12.1 Central Tendency
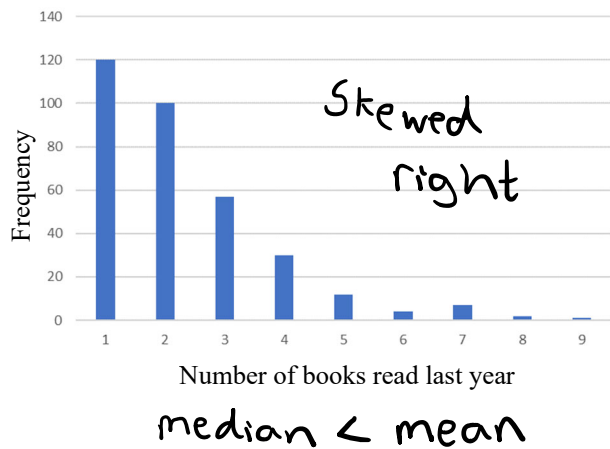
Calculus

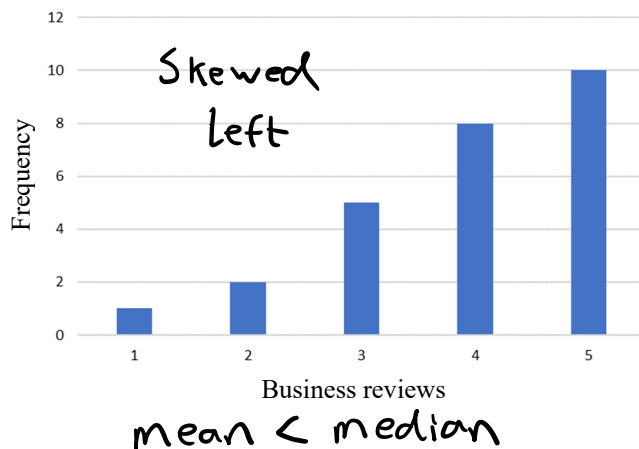*Solutions*

For each data set below, state whether the median is larger than the mean, of if the mean is larger than the median.

1.

Skewed
right

Frequency vs. Number of books read last year

median < mean

2.

Skewed
left

Frequency vs. Business reviews

mean < median

3. A data set that has a skewed left distribution.

Mean < median

4. A data set that has a skewed right distribution.

median < mean

Find the measures of central tendency for the following sets of data.

5. 3, 6, 8, 8, 8, 10, 11, 12, 12

↑ middle

Mean: $\frac{78}{9} = 8.667$

Median: 8

Mode: 8

Range: 12 - 3 = 9

Are there any outliers? If yes, what number(s)?

No

6. 45, 62, 56, 58, 128, 42, 62, 55

42, 45, 55, 56, 58, 62, 62, 128

middle

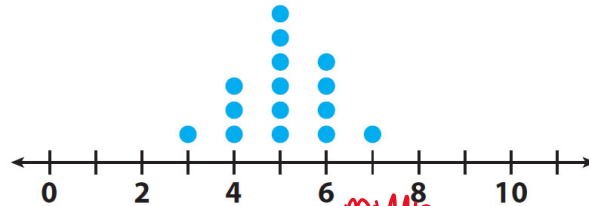Mean: $\frac{508}{8} = 63.5$

Median: $\frac{56+58}{2} = 57$

Mode: 62

Range: 128 - 42 = 86

Are there any outliers? If yes, what number(s)?

Yes, 128

7.

15 numbers

3, 4, 4, 4, 5, 5, 5, (5,) 5, 5, 6, 6, 6, 6, 7

middle

Mean: $\frac{88}{15} = 5.867$

Median: 5

Mode: 5

Range: 7 - 3 = 4

Are there any outliers? If yes, what number(s)?   No

8. Foot Locker records all shoe sizes sold in a day. Bob calculates the measure of central tendency for Foot Locker and gets the results in the box to the right.

a. Do you think the data is Normal, Skewed Left, or Skewed Right?

Skewed right

MEAN = 9.2
MEDIAN = 8
MODE = 7

b. Explain why you chose your answer form part a.

The median is less than the mean.
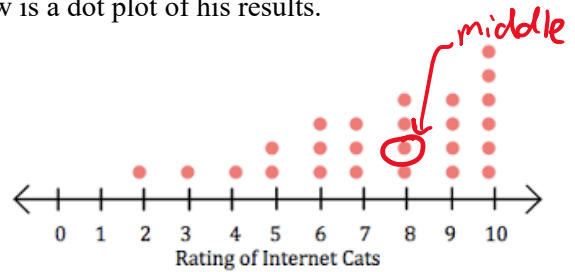The mean is pulled right of the median.

9. Bob loves cats on the internet. He asks some students in his class how much they like cats on the internet on a scale from 1-10 (1 being the lowest and 10 the highest). Below is a dot plot of his results.

a. How many students did Bob ask? **25 students**

b. Describe the data.

Skewed left

middle

```
                              •  •  •
                           •  •  •  •
                        •  •  ⊗  •  •
                     •  •  •  •  •  •
            •  •  •  •  •  •  •  •  •
←+——+——+——+——+——+——+——+——+——+——+——+→
 0  1  2  3  4  5  6  7  8  9  10
        Rating of Internet Cats
```

c. Find the mean, median and mode.

mean: $\frac{186}{25} = 7.44$

median: 8

mode: 10

d. Which measure of central tendency best represents the data? Explain why.

median, because the data is skewed left.

12.1 Central Tendency

<div style="background:black;color:white">**12.1 Test Prep**</div>

10. The list below shows the number of minutes Michael spent playing video games on each of six days.

$$91, \ 50, \ 88, \ 93, \ 50, \ 92$$

Which two measures of these data best describe the typical number of minutes Michael spent playing video games each day?

(A) Mean and mode

(B) Mean and median ⟵ *(circled)*

(C) Mode and range

(D) Median and range

11. The list below shows Mr. Brust's golf scores for his last five rounds.

$$94, \ 110, \ 105, \ 85, \ 97$$

Which measure of data best describes how much these bowling scores varied?

(A) Mean

(B) Median

(C) Mode

(D) Range ⟵ *(circled)*

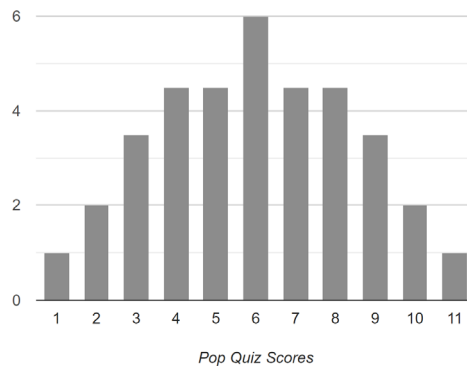12. Match the data sets to their graphs.
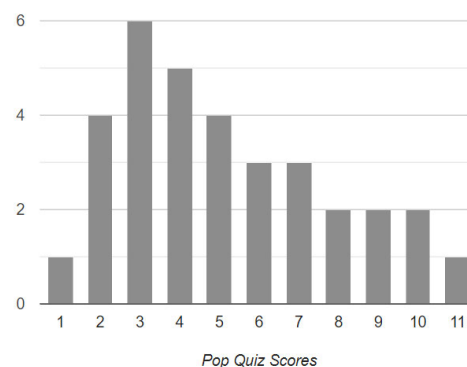
DATA SET A

Mean = 6.2

Median = 6
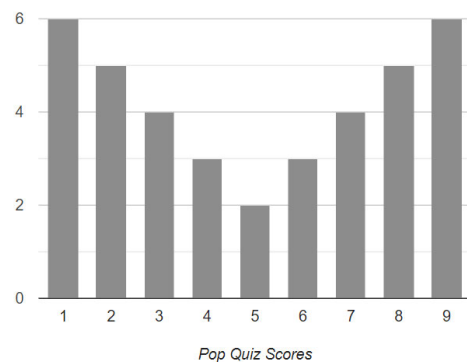
Mode = 3

Data Set A matches

graph **2**

GRAPH #1

Pop Quiz Scores

DATA SET B

Mean = 5

Median = 5

Mode = 10 and 2

Data Set B matches

graph **3**

GRAPH #2

Pop Quiz Scores

DATA SET C

Mean = 6

Median = 6

Mode = 6

Data Set C matches

graph **1**

GRAPH #3

Pop Quiz Scores
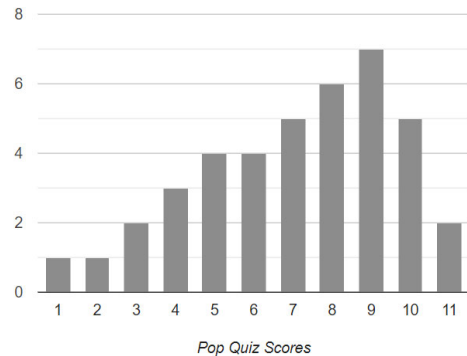
DATA SET D

Mean = 7.4

Median = 8.1

Mode = 9

Data Set D matches

graph **4**

GRAPH #4

Pop Quiz Scores