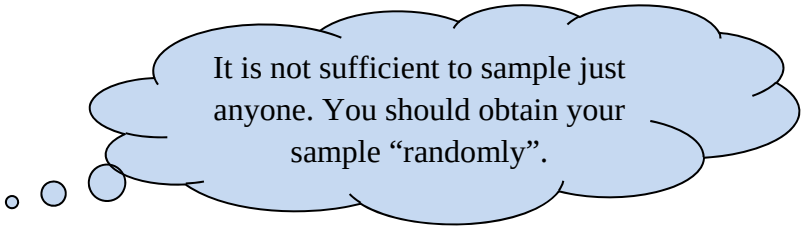

General Education Statistics
Class Notes
Simple Random Sampling (Section 1.3)

We often cannot ask every individual in a population the question we want answered. So we sample a small group of the population. But you cannot just choose any group. For instance, if you pick your five good friends to question about the video games they like, you might find they do not represent the whole population (perhaps all college students, or all people in your age group, or all Americans) well. We must sample with that in mind.

Definition: Random sampling is the process of using chance to select individuals from a population to be included in the sample.

A random sample will represent the population. Because the sample is selected randomly, it can be assumed to be a microcosm of the population.

Definition: Random sample: A **random sample** is one where the individuals from the population all have the same chance of being selected for the sample. We will pick them randomly so that is true.

Definition: Simple random sample (srs): A sample of size n from a population of size N is obtained through **simple random sampling** if every possible sample of size n has an equally likely chance of occurring. The sample is then called a **simple random sample (srs)**.

There are other methods that will be discussed in later sections.

Definition: Frame: A **frame** is a list of the individuals in a population. We will think of them as labeled with the numbers 1, 2, 3, … N. (Here, N is the number of individuals in the population as described above.)

To obtain a simple random sample, we will start with the frame and use a random number generator to pick a sample.

expl 1: The thirty people listed below are members of a club. The leaders of the club wish to survey its members on possible future trips. Obtain a simple random sample of ten of their members. (Notice the first nine are labeled as 01, 02, etc. Why do you think that is?)

01. Trey	06. Morgan	11. Stefanie	16. London	21. Molly	26. George
02. Amy	07. Bill	12. Joel	17. Julia	22. Tom	27. Robert
03. Marge	08. Jill	13. Penn	18. Chealon	23. Kevin	28. Lora
04. Elise	09. Steve	14. Savvy	19. Jenny	24. Linda	29. Penny
05. Bob	10. Mindy	15. Sawyer	20. Fred	25. Kristen	30. Josh

Your calculator has a random number generator built into it. On the TI calculators, press the **MATH** button and arrow over to **PRB** (stands for probability). Select **1: rand**. The "rand" will appear on the screen; just start pressing **ENTER** to start generating random numbers.

Since we have more than nine people to choose from, each person is assigned a two-digit identifying number.

My calculator gave me the following.

.9435974025
.908318861
.1466878292
.5147019505
.4058096418
.7338123112
.0439919875
.2209784733
.0062633066

Mark off these numbers in two-digit increments. Start at the beginning. When a number is greater than 30, ignore it. When a number falls in the range, 01 – 30, we select that person for the random sample.

What do you do when you get a number twice?

Write the sample of ten members here.

This is called a **sample without replacement**. Once you survey a person, it does not make sense to survey them again so they are skipped if their number comes up again. In other words, they are not replaced back into the pool once they are selected.