Using Minitab to run a Goodness-of-fit Test

1. Enter the values of a qualitative variable under C1.

2. Click on "Stat", choose "Tables" and then "Chi-square Goodness of Fit Test (One Variable)".

3. Click on the circle next to "Categorical data:" and enter C1 in the box to the right.

4. Under "Tests", click on the circle next to "Equal proportions".

5. Click on the "Graphs" button and uncheck the boxes next to both types of bar chart.

6. Click on "OK" in that window and on "OK" in the next window.

The test results will appear in the "Sessions" window under the heading "Chi-square Goodness of Fit Test for Categorical Variable: … ". The test statistic will appear under "Chi-Sq". The P-value will appear under "P-value".

Example (Navidi & Monk, *Elementary Statistics*, 2nd edition, #23 p.566): The significance level is 0.01. Since 1 – 0.01 = 0.99, the confidence is 99%. The null hypothesis is that all months are equally likely. The alternative is the months are not all equally likely. The data is shown in the table below.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Alarms	32	15	37	38	45	48	46	42	34	36	28	26

Open Minitab and enter the alarms values under C1. A portion of the entered data is shown below.

↓	C1	C2
	Alarms	
1	32	
2	15	
3	37	
4	38	
5	45	
6	48	
7	46	
8	42	
9	34	
10	36	

Now click on "Stat" and then choose "Tables" and "Chi-Square Goodness-of-Fit Test (One Variable) …".

Make sure the circle next to "Observed Counts" is selected. Click in the box next to "Observed Counts:", choose C1 from the box on the left side and click on the "Select" button. Under "Tests", click in the circle next to "Equal proportions".

Click on the "Graphs …" button. Uncheck the box next to "Bar chart of the observed and expected values", and uncheck the box next to "Bar chart of each category's contribution to the chi-square value".

Click on "OK" in that window and click on "OK" in the window below. The results will appear in the "Session" window under the heading "Chi-Square Goodness-of-Fit Test for Observed Counts in Variable: …". The test statistic appears under "Chi-Sq" as 27.7916. The P-value appears under "P-Value" as 0.003.

Since the P-value of 0.003 is less than the significance of 0.01, the null hypothesis is rejected. With 99% confidence, the evidence is strong enough to say that not all the months are equally likely.