Chapter 9	**Statistical Measures**
Date:	**9.3 Measures of Center**
Essential Question	**In what other ways can you describe an average of a data set?**

Vocab

Word	Definition
center of measure	measure that describes the typical value of a data set
median	the middle number in a set of numbers that are in order from least to greatest
mode	value or values that occur most often; data sets can have one mode, more than one mode, or no mode.

1) **Find the median and mode of the bowling scores.**

Bowling Scores				
120	135	160	125	90
205	160	175	105	145

Find the median.

Step 1: List the numbers in order from least to greatest.

90, 105, 120, 125, 135, 145, 160, 160, 175, 205

Step 2: Find the number that is in the middle. If there is an even amount of numbers, add the two middle numbers and divide by 2.

90, 105, 120, 125, 135, 145, 160, 160, 175, 205

$135 + 145 = 280$ $\quad \frac{280}{2} = 140$ The median is 140.

Find the mode.

The mode is 160 because that value occurs most often.

Complete numbers 1 and 2 on your notes page.

1) Find the median and mode of the data.

20, 4, 17, 8, 12, 9, 5, 20, 13

4, 5, 8, 9, 12, 13, 17, 20, 20

The median is the middle number so the median is 12.

The mode is the number that happens most often so the mode is 20.

2) Find the median and mode of the data.

100, 75, 90, 80, 110, 102

75, 80, 90, 100, 102, 110

There are 2 middle numbers so the mean, or average, of 90 and 100 is 90 + 100 = 190 $190 \div 2 = 95$. The median is 95.

The mode is the number that occurs most often. There is not a mode for this data set.

Complete number 2 in your composition book.

2) The list shows the favorite types of movies for students in a class. Organize the data in a frequency table. Then find the mode.

Favorite Types of Movies		
Comedy	Drama	Horror
Horror	Drama	Horror
Comedy	Comedy	Action
Action	Comedy	Action
Horror	Drama	Comedy
Comedy	Comedy	Horror
Horror	Comedy	Action
Horror	Action	Drama

Type	Tally	Frequency
Action	𝍸	5
Comedy	𝍸 |||	8
Drama	||||	4
Horror	𝍸 ||	7

Comedy received the most votes so, the mode is comedy.

Complete number 3 on your notes page.

3) The list shows the colors of shirts at a store. Organize the data in a frequency table. Then find the mode.

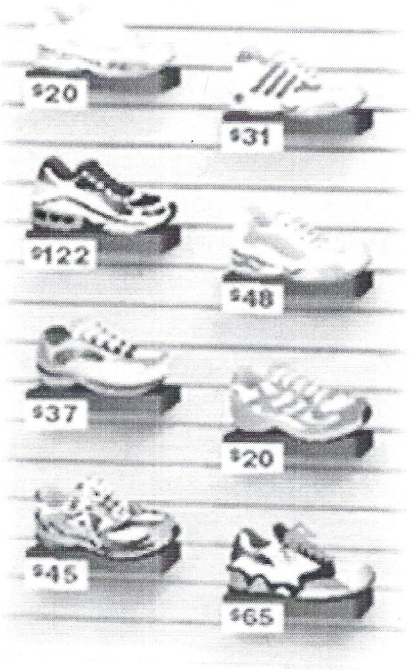
Shirt Color		
Black	Blue	Red
Pink	Black	Black
Gray	Green	Blue
Blue	Blue	Red
Yellow	Blue	Blue
Black	Orange	Black
Black		

Type	Tally	Frequency
black	𝍸 |	6
pink	|	1
gray	|	1
blue	𝍸 |	6
yellow	|	1
green	|	1
orange	|	1
red	||	2

Black and blue are the modes because they occur most often.

Complete numbers 4 and 5 on your notes page.

4) **Find the mean, median, and mode of the sneaker prices. Which measure best represents the data?**



mean **$48.50**

20 + 31 + 122 + 48 + 37 + 20 + 45 + 65 = 388

388 ÷ 8 = 48.5

median **$41**

20, 20, 31, 37, 45, 48, 65, 122

There are 2 middle numbers so take the average of them.

37 + 45 = 82

82 ÷ 2 = 41

mode **$20**

(20), (20), 31, 37, 45, 48, 65, 122

$20 happens most often.

The median best represents the data because it is in the middle. The mode is on the low end and the mean is higher than most of the data.

5) Identify the outlier from problem number 4. Find the mean, median, and mode without the outlier. Which measure does the outlier affect the most?

20, 20, 31, 37, 45, 48, 65, 1~~2~~

mean $38

20 + 20 + 31 + 37 + 45 + 48 + 65 = 266

266 ÷ 7 = 38

median $37

20, 20, 31, 37, 45, 48, 65

mode $20

20, 20, 31, 37, 45, 48, 65

The mean is affected the most by the outlier. It changed by $10.50 ($48.50 - $38.00). The median only changed by $4 ($41 - $37) and the mode didn't change at all.