Math 7  
Lesson 9-9 Notes  
Representative Samples

A population is an entire group of people or objects.

A sample is a part of the population. To make valid conclusions or predictions, a sample needs to be: a representative of the population.

When you conduct a survey, it is not usually possible for you to survey every person in the population you are interested in. Instead, statisticians collect information about a sample (a portion) of the population. However, finding a representative sample (a sample that represents the whole population well) is not easy.

Part 1: Student Survey

The President of ASB, Kian, would like to survey a few students about their interests. When Kian analyzes the results from the survey, he wants to make claims about the interests of *all* of the students in his school. If he were to survey only the students on ASB, for example, it might be hard to make claims about what all students think. Students who are on ASB may not have the same social interests as other students. Consider this idea as you think about the samples described below.

1. If Kian wanted to generalize the opinions of all students at his school, would it make sense to go to the grocery store and survey people there? Why or why not?

No, the people at the grocery store don't necessarily attend his school.

1. If he wanted to generalize the opinions of all the students at his school, would it make sense to ask all of his friends at school? Why or why not?

No, his friend’s interests don't match everyone at school.

1. If he wanted to generalize the opinions of all the students at his school, would it make sense to ask every third person who entered the cafeteria at lunch? Why or why not?

Best of the 3 options, but does not include students who don't buy lunch.

For Kian’s survey, the population is Students at his school. His random sample should only include people who are part of the population.

Part 2: Choosing a Sample

There are a variety of ways to choose samples of the population you are studying. Every sample has features that make it more or less representative of the larger population. For example, if you want to represent all of the students at your school, but you survey all of the students at school 30 minutes after period 6 has ended, you are likely to get a disproportionate number of student who participate in after school activities (such as YAT or homework club).

1. If you ask the opinion of the people around you, then you have used a convenience sample. If you took a convenience sample right now, what would be some features of the sample? Would you expect a convenience sample to represent the entire population at your school? Why or why not?

Features: Mrs. Davis' Math Class

No.- does not include 8th-grade students.

1. If you e-mail or create an online questionnaire then you have used a voluntary response sample. What are some features of the people in a voluntary response sample? Could it represent the sample of all of the students at school accurately?

do not have to respond

needs computer

choose to respond (maybe concerned or feel strongly about

Fav color vs. less homework

1. You use a cluster sample if you first divide the students into smaller groups so that each smaller group represents all of the students at your school. Then you randomly select one or more of these groups to sample. How might you divide the students at your school into groups that each represent the whole school? Explain. Are there any reasons that these clusters might not be fully representative of all the students at your school?

Split students into advisement  
Survey random parts of the campus at lunch

An unbiased sample is representative of the population  
\*Selected at random  
\*Large Enough to provide accurate data

A biased sample is not representative of the population  
\*One or more parts of the population are favored over others