

CH 7: CONFIDENCE INTERVALS AND SAMPLE SIZE

Confidence Intervals for the Mean and Proportion are calculated in Minitab using the following three functions:

CI for the Mean with σ known or or $n \geq 30$: **Stat** → **Basic Statistics** → **1-Sample Z**

CI for the Mean with σ not known and $n < 30$: **Stat** → **Basic Statistics** → **1-Sample t**

CI for Proportion **Stat** → **Basic Statistics** → **1-Proportion**

All three functions operate in very similar manner and they all provide for the input of either Summary Statistics or Raw data.

1-Sample Z

- If raw data, place appropriate column in the box for **Samples in columns**.
- If only Summary data available, check the **Summarized data** radio button and place the sample size and mean in the two boxes.
- Regardless of the data input method, enter the actual or estimated std dev in the **Std Dev** box.
- Leave **Test mean** empty.
- Click on **Options**.
- Set the **Confidence Level** to the desired number and make sure that the **Alternative** value is set to **Not Equal**.
- The output is placed in the Session window

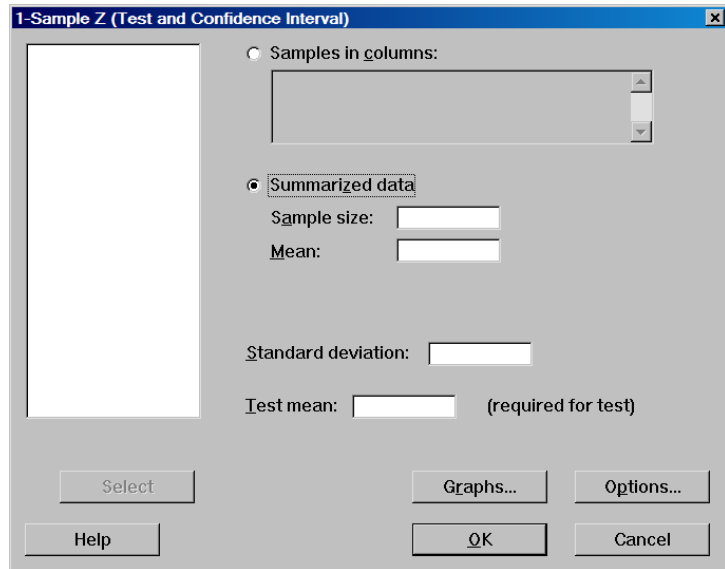


Figure 7.1

One-Sample Z			
The assumed standard deviation = 2			
N	Mean	SE Mean	95% CI
35	5.00000	0.33806	(4.33741, 5.66259)

1-Sample t

- If raw data, place appropriate column in the box for **Samples in columns**.
- If only Summary data available, check the **Summarized data** radio button and place the sample size, mean, and std dev in the three boxes.
- Leave **Test mean** empty.
- Click on **Options**.
- Set the **Confidence Level** to the desired number and make sure that the **Alternative** value is set to **Not Equal**.
- The output is placed in the Session window

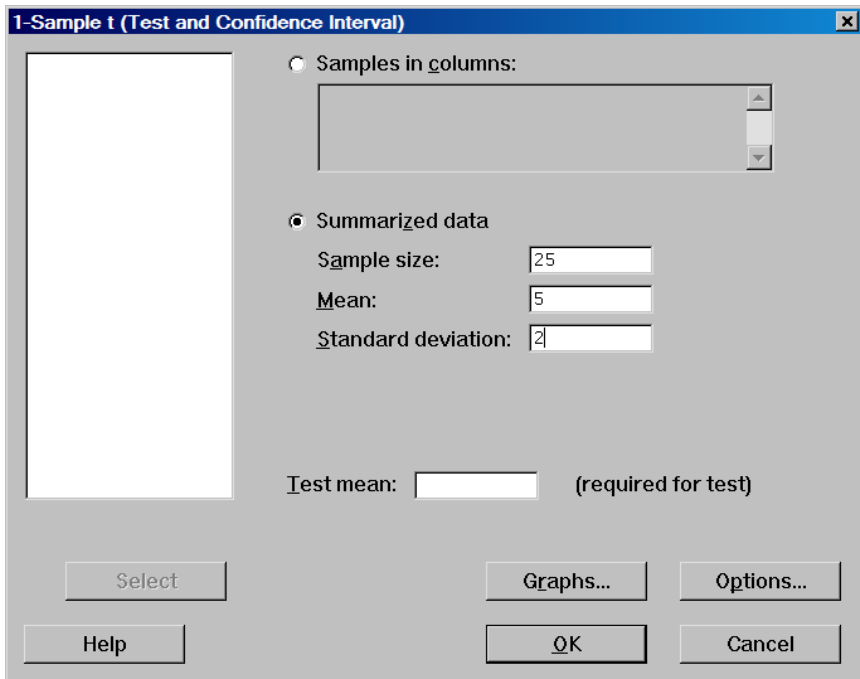


Figure 7.2

One-Sample T				
N	Mean	StDev	SE Mean	95% CI
25	5.00000	2.00000	0.40000	(4.17444, 5.82556)

1-Proportion

- If raw data, place appropriate columns in the box for **Samples in columns**.
- If only Summary data available, check the **Summarized data** radio button and place the Number of trials and Number of events in the two boxes.
- Click on **Options**.
- Set the **Confidence Level** to the desired number and make sure that the **Alternative** value is set to **Not Equal**.
- Check the **Use test and interval based on normal distribution**
- The output is placed in the Session window

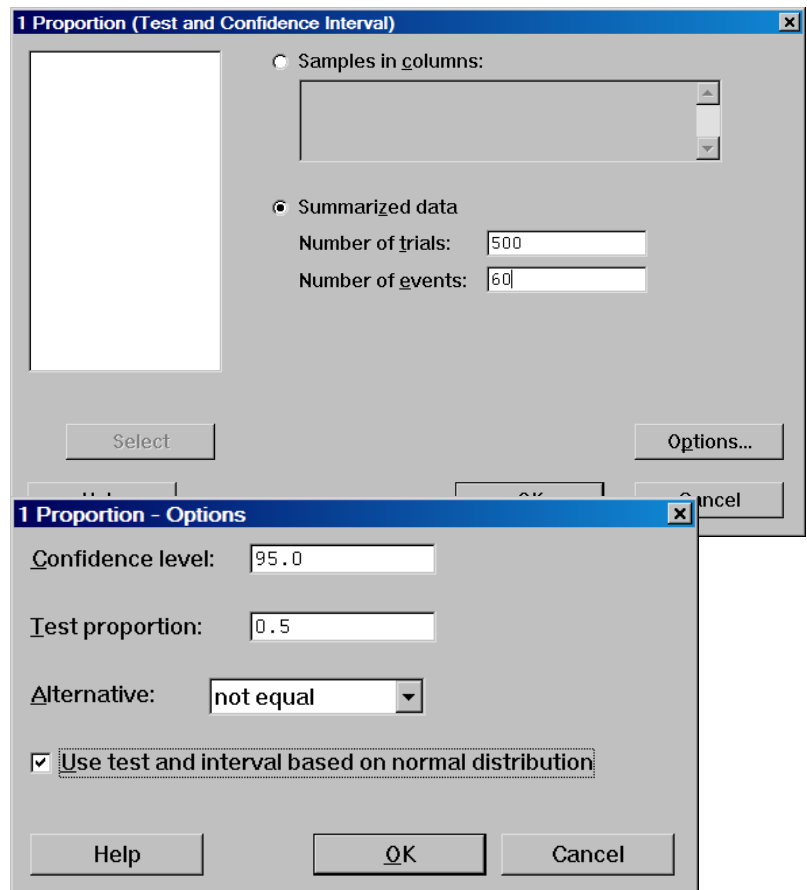


Figure 7.3

Test and CI for One Proportion

Test of $p = 0.5$ vs $p \text{ not} = 0.5$

Sample	X	N	Sample p	95% CI	Z-Value	P-Value
1	60	500	0.120000	(0.091516, 0.148484)	-16.99	0.000

Minimum Sample Sizes are calculated using the Calculator function and the appropriate formulas.