# Questions on lesson 2.1?

We will be having our concept mastery quiz shortly.

2.2

## Circle Up

## Sampling Methods and Randomization

PG. 57-8 IN YOUR BOOK

PROBLEM

You Gotta Mix It Up



When you use statistics, you are often measuring the values of a population by focusing on the measurements of a sample of that population. A population does not have to refer to people. It can be any complete group of data-like the areas of 100 circles.

The end of this lesson includes 100 circles and a table. The table lists an identification number, the diameter, and the area for each circle. Suppose you want to determine the mean area of all 100 circles. Calculating the areas of all of the circles would be time-consuming. Instead, you can use different samples of this population of circles to estimate the mean area of the entire population.

1. Without looking at the circles, Mauricia decided to use Circles 1–5 for her sample. Is it likely that those 5 circle areas are representative of all 100 circles?

Not representative of all 100 circles. Most likely, the first 5 won't include a variety SIZOS.

2. Analyze the circles. Select a sample of 5 circles that you think best represents the entire set of circles.

#### PG.58 IN YOUR BOOK

A convenience sample is a sample whose data is based on what is convenient for the person choosing the sample.

The sample of circles you chose in Question 2 is called a *subjective sample*. A *subjective sample* is a sample drawn by making a judgment about which data items to select.

Another type of sample is a volunteer sample.

A volunteer sample is a sample whose data consists of those who volunteer to be part of a sample.

#### PG.60 IN YOUR BOOK

A simple random sample is a sample composed of data elements that were equally likely to have been chosen from the population.

 Explain how convenience samples, subjective samples, and volunteer samples do not include data elements that were equally likely to have been chosen from the population.

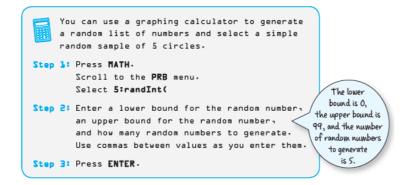
Using a random digit table is one option for selecting a simple random sample. To use the table, begin at any digit and follow the numbers in a systematic way, such as moving across a row until it ends and then moving to the beginning of the next row.



#### PG.61 IN YOUR BOOK

Take 5 mins to work on page 61

You can also use a graphing calculator to generate a random list of numbers.



### PG.62 IN YOUR BOOK

There are several other types of random samples, including *stratified random samples*, cluster samples, and *systematic samples*.

A stratified random sample is a random sample obtained by dividing a population into different groups, or strata, according to a characteristic and randomly selecting data from each group.

\*circle size - 5, M, L

#### PG.63 IN YOUR BOOK

A cluster sample is a random sample that is obtained by creating clusters. Then, one cluster is randomly selected for the sample. Each cluster contains the characteristics of a population.

\*group by space on page

A systematic sample is a random sample obtained by selecting every *n*th data value in a population.

\*every 3rd circle

### PG.65 IN YOUR BOOK

The mean of a sample, x, can be used to estimate the population mean,  $\mu$ . The population mean is an example of a parameter, because it is a value that refers to a population. The sample mean is an example of a statistic, because it is a value that refers to a sample.

### **NOT IN YOUR BOOK**

1. Twenty-four professional athletes are participating in a charity golf tournament. Each golfer has been given an identification number from 01 through 24. Golfers 01 through 12 are professional football players and golfers 13 through 24 are professional baseball players. Par for the course is 72. The following table shows the golfers' tournament scores after the first round.

Golfer ID Number	Score	Golfer ID Number	Score
01	72	13	79
02	75	14	85
03	69	15	67
04	78	16	75
05	80	17	68
06	68	18	76
07	81	19	68
08	72	20	69
09	74	21	71
10	77	22	76
11	75	23	70
12	77	24	74

a. Create a simple random sample of 6 scores from the table. Explain how you created your sample.

rand Int (1,24,6)

- b. Calculate the average of your sample from part (a).
- c. Create a stratified random sample of 6 scores from the table. Explain how you created this sample.
- d. Calculate the average of your sample from part (c).
- e. Create a cluster sample of 6 scores from the table. Explain how you created this sample.
- Calculate the average of your sample from part (e).
- g. Create a systematic sample of 6 scores from the table. Explain how you created this sample.
- h. Calculate the average of your sample from part (g).

i. The actual average score is 74. Which of your sample averages was closest to the actual average? Is this what you expected? Explain.

## Homework

Finish lesson 2.2 through pg. 65