

Using Minitab to Estimate Sample Size for the Population Mean or Population Proportion

1. Click on "Stat", then choose "Power and Sample Size" and then "Sample Size for Estimation".
2. Choose the parameter you are estimating.
3. If you want to estimate the mean, put in an estimated value for the standard deviation. If you want to estimate the proportion, put in an estimate for that proportion or 0.5 if you have no estimate.
4. Make sure "Estimate sample sizes" is selected next to the following drop down box.
5. Next to "Margin of error for confidence intervals:", enter the margin of error that will be allowed.
6. Click on the "Options" button.
7. Enter the desired confidence next to "Confidence level".
8. Make sure "Two-sided" is selected next to the "Confidence Level".
9. If you are estimating a sample size for the mean, click the box next to "Assume the population standard deviation is known."
10. Click on "OK" in that window and "OK" in the next window.

The estimated sample size will be the last number that appears in the "Session" window under "Sample Size for Estimation".

Example (Navidi & Monk, *Elementary Statistics*, 2nd edition, #51(b) p.364): The problem is discussing means, so we want the sample size needed to estimate the population mean. The population standard deviation is 20. The desired confidence is 98%. The margin of error is 3.

Open Minitab. Click on "Stat", choose "Power and Sample Size" and "Sample Size for Estimation".

Make sure "Mean (Normal)" is chosen from the drop-down box next to "Parameter:". Enter 20 next to "Standard deviation:". Make sure "Estimate sample sizes" is selected from the drop-down box below "Standard deviation:". Enter 3 next to "Margin of error for confidence intervals:".

Click on the "Options" button. Enter 95 next to "Confidence level". Make sure "Two-sided" is selected from the drop-down box next to "Confidence interval:". Click in the box next to "Assume population standard deviation is known".

Click on "OK" in this window and click on "OK" in the window below. The result will appear in the "Session" window under the heading "Sample Size for Estimation", under "Sample Size".

Minitab gives the minimum sample size needed to estimate the population mean as 171.

Example (Navidi & Monk, *Elementary Statistics*, 2nd edition, #27(a) p.388): This problem is discussing proportions, so we want the sample size needed to estimate the population proportion. The desired confidence is 95%. An estimated value of the proportion in 2012 was 0.32. The desired margin of error is 0.02.

Open Minitab. Click on "Stat", choose "Power and Sample Size" and "Sample Size for Estimation".

Make sure "Proportion (Binomial)" is chosen from the drop down box next to "Parameter". Enter 0.32 next to "Proportion". Make sure "Estimate sample sizes" is selected from the drop-down box below "Proportion:". Enter 0.02 next to "Margin of error for confidence intervals:".

Click on the "Options" button. Enter 95 next to "Confidence level". Make sure "Two-sided" is selected from the drop-down box next to "Confidence interval:".

Click on "OK" in this window and click on "OK" in the window below. The result will appear in the "Session" window under the heading "Sample Size for Estimation", under "Sample Size".

Minitab gives the minimum sample size needed to estimate the population proportion as 2190.