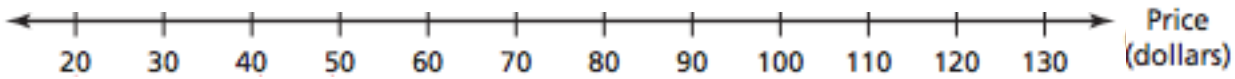
10.+

Box and Whisker Plots

Do Now

Find the mean, median, and mode of the sneaker prices. Which measure best represents the data? Explain your reasoning.

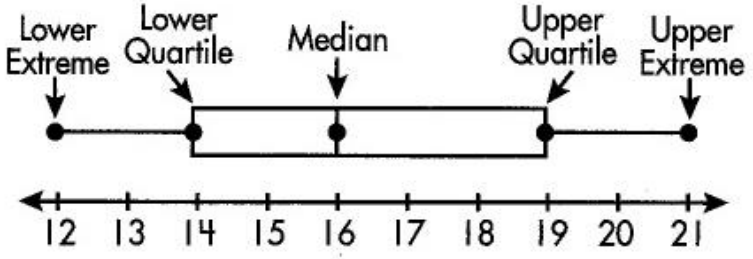


Box-and-Whisker Plots

A **box-and-whisker** plot displays data along a number line. Quartiles are used to divide the data into four equal parts. Each quartile is 25% of the number of items. The upper and lower quartiles, representing 50% of the data, form the box.
The upper extreme (highest value) and lower extreme (lowest value) form the whiskers.

This box-and-whisker plot represents the following data:

12, 13, 14, 14, 15, 16, 17, 18, 19, 19, 21



Definitions

Median:

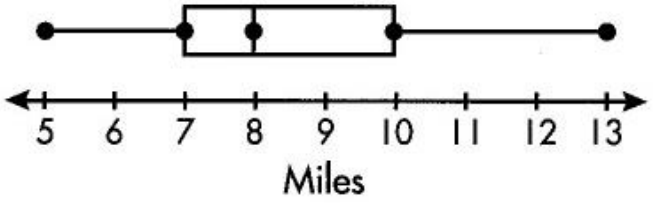
Lower quartile:

Upper quartile:

Interquartile range:

Use the box-and-whisker plots below to answer the following questions.

Miles Walked in Walk-a-Thon



1. What is the median number of miles walked? _____

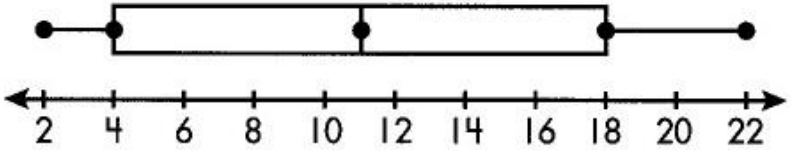
2. What are the lowest and highest numbers of miles walked?

   lowest: _____ highest: _____

3. If 126 people participated in the walkathon, how many people walked 7–10 miles? _____

4. What percentage of the people walked more than 10 miles? _____

Books Read Over the Summer



5. What is the median number of books read? _____

6. What is the upper quartile? _____

7. What percentage of the people who responded to the survey read 4 or fewer books? _____

8. What is the most number of books anyone read? _____

9. If 82 people responded to this survey, how many read from 4 to 18 books? _____

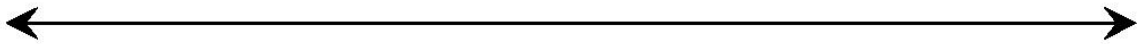
Drawing Box-and-Whisker Plots

62, 23, 27, 56, 52, 34, 42, 40, 68, 45, 83

1) Find the Median _____	**Use the values above to make a box and whiskers plot**
2) Find the Lower Quartile _____	**Step 1** – **Draw** a number line that includes the minimum and maximum data values
3) Find the Upper Quartile _____	**Step 2** – **Plot** the minimum, lower quartile, median, upper quartile, and maximum below the number line
4) Find the Minimum _____	**Step 3** – **Make** a box from the lower quartile to the upper quartile
5) Find the Maximum _____	**Step 4** – **Draw** a vertical line through the median
	Step 5 – **Draw** "whisker" from the box to the minimum and maximum.

Draw a box and whiskers plot for the following problems:

1) 2, 3, 6, 7, 6, 4, 8



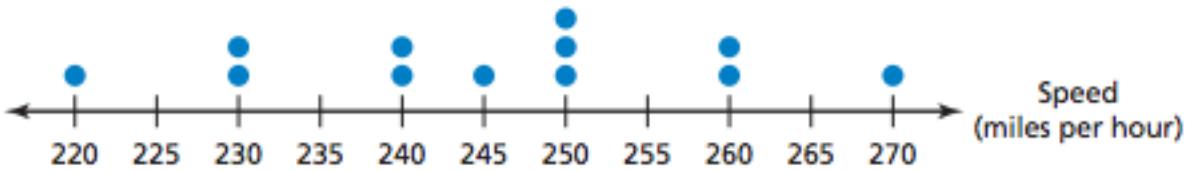
2) 3, 7, 2, 10, 12, 5

3) 23, 27, 34, 40, 42, 45, 52, 56, 62, 68, 83, 90

4) 71, 50, 66, 71, 65, 60, 70, 71, 68, 57, 71, 53, 85, 71

Finding the Interquartile Range

5) The dot plot shows the top speeds of 12 sports cars. Find and interpret the interquartile range of the data.



Order the speeds from slowest to fastest. Find the quartiles.

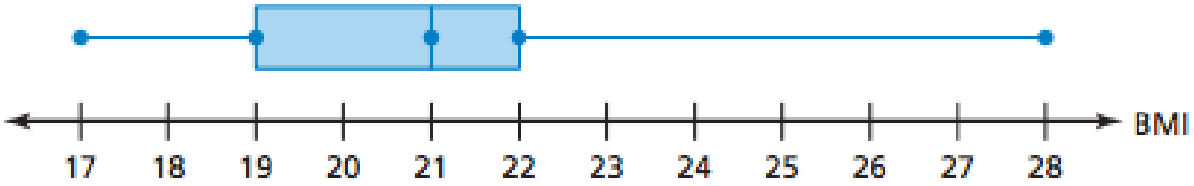
Finding the Interquartile Range

6) The number of pages in each of an author's novels is shown. Find and interpret the interquartile range of the data.

365, 364, 390, 468, 400, 382, 376, 396, 350

Analyzing Box-and-Whisker Plots

7) The box-and-whisker plot shows the body mass index (BMI) of a seventh grade class.



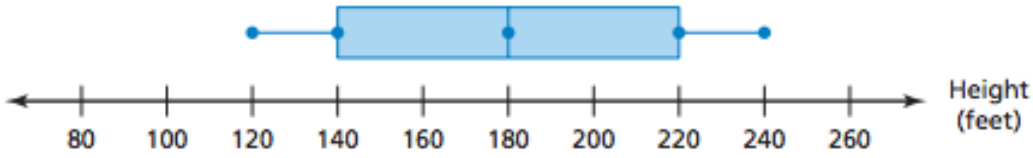
a) What fraction of the students have a BMI of at least 22?

b) Is the data more spread out below the first quartile or above the third quartile? Explain.

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

Analyzing Box-and-Whisker Plots

8) The box-and-whisker plot shows the heights of the roller coasters at an amusement park.



a) What fraction of the roller coasters are between 120 feet tall and 220 feet tall?

b) Is the data more spread out below or above the median? Explain.

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