

15.7

Comparing Populations

Mean

•(Average) – The sum of numbers divided by the amount of numbers

Mean = _____

1) Find the average of the following numbers:

20, 32, 35, 48, and 55

IF YOU GET A DECIMAL ANSWER, ROUND TO THE NEAREST TENTH PLACE

Median

•The middle number when a list is organized from least to greatest

2) Find the median of the following :

10, 4, 19, 4, 6

Median

•The middle number when a list is organized from least to greatest

3) Find the median of the following :

19, 10, 4, 23, 4, 6

Mode

•The number that occurs the most in a list of numbers

4) Find the mode of the following :

4, 4, 6, 10, 19

4

5) Find the mode of the following :

3, 5, 5, 7, 7

5, 7

6) Find the mode of the following :

2, 4, 6, 7, 9

NO MODE

Mean

•(Average) – The sum of numbers divided by the amount of numbers

$$\text{Mean} = \frac{\text{Sum of numbers}}{\text{Amount of numbers}}$$

Median

•The middle number when a list is organized from least to greatest

Mode

•The number that occurs the most in a list of numbers

Range

•The difference between the biggest and smallest numbers

7) Find the range of the following :

4, 4, 6, 10, 19

8) Find the range of the following :

3, 5, 5, 7, 7

9) Find the range of the following :

2, 4, 6, 7, 9

PRACTICE

10) Find the mean, median, mode, and range.

4, 0, 8, 2, 1, 7, 2, 4, 26, 2, 10

Outlier

- This is a number that is “out of place” and much greater or much less than the other numbers.

2, 3, 4, 5, 6, 70

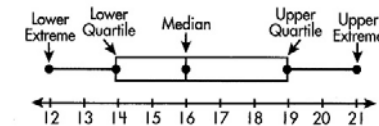
11) What would happen to the average if we removed this outlier from this list?

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.

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

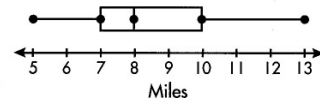
2. What are the lowest and highest numbers of miles walked?

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? _____

Miles Walked in Walk-a-Thon



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

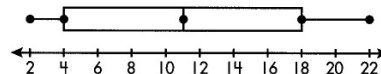
6. What is the upper quartile? _____

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? _____

Books Read Over the Summer



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.

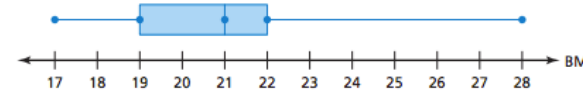
Finding the Interquartile Range

- 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

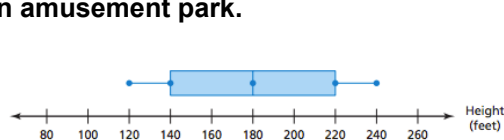
- 7) The box-and-whisker plot shows the body mass index (BMI) of a seventh grade class.



- What fraction of the students have a BMI of at least 22?
- Is the data more spread out below the first quartile or above the third quartile? Explain.
- Find and interpret the interquartile range of the data.

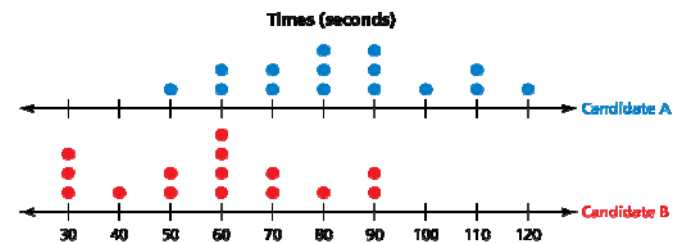
Analyzing Box-and-Whisker Plots

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



- What fraction of the roller coasters are between 120 feet tall and 220 feet tall?
- Is the data more spread out below or above the median? Explain.
- Find and interpret the interquartile range of the data.

The double dot plot shows the time that each candidate in a debate spent answering each of 15 questions.



- Compare the populations using measures of center and variation.

You want to compare the costs of speeding tickets in two states.

- a. The double box-and-whisker plot shows a random sample of 10 speeding tickets issued in two states. Compare the samples using measures of center and variation. Can you use this to make a valid comparison about speeding tickets in the two states? Explain.

