

Module 4: Analyzing Populations and Probabilities

TOPIC 3: DRAWING INFERENCES

In this topic, students continue developing their understanding of the statistical process by focusing on the second component of the process: data collection. They learn about samples, populations, censuses, parameters, and statistics. Students display data and compare the difference of the measures of center for two populations to their measures of variation. Then students draw conclusions about two populations using random samples.

Where have we been?

In grade 6, students learned about and used aspects of the statistical problem-solving process: formulating questions, collecting data, analyzing data, and interpreting the results. They also used numerical data displays, including both measures of center (mean, median, mode) and measures of variation (mean absolute deviation, range, and interquartile range).

Where are we going?

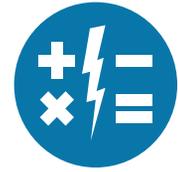
In high school, students will learn about specific types of random sampling and the inherent bias in sampling techniques. They will continue analyzing and comparing random samples from populations and comparing their measures of center and variation.

Using a Random Number Table to Select Random Samples

When selecting samples for an experiment, a random number table can be used to assign individuals to groups. The first three lines of a sample random number table are shown.

Random Number Table										
Line 1	65285	97198	12138	53010	94601	15838	16805	61404	43516	17020
Line 2	17264	57327	38224	29301	18164	38109	34976	65692	98566	29550
Line 3	95639	99754	31199	92558	68368	04985	51092	37780	40261	14479

Myth: Faster = smarter.



In most cases, speed has nothing to do with how smart you are. Why is that? Because it largely depends on how familiar you are with a topic. For example, a bike mechanic can look at a bike for about 8 seconds and tell you details about the bike that you probably didn't even notice (e.g., the front tire is on backwards). Is that person smart? Sure! Suppose, instead, you show the same bike mechanic a car. Will s/he be able to recall the same amount of detail as for the bike? No!

It's easy to confuse speed with understanding. Speed is associated with the memorization of facts. Understanding, on the other hand, is a methodical, time-consuming process. Understanding is the result of asking lots of questions and seeing connections between different ideas. Many mathematicians who won the Fields Medal (i.e., the Nobel prize for mathematics) describe themselves as extremely slow thinkers. That's because mathematical thinking requires understanding over memorization.

[#mathmythbusted](#)

Talking Points

You can support your student's learning by approaching problems slowly. Students may observe a classmate learning things very quickly, and they can easily come to believe that mathematics is about getting the right answer as quickly as possible. When this doesn't happen for them, future encounters with math can raise anxiety, making problem solving more difficult, and reinforcing a student's view of himself or herself as "not good at math." Slowing down is not the ultimate cure for math difficulties. But it's a good first step for children who are struggling. You can reinforce the view that learning with understanding takes time, and that slow, deliberate work is the rule, not the exception.

Key Terms

parameter

When data are gathered from a population, the characteristic used to describe the population is called a parameter.

statistic

When data are gathered from a sample, the characteristic used to describe the sample is called a statistic.

random sample

A random sample is a sample that is selected from the population in such a way that every member of the population has the same chance of being selected.