Sample Size

(Always Round Up to the Next Higher Whole Number)
z-Score is based on the desired confidence level

1) Estimating Population Proportion p:

a) When $\hat{p}$ is known, then $n = \dfrac{z^2 \bullet \hat{p} \bullet \hat{q}}{E^2}$

b) When $\hat{p}$ is not known, then $n = \dfrac{0.25 \bullet z^2}{E^2}$

2) Estimating Population Mean μ:

a) When Population is infinite, then $n = \left(\dfrac{z \bullet \sigma}{E} \right)^2$

b) When population is finite, then $n = \dfrac{N \bullet z^2 \bullet \sigma^2}{(N-1) \bullet E^2 + z^2 \bullet \sigma^2}$

where N is the population size.

3) Estimating population variance σ^2 and standard deviation σ:

The procedure for finding sample size for estimating population variance and standard deviation are much more complex. Use the following table to determine the sample size:

Table 6-2 Sample Size for σ^2 | Sample Size for σ

To be 95% confident that s^2 is within	of the value of σ^2, the sample size n should be at least	To be 95% confident that s is within	of the value of σ, the sample size n should be at least
1%	77,207	1%	19,204
5%	3,148	5%	767
10%	805	10%	191
20%	210	20%	47
30%	97	30%	20
40%	56	40%	11
50%	37	50%	7
To be 99% confident that s^2 is within	**of the value of σ^2, the sample size n should be at least**	**To be 99% confident that s is within**	**of the value of σ, the sample size n should be at least**
1%	133,448	1%	33,218
5%	5,457	5%	1,335
10%	1,401	10%	335
20%	368	20%	84
30%	171	30%	37
40%	100	40%	21
50%	67	50%	13