

Remember the five number summary???

The _____ is the distance between the first and third quartiles: _____

We call an observation an _____ if it falls more than _____ above the _____ or below the _____.

If it is _____,

or if it is _____.

A _____ (_____) is drawn using the five number summary.

In a _____, the observations that are more than $1.5 \times \text{IQR}$ away are plotted

_____.

(NOTE: _____)

HINT: _____

Examples:

1. Find the following using the numbers given:

1, 60, 15, 3, 18, 6, 12, 35

- A) Find the mean, median, and mode. _____
- B) Find the range. _____
- C) List the five number summary _____
- D) Find the IQR. _____
- E) Determine if there are any outliers.
- F) Create a box and whisker plot of this data.
- G) Does the modified box and whisker plot look different from the plot in part F?

How do you find the outlier?

Step 1: Put data in order least to greatest.

Step 2: Find Q_1 , median and Q_3 .

Step 3: Find the Interquartile Range (IQR).

Step 4: Outliers are any number smaller than $Q_1 - 1.5(IQR)$ OR bigger than $Q_3 + 1.5(IQR)$.

Find the outlier of the data set.

1. 43, 69, 49, 78, 88, 54, 73, 194, 54, 59, 70

2. 40, 62, 47, 68, 12, 78, 49, 65, 49, 52, 63

3. 44, 67, 52, 72, 82, 55, 70, 200, 55, 57, 68

4. Given the following data: 164, 175, 126, 135, 159, 143, 55

a. What effect will the outlier have on the median of the data if the outlier is excluded?

b. What effect will the outlier have on the mean of the data if the outlier is excluded?

c. What effect will the outlier have on the mode of the data if the outlier is excluded?

d. What effect will the outlier have on the range of the data if the outlier is excluded?

5. Given the following data: 46, 39, 38, 47, 45, 34, 83
 - a. What effect will the outlier have on the median of the data if the outlier is excluded?
 - b. What effect will the outlier have on the mean of the data if the outlier is excluded?

6. What effect will the outlier have on the mean if it is left out of the data set 5, 8, 9, 7, 10, 6, 25

7. If Miguel earned the following test scores 89, 92, 86, and 97, his average (mean) test score would be 91. The teacher entered his scores in as 89, 92, 68, 97.
 - a. How is his mean going to change?
 - b. If we were to not turn in a take home test and got a 0, how would his average change?

8. Consider the following three sets of data. For each set of data calculate the mean and standard deviation.

	MEAN	Standard Deviation
A. 9, 10, 11, 7, 13	_____	_____
B. 10, 10, 10, 10, 10	_____	_____
C. 1, 1, 10, 19, 19	_____	_____

Which set has the largest standard deviation? _____

Is it possible to answer the previous question without doing the calculations?
Why?