Problem Solving

LESSON 7-5
Misleading Graphs

Write the correct answer. Use the line graph for Exercises 1–4.

1. What would be a less misleading title for this graph?

2. How is the horizontal axis misleading?

3. How is the vertical axis misleading?

4. How much did spending really increase between 1993 and 2000?

Choose the letter for the best answer.

The bar graph is an advertisement used by a tour company to convince New Yorkers to vacation in Hawaii.

5. How far is New York from Los Angeles?
   A 2,500 miles  C 5,000 miles
   B 4,000 miles  D 5,200 miles

6. How far is New York from Hawaii?
   F 2,500 miles  H 5,000 miles
   G 2,600 miles  J 6,000 miles

7. What is the point of the ad?
   A New York is closer to Hawaii than to Los Angeles.
   B Hawaii is the same distance from New York as Los Angeles.
   C Hawaii is only slightly farther from New York than is Los Angeles.
   D San Francisco and Los Angeles are the same distance from New York.

8. Why is the graph misleading?
   F The distances are incorrect.
   G The bars are mislabeled.
   H The bars are too tall.
   J The intervals on the vertical axis are not equal.
Challenge

**Picture the Headlines**

Read each fact. Draw a bar or line graph to support the two different headlines that report the fact.

1. Fact: In 2002, property taxes were $2.50 per $100 of the value of a house in Oakville. In 2003, they will increase to $2.60 for each $100 of value. Possible answers are given.

![Graph A: Property Taxes Skyrocket Under New Mayor!](image)

![Graph B: New Mayor Okays Small Increase in Property Taxes](image)

2. Fact: From 1996 to 1997, public schools in the United States averaged 7.8 students per computer. From 1997 to 1998, this average went down to 6.1. From 1998 to 1999, it was 5.7; and from 1999 to 2000, it was 5.4.

![Graph C: Schools See Big Drop in Number of Students per Computer Since 1998](image)

![Graph D: Little Change Since 1990 in Number of Students per Computer in Our Public Schools!](image)

Problem Solving

**Misleading Graphs**

Write the correct answer. Use the line graph for Exercises 1–4.

1. What would be a less misleading title for this graph?
   - Possible answer: Spending, 1990–2000

2. How is the horizontal axis misleading?
   - The intervals between years are not equal.

3. How is the vertical axis misleading?
   - Broken scale

4. How much did spending really increase between 1993 and 2000? About $40,000

Choose the letter for the best answer.

The bar graph is an advertisement used by a tour company to convince New Yorkers to vacation in Hawaii.

![Graph E: Distance from New York](image)

5. How far is New York from Los Angeles?
   - A) 2,500 miles
   - B) 4,000 miles
   - C) 5,000 miles
   - D) 6,200 miles

6. How far is New York from Hawaii?
   - F) 2,500 miles
   - G) 4,000 miles
   - H) 5,000 miles
   - J) 6,200 miles

7. What is the point of the ad?
   - A) New York is closer to Hawaii than to Los Angeles.
   - B) Hawaii is the same distance from New York as Los Angeles.
   - C) Hawaii is only slightly farther from New York than is Los Angeles.
   - D) San Francisco and Los Angeles are the same distance from New York.

8. Why is the graph misleading?
   - A) Trees are mislabeled.
   - B) The bars are too small.
   - C) The intervals on the vertical axis are not equal.
   - D) The increase between 1993 and 2000 is not equal.

9. How is the graph misleading?
   - A) The increase between 1993 and 2000 is not equal.
   - B) The vertical axis is not labeled.
   - C) The intervals on the vertical axis are not equal.
   - D) The legend is missing.

10. What is the point of the ad?
    - A) Hawaii is closer to New York than Los Angeles.
    - B) Hawaii is the same distance from New York as Los Angeles.
    - C) Hawaii is only slightly farther from New York than is Los Angeles.
    - D) San Francisco and Los Angeles are the same distance from New York.

Puzzles, Twisters & Teasers

**How's Your Vocabulary?**

Complete the crossword puzzle by answering the clues.

**Across**

1. Each _______ or slice of a circle represents one part of the entire data set.
2. Each point on a scatter _______ represents a pair of data values.
3. Bar or line _______
4. Frequency and cumulative frequency are two types of _______.
5. The _______ is the value or values that occur most often in a data set.
6. A _______ graph shows change over time for two sets of data.
7. The _______ is the sum of the data values divided by the number of data items.
8. The _______ is the middle value of an odd number of data items.
9. The _______ is the sum of the data values divided by the number of data items.
10. The _______ is the sum of the data values divided by the number of data items.

**Down**

1. Often researchers can't survey every member of a large group, so they use a part of the group. This group is called an _______.
2. Positive, negative, or no _______ are three ways to describe data in a scatter plot.
3. Frequency and cumulative frequency are two types of _______.
4. The _______ is the value or values that occur most often in a data set.
5. The _______ is the middle value of an odd number of data items arranged in order and it is the average of the two middle values for an even number of items.
6. An extreme value in a set is called an _______.
7. A _______ table is one way to organize data into categories or groups.
8. A _______ table is one way to organize data into categories or groups.
9. A _______ table is one way to organize data into categories or groups.
10. A _______ table is one way to organize data into categories or groups.