



Vocabulary

Review

Percent means parts per 100. **Percentiles** separate a data set into 100 equal parts.

Write *percent* or *percentile* to complete each sentence.

- In a bag of coins, 20 of the 80 coins are pennies. So, 25 ? of the coins are pennies.
- A score at the 70th ? of a data set is greater than or equal to 70 ? of the scores.

Vocabulary Builder

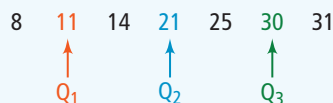
quartile (noun) kwAR tyl

Definition: A **quartile** is one of three values that divide a data set into four parts such that each part contains the same number of data values.

Math Usage: The median, or second **quartile**, separates the data into upper and lower halves. The first **quartile** is the median of the lower half of the data. The third **quartile** is the median of the upper half of the data.

Related Term: The **interquartile range** is the difference between the third and first quartiles. In the example above, the *interquartile range* is $30 - 11 = 19$.

quartiles



Use Your Vocabulary

Write T for *true* or F for *false*.

3. The *quartiles* of a data set divide the data so that each part has the same range.
4. The *quartiles* of a data set divide the data so that there is an equal number of scores in each part.
5. The second *quartile* of a data set is greater than about 50% of the scores.

Find the second *quartile* for each set of data.

6. 8 15 19 21 25 25 29

second quartile =

7. 17 28 30 30 32 33 35 39

second quartile =



Problem 1 Summarizing a Data Set

Got It? What are the minimum (least value), first quartile, median, third quartile, and maximum (greatest value) of the data set?

95 85 75 85 65 60 100 105 75 85 75

8. Arrange the data in order from least to greatest. Then circle the median.

60 65 75 85 85 85 95 100

9. The minimum data value is .

The maximum data value is .

10. Write each data value from Exercise 8 in the correct box.

Values to the left of the median:

Values to the right of the median:

Complete the first sentence. Then underline the correct word to complete the second sentence.

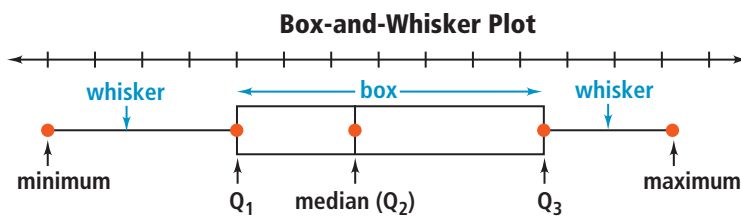
11. The median of the numbers to the left of the median is .

This is the first / third quartile.

12. The median of the numbers to the right of the median is .

This is the first / third quartile.

A **box-and-whisker plot** is a graph that summarizes a set of data by displaying it along a number line. It consists of three parts: a box and two whiskers.



Problem 2 Making a Box-and-Whisker Plot

Got It? What box-and-whisker plot represents the following monthly sales, in millions of dollars, of audio devices?

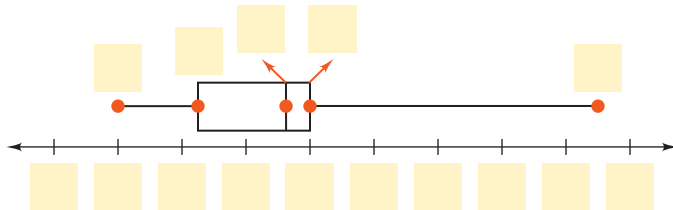
15 4 9 16 10 16 8 14 25 34

13. Order the data from least to greatest.

14. Draw a line from the description in Column A to the value in Column B.

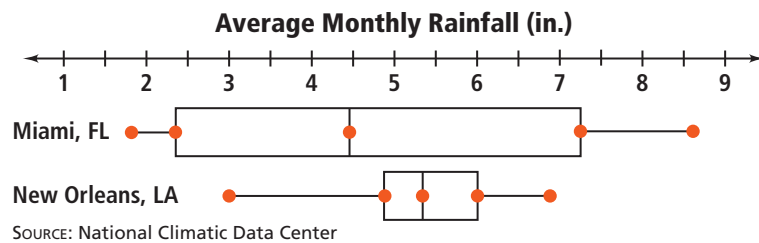
Column A	Column B
minimum value	9
maximum value	34
median	14.5
first quartile	16
third quartile	4

15. Use the number line and the box-and-whisker plot below. Label the minimum, maximum, and quartiles on the plot with the values from Exercise 14.



Problem 3 Interpreting Box-and-Whisker Plots

Got It? Use the box-and-whisker plots below. What do the medians tell you about the average monthly rainfalls for Miami and New Orleans?



16. Circle the median of each box-and-whisker plot.

Miami					New Orleans				
7.1	4.5	1.75	8.6	2.25	3	6.9	6	5.3	4.8

17. What do the medians tell you about the average monthly rainfall for the two cities?

The **percentile rank** of a data value is the percentage of data values that are less than or equal to that value.

Problem 4 Finding a Percentile Rank

Got It? Of 25 test scores, there are 15 scores less than or equal to 85. What is the percentile rank of a test score of 85?

18. Complete the reasoning model below.

Think	Write
I should write a ratio to compare the number of scores less than or equal to 85 to the total number of test scores.	$\frac{\square}{\square}$
Then I rewrite the fraction as a percent.	$\frac{\square}{\square} = \square\%$

19. A test score of 85 in this group of test scores ranks at the percentile.



Lesson Check • Do you UNDERSTAND?

Vocabulary Which portion of a box-and-whisker plot represents the *interquartile range*?

Write T for *true* or F for *false*.

20. The interquartile range is the difference between the third and first quartiles.

21. The first quartile is the leftmost point of the left whisker.

22. The first quartile is the leftmost point on the box.

23. The third quartile is the rightmost point on the box.

24. **Multiple Choice** Which portion of a box-and-whisker plot represents the interquartile range?

- A the maximum and minimum values C the length of the box
 B the length of the right whisker D the vertical line through the box



Math Success

Check off the vocabulary words that you understand.

- quartile interquartile range box-and-whisker plot percentile rank

Rate how well you can *make and interpret box-and-whisker plots*.

