	Population	One Simple Random Sample $y_1, y_2, \ldots, y_n$ of size n	All Simple Random Samples of size n
Associated Random Variable	Y	Y	$\bar{Y}_n$ The population for $\bar{Y}_n$ is all simple random samples from Y. The value of $\bar{Y}_n$ for a particular simple random sample is the sample mean $\bar{y}$ for that sample.
Associated Distribution	Distribution of Y	Distribution of Y	Sampling Distribution
Associated Mean(s)	Population mean μ, also called E(Y), or the expected value of Y, or the expectation of Y	Sample mean $\bar{y} = (y_1 + y_2 + \ldots + y_n)/n$ It's an estimate of μ.	Since it is a random variable, $\bar{Y}_n$ also has a mean, E($\bar{Y}_n$). A mathematical theorem tells us that E($\bar{Y}_n$) = μ. In other words, the random variables Y and $\bar{Y}_n$ have the same mean.
Associated Standard Deviation	*Population standard deviation* σ	*Sample standard deviation* s = $\sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(\bar{x}-x_i)^2}$ s is an <u>estimate</u> of the population standard deviation σ	*Sampling distribution standard deviation.* A a math theorem tells us that the sampling standard deviation is $\sigma/\sqrt{n}$