	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	$\overline{Y}_n$ The population for $\overline{Y}_n$ is all simple random samples of size n from Y. The value of $\overline{Y}_n$ for a particular simple random sample is the sample mean $\overline{y}$ for that sample.
Associated Distribution	Y *has* a normal distribution.	The sample is *from* the (normal) distribution of Y.	The distribution of $\overline{Y}_n$ 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 $\overline{y} = (y_1 + y_2 + \ldots + y_n)/n$ It's an estimate of μ.	Since it's a random variable, $\overline{Y}_n$ also has a mean, E($\overline{Y}_n$). The theorem tells us that E($\overline{Y}_n$) = μ. (In other words, the random variables Y and $\overline{Y}_n$ have the same mean – i.e., E($\overline{Y}_n$) = E(Y) = μ.)
Associated Standard Deviation	*Population standard deviation* σ	*Sample standard deviation* s = $\sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(\overline{x}-x_i)^2}$ 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 $\sigma/\sqrt{n}$.