

4/24/17 CCM6

How does shape of data affect measures of center? Describe the shape of data.

1. Agenda...HW is page 14...QUIZ Wed up to page 15...EOG Number System due MON
2. Get out p.10-12 to check and a calculator
3. Complete the Mon warm-ups

Monday Warm-ups

① $1 \text{ cup} = 8 \text{ oz}$
 $\frac{1}{2} \text{ cup} = 4 \text{ oz}$

② $10x = 2$

$$x = \frac{2}{10} = \frac{1}{5}$$

EOG REVIEW packets

~Due Dates

~Graded? Practice? Minor? Major?

= Work not required

4

CW/HW

Finding Statistical Measures and Comparing them to Understand Data

BIG IDEAS....

• **Shape of a set of data**

- Symmetrical data...mean and median are close to the same
- Skewed data...leans left or right...mean and median are different...mean is pulled left or right

• **Outliers**

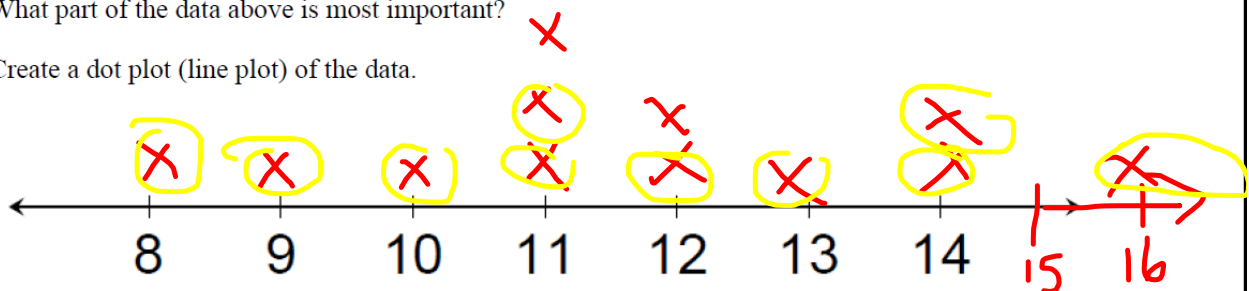
- When there is an outlier, it pulls the **mean** up or down
- Outliers barely affect the **median**
- If there is an outlier, the median will be more typical for that set of data than the mean

Names:

Maxi Swanson (11)	Thomas Petes (11)	Michelle Hughes (14)	Shoshana White (13)
Deborah Black (12)	Tonya Stewart (12)	Tony Tung (8)	Richard Mudd (11)
Janice Wong (10)	Bobby King (9)	Charlene Greene (14)	

What part of the data above is most important?

Create a dot plot (line plot) of the data.



Can you make any conclusions about this data? _____

Describe the **SHAPE** of the data... Symmetrical? Skewed? Random?

Write a statistical question about the data above. _____

cw/HW

Investigating Statistics... What numbers affect the **MEDIAN**?

- Using the names provided, place them in order from least to greatest. What is the middle number? How many numbers are to the left of the middle number? How many numbers are to the right of the middle number?

Middle Number: 11
 # of numbers to the left: 5
 # of numbers to the right: 5

P. 11

- The median is the number that is the midpoint of a set of data. The same number of data values occur before and after the median. What is the median for these data? *n*

- Remove two names from your data set so that:

The median stays the same: 11 when you remove 8 + 14
 The median increases: 12 when you remove 8 + 9
 The median decreases: impossible

- Maxi Swanson is moving. When she leaves, what will be the new median for the data set?

(11)

- What would happen to the median of the data set if you add a name with 16 letters?

11.5
11.5

- What would happen to the median of the data set if you add a name with 89 letters?

11.5

**What do you call a data point far away from all others? outlier

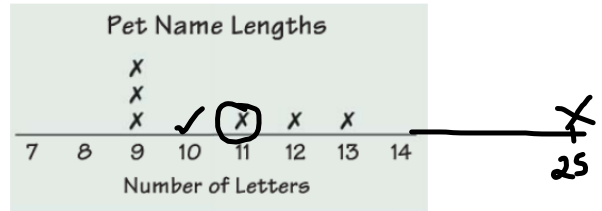
- What would be the length of two names that you could add to the data set so that

The median stays the same: 16 + 8
 The median increases: 2 above 11
 The median decreases: impossible

cw/HW

Investigating Statistics...What numbers affect the MEAN?

Susan has six pets. She made the line plot to show the lengths of her pets' names.



Describe the SHAPE of the data.

skewed left

What is the mean of the data above?

$$\frac{63}{6}$$

10.5

If you add a 1 letter pet name, what will be the new mean?

9.14

$$\frac{64}{7}$$

What will be the new median?

9

How did a low data value change the mean?

went down

How did a low data value change the median?

" " 10 → 9

If you remove the 1 and replace it with a 25, what will be the new mean?

12.57

What will be the new median?

11 10 → 11

How did a high data value change the mean?

↑ 10.5 - 12.57

How did a high data value change the median?

↑ less

Do very high or very low data values far away from the other data (outliers) change the mean or median more?

When there is an outlier, which measure of center would be better to use for that set of data?

median ✓

When there is no outlier, which measure of center would be better to use for that set of data?

either

Investigating Statistics: How does the SHAPE of the data affect the center?

PEAK ... CLUSTER ... SKEWED ... SYMMETRICAL ... GAP

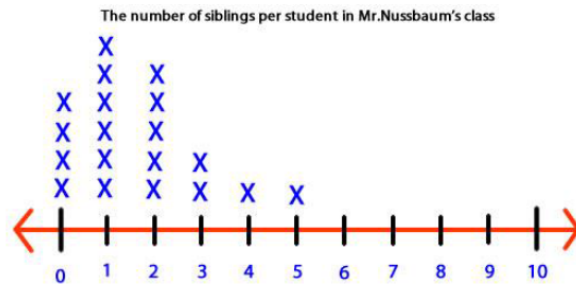
Describe the shape of the data in the line plot to the right.

Mean = _____

Median = _____

Mode = _____

Range = _____



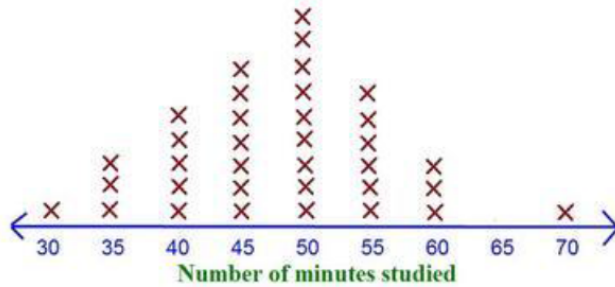
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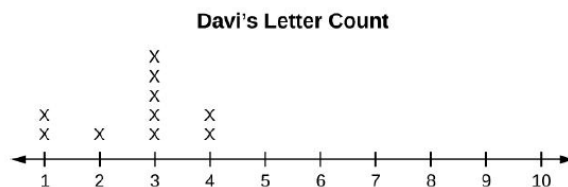
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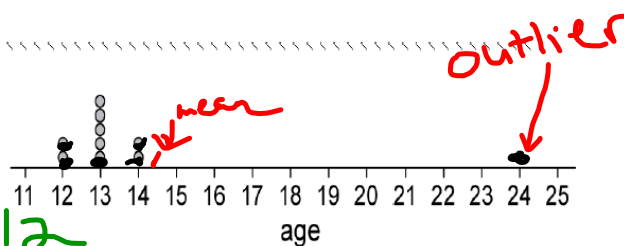
Range = _____



✓ Describe the shape of the data in the line plot to the right.

Mean = $\frac{141}{10} = 14.1$ Median = 13

Mode = 13 Range = $24 - 12 = 12$



Which measures are affected most by the outlier? range & mean

HW

PRACTICE

1.

Jessica's History Test Scores	81	97	99	89	91	50
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Range: _____

Mean: _____

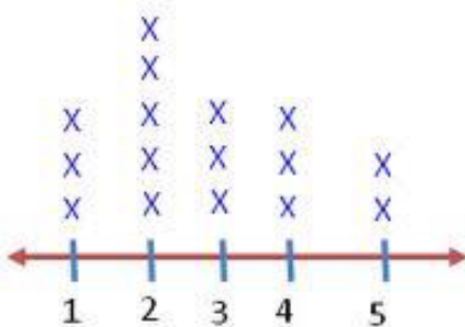
Median: _____

Mode: _____

Which measure of center is best for Jessica—mean or median? Explain.

2. On an exam, three students scored 75, four students scored 82, three students scored 88, four students scored 93, and one student scored 99. If the answer is 88, what is the question? *Hint: Write the scores out!*

3. Find the mean, median, mode, and range of the dot plot.



Mean: _____

Median: _____

Mode: _____

Range: _____

For the line plot, is mean or median a better measure of center? Explain.