

*This activity is a variation of the activity in "Activity Based Statistics, by Scheaffer, Gnadesikan, Watkins and Witmer, 1996*

Generally a Statisticians' job is to find out the truth about a population. In order to do this you could collect data from every individual in the population (a census.....not too efficient and sometimes downright impossible) OR collect data from a representative sample from the population, find whatever piece of information you need from the sample (mean or proportion usually) and IF your sample was representative of the population your sample statistic should be close to the population parameter.

That seems simple enough. That is really all statistics is. ☺

So we have to start with collecting a good sample. Can you collect a random sample from a population?

Our job is to find out the average area of a rectangle given a population of 100 rectangles. We could find the area of all 100 rectangles and then get an average. Yuck. ☹ Instead lets' take a sample of size five rectangles that you feel are pretty representative of the population as a whole. Then we will find the average of those five rectangles.

- WHEN WE CHOOSE THE RECTANGLES.

Rectangle #					
Area					

Average Area\_\_\_\_\_

Now we will collect class data of all the averages and get one "super average": Class Average\_\_\_\_\_

- HOW ABOUT WE HAVE A SYSTEM TO CHOOSE THE RECTANGLES? So pick your favorite one digit number and then add your age to that number until you get five rectangles.

Rectangle #					
Area					

Average Area\_\_\_\_\_

Class Average\_\_\_\_\_

I want to do this activity twice more, but this time we don't get to pick the rectangles.

- WHEN WE USE A RANDOM NUMBER TABLE CHOOSE THE RECTANGLES:

Rectangle #					
Area					

Average Area\_\_\_\_\_

Class Average\_\_\_\_\_

○ WHEN WE LET TECHNOLOGY (OUR CALCULATOR) CHOOSE THE RECTANGLES:

Rectangle #					
Area					

Average Area \_\_\_\_\_

Class Average \_\_\_\_\_

- Is there a significant difference in the three class averages?
- If so which average do you trust the most?

NOW FOR THE TRUTH. The average area for the rectangles in my population is \_\_\_\_\_ Which method seemed to get closer to "the truth"?

What do you think the moral of the story is?

BUT WAIT THERE IS MORE!!!! 😊

Whichever method seemed to work better lets' do it again but this time taking a sample of ten rectangles instead of five.

Rect #										
Area										

Ave Area \_\_\_\_\_

Class Ave \_\_\_\_\_

What do you notice has happened now? (if anything)

Further moral of the story??

What do I want you to take with you, what is the big picture of this activity?