NAME _____ DATE _____ PERIOD _____

Statistical Questions

Statistics deals with collecting, organizing, and interpreting pieces of information, or *data*. One way to collect data is by asking statistical questions. A **statistical question** is a question that anticipates and accounts for a variety of answers.

The table below gives some examples of statistical questions and questions that are *not* statistical questions.

Statistical Questions	Not Statistical Questions
How many text messages do you send each day?	What is the height in feet of the tallest mountain in Colorado?
What is the minimum driving age for each state in the United States?	How many people attended last night's jazz concert?

These ARE statistical questions.

What are the favorite colors of the students in my class?

What are the ages of the students in the choir?

What are the bedtimes of my classmates?

What are the heights of the students in my class?

These are NOT statistical questions.

What time do you go to bed?

How many brothers do you have?

How old are you?

Do you like to read?

Are you in sixth grade?

Work with a partner. State whether each question is a statistical question. Explain your reasoning.

1. Who was the first president of the United States?

   NO; The answers will not vary because there will only be one answer

2. How much time do the students in my school spend on the Internet each night?

   yes; The answers will vary.

3. What is the height of the tallest waterslide at Wild Rides Water Park?

   NO; There is only one correct answer.

4. What are the cabin rental prices for each of the state parks in Kentucky?

   yes; The answers will vary for the multiple parks and cabins.

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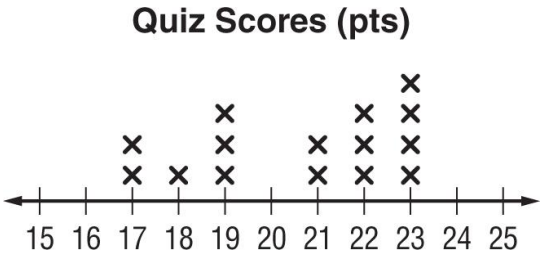
Shape of Data Distributions

The **distribution** of a data set shows the arrangement of data values. Data are **symmetric** when the left side of the distribution looks like the right side. A **cluster** is data grouped closely together. A **gap** is a number that does not have a data value. A **peak** is the most frequently occurring value, or mode.

Example 1

The line plot shows the quiz scores in a social studies class. Describe the shape of the distribution.

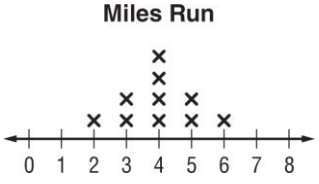


- The shape of the data is not symmetric because the left side of the data does not look like the right side.
- There are clusters from 17−19 and 21−23.
- The distribution has a peak at 23.
- There is a gap at 20.
- There are no outliers.

If data are symmetric, use the **mean** and **mean absolute deviation** to describe the spread. If the data are not symmetric, use the **median** and **interquartile range.**

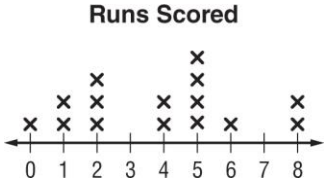
For Exercises 1–4, describe the shape of each distribution.

1.



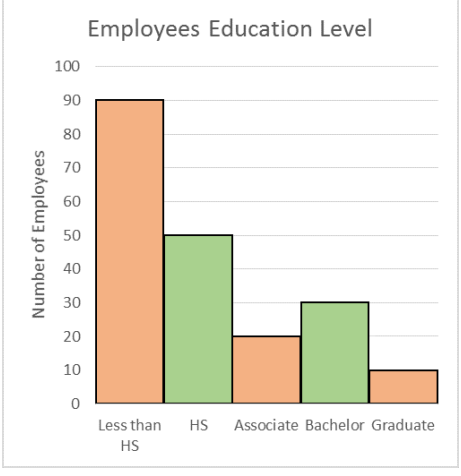
Sample answer: The shape of the distribution is symmetric and resembles a bell curve. There is a peak at 4 miles run. There are no outliers and no gaps.

2.



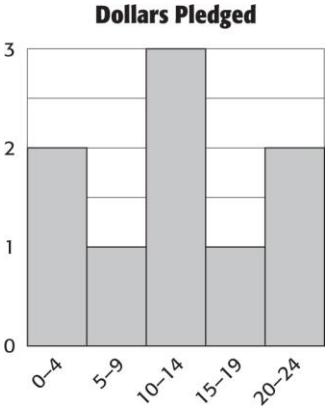
Sample answer: The shape is not symmetric. There are gaps between 2 – 4 and 6 – 8. There is a peak at 5. There are clusters from 0 – 2 and 4 – 6.

3.



Sample answer: The shape of the distribution is not symmetric because the data skews right. There is a peak for the "Less than HS" category. There are not outliers or gaps. The data clusters at "Less than HS" and "HS."

4.



Sample answer: The shape of the distribution is symmetric. There is a peak from 10-14 dollars. There are no outliers.