9.4

Choosing a Data Display
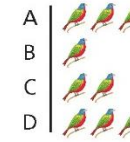
Key Idea

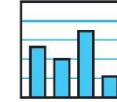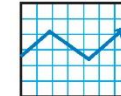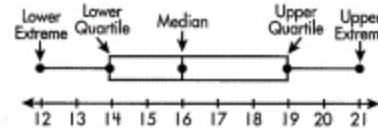| Data Display	What does it do?	
Pictograph	shows data using pictures	
Bar Graph	shows data in specific categories	
Circle Graph		
Line Graph		
Histogram		
Stem-and-...		
Box-and-...		
Dot Plot	shows the number of times each value occurs in a data set	
Scatter Plot	shows the relationship between two data sets by using ordered pairs in a coordinate plane	

A **box-and-whisker** plot displays data along a number line. Quartiles are used to divide the data into four equal parts. Each quartile is 25% of the number of items. The upper and lower quartiles, representing 50% of the data, form the box. The upper extreme (highest value) and lower extreme (lowest value) form the whiskers.

This box-and-whisker plot represents the following data:
12, 13, 14, 14, 15, 16, 17, 18, 19, 19, 21

Upper Extreme: 21
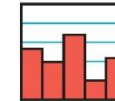Lower Extreme: 12
Middle Quartile (median): 16

Upper Quartile (median of upper half): 19
Lower Quartile (median of lower half): 14

Example 1

Choose an appropriate data display for the situation. Explain your reasoning.

a. the number of students in a marching band each year

b. a comparison of people's shoe sizes and their heights

On Your Own

Choose an appropriate data display for the situation. Explain your reasoning.

1. the population of the United States divided into age groups

2. the percents of students in your school who play basketball, football, soccer, or lacrosse
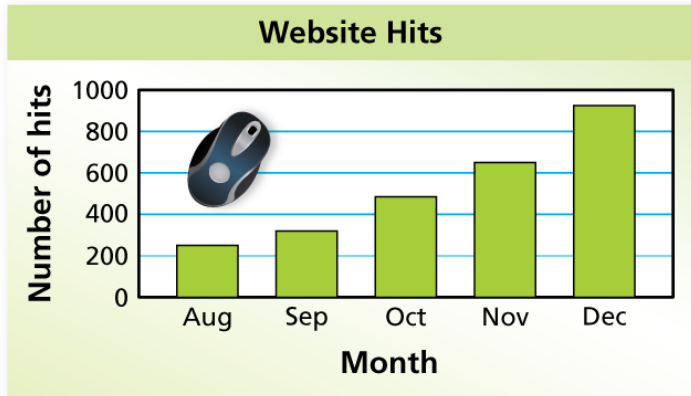
Example 2

You record the number of hits for your school's new website for 5 months. Tell whether the data display is appropriate for representing how the number of hits changed during the 5 months. Explain your reasoning.
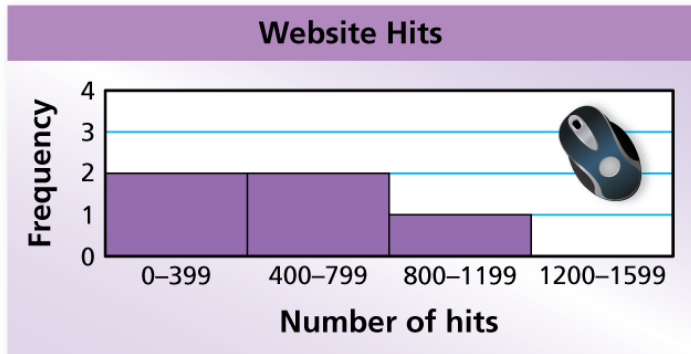
Month	Hits
August	250
September	320
October	485
November	650
December	925

a.

Website Hits

(Bar graph: Number of hits vs. Month — Aug, Sep, Oct, Nov, Dec)

b.

Website Hits

(Histogram: Frequency vs. Number of hits — 0–399, 400–799, 800–1199, 1200–1599)

Example 2 Cont.

c.

Website Hits

Number of hits vs. Month

Month	Number of hits
Aug	
Sep	
Oct	
Nov	
Dec	

On Your Own

Tell whether the data display is appropriate for representing the data in Example 2. Explain your reasoning.

3. dot plot
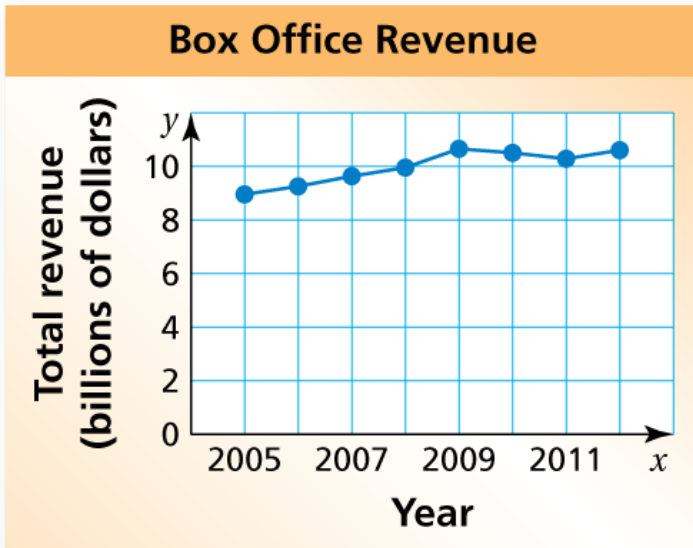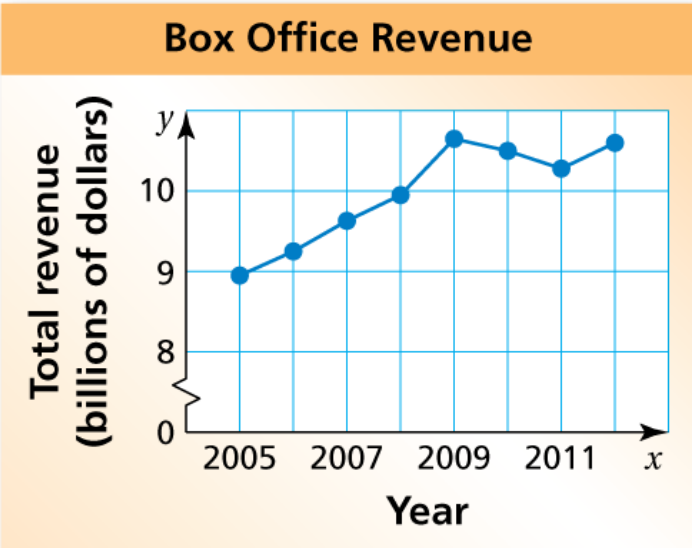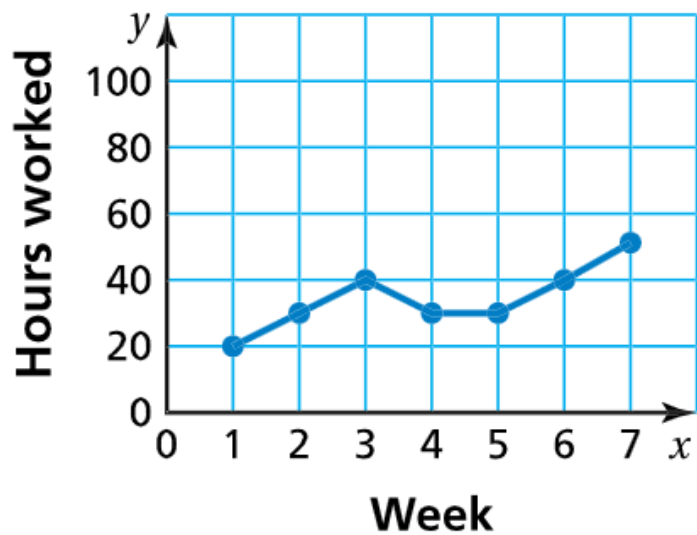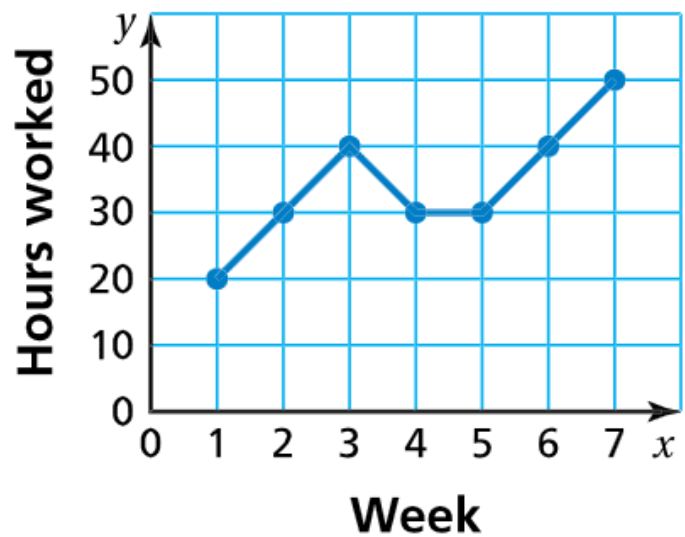
4. circle graph

5. stem-and-leaf plot

Example 3

Which line graph is misleading? Explain.

Box Office Revenue

Total revenue (billions of dollars)

10

9

8

0

2005   2007   2009   2011   x

Year

Box Office Revenue

Total revenue (billions of dollars)

10

8

6

4

2

0

2005   2007   2009   2011   x

Year

On Your Own

Which line graph is misleading? Explain.

Example 4

Food Drive Donation Totals

Canned food

Boxed food

Juice

= 20 cans   = 20 boxes   = 20 bottles

A volunteer concludes that the numbers of cans of food and boxes of food donated were about the same. Is this conclusion accurate? Explain.

On Your Own

Explain why the data display is misleading.

Favorite Pets

- Dog 41%
- Fish 27%
- Cat 32%