TOPIC: SAMPLING

Simple Random Sampling

◆ **Sampling** = the process of selecting a smaller group (*sample*) of subjects from a larger group (*population*).

► A **Representative Sample** is made up of equal _____ of characteristics to the original population.

► In **Simple Random Sampling (SRS)** each subject is _____ likely & each possible group is equally likely.

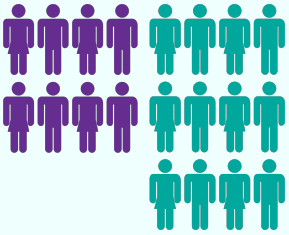
EXAMPLE Determine if each of the following is an instance of a Representative Sample. Also determine if it is a Simple Random Sample.

(***A***) You randomly select 3 marbles from a bag with **2 red** & **4 blue** marbles. The ones you select are all blue.

Representative Sample?

Simple Random Sample?

(***B***) A university with **60% undergraduate** & **40% graduate** students surveys 60 random undergrads & 40 random grad students.



Representative Sample?

Simple Random Sample?

PRACTICE

A 24-hour gym is interested in whether they should purchase a new rowing machine, so they decide to survey their active members to get their opinion. They use a random number generator to obtain a sample of gym ID numbers and ask all people selected about their opinion. They can collect the data easily, as all selected respondents happen to be enrolled in fitness classes in the early afternoons. Is this a simple random sample? Is this a representative sample?

PRACTICE

A store is interested in whether they should adjust their store hours, so they choose a random day to poll all people entering the shop and ask them if they would prefer the store to change their hours. Is this a simple random sample? Can we assume this is a representative sample?

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PRACTICE

A superintendent of a school system is interested in how the teachers working at the schools feel about the current professional development offerings, so they use the employee dashboard to randomly select 60 teachers for their survey. As it happens, approximately two teachers from each grade are chosen, and there is about the same number of teachers for each major discipline. Is this a simple random sample? Is it a representative sample?

PRACTICE

A regional manager runs the day-to-day operations of three branches of a chain restaurant. Each location is roughly the same size and employs approximately the same number of workers. The manager is interested in streamlining policies across each location, so he decides to survey 10 random employees in each branch about certain processes. Is this a simple random sample? Is it a representative sample?

EXAMPLE

A college professor wants feedback from her statistics course and decides to survey 5 random students out of the 20. Create a process she could use for generating a simple random sample of 5 out of 20 students.

TOPIC: SAMPLING

Other Sampling Methods

◆ Simple Random Sampling isn't always practical, so we can use other methods.

Sampling Methods	
SRS – Randomly select sample from *whole* population where each subject & group is equally likely. 	**Systematic** – Select every _____ subject. 
Cluster – First _____ pop. into groups *(clusters)*, then randomly select 1 or more cluster(s). 	**Stratified** – First divide pop. into groups *(strata)* with _____ characteristics, then randomly select subjects from within strata. 

EXAMPLE Match the example situation with the sampling method it describes.

(***A***) A bakery tests every 12th cookie.

(***B***) An HR manager uses a random number generator to select 15 employees for a satisfaction survey.

(***C***) Randomly select 1 class per grade in a school & survey each student in the class.

(***D***) A university surveys 50 random undergrads & 50 random grad students.

PRACTICE

A quality control manager wants to see how many defective products come off the line on average per day. They select three random cases of units at the end of the day to test how many defective units are in one of the three cases. What type of sampling method is this?

TOPIC: SAMPLING

PRACTICE

A quality control manager wants to see how many defective products come off the line on average per day. They select every tenth unit produced on the line and inspect it to see if it is defective. What type of sampling method is this?

PRACTICE

A quality control manager wants to see how many defective products come off the line on average per day. They use a random number generator to select 100 of the 1500 units produced that day and test whether they were defective. What type of sampling method is this?

PRACTICE

A quality control manager wants to see how many defective products come off the line on average per day. They take 10 random units produced over the course of the day from each of 10 machines to test if they are defective. What type of sampling method is this?

EXAMPLE

A regional branch manager runs three locations of a chain restaurant. They want to survey a sample of employees regarding kitchen procedure to streamline company processes. Describe a possible sampling method he could use to get each of the following sample types: simple random sample, stratified sample, cluster sample, and systematic sample.