

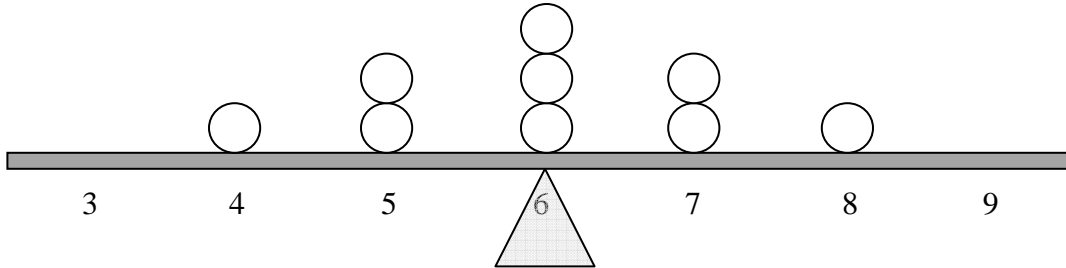
Exploring Mean, Median, and Mode

(Adapted from Beckmann, Pearson, 2008; Bennett, Burton & Nelson, McGraw Hill, 2007; and Small, McGraw Hill, 2005)

Name: _____

1. The circles arranged along the number line below represent the following data set:

4, 5, 5, 6, 6, 6, 7, 7, 8



What are the mean, median, and mode of this set? Explain how the number line helps you see this. What do you think the triangle represents in the diagram?

2. Rearrange the circles on the number line so that they represent a new data set that still has median 6, but has a mean *less than* 6. Use the same number of circles as we had in problem 1. Write out your data set and sketch your arrangement on the number line below.



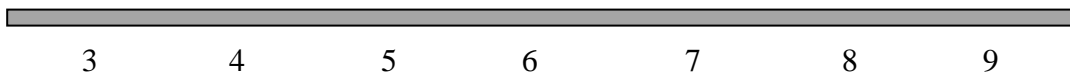
- a. Describe the process that you used to come up with your new data set.
- b. What did you do with the triangle in part b? If you don't have a triangle in your diagram, draw one in where you think it should go. How do you know it goes there?

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- c. Are there other data sets with the same number of points in them that would have a median of 6 and a mean less than 6? Explain your answer.

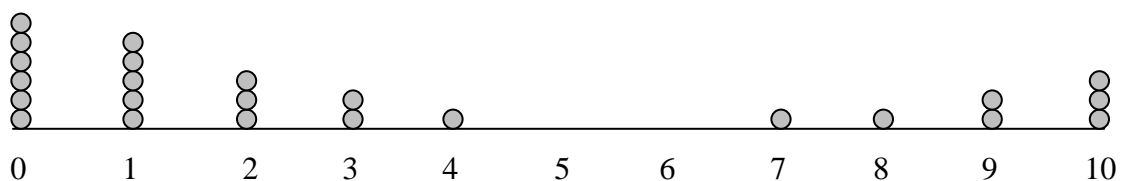
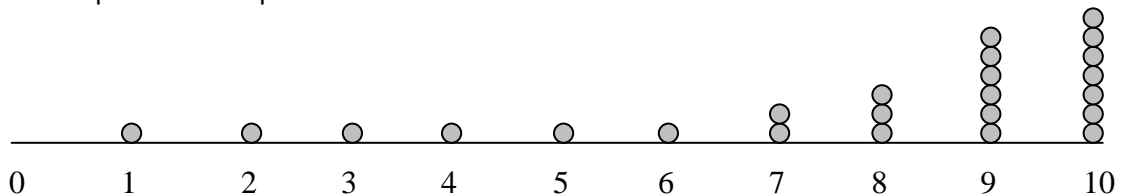
3. Now rearrange the circles on the number line so that they represent a data set with median 6 and a mean *greater than* 6, using the same number of circles. Write out your data set and sketch your arrangement on the number line below.



- a. How did you come up with this data set?

- b. Where did the triangle go in the diagram for this set? Why?

4. The two plots below represent two different sets of data.



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- a. For each of the dot plots shown above, decide which is greater **without** calculating, the mean or the median.

Set 1:

Set 2:

How did you decide? Clearly explain your reasoning.

- b. Which of the two sets do you think has the larger mean? Why? The larger median? Why?

- c. Calculate the median and mean of each of the two sets. Were your answers in parts (a) and (b) correct?

Set 1:

Set 2:

5. Suppose a teacher gives a test to a class of 20 students.

- a. Is it possible for 90% of the class scores to be above the mean? If so, give an example of test scores that would work. If not, explain why not.

- b. Is it possible for 90% of the class scores to be above the median? If so, give an example of test scores that would work. If not, explain why not.

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6. For each of the following, make up a data set of 10 entries which meets the requirements. Explain your thinking.
 - a. The mean is 6 and the mode is 8.

 - b. The mean is 8 and the median is 5.

 - c. The mean is 7, the median is 8, and the mode is 3.

7. For each of mean, median, and mode, describe a situation in which that measure is the most appropriate to use. Explain what you mean by "most appropriate."