

Draw random samples of size 5, 10, and 20 from the table of heights given (you may accumulate observations), and record the random observation's number and height. After you've found 5 samples, compute the mean of your samples. Repeat after you've found 10 and after you've found 20.

Example

Starting line in Table B:

Unit	Random Number	Height
1		
2		
3		
4		
5		
$\bar{x} =$		
6		
7		
8		
9		
10		
$\bar{x} =$		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
$\bar{x} =$		

Your sample

Starting line in Table B:

Unit	Random Number	Height
1		
2		
3		
4		
5		
$\bar{x} =$		
6		
7		
8		
9		
10		
$\bar{x} =$		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
$\bar{x} =$		

Please add your sample means to the appropriate frequency count in the histograms on the board. These histograms approximate the distribution of the sample means by showing some of the values of sample means that can occur and how often they occurred in our trials. Use these histograms to answer the following questions about the distribution of the sample means.

Questions and Conclusions:

1. What is the population of interest? _____ What is the variable? _____

2. When you look at the distribution of the sample mean (based on samples of size $n = 5$) displayed in the histogram, the center of the histogram represents a typical/central value of the sample mean.

a. Approximately, where is the center of histogram? _____

The **true mean of the population** is actually $\mu =$ _____.

b. How close does the center of the histogram (the typical value of the sample mean) lie to the population mean? Does the typical/central value of the sample mean appear to be close to the population mean?

c. Approximately, where is the center of the histograms (the typical value of the sample mean of that given sample size) for the samples of size $n = 10$ and size $n = 20$.

$n = 10$: _____ $n = 20$: _____

Do these centers/typical values appear to be close to the population mean? Can you see any pattern in the histograms as the sample size n increases?

3a. In each histogram, what intervals contained the maximum and minimum values of the sample means?

$n = 5$	Minimum	Maximum
$n = 10$		
$n = 20$		

b. Can you say that all sample mean values were close to the typical value of the population (population mean)? Explain your answer?

c. What happens to the "spread" of the sample mean values as the sample size n increases?

4. What conclusions can you draw from this experiment about using samples and statistics to estimate population parameters?