

### Finding the Sample Size Needed to Estimate a Proportion Using Excel

**Example #27(a)** p.388 The confidence is 95%. The sociologist wants to estimate the proportion of children with cell phones. Prior estimate is 0.32. The margin of error is 0.02.

Open an Excel spreadsheet. Enter the confidence, the margin of error and the prior estimate in cells B1 through B3.

Enter the formulas shown in cells C5 through C7 in the neighboring cells, B5 through B7. When you have finished typing in the formulas, you will only see the values shown below in cells B5 through B7 that Excel calculates.

	A	B	C	D
1	Confidence =	95		
2	Margin of Error =	0.02		
3	Prior Estimate =	0.32		
4				
5	Significance =	0.05	$= (100 - B1) / 100$	
6	Critical Value =	1.9600	$= -\text{NORMSINV}(B5/2)$	
7	Minimum Sample Size =	2090	$= \text{CEILING}(B3 * (1 - B3) * (B6 / B2)^2, 1)$	
8				

Thus, you would need a sample containing at least 2090 children to estimate the population proportion in this case to within plus or minus 0.02, at 95% confidence.