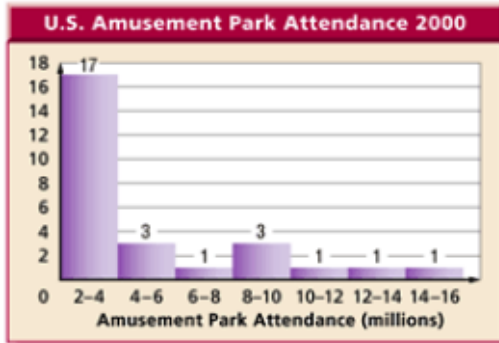


Lesson 13-3

Example 1 Determine Information from a Histogram

Answer each question about the histogram shown below.



Source: *The World Almanac*

a. In what measurement class does the median occur?

First, add the frequencies to determine the number of amusement parks represented.

$$17 + 3 + 1 + 3 + 1 + 1 + 1 = 27$$

There are 27 amusement parks, so the middle data value is the 14th data value. The 14th data value is located in the 2-4 million measurement class. Therefore, the median occurs in the 2-4 million measurement class.

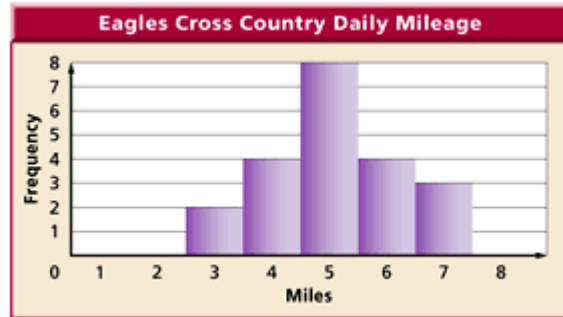
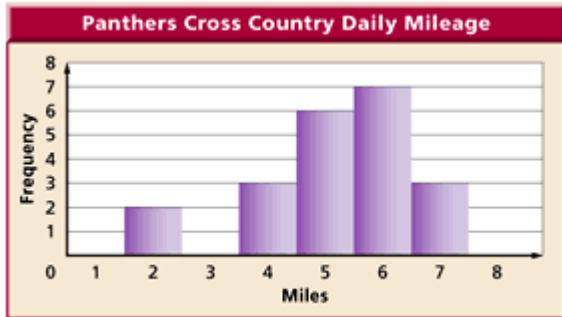
b. Describe the distribution of the data.

- Most of the amusement parks had attendance between 2 and 4 million.
- There are no gaps.
- Only 3 amusement parks had attendances over 10 million.
- As the attendance increases, the histogram shows that the number of amusement parks decreases. We say that the distribution is *skewed*, or pulled in one direction away from the center. This distribution is *skewed to the left* because the majority of the data are located at the low end of the scale.

Example 2 Compare Data in Histograms

Multiple-Choice Test Item

Use the data in the histograms to determine which cross country team has a greater median daily mileage.



- A. The Eagles have a greater median mileage.
- B. The Panthers have a greater median mileage.
- C. The medians are the same.
- D. You cannot determine which median mileage is greater.

Read the Test Item

You have two histograms depicting the daily mileage of two cross country teams. You are asked to determine which team has a greater median mileage.

Solve the Test Item

Study the histograms carefully. The measurement classes and the frequency scales are the same for each histogram. The distribution for the Panthers has a gap at 3 miles otherwise it seems *skewed to the right*. The distribution for the Eagles has no gaps and is much more *symmetrical*. Due to the graph appearing to be skewed to the right, the Panthers seem to have the higher median mileage.

To check this assumption, locate the measurement class of each median.

Panthers

$$2 + 4 + 8 + 4 + 3 = 21$$

The median is the 11th data value.

The median is in the 5 measurement class.

Eagles

$$2 + 3 + 6 + 7 + 3 = 21$$

The median is the 11th data value.

The median is in the 5 measurement class.

This shows that both groups have the same median mileage. The answer is C.

Example 3 Create a Histogram

Create a Histogram to represent the number of hours per week spent exercising by a group of high school seniors.

10 5 2 8 1 11 4 3 0 1 6 5 3 7 3 0
6 5 9 2 6 0 5 0 1 8 5 2 6 4 3 3 3

Step 1 Identify the greatest and least values in the data set.

The hours range from 0 to 11.

Step 2 Create measurement classes of equal width.

For these data, use measurement classes from 0 to 12 with a 2-point interval for each class.

Step 3 Create a frequency table using the measurement classes.

Hour Intervals	Tally	Frequency
$0 \leq h < 2$		7
$2 \leq h < 4$		9
$4 \leq h < 6$		7
$6 \leq h < 8$		5
$8 \leq h < 10$		3
$10 \leq h < 12$		2

Step 4 Draw the histogram.

Use the measurement classes to determine the scale of the horizontal axis and the frequency values to determine the scale for the vertical axis. For each measurement class, draw a rectangle as wide as the measurement class and as tall as the frequency for the class. Label the axes and include a descriptive title for the histogram.

