between the data values

b.



Clustered around the median, no symmetry

c.



Gap between the two middle data values and symmetric around the middle value

Example

1 Describe the shape of each distribution using the terms *gap*, *peak*, and *symmetry*.

a. Dot plot: no symmetry, no **peaks**, gap

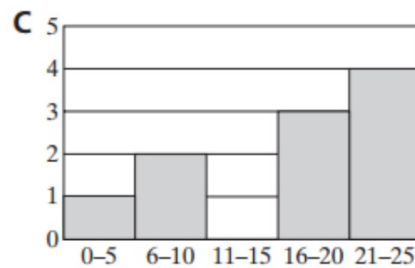
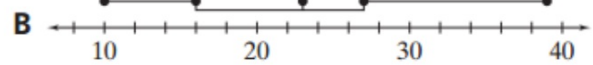
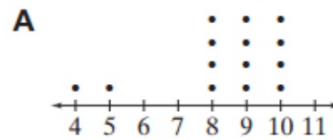
between **5 and 8**

b. Box-and-whisker plot: clustered around the

median no **symmetry**

c. Histogram: no symmetry, no **peak**,

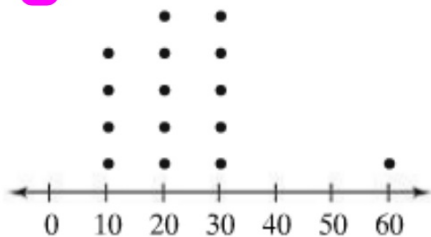
gap between **10 and 15**



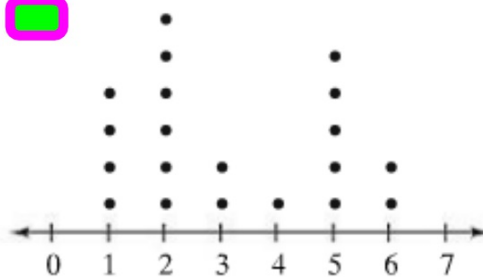
✓ Quick Check

1. Match the shape of each distribution with the description that best fits it.

S



T



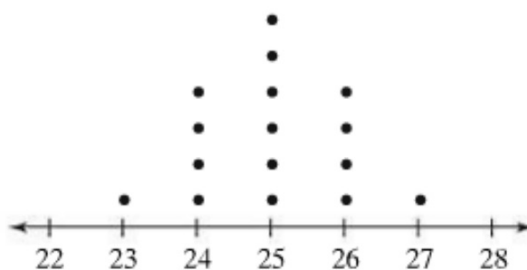
x. a gap and 2 peaks y. cluster and a gap z. no gap and 2 peaks

EXAMPLE**Relating Distribution Shape to Measures**

- 2 What can the shape of this dot plot tell you about its measures of center and variability?

The distribution is symmetrical. It has a peak at 25, and values are clustered around the peak. There are no gaps.

The distribution is symmetrical and has a peak at 25, so the median, mean, and mode will be the same value, 25. Since the values are clustered close together rather than spread out, the interquartile range will be small.



Example

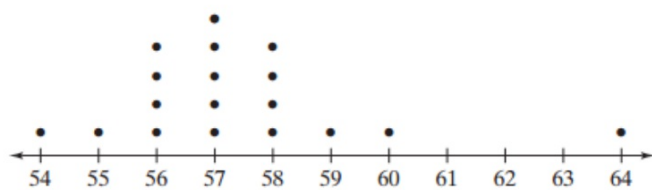
- ② **Relating Distribution Shape to Measures** What can the shape of this dot plot tell you about its measures of center and variability?

The distribution is almost symmetrical.

Except for the **outlier**, the data are

clustered around a peak, which is

also the **mode** and the **median**.



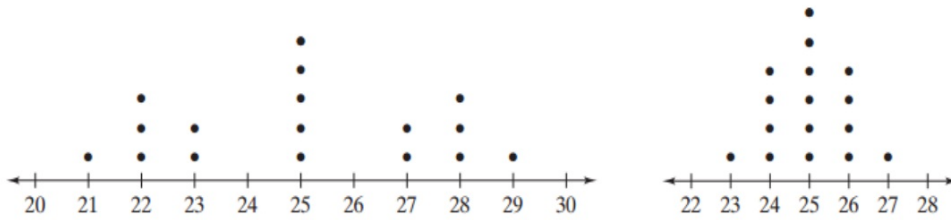
The **mean** will be a greater number because of the outlier. The IQR

will be small because the middle half of the data is close together.

The **MAD** will be somewhat greater because it is affected by the outlier.

Quick Check

2. Compare the dot plot on the left to the one on the right.



a. What similarities and differences are there between the two dot plots?

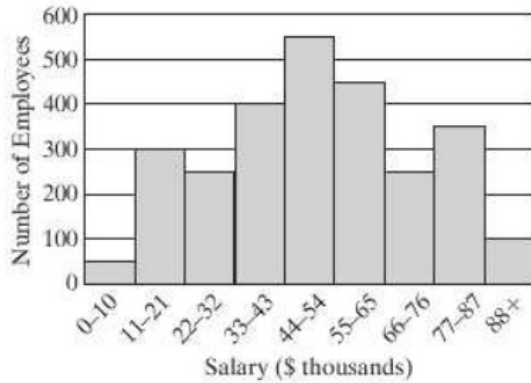
b. What do your observations tell you about the variability and center of the dot plot on the left?

Practice 9-7

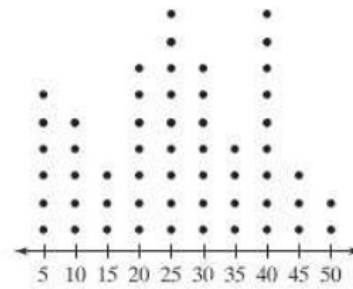
Shape of Distributions

Match the shape of each distribution with the description that best fits it.

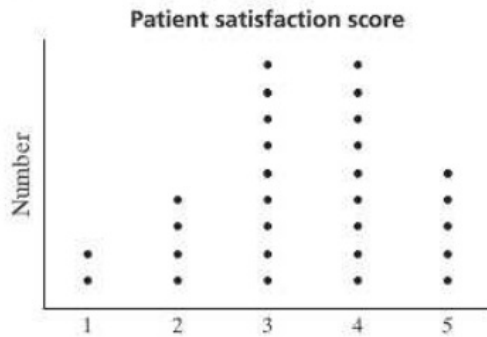
A



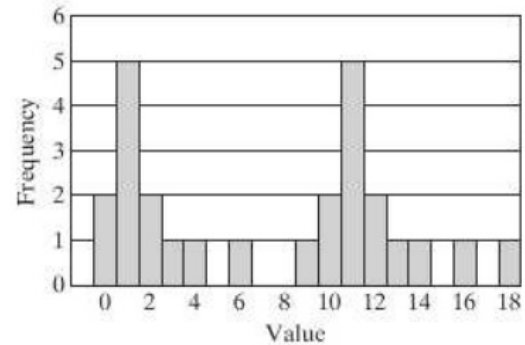
B



C



D



1. Data has 2 modes, gaps, and peaks. _____
2. Data is not symmetrical, has 2 modes, has no peaks, and clusters around the modes. _____
3. Data has no gaps, has 2 modes, is not symmetrical, and is spread over a large range. _____
4. Data has one mode, has a large range, and is not symmetric. _____
5. How can you make dot plot C above symmetric?
Describe and sketch it.

