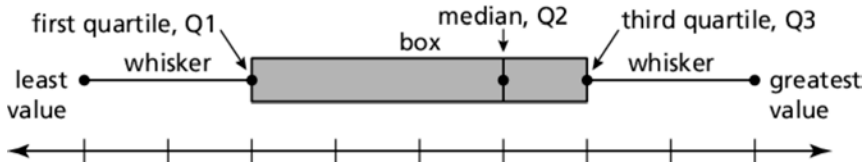
Name _____ Date _____

11.2 Notes: Interpreting Box and Whisker Plots

Box-and-Whisker Plot

A **box-and-whisker plot** shows the variability of a data set along a number line using the least value, the greatest value, and the *quartiles* of the data.

Quartiles divide the data set into four equal parts. The median (second quartile, Q2) divides the data set into two halves. The median of the lower half is the first quartile, Q1. The median of the upper half is the third quartile, Q3.



The five numbers that make up a box-and-whisker plot are called the **five-number summary** of the data set. These are the **mimimum, Q1, Median, Q3, and maximum** values.

Example: The numbers of first cousins of the students in a ninth-grade class are shown at the right.

Numbers of First Cousins			
3	10	18	8
9	3	0	32
23	19	13	8
6	3	3	10
12	45	1	5
13	24	16	14

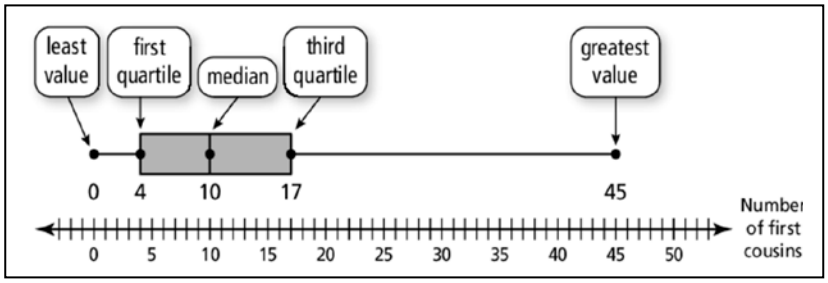
A *box-and-whisker plot* is one way to represent the data visually.

a. Order the data from least to greatest.

b. Divide the data listed above evenly into four groups by dividing it in half, and then divide each half equally. How many data items will be in each set? Find the **five number summary.**

Min: **Q1:** **Median:** **Q3:** **Max:**

c. Explain how the box-and-whisker plot shown represents the data set.



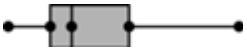
Shapes of Box-and-Whisker Plots

Skewed left

- The left whisker is longer than the right whisker.
- Most of the data are on the right side of the plot.

Symmetric

- The whiskers are about the same length.
- The median is in the middle of the plot.



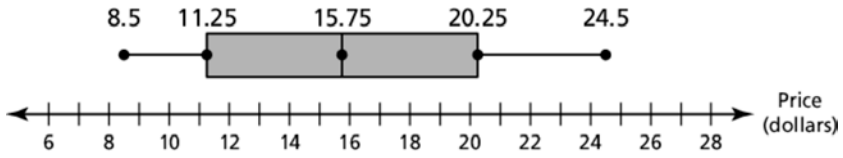
Skewed right

- The right whisker is longer than the left whisker.
- Most of the data are on the left side of the plot.

In Exercises 1 and 2, make a box-and-whisker plot that represents the data.

1. Hours of sleep: 7, 9, 8, 8, 8, 6, 6, 5, 4

2. The box-and-whisker plot represents the prices (in dollars) of soccer balls at different sporting goods stores.



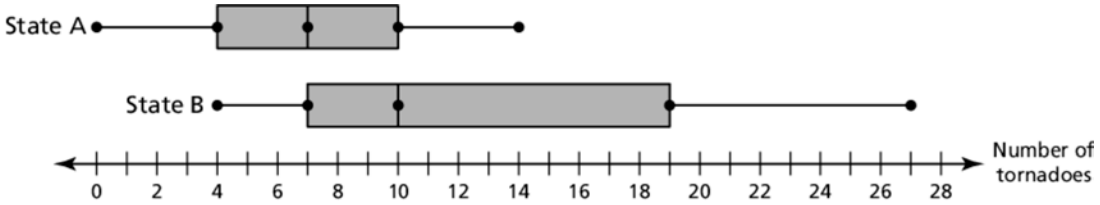
   a. Find and interpret the range of the data.

   b. Describe the distribution of the data.

   c. Find and interpret the interquartile range of the data.

   d. Are the data more spread out below Q1 or above Q3? Explain.

3. The double box-and-whisker plot represents the number of tornados per month for a year for two states.



   a. Identify the shape of each distribution.

   b. Which state's number of tornadoes are more spread out? Explain.

   d. Which state had the single least number of tornadoes in a month during the year? Explain.

Name _____ Date _____

11.2 CW 43: Puzzle Time HW 43: P. 597 #1-17 odds

What Did The Tired Dishcloth Say To The Counter?

Write the letter of each answer in the box containing the exercise number.

Identify the least value, Q1, Q2, Q3, and greatest value of the data set.

1. Time spent reading (in hours): 1, 2, 3, 4, 1, 3, 5, 4

2. Lengths of rabbits (in inches): 19, 15, 23, 22, 20, 19, 26, 24

3. Temperature changes (°F): −10, 8, −3, 4, −7, 5, −6, 8, −6, 5, −2

4. Sneaker prices (in dollars): 104, 75, 125, 90, 104, 320, 170, 134

Use the data set to complete the exercises.

10, 13, 14, 15, 12, 14, 16, 15

5. Find the first quartile.

O. 12.5 **P.** 15 **Q.** 16

6. Find the second quartile.

H. 12.5 **I.** 14 **J.** 16

7. Find the third quartile.

O. 12.5 **P.** 15 **Q.** 14

8. Find the range of the data.

V. 3.5 **W.** 6 **X.** 26

9. Make a box and whisker plot and describe the distribution of the data.

U. skewed left **V.** symmetric **W.** skewed right

10. Find the interquartile range.

D. 6 **E.** 2.5 **F.** 15

Answers

T. least value: 15; Q1: 19; Q2: 21; Q3: 23.5; greatest value: 26

D. least value: 75; Q1: 97; Q2: 114.5; Q3: 152; greatest value: 320

I. least value: 1; Q1: 1.5; Q2: 3; Q3: 4; greatest value: 5

M. least value: −10; Q1: −6; Q2: −2; Q3: 5; greatest value: 8

6	,	3		8	1	7	10	4		5	9	2