

Applications

TEACH

If students are getting the wrong answers, analyze their work step by step to determine if they misunderstood a concept earlier in the process that is affecting their final answer. Also check if they have an incorrect piece of data entered.

ANSWERS

1. The media is filled with statistical reports every day, and all citizens need to have a knowledge of statistics so they can understand, interpret, and critique the studies and reports they read. With the tremendous number-crunching and availability of data due to the prevalence of technology, understanding how to quantitatively describe information is becoming increasingly important.

TEACH

Exercise 5

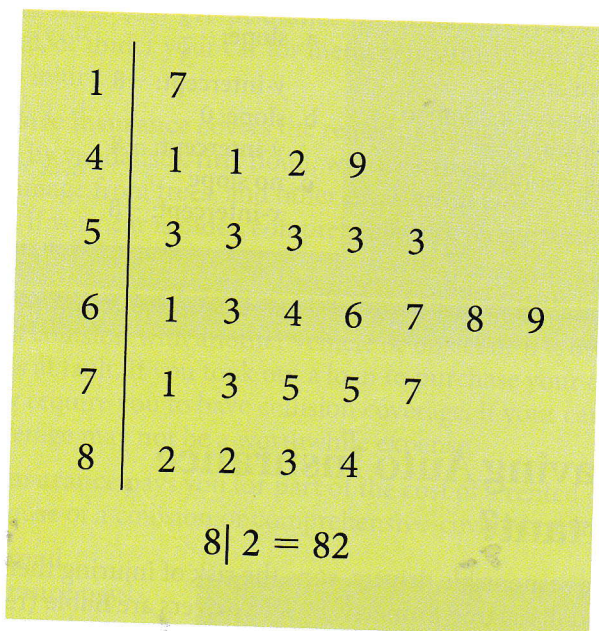
Have students pair up so they can check the distribution each of them created.

Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write.

—H.G. Wells, English science fiction author

1. Interpret the quote in the context of what you learned about statistics in this lesson.
2. The quartiles of a data set are $Q_1 = 50$, $Q_2 = 72$, $Q_3 = 110$, and $Q_4 = 140$. Find the interquartile range. **60**
3. The following list of prices is for a used original radio for a 1955 Thunderbird. The prices vary depending on the condition of the radio.
\$210, \$210, \$320, \$200, \$300, \$10, \$340,
\$300, \$245, \$325, \$700, \$250, \$240, \$200
 - a. Find the mean of the radio prices. Round to the nearest cent. **\$275**
 - b. Find the median of the radio prices. **\$247.50**
 - c. Find the mode of the radio prices. **\$200, \$210, \$300**
 - d. Find the four quartiles. $Q_1 = 210$; $Q_2 = 247.50$; $Q_3 = 320$; $Q_4 = 700$
 - e. Find the interquartile range for this data set. **110**
 - f. Find the boundary for lower outliers. Are there any lower outliers? **\$45; \$10**
 - g. Find the boundary for upper outliers. Are there any upper outliers? **\$485; \$700**
4. Bill is looking for original taillights for his 1932 Ford. The prices vary depending on the condition. He finds these prices: \$450, \$100, \$180, \$600, \$300, \$350, \$300, and \$400.
 - a. Find the four quartiles. $Q_1 = 240$; $Q_2 = 325$; $Q_3 = 425$; $Q_4 = 600$
 - b. Find the interquartile range. **185**
 - c. Find the boundary for lower outliers. Are there any lower outliers? **-\$37.50; there are**
 - d. Find the boundary for upper outliers. Are there any upper outliers? **\$702.50; there are**
5. Create a list of numbers with two upper outliers and one lower outlier. **Answers will vary.**
6. Explain why you cannot find the range of a data set if you are given just the four quartiles. **You need the minimum number to find the range, and that is not one of the**
7. Mitzi looked up prices of 13 used Chevrolet HHR “retro” trucks in the classified ads and found these prices: \$8,500, \$8,500, \$8,500, \$9,900, \$10,800, \$10,800, \$11,000, \$12,500, \$12,500, \$13,000, \$13,000, \$14,500, and \$23,000.
 - a. Find the range. **\$14,500**
 - b. Find the four quartiles. $Q_1 = \$9,200$; $Q_2 = \$11,000$; $Q_3 = \$13,000$; $Q_4 = \$23,000$
 - c. Find the interquartile range. **\$3,800**
 - d. Find the boundary for upper outliers. **\$18,700**
 - e. Find the boundary for lower outliers. **\$3,500**
 - f. How many outliers are there? **1**
 - g. Draw a modified box-and-whisker plot. Label it. **See additional answers.**

8. The Cold Spring High School student government polled randomly selected seniors and asked them how much money they spent on gas in the last week, rounded to the nearest dollar. The following stem-and-leaf plot shows the data they collected.
- How many students were polled? **26**
 - Find the mean to the nearest cent. **\$62.12**
 - Find the median. **\$65**
 - Find the mode. **\$53**
 - Find the range. **\$67**
 - Find the four quartiles. $Q_1 = 53$; $Q_2 = 65$; $Q_3 = 75$; $Q_4 = 84$
 - What percent of the students spent \$53 or more on gas? **75%**
 - Find the interquartile range. **\$22**
 - What percent of the students spent from \$53 to \$75 on gas? **50%**
 - Find the boundary for lower outliers. **\$20**
 - Find the boundary for upper outliers. **\$108**
 - How many outliers are there? **1**
 - Draw a modified box plot. **See additional answers.**



TEACH

Exercise 8

Point out to students that if a distribution has no outliers, then the box plot and modified box plot are the same. Remind them that when data are presented in a stem-and-leaf plot, they can be converted into a frequency table. A box plot does not display enough data for someone to construct a frequency table.

#141

1.000

Difference

am 5-2

bites

853

367