The Third Annual GeoGebra Conference of Southern Connecticut August 25, 2015
Forest Fisher, Guttman Community College, NY http://fdfisher.com

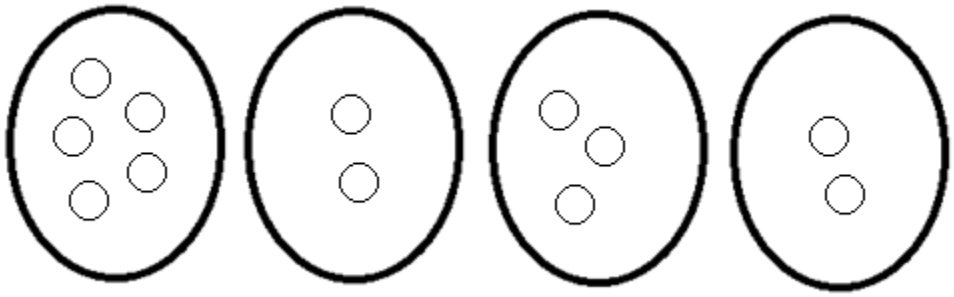
Mean and Median – part 2

Group Members: List the names of your group mates below.

_____ _____

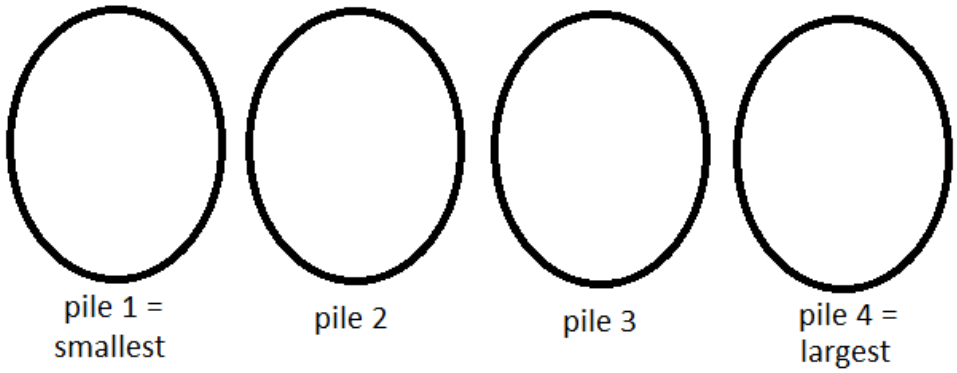
_____ _____

1. Your group is stranded on a desert island. Create four piles of chips (representing food) in front of you as follows.



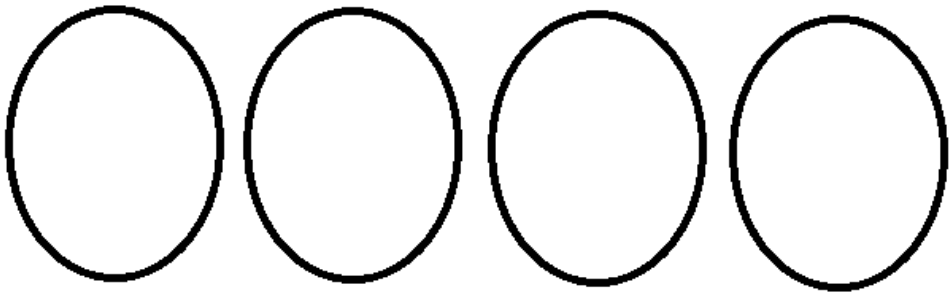
Of the four of you, each person will only receive one pile.

a) Put the piles in order from smallest to largest. Draw the rearranged piles in the space below.



b) How big is the middle pile? Is this the mean size of the piles or the median?

c) As a group, you decide the only fair thing to do is give everyone the same amount of food. Rearrange the piles of "food" in front of you so that everyone receives the same amount. Draw the rearranged piles in the space below.

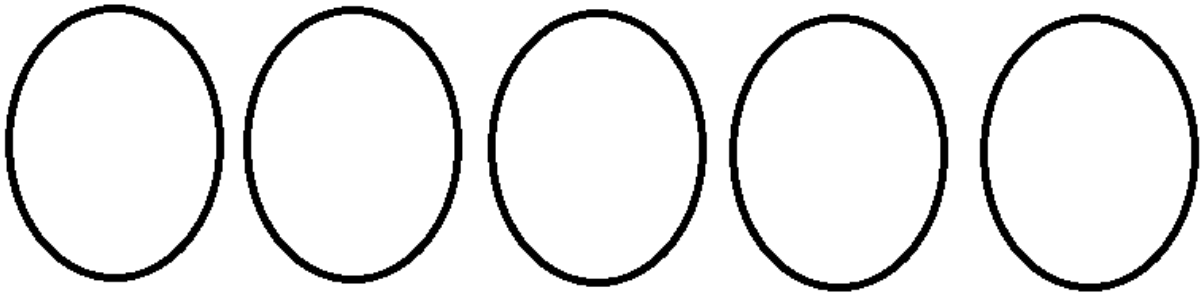


d) How big are the piles now? Is this the mean size of the piles or the median?

e) Someone finds a scraggly old man living on the island. He has a **huge** stash of food. Represent his food as a new, 5th pile of 28 additional chips. *Make a prediction*: how do you think this old man's stash of food will change the median and the mean? ***Explain*** *your answer.*

f) Add this pile to your drawing in part (a). What is the median now?

g) Redistribute the food again so that everyone receives the same amount, and draw your rearrangement of the piles in the space below. What is the mean size of the piles now?



2. a) Create a sample representing the ages of students with the following information.

Sample size: 6 students

Median age: 12.5 years

Mean: 10 years

These don't have to be the ages of actual students; I'm asking you to make up data with these properties. You're welcome to use Excel or any other tools that might help you create this sample.

Sample 1 of Ages	
1.	4.
2.	5.
3.	6.

b) Can you create another sample with the same sample size, median, and mean?

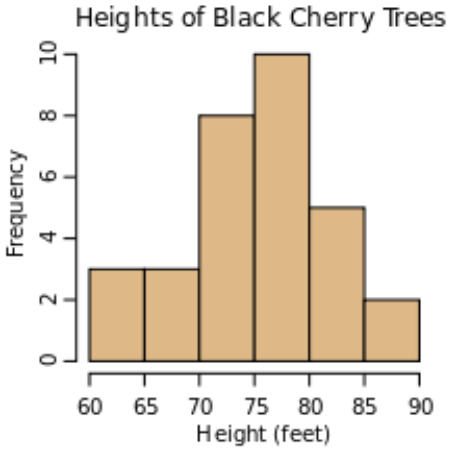
Sample 2 of Ages	
1.	4.
2.	5.
3.	6.

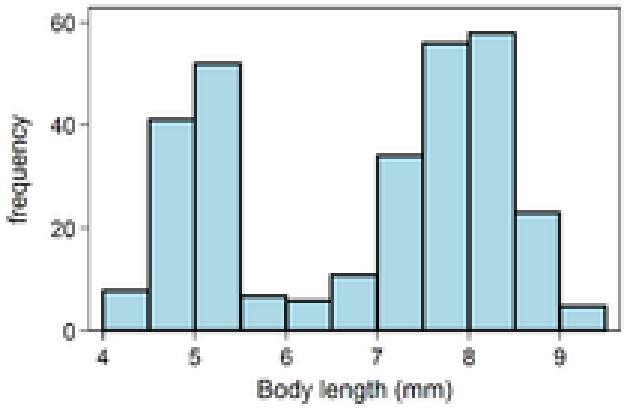
c) Create a 3rd sample with the same median and sample size, but with mean equal to 20.

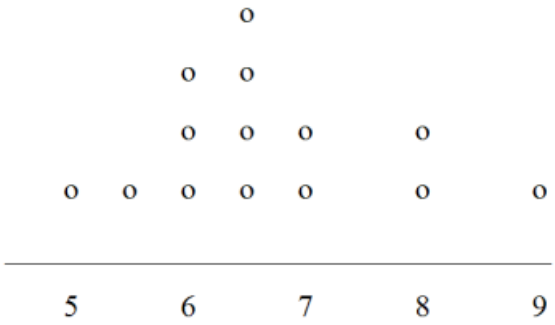
Sample 3 of Ages	
1.	4.
2.	5.
3.	6.

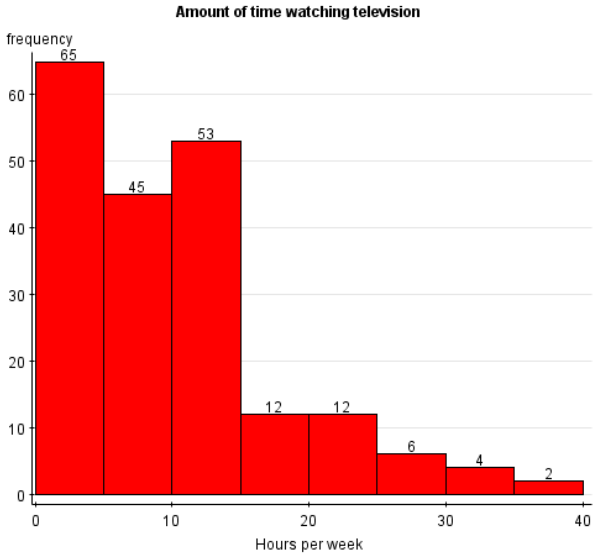
3. The mean is sometimes called the **balance point**, since it balances out observations on the left with those on the right. Imagine that the dot plot or histogram sat on top of a balance beam. The mean would be the place where you would need to put the fulcrum so that the beam stays balanced.

Draw the mean in each of the graphs below as though it were the fulcrum holding up the balance beam.









4. We asked 50 students to keep track of the number of times they drank soda like Coke or Pepsi in the last month. The data is recorded in a dot plot in GeoGebra, which you can download from our class ePortfolio. The mean and median for this sample are represented by a red triangle and a blue diamond.

a) What is the mean? What is the median?

b) Find the orange dot in the dotplot. How many times did this orange dot person drink soda last month?

c) We're going to change our data to see what happens. Drag the orange dot down to 8. What happens to the mean? Does it go up, down, or stay the same? What about the median? ***Explain*** *why* these numbers do or do not change.

d) Find the purple dot in the dot plot. How many times did this purple dot person drink soda last month?

e) Drag the purple dot up to 8. What happens to the mean? Does it go up, down, or stay the same? What about the median? ***Explain*** *why* these numbers do or do not change.

f) There's one outlier in this sample. How many sodas did the outlier person drink last month?

g) What would happen if we dragged this outlier down to 9? Would it change the median or the mean? *How* so?

h) Drag the dots around in the dotplot until you've created a sample with median 5 and mean 13.

i) Drag the dots around in the dotplot until you've created a sample with median 12 and mean 4.