	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 of size n 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	Y *has* a normal distribution.	The sample is *from* the (normal) distribution of Y.	The distribution of $\bar{Y}_n$ is called the *Sampling Distribution.* The theorem tells us that the sampling distribution is normal.
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's a random variable, $\bar{Y}_n$ also has a mean, $E(\bar{Y}_n)$. The theorem tells us that $E(\bar{Y}_n) = \mu$. (In other words, the random variables Y and $\bar{Y}_n$ have the same mean – i.e., $E(\bar{Y}_n) = E(Y) = \mu$.)
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 estimate of the population standard deviation σ	*Sampling distribution standard deviation.* The theorem tells us that the standard deviation of the sampling standard deviation is $\sigma / \sqrt{n}$.