Data displays can be used to describe the following elements of a data set's distribution:

- Center
- Shape
- Spread

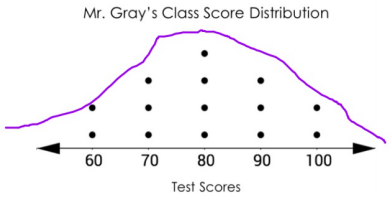
There are three common ***measures of center***.

- ***Mean:*** The average of the data values.
- ***Median***: The middle value of the ordered data set.
- ***Mode:*** The most frequently occurring value(s).

Mr. Gray gave a test on a regular school day with no special activities. The scores are listed below.

$$60, 60, 70, 70, 70, 80, 80, 80, 80, 90, 90, 90, 100, 100$$

The dot plot for the data is as follows:



Looking at the dot plot, what do you think is the value of the median?

80

What is the value of the mean?

80

Why is it important to know where the center is?

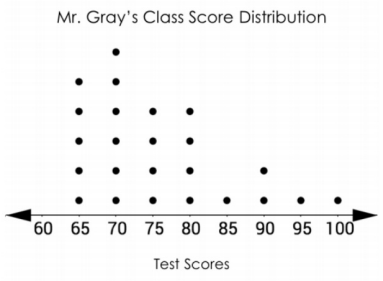
Overall idea of how everyone did.

The shape of a dot plot also gives important information about a data set's distribution. The data in the previous dot plot is symmetrical and follows a ***normal distribution***. What do you notice about the shape of a normal distribution?

- Bell shape
- Most data clumped in the middle.

Mr. Gray then gave a test the day after a basketball game against the school's rival. The scores were as follows.

65, 65, 65, 65, 65, 70, 70, 70, 70, 70, 70, 75, 75, 75, 75, 80, 80, 80, 80, 85, 90, 90, 95, 100



a. What are the mean and the median of this data set?

median: 75 mean: 76

b. Which measure is a more appropriate measure of center, the mean or the median?

median

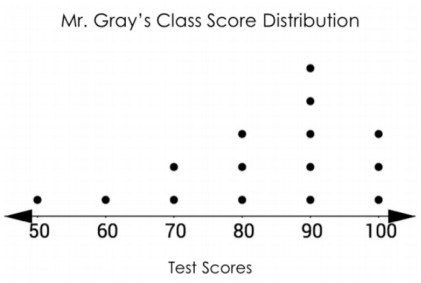
Mr. Gray then gave a test the day after a mid-week early release day. The scores were as follows.

50, 60, 70, 70, 80, 80, 80, 90, 90, 90, 90, 90, 100, 100, 100

a. Which value do you think will be smaller: the mean or the median?

mean

b. Consider the dot plot for the data.



Which measure is a more appropriate measure of center, the mean or the median?

median

c. Does this data set have a normal distribution? Why or why not?

No! It doesn't follow a bell curve

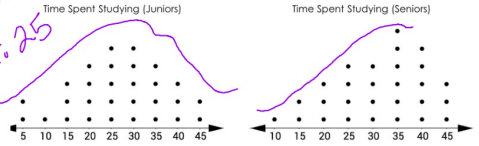
d. The shape of this distribution is skewed right.

c. The shape of this distribution is skewed left.

d. For a normal-shaped data set the best measure of center is the mean, whereas for a skewed-shaped data set, the median is better.

Mr. Logan surveyed his junior and senior students about the time they spent studying math in one day. He then tabulated the results and created a dot plot displaying the data for both groups.

mean: 26.6
median: 25



29 students

28 students

median 32.5

mean 30.9

Part A: The value of the larger median for the two groups is 32.5

Part B: The value of the larger mean for the two groups is 30.9.

Part C: Using one to two sentences, describe the difference between the number of minutes the juniors and seniors studied by comparing the center and shapes for the groups.

Juniors were normal distribution
Seniors were skewed-left