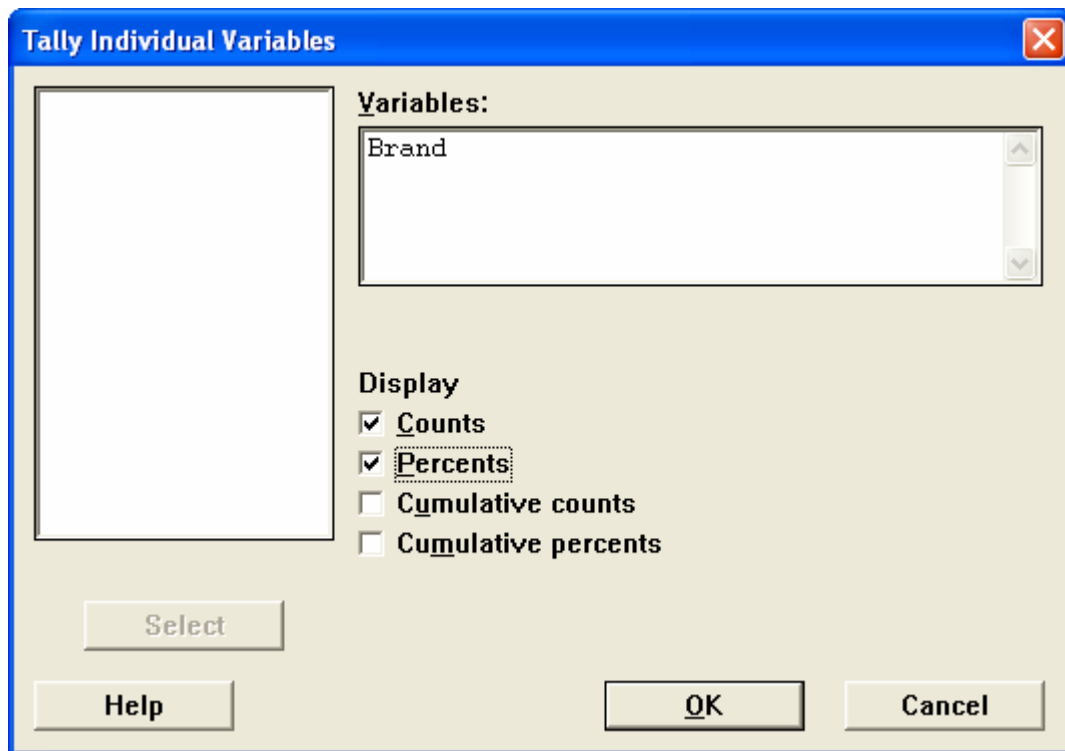


CD Appendix B3 Minitab Detailed Instructions for Version 14 (and Earlier)

Chapter 2

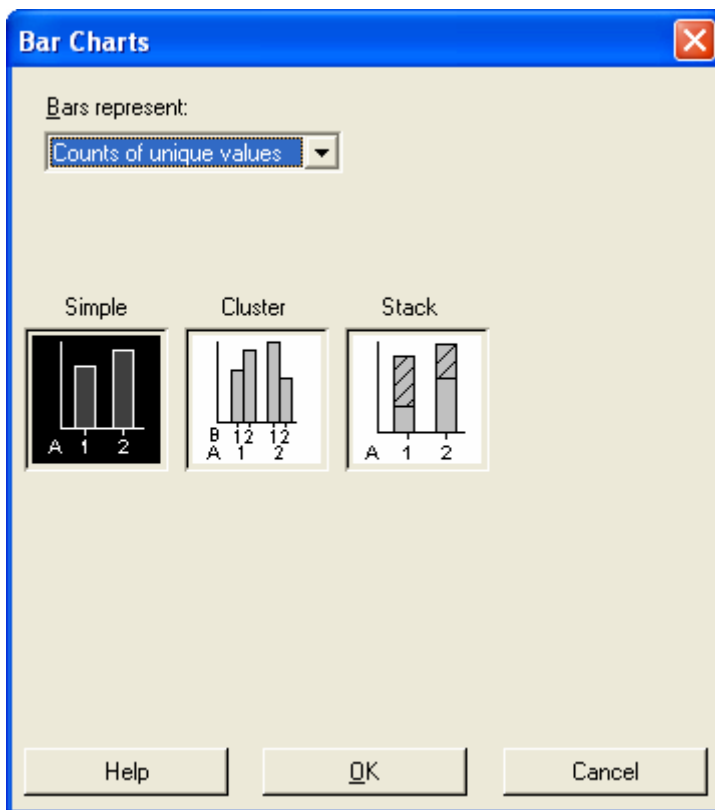
Example 2.1

1. Open Xm02-01.
2. Click **Stat**, **Tables**, and **Tally Individual Variables**. Type or use the **Select** button to specify the name of the variable or the column where the data are stored in the **Variables** box (Area). Under **Display** click **Counts** and **Percents**.

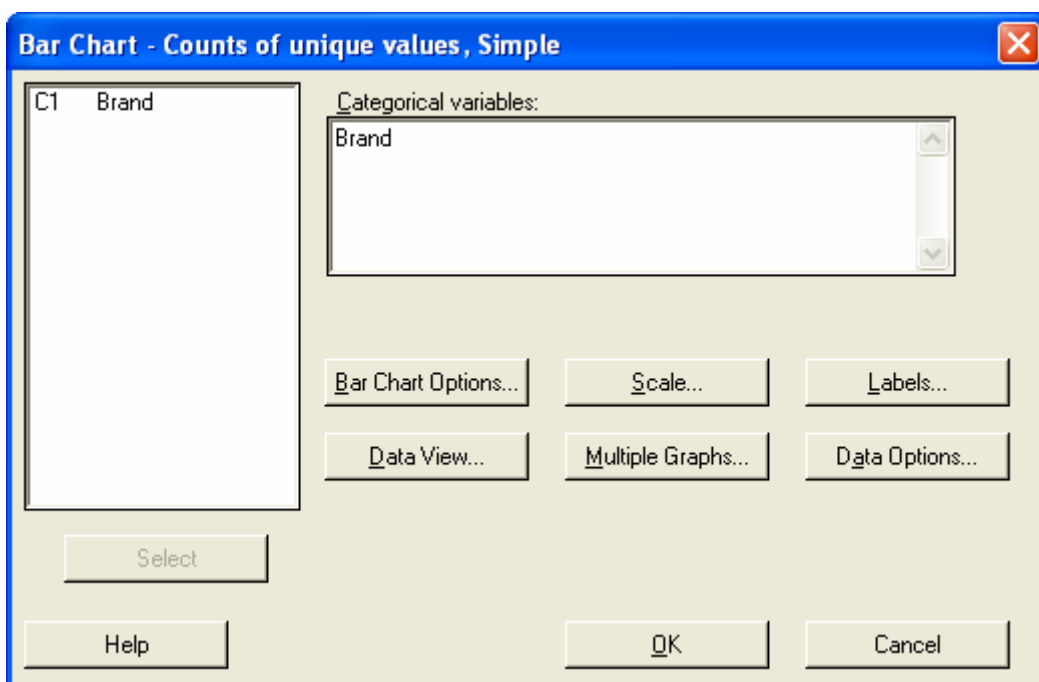


For a bar chart:

2. Click **Graph** and **Bar Chart**. Complete the dialog box below.



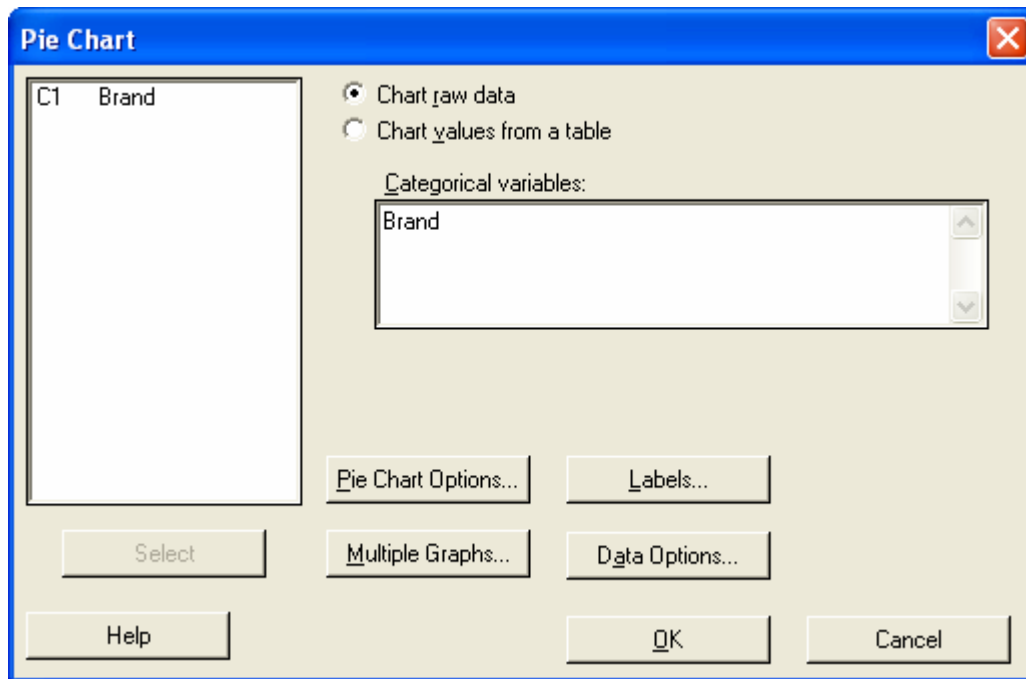
3. Click **OK** Fill in the next box.



We clicked **Labels** and added the title and clicked **Data Labels** and use **y-value labels** to display the frequencies at the top of the columns.

For a pie chart:

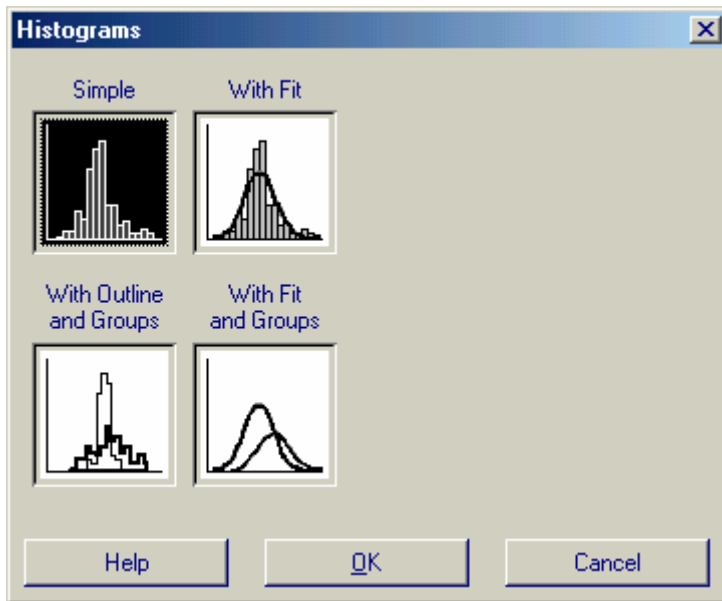
2. Click **Graph** and **Pie Chart**.



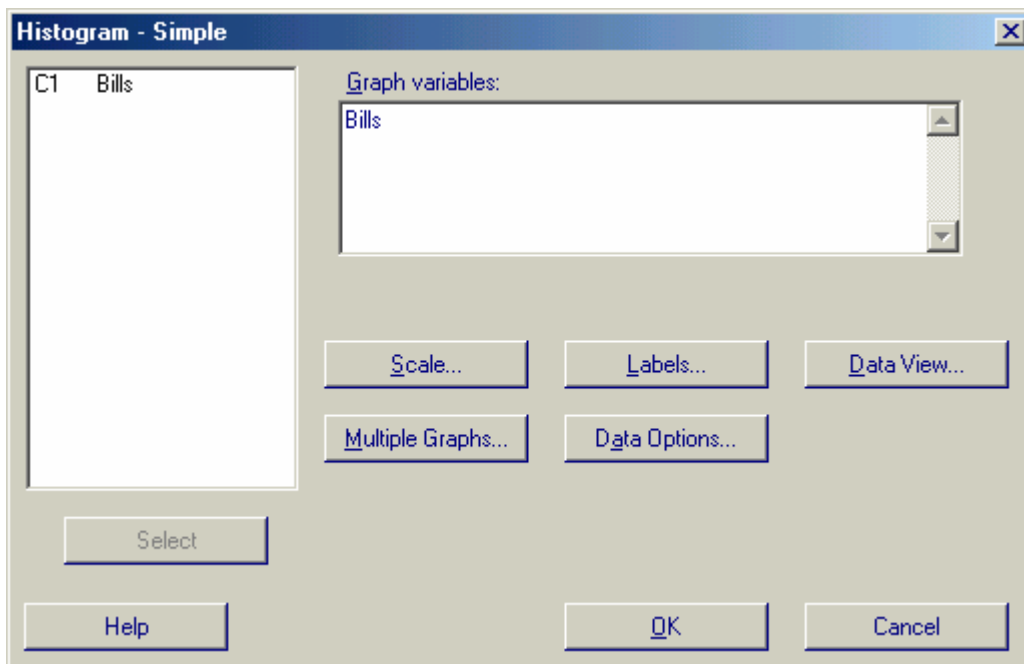
We clicked **Labels** and added the title. We clicked **Slice Labels** and clicked **Category name** and **Percent**.)

Example 2.4

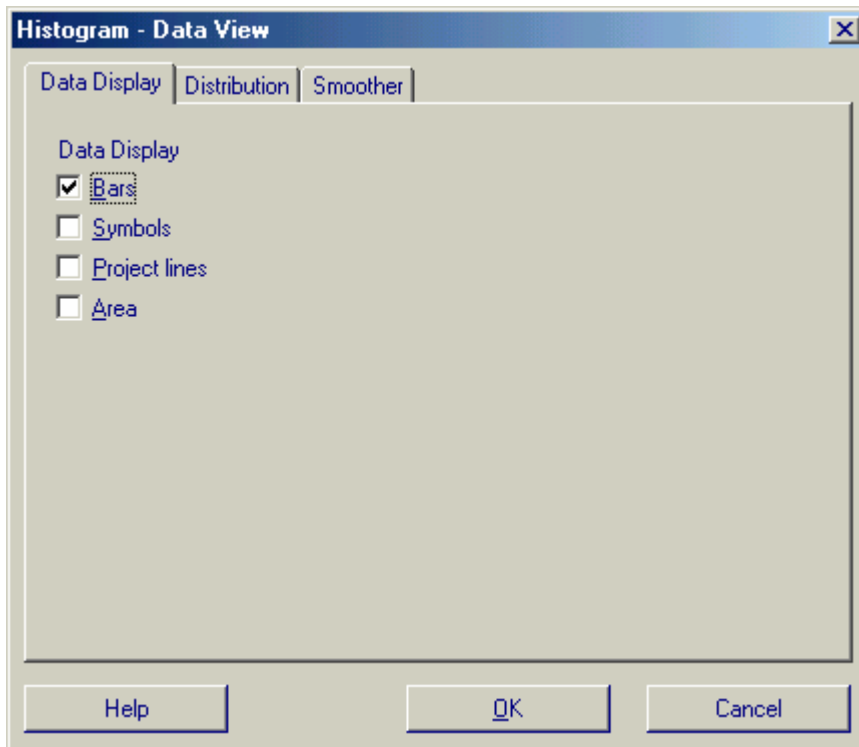
1. Open Xm02-04.
2. Click **Graph** and **Histogram....** The following box will appear.



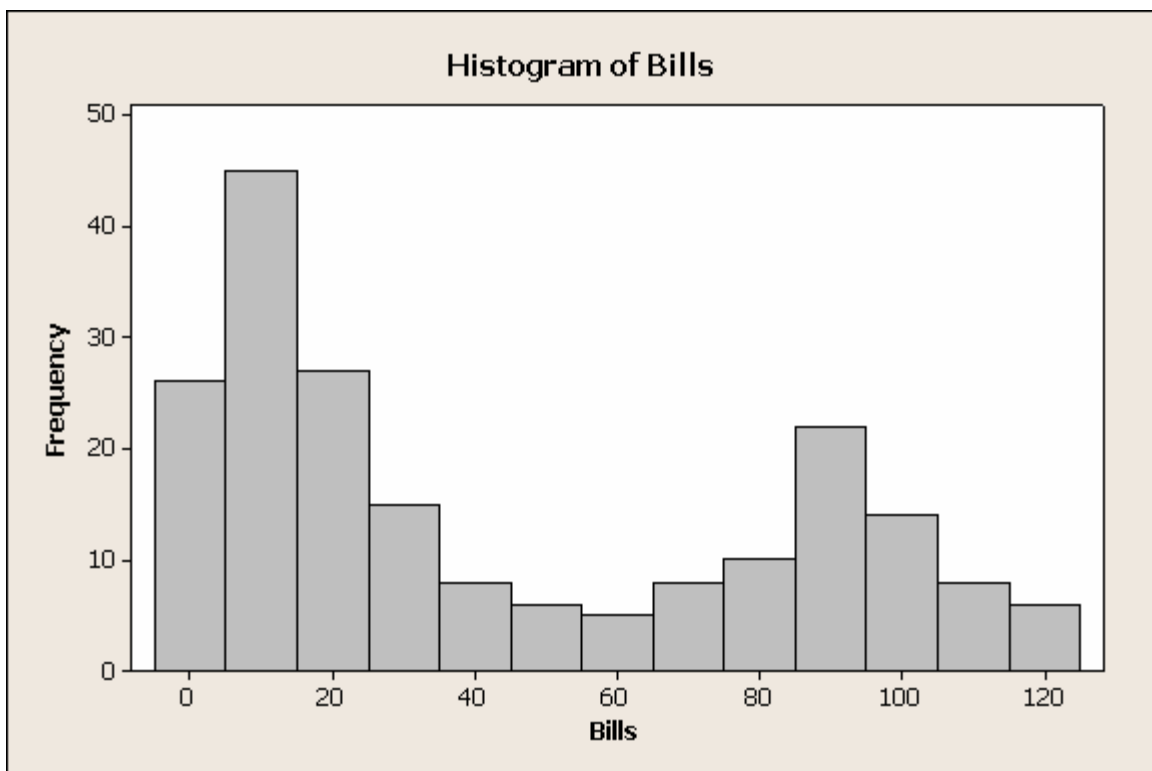
3. Click **Simple** and **OK**. The next dialog box will appear. Type or use the **Select** button to specify the name of the variable in the **Graph variables** box (Bills).



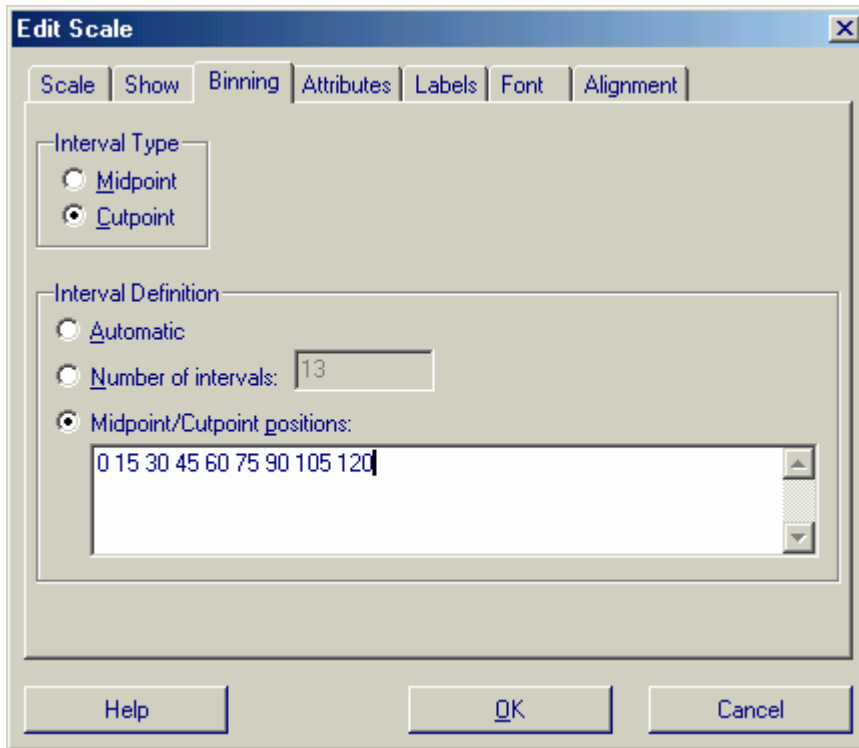
4. Click **Data View**.



Click **Data Display** and **Bar**. Minitab will create a histogram using its own choices of class intervals.

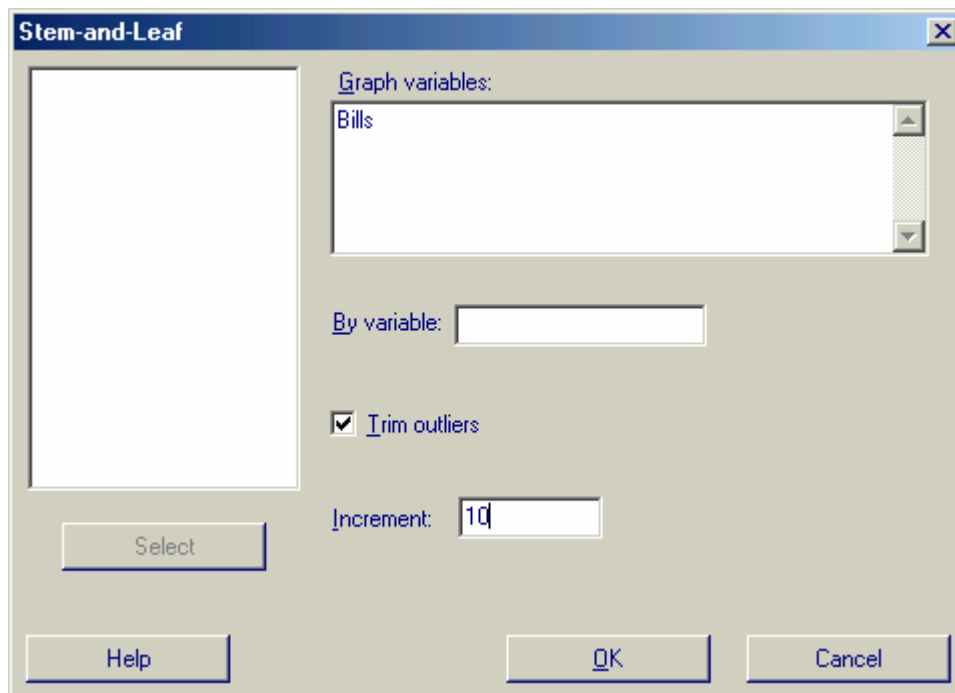


5. To choose your own classes double click the horizontal axis. Click **Binning**. Under **Interval Type** choose **Cutpoint**. Under **Interval Definition** choose **Midpoint/Cutpoint positions** and type in your choices. (0, 15, 30, 45, 60, 75, 90, 105, 120) as shown below.



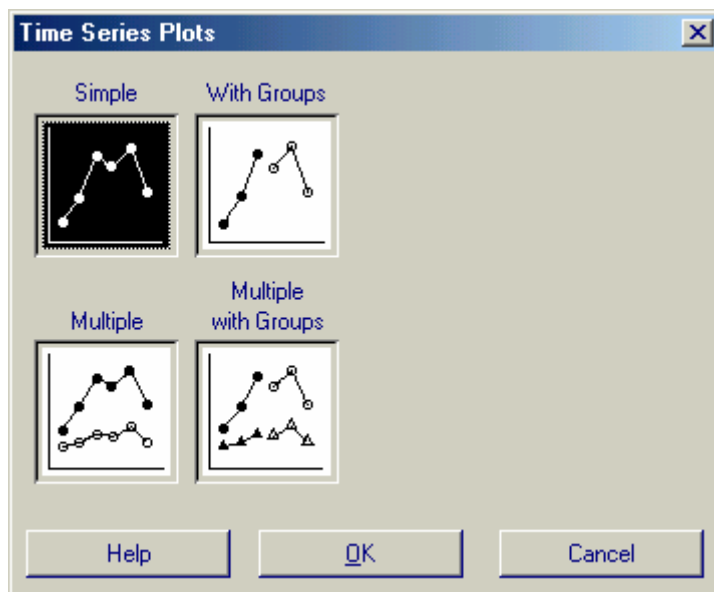
Stem-and Leaf Display for Example 2.4

1. Open Xm02-04.
- 2 Click **Graph** and **Stem-and-Leaf....**
3. Type or use the **Select** button to specify the variable in the **Variables** box (Bills). Type the increment in the **Increment** box (10).

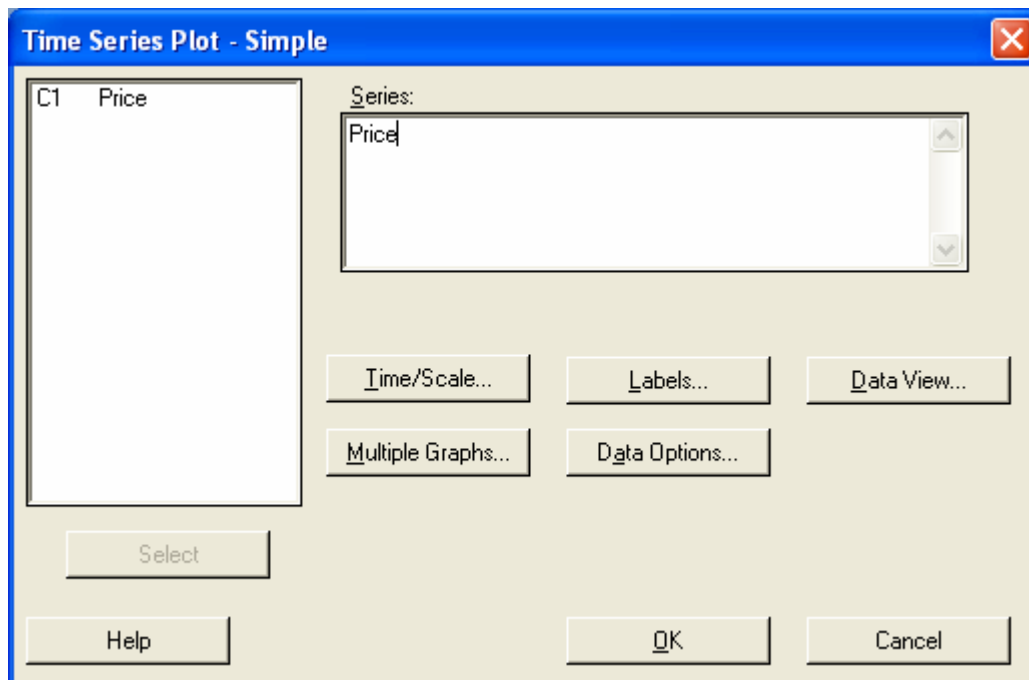


Example 2.8

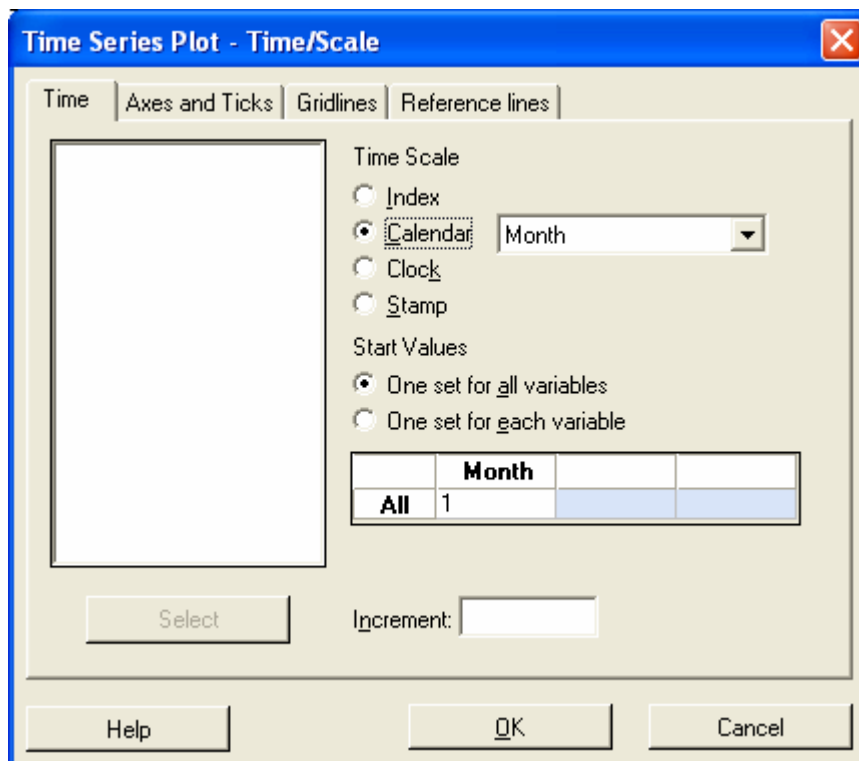
1. Open Xm02-08.
2. Click **Graph** and **Time Series Plot...**



3. Click **Simple** and specify variable (Income Tax).



4. Click **Time/Scale**. Click the **Time** tab and under **Time Scale** click **Calendar** and **Month**. In the **Month** box specify the first month of the series (1). See below.



Example 2.10

1. Open Xm02-10.
2. Click **Stat**, **Tables**, and **Cross Tabulation and Chi-square** and complete the dialog box as shown below.

Cross Tabulation and Chi-Square

Categorical variables:

For rows: Newspaper

For columns: Occupation

For layers:

Frequencies are in: (optional)

Display

☒ Counts

☐ Row percents

☒ Column percents

☐ Total percents

Select

Chi-Square... Other Stats...

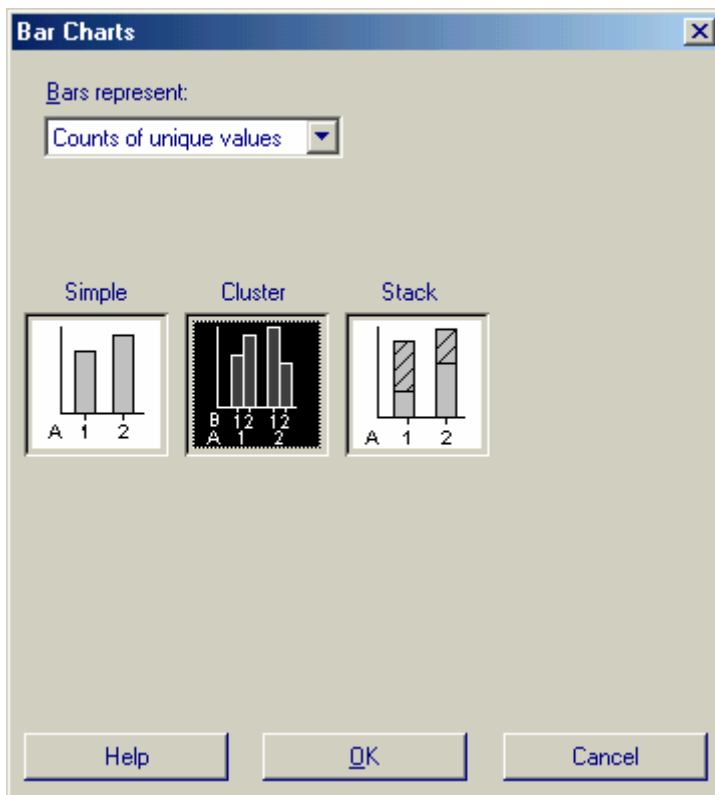
Options...

Help OK Cancel

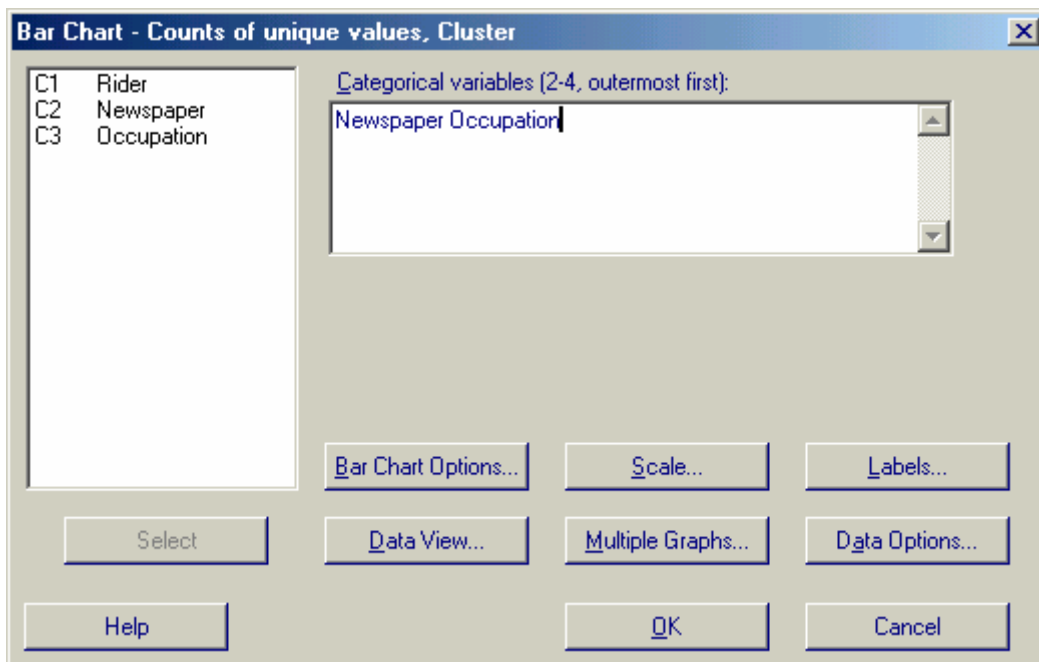
Graphing the Relationship between Two Nominal Variables

From raw data:

1. Click **Graph** and **Bar Chart**. Fill in the box.

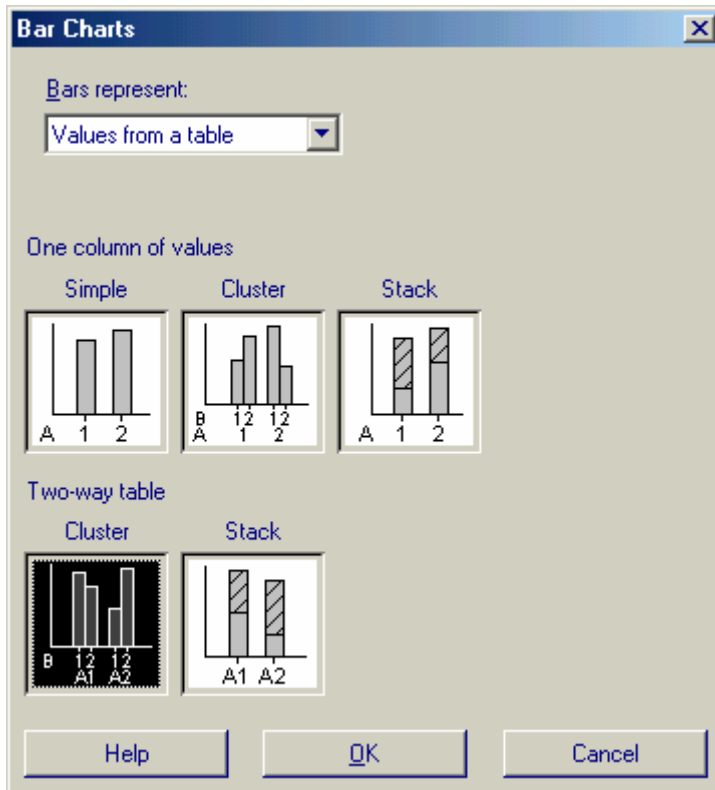


2. Click **OK** and complete the next box.



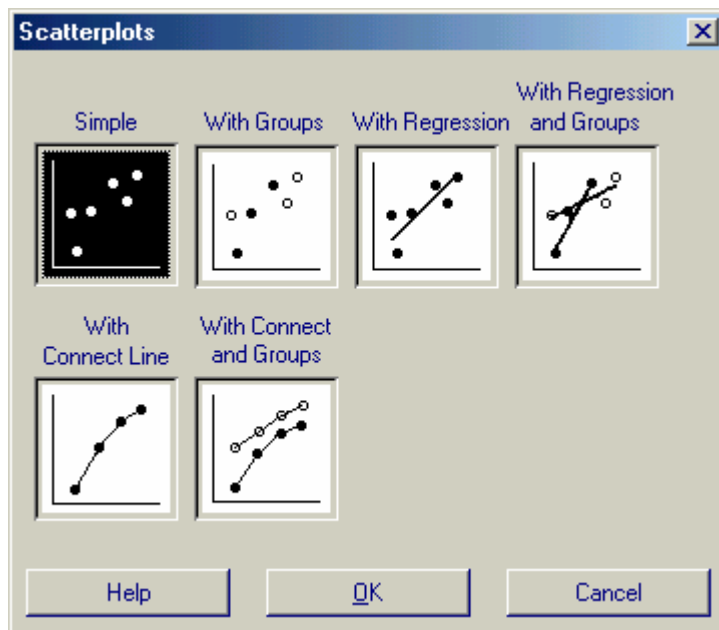
From a completed table:

1. Open Xm02-08A.
2. Click **Graph** and **Bar Chart** and complete the next dialog box.

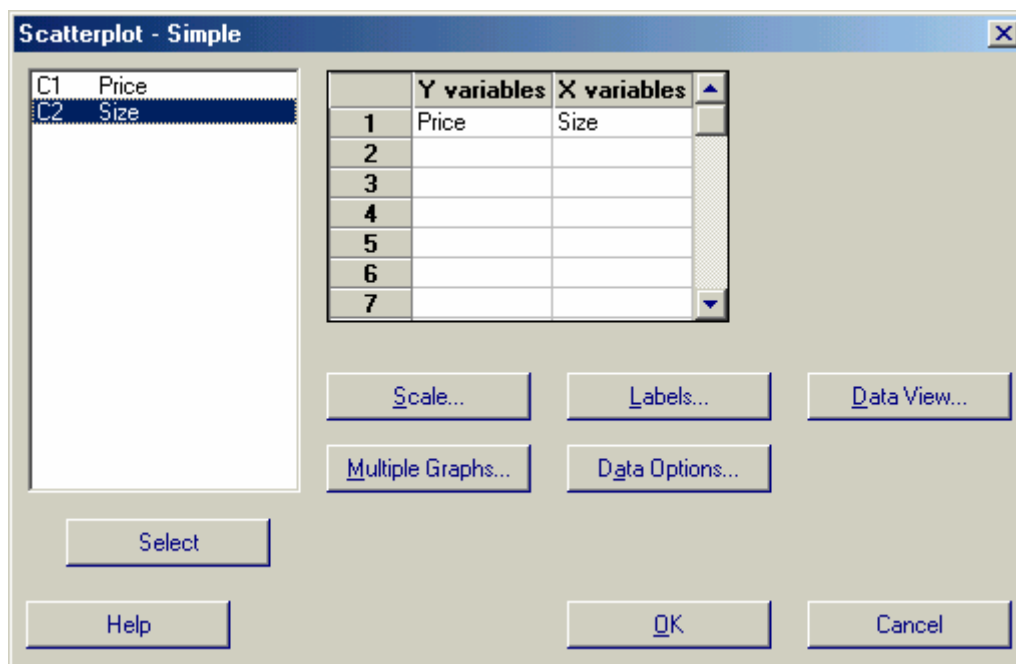


Example 2.12

1. Open Xm02-12.
2. Click **Graph** and **Scatterplot...**



3. Click Simple and **OK**. Fill in the next box.

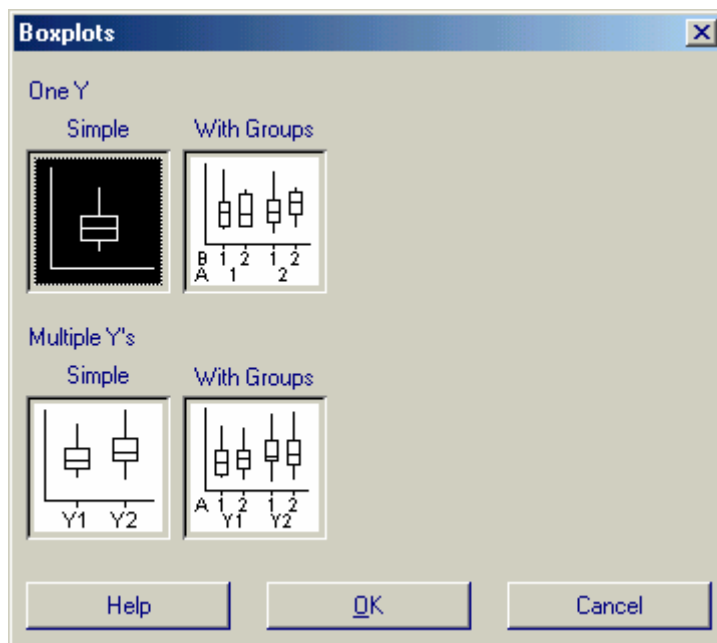


Chapter 4

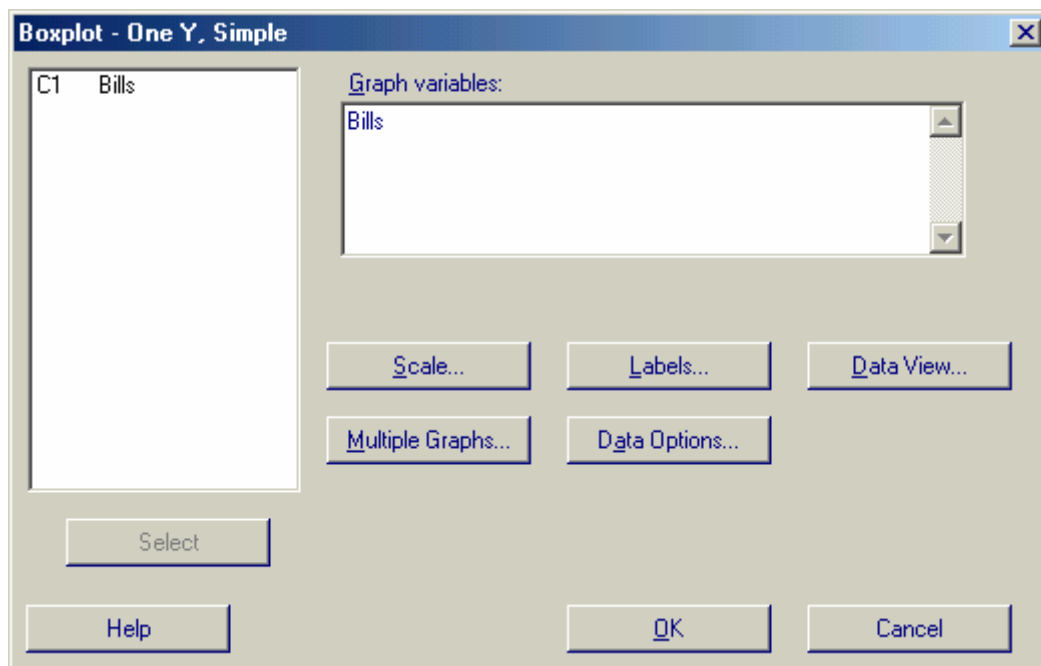
Example 4.14

1. Open Xm02-04.

2. Click **Graph** and **Box Plot...** Click **Simple** if there is only one column of data or **Multiple Y's** if there are two or more columns.



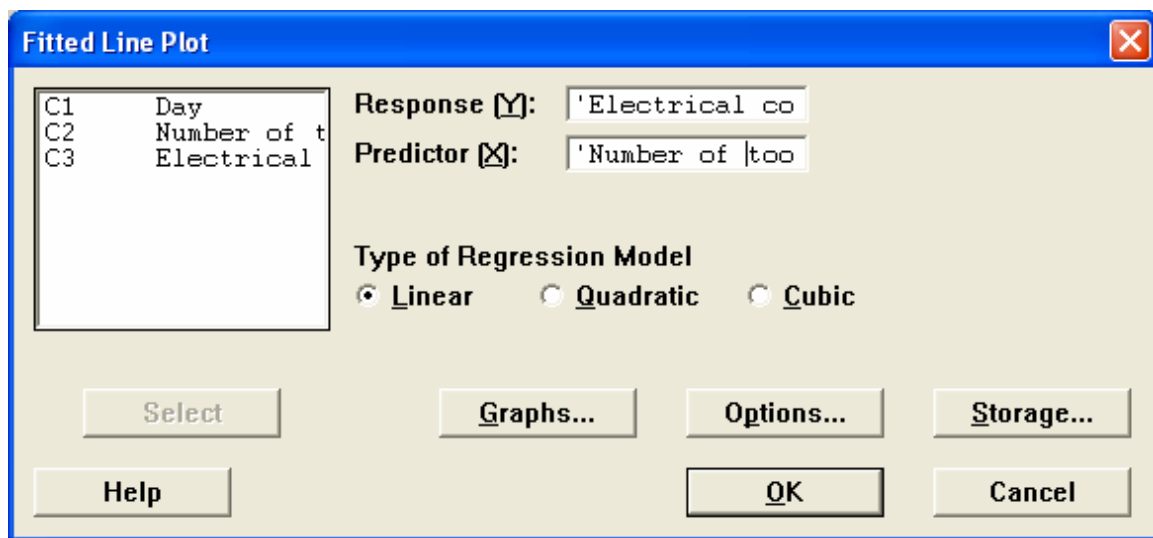
3. Click **OK**. Type or **Select** the variable or variables in the **Graph variables** box.



4. The box plot will drawn so that the values (Bills) will appear on the vertical axis. To turn the box plot on its side click **Scale, Axes and Ticks**, and **Transpose value and category scales**.

Example 4.17

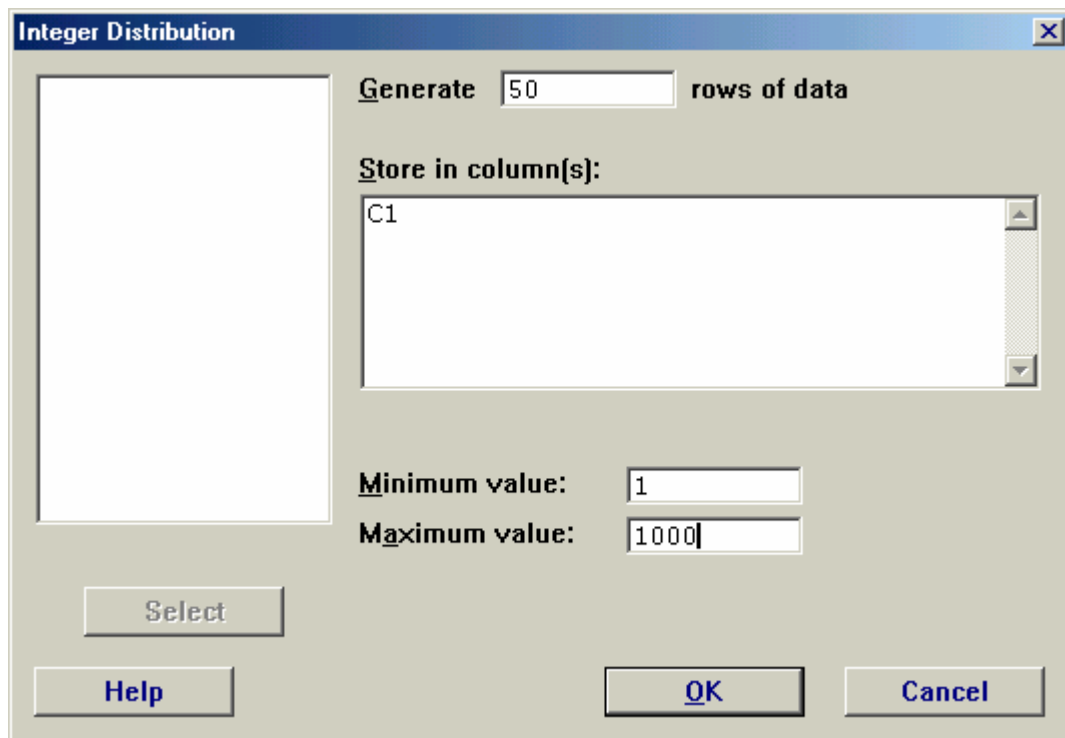
1. Open Xm04-16.
2. Click **Stat, Regression**, and **Fitted Line Plot**. Specify the **Response [Y]** (Electrical costs) and the **Predictor [X]** (Number of Tools) variables. Specify **Linear**.



Chapter 5

Example 5.1

1. Click **Calc, Random Data**, and **Integer...**. Type the number of random numbers you wish, specify where the numbers are to be stored, the **Minimum value**, and the **Maximum value**.



Chapter 7

Example 7.10

Click **Calc**, **Probability Distributions**, and **Binomial....**

Binomial Distribution ✕

☐ **Probability**

☒ **Cumulative probability**

☐ **Inverse cumulative probability**

Number of trials:

Probability of success:

☐ **Input column:**

Optional storage:

☒ **Input constant:**

Optional storage:

Select

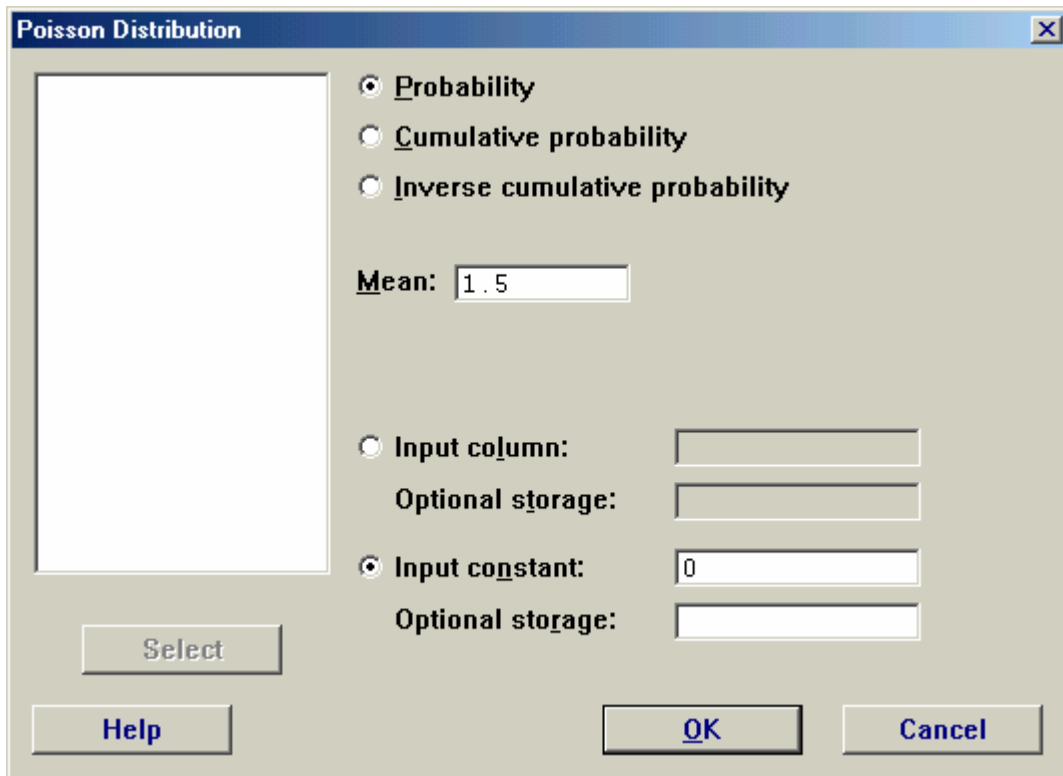
Help

OK

Cancel

Example 7.13

Click **Calc**, **Probability Distributions**, and **Poisson.....**



The image shows the 'Poisson Distribution' dialog box in Minitab. The window has a title bar 'Poisson Distribution' with a close button. On the left is a large empty rectangular box. To its right are three radio buttons: 'Probability' (selected), 'Cumulative probability', and 'Inverse cumulative probability'. Below these is a 'Mean:' label followed by a text box containing '1.5'. Further down are two sets of options. The first set has a radio button for 'Input column:' followed by an empty text box, and 'Optional storage:' followed by another empty text box. The second set has a radio button for 'Input constant:' followed by a text box containing '0', and 'Optional storage:' followed by an empty text box. At the bottom left is a 'Select' button. At the bottom center is an 'OK' button. At the bottom right is a 'Cancel' button. A 'Help' button is located at the bottom left, below the 'Select' button.

Poisson Distribution

☒ **Probability**
☐ **Cumulative probability**
☐ **Inverse cumulative probability**

Mean:

☐ **Input column:**
Optional storage:

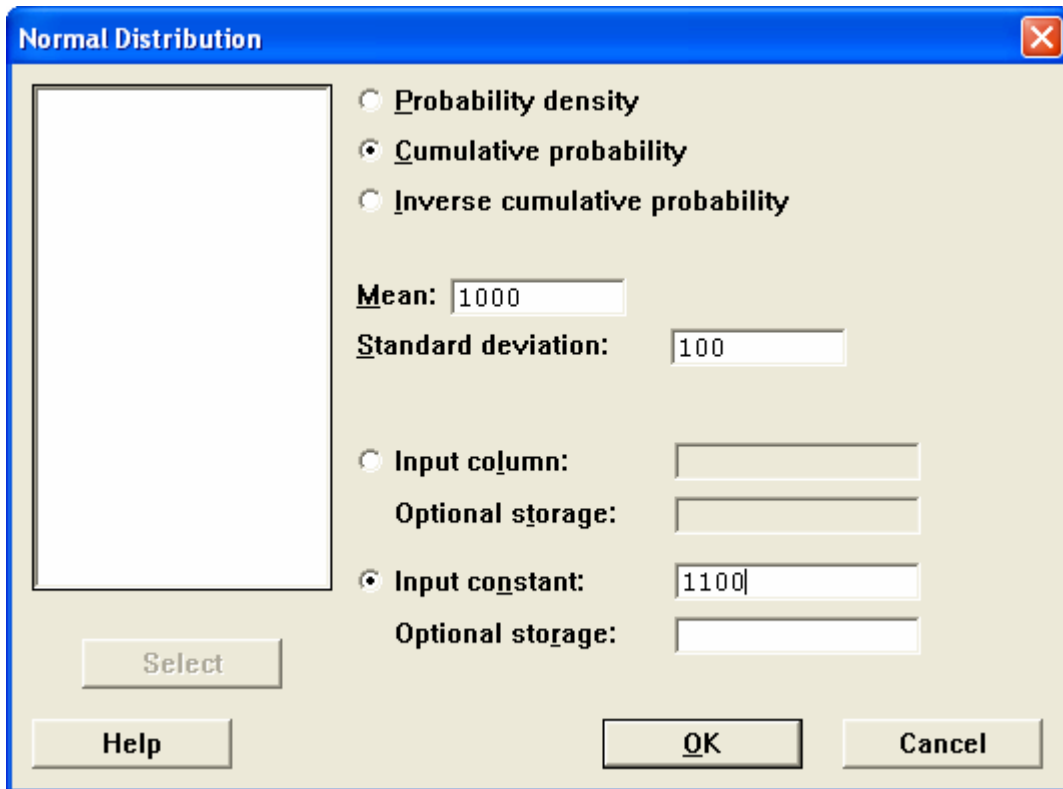
☒ **Input constant:**
Optional storage:

Select **Help** **OK** **Cancel**

Chapter 8

Example 8.2

Click **Calc**, **Probability Distributions**, and **Normal...**



The image shows a "Normal Distribution" dialog box with a blue title bar and a close button in the top right corner. On the left is a large empty rectangular box. To its right are three radio buttons: "Probability density", "Cumulative probability" (which is selected), and "Inverse cumulative probability". Below these are two input fields: "Mean:" with the value "1000" and "Standard deviation:" with the value "100". Further down are two sets of input fields. The first set has a radio button (unselected) for "Input column:" followed by an empty text box, and "Optional storage:" followed by another empty text box. The second set has a radio button (selected) for "Input constant:" followed by a text box containing "1100", and "Optional storage:" followed by an empty text box. At the bottom left is a "Select" button. At the bottom center is an "OK" button, and at the bottom right is a "Cancel" button. A "Help" button is located at the bottom left, below the "Select" button.

Normal Distribution

☐ Probability density

☒ Cumulative probability

☐ Inverse cumulative probability

Mean: 1000

Standard deviation: 100

☐ Input column:

Optional storage:

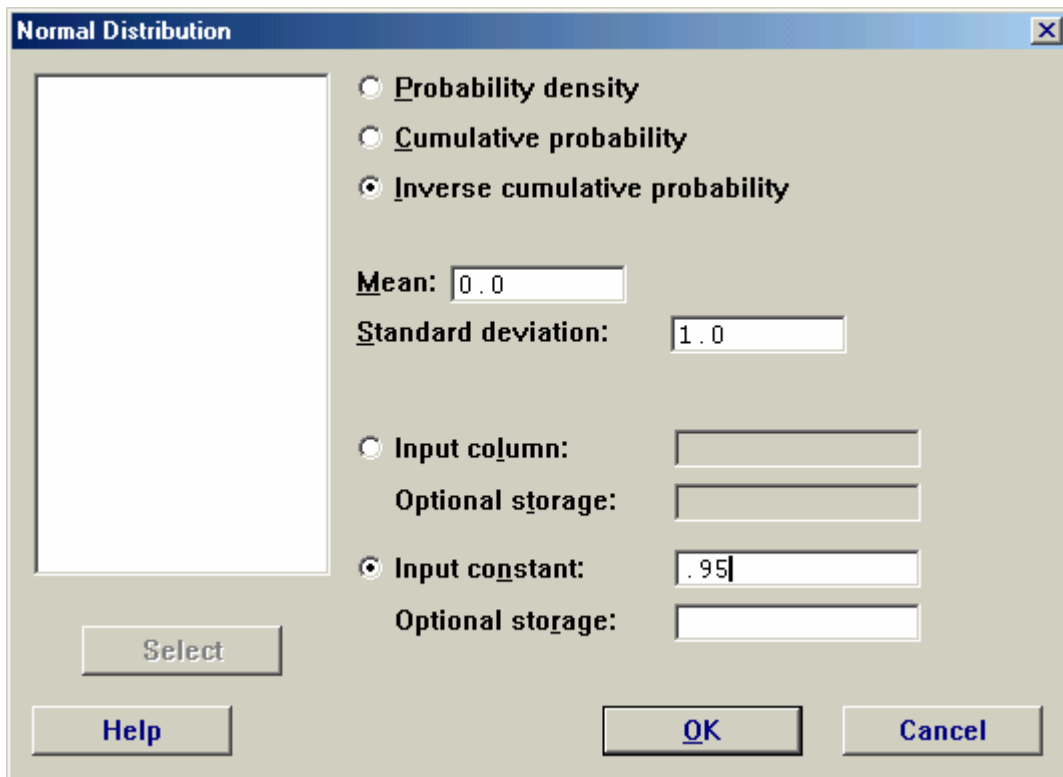
☒ Input constant: 1100

Optional storage:

Select

Help OK Cancel

Example 8.3



The image shows a 'Normal Distribution' dialog box with a blue title bar and a close button. On the left is a large empty rectangular area. To its right are three radio buttons: 'Probability density', 'Cumulative probability', and 'Inverse cumulative probability', with the third one selected. Below these are input fields for 'Mean' (0.0) and 'Standard deviation' (1.0). Further down are two groups of controls. The first group has a radio button for 'Input column:', an empty 'Optional storage:' field, and an empty input field. The second group has a selected radio button for 'Input constant:', an input field containing '.95', and an empty 'Optional storage:' field. At the bottom are four buttons: 'Select', 'Help', 'OK', and 'Cancel'.

Normal Distribution

☐ Probability density

☐ Cumulative probability

☒ Inverse cumulative probability

Mean: 0.0

Standard deviation: 1.0

☐ Input column:

Optional storage:

☒ Input constant: .95

Optional storage:

Select

Help OK Cancel

Example 8.5c

Click **Calc**, **Probability Distributions**, and **Exponential...**

Exponential Distribution [X]

☐ Probability density
☒ Cumulative probability
☐ Inverse cumulative probability

Scale: (= Mean when Threshold = 0)
Threshold:

☐ Input column:
Optional storage:
☒ Input constant:
Optional storage:

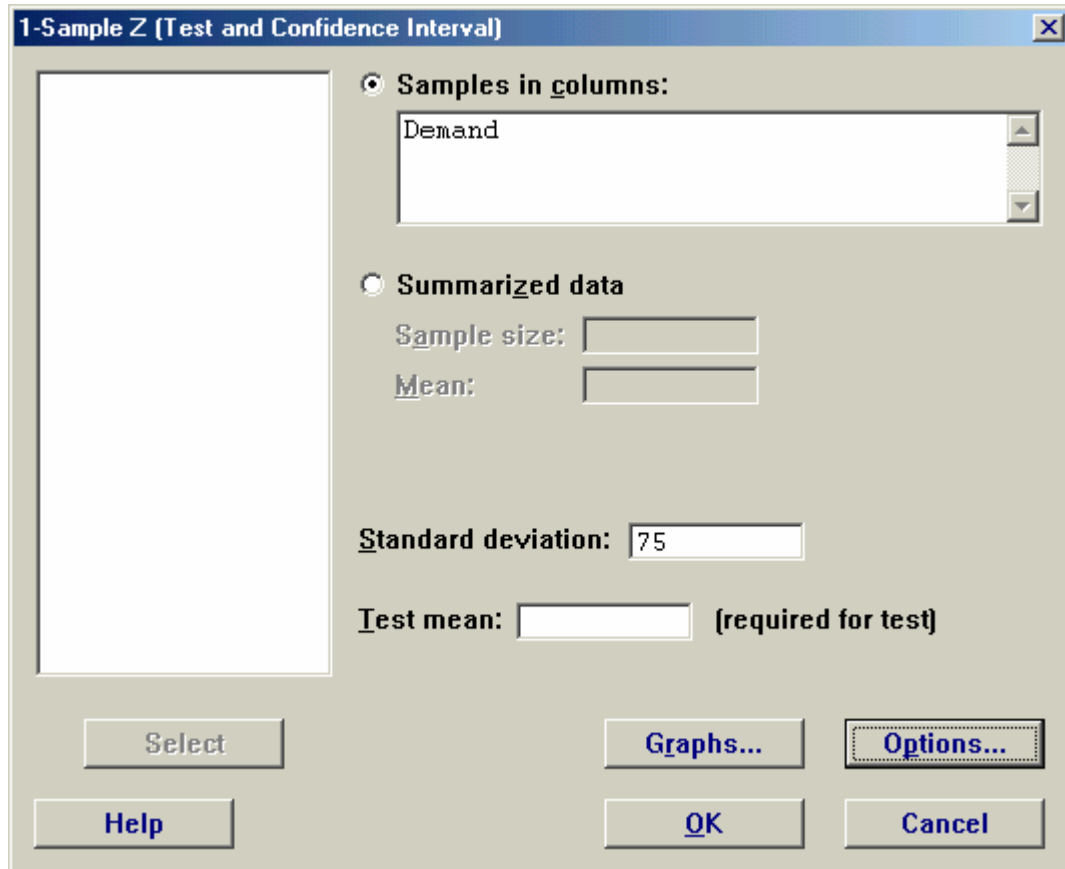
Select

Help OK Cancel

Chapter 10

Example 10.1

1. Open Xm10-01.
2. Click **Stat**, **Basic Statistics**, and **1-Sample Z....** Fill in the dialog box as shown below.



The dialog box is titled "1-Sample Z (Test and Confidence Interval)". It features a large empty list box on the left. On the right, there are two radio buttons: "Samples in columns:" (selected) and "Summarized data". The "Samples in columns:" option has a text box containing "Demand". The "Summarized data" option has fields for "Sample size:", "Mean:", and "Standard deviation:". The "Standard deviation:" field contains the value "75". Below these is a "Test mean:" field with a note "(required for test)". At the bottom, there are buttons for "Select", "Help", "Graphs...", "Options...", "OK", and "Cancel".

1-Sample Z (Test and Confidence Interval)

☒ **Samples in columns:**

Demand

☐ **Summarized data**

Sample size:

Mean:

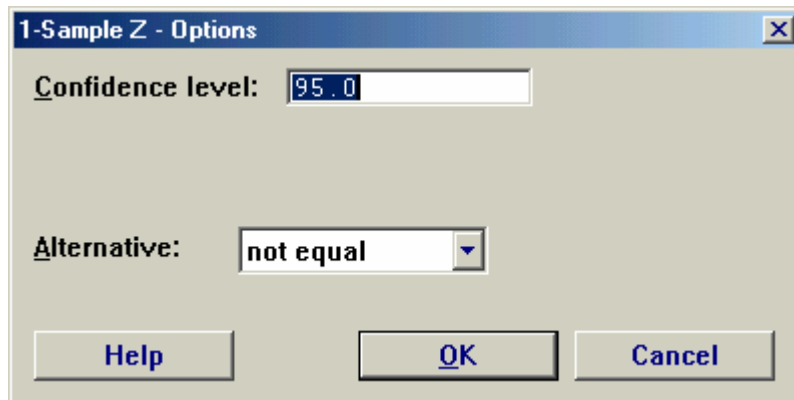
Standard deviation:

Test mean: (required for test)

Select Graphs... Options...

Help OK Cancel

3. Click **Options...** and fill in the dialog box below.



The dialog box is titled "1-Sample Z - Options". It has a "Confidence level:" field with the value "95.0". Below it is an "Alternative:" dropdown menu set to "not equal". At the bottom, there are buttons for "Help", "OK", and "Cancel".

1-Sample Z - Options

Confidence level:

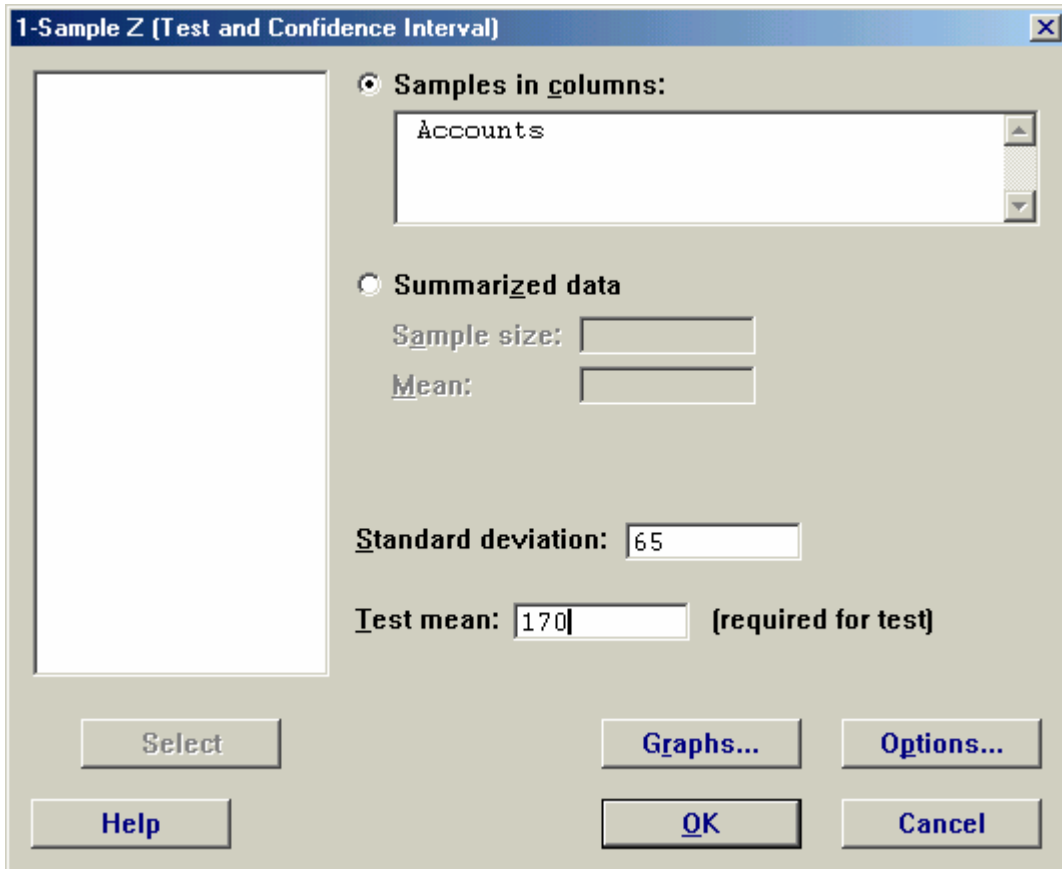
Alternative:

Help OK Cancel

Chapter 11

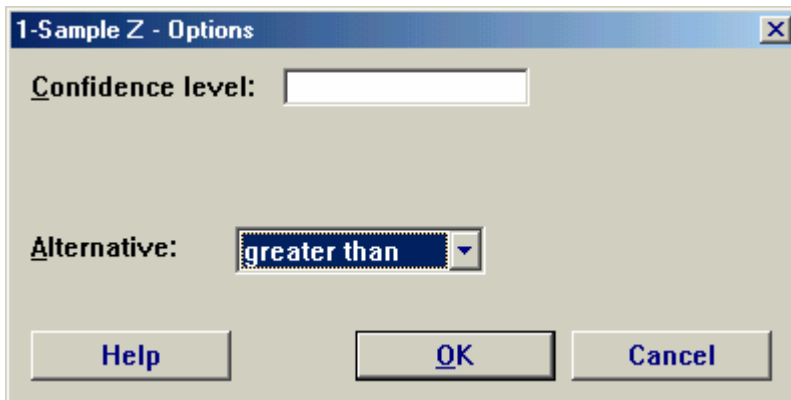
Example 11.1

1. Open Xm11-01.
2. Click **Stat**, **Basic Statistics**, and **1-Sample Z....** Complete the dialog box below.



The dialog box is titled "1-Sample Z (Test and Confidence Interval)". It features a large empty list box on the left. On the right, there are two radio buttons: "Samples in columns:" (selected) and "Summarized data". The "Samples in columns:" option has a text box containing "Accounts". The "Summarized data" option has fields for "Sample size:", "Mean:", "Standard deviation:" (containing "65"), and "Test mean:" (containing "170") with the label "(required for test)". At the bottom, there are buttons for "Select", "Help", "Graphs...", "Options...", "OK", and "Cancel".

3. Click **Options...** and complete the next dialog box.

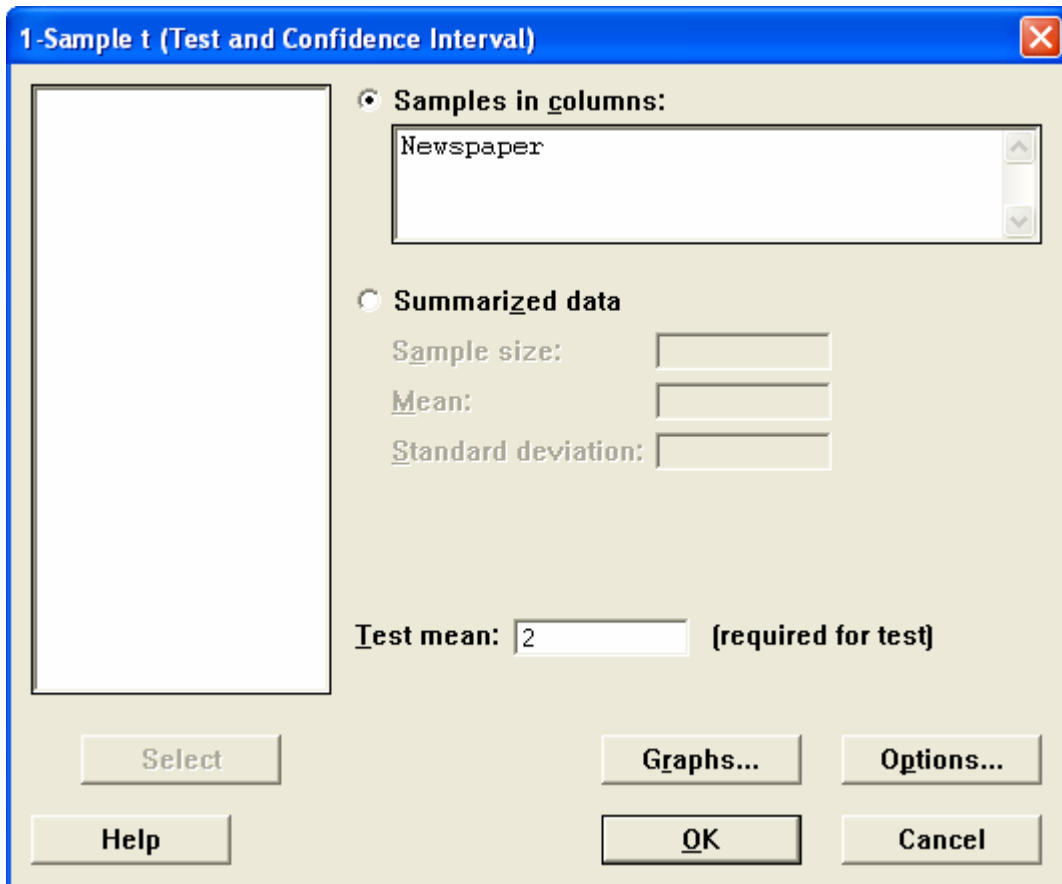


The dialog box is titled "1-Sample Z - Options". It has a field for "Confidence level:". Below it, the "Alternative:" label is followed by a dropdown menu showing "greater than". At the bottom, there are buttons for "Help", "OK", and "Cancel".

Chapter 12

Example 12.1

1. Open Xm12-01.
2. Click **Stat**, **Basic Statistics**, and **1-Sample t....** Fill in the dialog box as shown below.



The dialog box is titled "1-Sample t (Test and Confidence Interval)". It features a large empty list box on the left. On the right, the "Samples in columns:" radio button is selected, with a text box containing "Newspaper". Below this, the "Summarized data" radio button is unselected, followed by input fields for "Sample size:", "Mean:", and "Standard deviation:". The "Test mean:" is set to "2" with the label "(required for test)". At the bottom, there are buttons for "Select", "Help", "Graphs...", "Options...", "OK", and "Cancel".

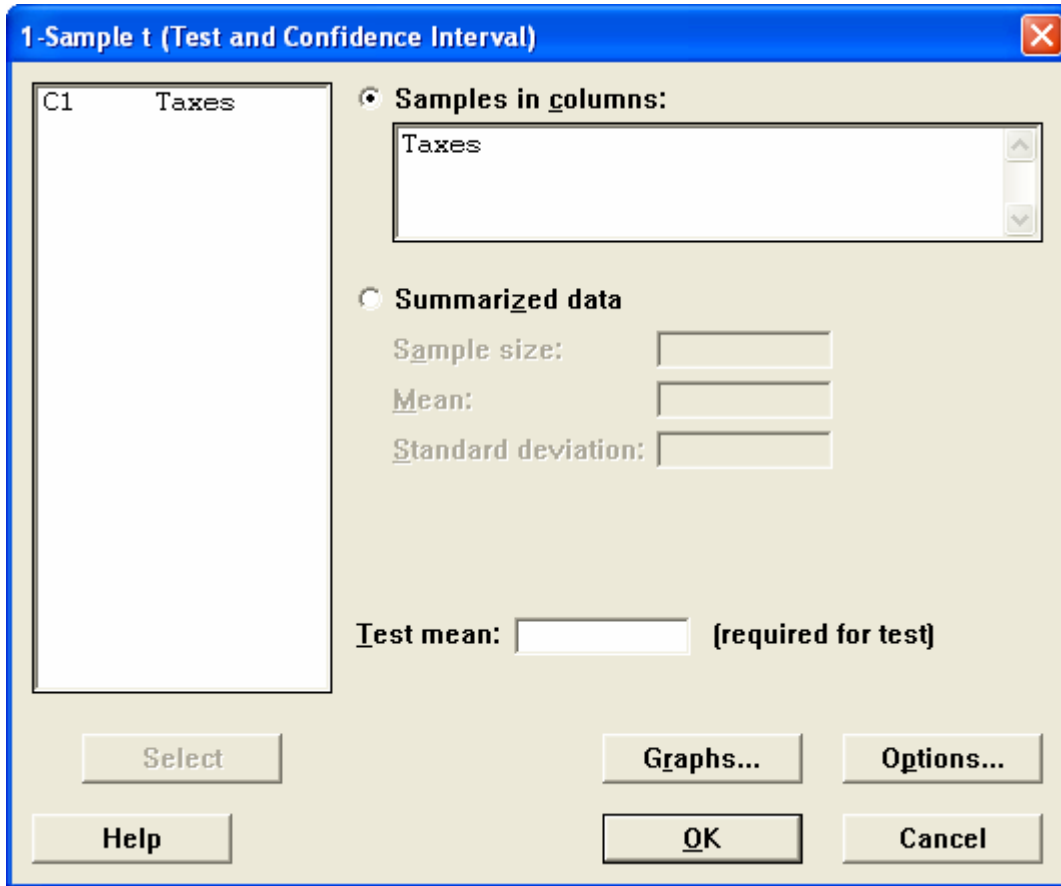
3. Click **Options...**



The dialog box is titled "1-Sample t - Options". It contains a "Confidence level:" input field. Below it, the "Alternative:" dropdown menu is set to "greater than". At the bottom, there are buttons for "Help", "OK", and "Cancel".

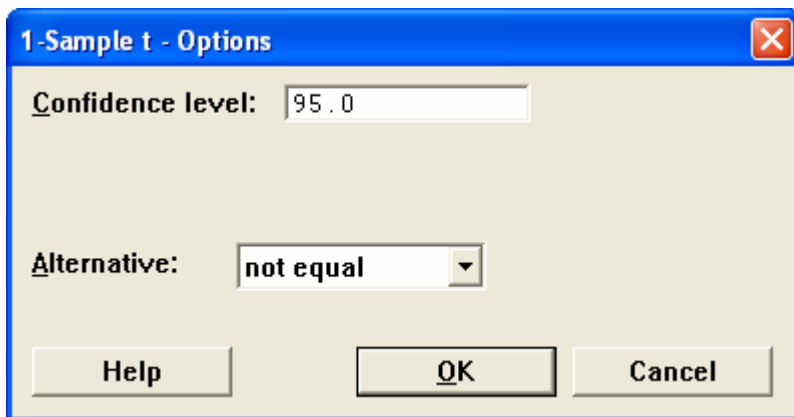
Example 12.2

1. Open Xm12-02.
2. Click **Stat**, **Basic Statistics**, and **1-Sample t....** Fill in the dialog box as shown below.



The dialog box is titled "1-Sample t (Test and Confidence Interval)". On the left, a list box contains "C1" and "Taxes". To the right, the "Samples in columns:" radio button is selected, and the "Taxes" variable is entered in the adjacent text box. Below this, the "Summarized data" radio button is unselected. Further down, there are three input fields for "Sample size:", "Mean:", and "Standard deviation:". At the bottom left, there is a "Test mean:" label followed by an empty input box and the text "(required for test)". At the bottom, there are four buttons: "Select", "Help", "Graphs...", "Options...", "OK", and "Cancel".

3. Click **Options...**



The dialog box is titled "1-Sample t - Options". It features a "Confidence level:" label followed by an input box containing "95.0". Below this, the "Alternative:" label is followed by a dropdown menu currently set to "not equal". At the bottom, there are three buttons: "Help", "OK", and "Cancel".

Minitab 14 does not conduct the chi-squared test and estimator of a variance .

Example 12.5

1. Open Xm12-05.

2 Click **Stat, Basic Statistics, and 1 Proportion....** Fill the next box.

1 Proportion (Test and Confidence Interval)

C1 Votes

☒ **Samples in columns:**

Votes

☐ **Summarized data**

Number of trials:

Number of events:

Select Options...

Help OK Cancel

3. Click **Options...**

1 Proportion - Options

Confidence level: 95.0

Test proportion: 0.5

Alternative: greater than

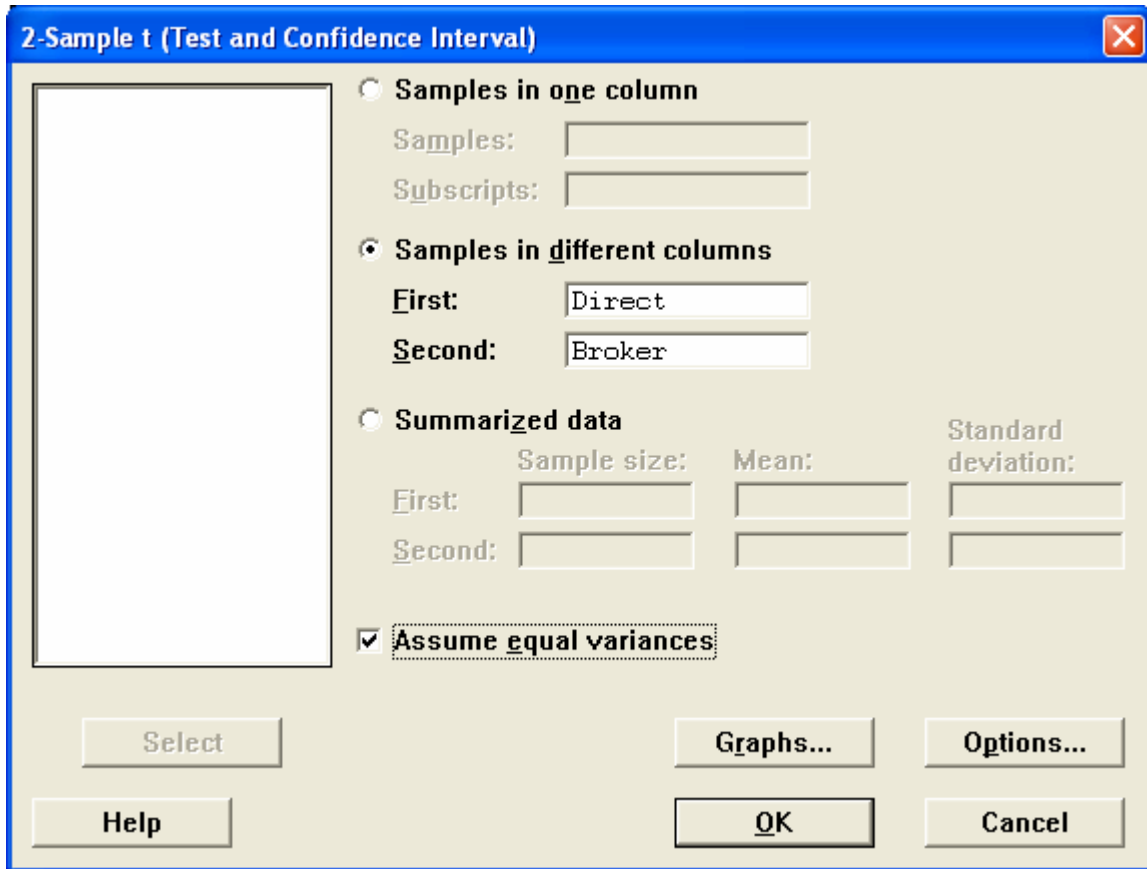
☒ Use test and interval based on normal distribution

Help OK Cancel

Chapter 13

Example 13.1

1. Open Xm13-01.
2. Click **Stat**, **Basic Statistics**, and **2-Sample t...**. Fill in the dialog box as shown below.



The dialog box is titled "2-Sample t (Test and Confidence Interval)". It features a large empty list box on the left. On the right, there are three radio button options: "Samples in one column", "Samples in different columns" (which is selected), and "Summarized data". Under "Samples in different columns", the "First" field contains "Direct" and the "Second" field contains "Broker". Under "Summarized data", there are fields for "Sample size:", "Mean:", and "Standard deviation:" for both "First" and "Second" samples. A checkbox labeled "Assume equal variances" is checked. At the bottom, there are buttons for "Select", "Help", "Graphs...", "Options...", "OK", and "Cancel".

2-Sample t (Test and Confidence Interval)

☐ Samples in one column

Samples:

Subscripts:

☒ Samples in different columns

First:

Second:

☐ Summarized data

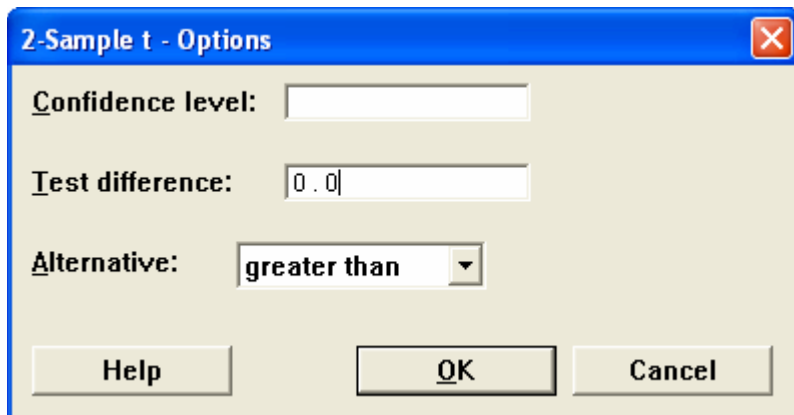
	Sample size:	Mean:	Standard deviation:
First:			
Second:			

☒ Assume equal variances

Select Graphs... Options...

Help OK Cancel

3. Click **Options...**



The dialog box is titled "2-Sample t - Options". It contains three fields: "Confidence level:" with an empty text box, "Test difference:" with a text box containing "0.0", and "Alternative:" with a dropdown menu showing "greater than". At the bottom, there are buttons for "Help", "OK", and "Cancel".

2-Sample t - Options

Confidence level:

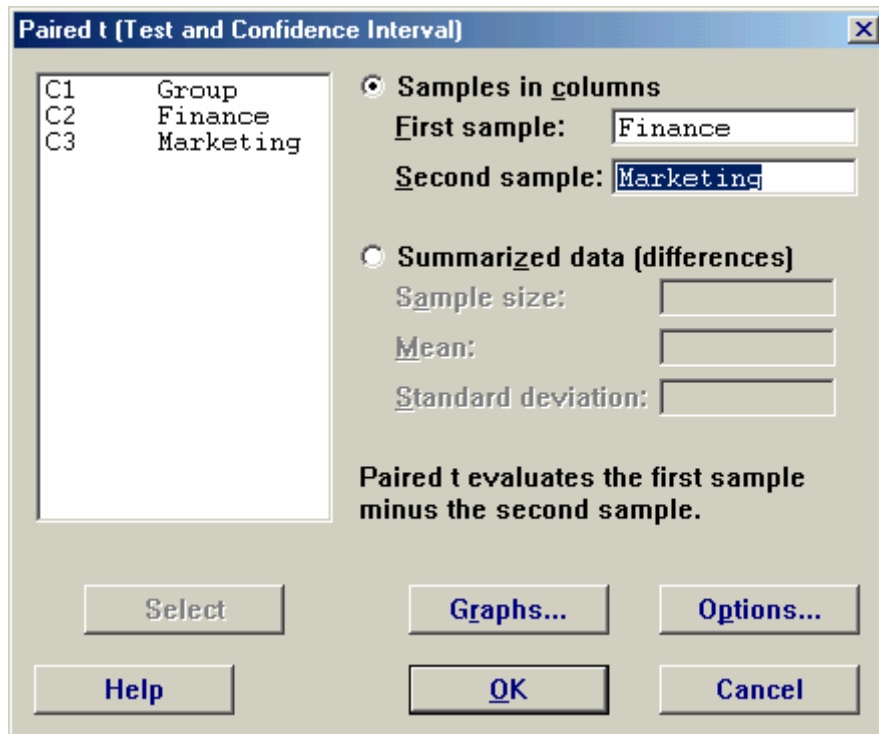
Test difference:

Alternative:

Help OK Cancel

Example 13.5

1. Open Xm13-05.
2. Click **Stat**, **Basic Statistics**, and **Paired t...** . Click **Options...**



The dialog box is titled "Paired t (Test and Confidence Interval)". It features a list box on the left containing three entries: "C1 Group", "C2 Finance", and "C3 Marketing". To the right of the list box, there are two radio button options. The first option, "Samples in columns", is selected. Below it, the "First sample:" field is set to "Finance" and the "Second sample:" field is set to "Marketing". The second option, "Summarized data (differences)", is unselected. Below this option, there are three input fields: "Sample size:", "Mean:", and "Standard deviation:", all of which are currently empty. At the bottom of the dialog, there is a text label that reads "Paired t evaluates the first sample minus the second sample." Below this label are six buttons arranged in two rows: "Select", "Graphs...", and "Options..." in the top row; and "Help", "OK", and "Cancel" in the bottom row.

C1	Group
C2	Finance
C3	Marketing

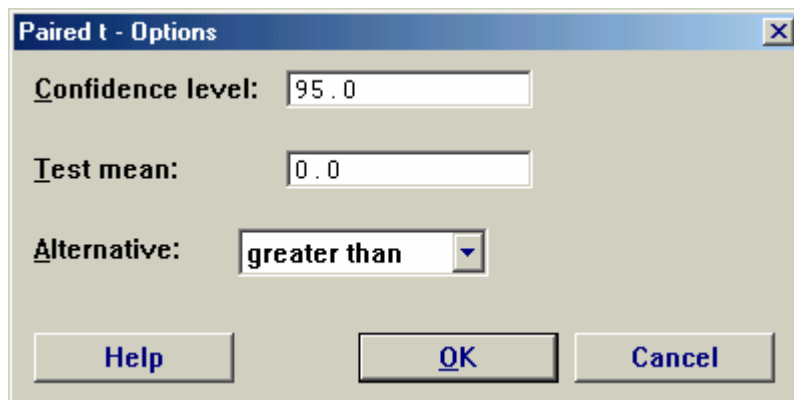
☒ Samples in columns
First sample: Finance
Second sample: Marketing

☐ Summarized data (differences)
Sample size:
Mean:
Standard deviation:

Paired t evaluates the first sample minus the second sample.

Select Graphs... Options...
Help OK Cancel

3. Click **Options...**



The dialog box is titled "Paired t - Options". It contains three input fields. The "Confidence level:" field is set to "95.0". The "Test mean:" field is set to "0.0". The "Alternative:" field is a dropdown menu currently showing "greater than". At the bottom of the dialog are three buttons: "Help", "OK", and "Cancel".

Confidence level: 95.0
Test mean: 0.0
Alternative: greater than

Help OK Cancel

Example 13.7

1. Open Xm13-07.
2. Click **Stat, Basic Statistics, and 2 Variances...**

2 Variances

C1 Machine1
C2 Machine2

☐ Samples in one column
Samples:
Subscripts:

☒ Samples in different columns
First:
Second:

☐ Summarized data
Sample size: Variance:
First:
Second:

Select Options... Storage...
Help OK Cancel

Example 13.9

1. Open Xm13-09.
2. Click **Stat, Basic Statistics, and 2 Proportions...** Fill in the box.

2 Proportions (Test and Confidence Interval)

C1	Supermarket
C2	Supermarket

☐ Samples in one column

Samples:

Subscripts:

☒ Samples in different columns

First:

Second:

☐ Summarized data

	Trials:	Events:
F <u>ir</u> st:		
S <u>e</u> c <u>o</u> nd:		

Select Options... Help OK Cancel

3. Click **Options...**

2 Proportions - Options

Confidence level:

Test difference:

Alternative:

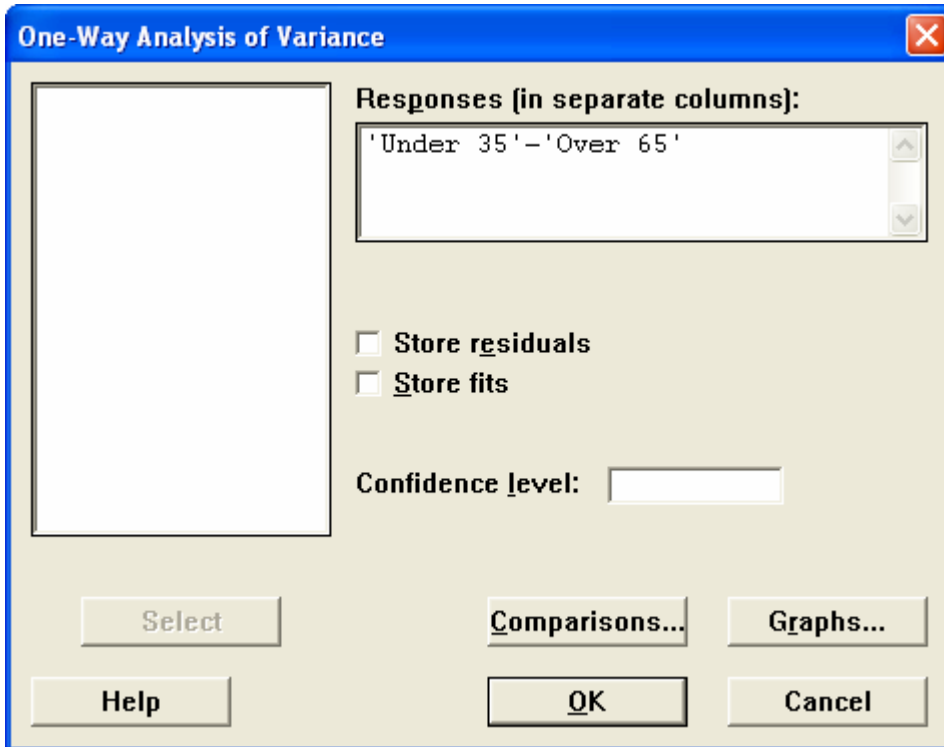
☒ Use pooled estimate of p for test

Help OK Cancel

Chapter 14

Example 14.1

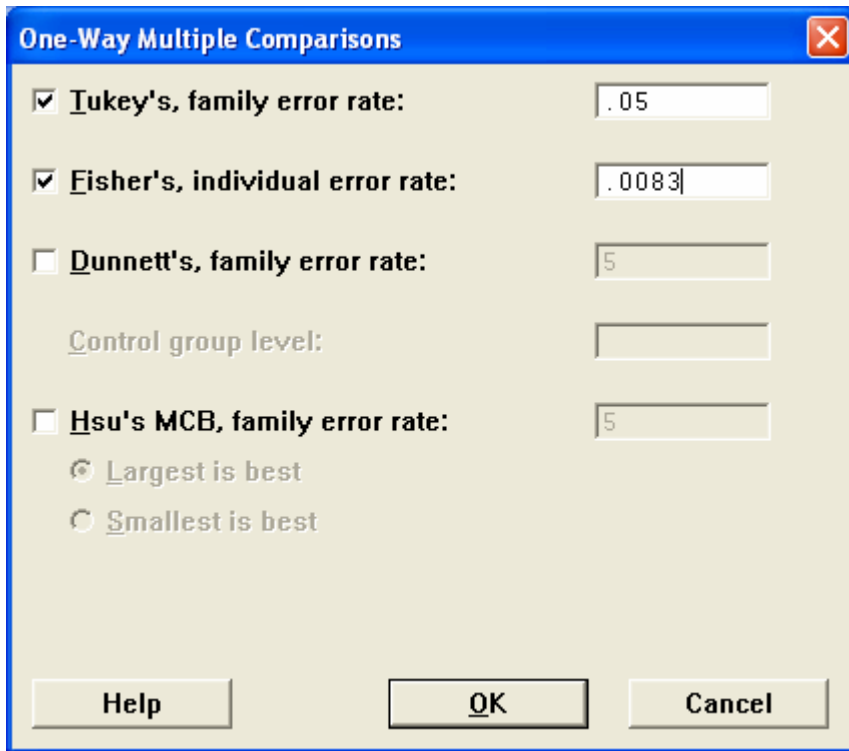
1. Open Xm14-01.
2. Click **Stat**, **ANOVA**, and **Oneway (Unstacked)** and complete the next dialog box.



The image shows a screenshot of the 'One-Way Analysis of Variance' dialog box in Minitab. The dialog box has a blue title bar with the text 'One-Way Analysis of Variance' and a red close button. The main area is light beige. On the left is a large empty rectangular box. To its right, the text 'Responses (in separate columns):' is followed by a text box containing the text ''Under 35'-'Over 65''. Below this, there are two checkboxes: 'Store residuals' and 'Store fits', both of which are unchecked. Below the checkboxes is the text 'Confidence level:' followed by a small empty text box. At the bottom of the dialog box, there are six buttons arranged in two rows: 'Select', 'Comparisons...', and 'Graphs...' in the top row; and 'Help', 'OK', and 'Cancel' in the bottom row.

Example 14.2

1. Open Xm14-02.
2. Click **Stat**, **ANOVA**, and **Oneway (Unstacked)** and complete the dialog box.
3. Click Comparisons

A screenshot of the 'One-Way Multiple Comparisons' dialog box. The dialog has a blue title bar with the text 'One-Way Multiple Comparisons' and a red close button. The main area is light beige. It contains four rows of options, each with a checkbox and a text input field. The first row is 'Tukey's, family error rate:' with a checked checkbox and a value of '.05'. The second row is 'Fisher's, individual error rate:' with a checked checkbox and a value of '.0083'. The third row is 'Dunnett's, family error rate:' with an unchecked checkbox and a value of '5'. Below this is a label 'Control group level:' followed by an empty text input field. The fourth row is 'Hsu's MCB, family error rate:' with an unchecked checkbox and a value of '5'. Below this are two radio buttons: 'Largest is best' (selected) and 'Smallest is best' (unselected). At the bottom are three buttons: 'Help', 'OK', and 'Cancel'.

One-Way Multiple Comparisons

☒ **Tukey's, family error rate:** .05

☒ **Fisher's, individual error rate:** .0083

☐ **Dunnett's, family error rate:** 5

Control group level:

☐ **Hsu's MCB, family error rate:** 5

☒ Largest is best

☐ Smallest is best

Help OK Cancel

Example 14.3

The data must be in stacked format in three columns. One column contains the responses, another contains codes for the levels of the blocks, and a third column contains codes for the levels of the treatments. To convert Xm14-03 to this format proceed as follows.

1. Open Xm14-03.
2. Activate the Session Window (Click anywhere.)
3. Click **Editor** and **Enable Commands** and type what you see in the session window below.

MINITAB - Untitled

File Edit Data Calc Stat Graph Editor Tools Window Help

Session

Retrieving worksheet from file: 'C:\My Documents\Seventh Edition\Excel files\CH15\Xm15-02.xls'
Worksheet was saved on Sun Feb 18 2001

Results for: Sheet1

```
MTB > stack c2-c5 c6;
SUBC> subs c7.
MTB > set c8
DATA> 4(1:25)
DATA> end
MTB >
```

Sheet1 ***

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
	Group	Drug 1	Drug 2	Drug 3	Drug 4											
1	1	6.6	12.6	2.7	8.7	6.6	1	1								
2	2	7.1	3.5	2.4	9.3	7.1	1	2								
3	3	7.5	4.4	6.5	10.0	7.5	1	3								
4	4	9.9	7.5	16.2	12.6	9.9	1	4								
5	5	13.8	6.4	8.3	10.6	13.8	1	5								
6	6	13.9	13.5	5.4	15.4	13.9	1	6								
7	7	15.9	16.9	15.4	16.3	15.9	1	7								
8	8	14.3	11.4	17.1	18.9	14.3	1	8								
9	9	16.0	16.9	7.7	13.7	16.0	1	9								
10	10	16.3	14.8	16.1	19.4	16.3	1	10								
11	11	14.6	18.6	9.0	18.5	14.6	1	11								

Project Manager

Current Worksheet: Sheet1

Start | CD Appendix B Part 2 - Mi... | MINITAB - Untitled | untitled - Paint | 98% | 3:35 PM

4 Click **Stat**, **ANOVA**, and **Twoway...**

5. Specify the **Responses**, **Row factor**, and **Column factor**. Fill in the box.

Two-Way Analysis of Variance

C1	Group
C2	Drug 1
C3	Drug 2
C4	Drug 3
C5	Drug 4
C6	
C7	
C8	

Response: C6

Row factor: C8 ☐ Display means

Column factor: C7 ☐ Display means

☐ Store residuals

☐ Store fits

Confidence level: 95.0

Select ☐ Fit additive model Graphs...

Help OK Cancel

Example 14.4

1 The data must be in stacked format where one column contains the responses, another contains codes for the levels of factor A, and a third column contains codes for the levels of factor B. We describe how to convert Xm15-03 to this format.

Open Xm14-04.

MINITAB - Untitled

File Edit Data Calc Stat Graph Editor Tools Window Help

Session

Results for: Sheet2

```

MTB > stack c2-c4 c5;
SUBC> subs c6.
MTB > set c7
DATA> 10(1) 10(2) 10(1) 10(2) 10(1) 10(2)
DATA> end
MTB >

```

Sheet1

Sheet2 ***

	C1-T	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
1		Convenience	Quality	Price											
2	1	Television	491	677	575	491	1	1							
3	2		712	627	614	712	1	1							
4	3		558	590	706	558	1	1							
5	4		447	632	484	447	1	1							
6	5		479	683	478	479	1	1							
7	6		624	760	650	624	1	1							
8	7		546	690	583	546	1	1							
9	8		444	548	536	444	1	1							
10	9		582	579	579	582	1	1							
11	10		672	644	795	672	1	1							
12	11	Newspaper	464	689	803	464	1	2							

Welcome to Minitab, press F1 for help. Editable 3:39 PM

2. Click **Stat**, **ANOVA**, and **Twoway...** . Complete the dialog box.

Two-Way Analysis of Variance

C2	Convenience
C3	Quality
C4	Price
C5	
C6	
C7	

Response: C5

Row factor: C6 ☐ **Display means**

Column factor: C7 ☐ **Display means**

☐ **Store residuals**

☐ **Store fits**

Confidence level: 95.0

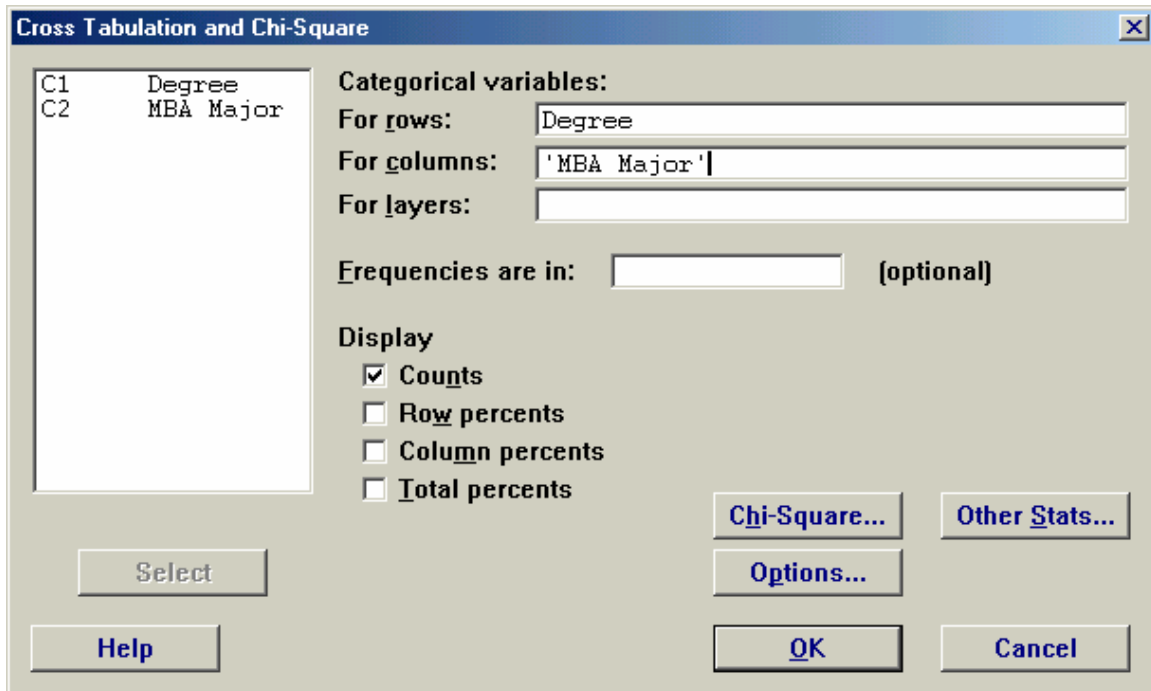
☐ **Fit additive model**

Chapter 15

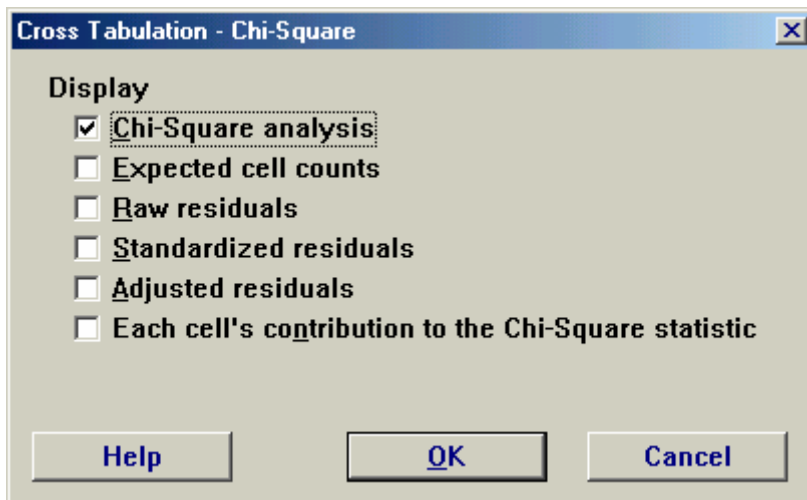
Example 15.2

1. Open Xm15-02.

1 Click **Stat**, **Tables**, and **Cross Classification and Chi-Square...**



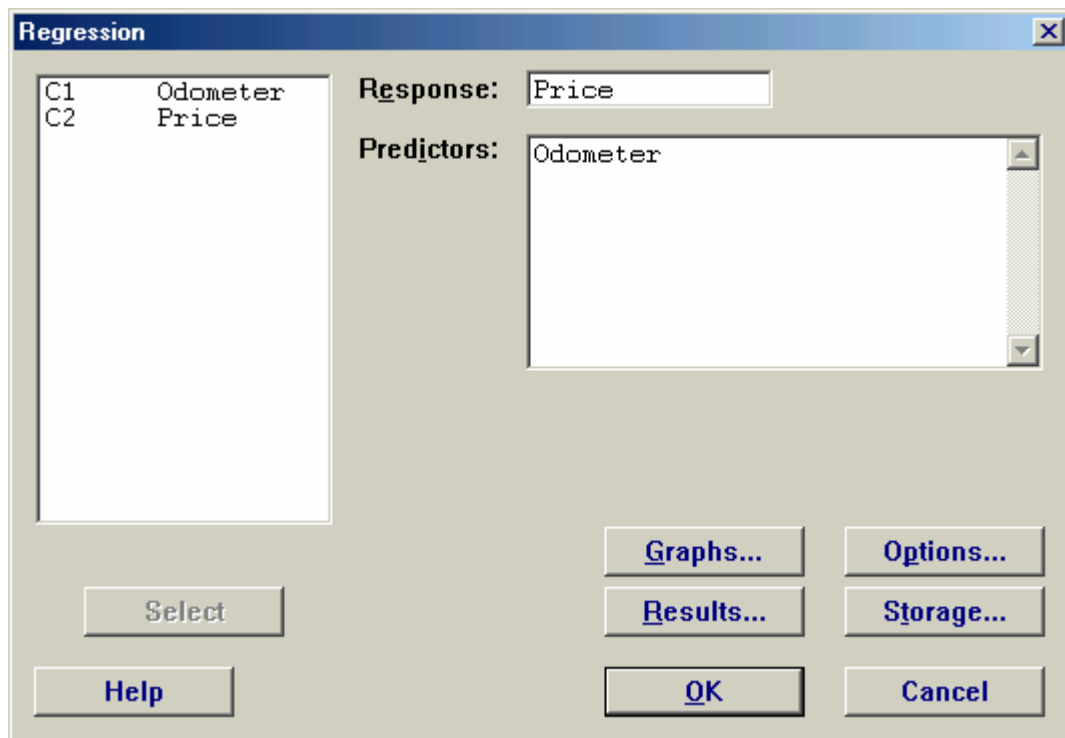
3 Click **Chi-Square...** and click **Chi-Square analysis**.



Chapter 16

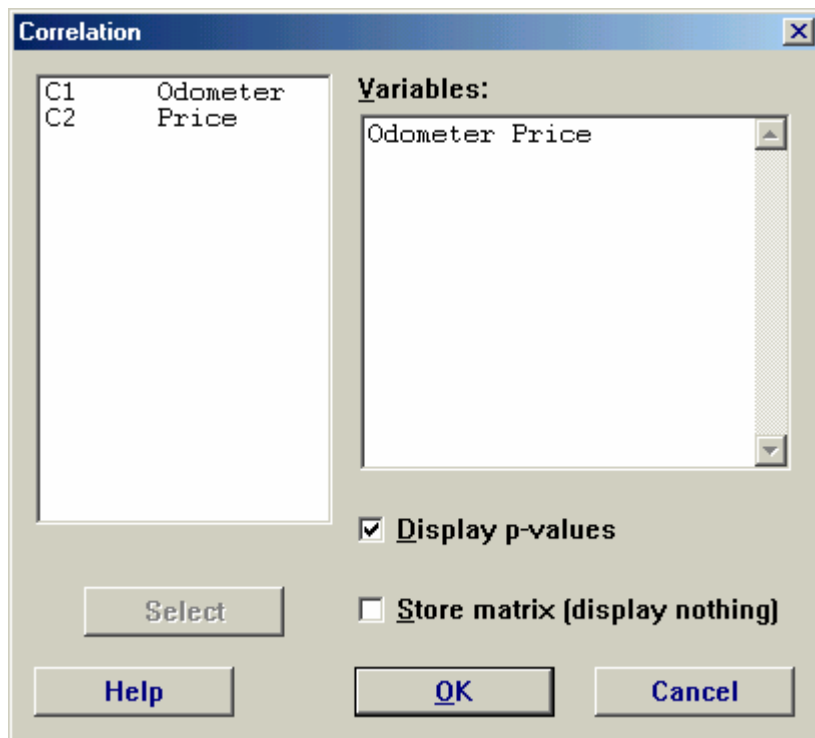
Example 16.2

1. Open Xm16-02.
2. Click **Stat**, **Regression**, and **Regression...**



Example 16.6

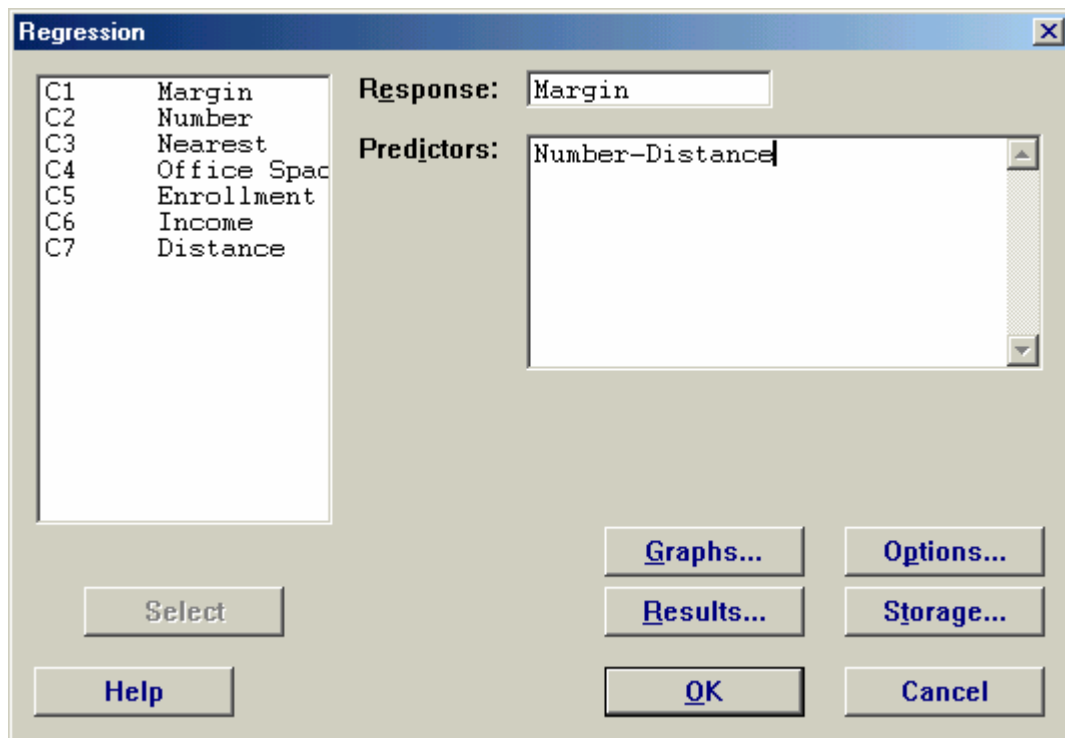
1. Open Xm16-02.
2. Click **Stat**, **Basic Statistics**, and **Correlation**.



Chapter 17

Example 17.1

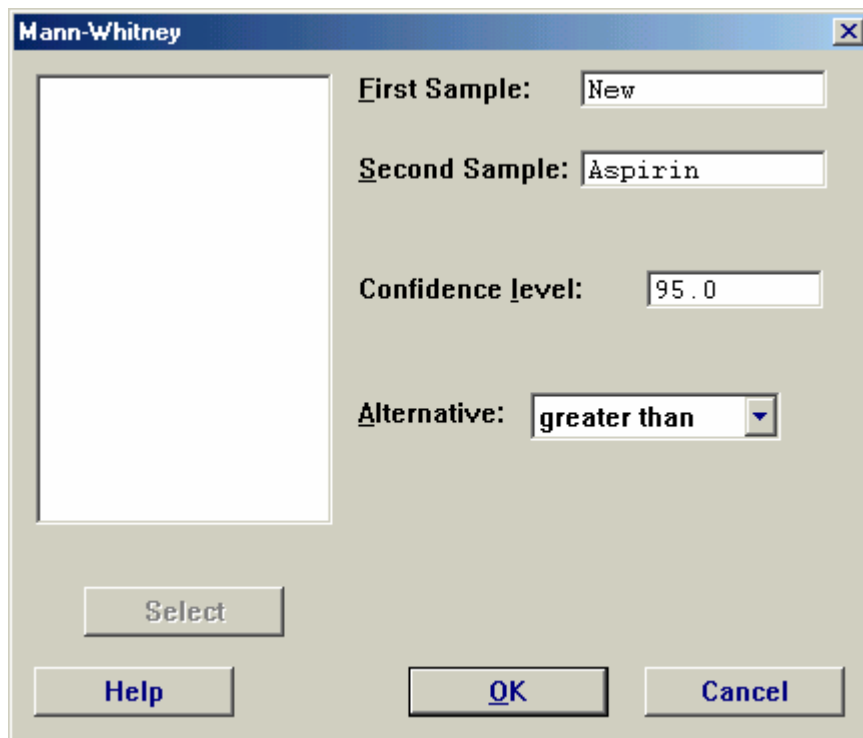
1. Open Xm17-01.
2. Click **Stat**, **Regression**, and **Regression...**



Chapter 19

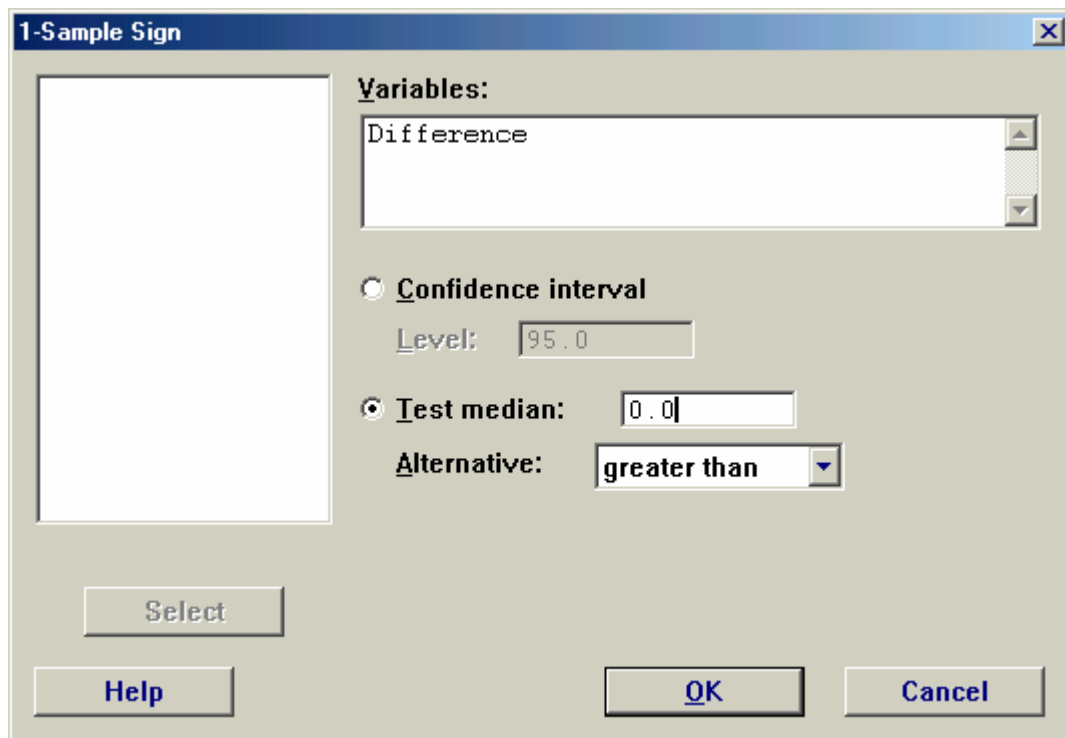
Example 19.1

1. Open Xm19-02.
2. Click **Stat**, **Nonparametrics**, and **Mann-Whitney...**



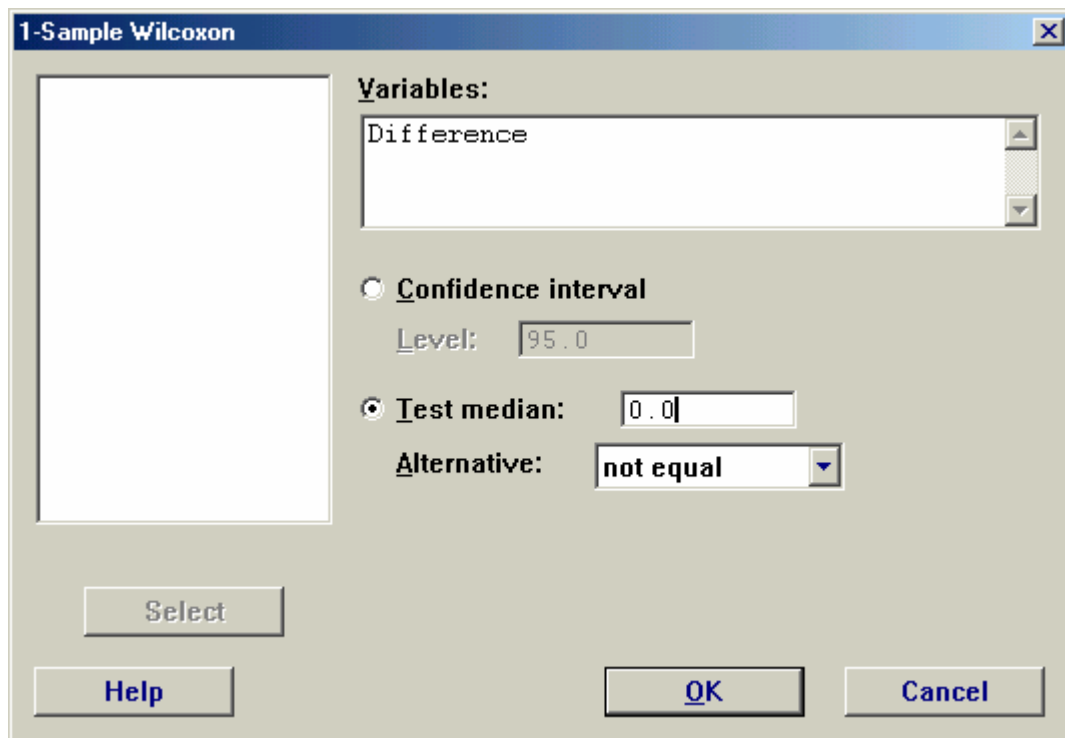
Example 19.3

1. Open Xm19-03.
2. Create a new variable, the paired difference.
3. Click **Stat, Nonparametrics, and 1-Sample Sign...**



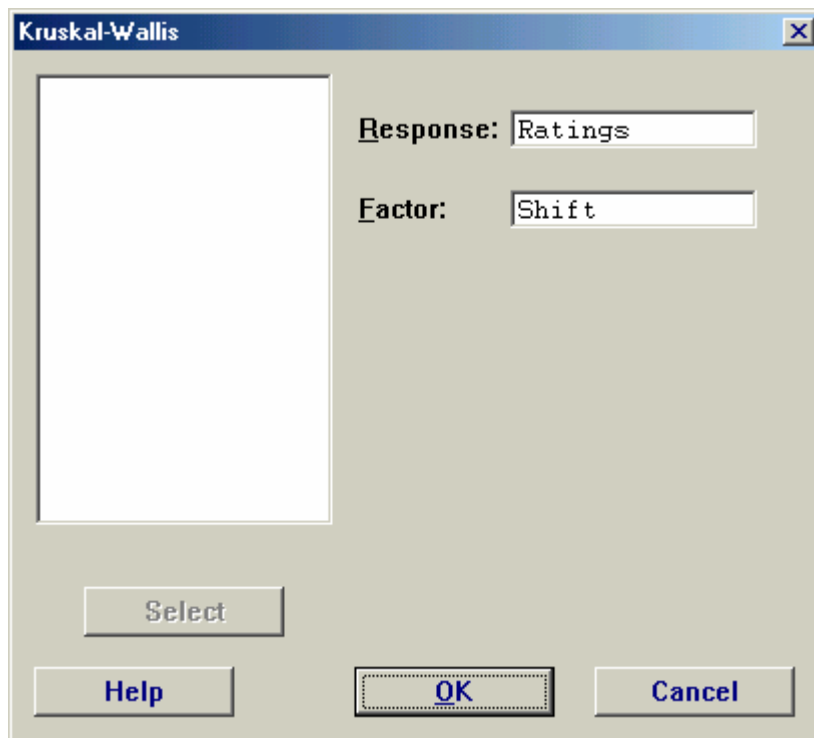
Example 19.4

1. Open Xm19-04.
2. Create a new variable, the paired difference.
3. Click **Stat, Nonparametrics, and 1-Sample Wilcoxon...**



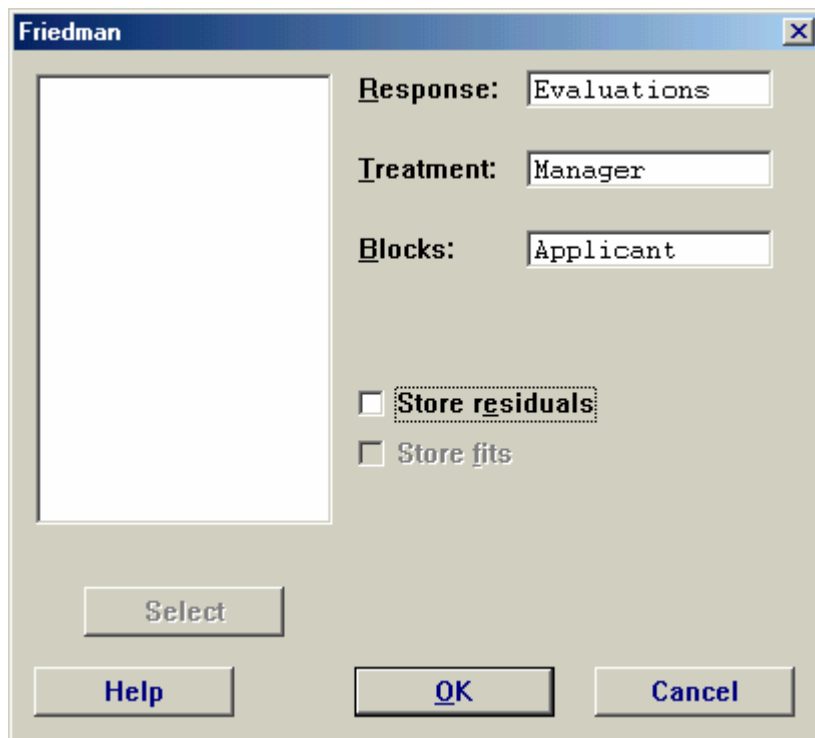
Example 19.5

1. Open Xm19-05.
2. The data must be stacked. So that one column represents the responses are in one column and the codes identifying the shift in a second column.
3. Click **Stat**, **Nonparametrics**, and **Kruskal-Wallis...** .



Example 19.6

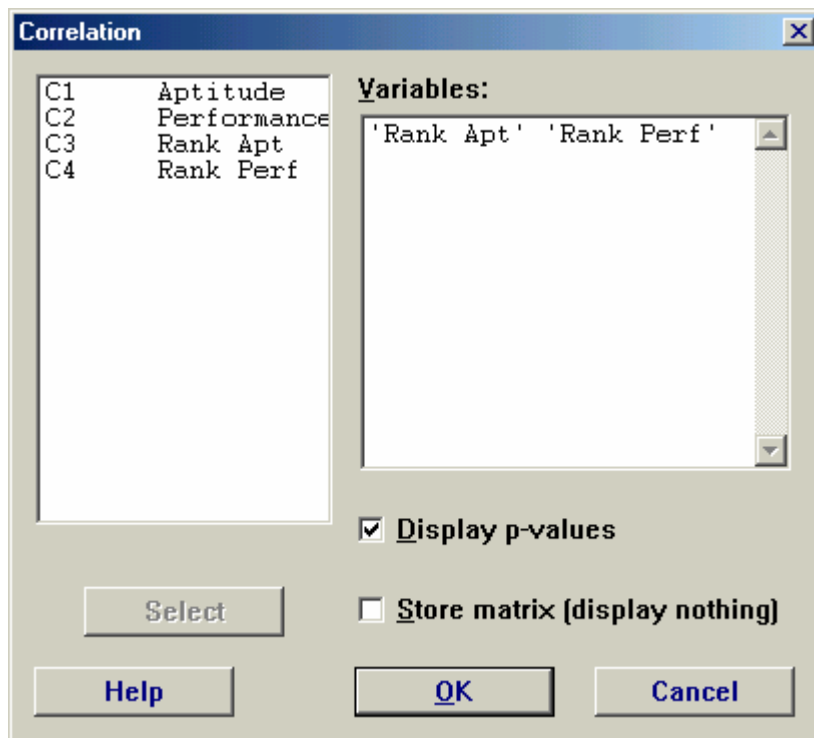
1. Open Xm19-06.
2. The responses are stored in one column, the treatment codes are stored in another column, and the block codes are stored in a third column.
3. Click **Stat**, **Nonparametrics**, and **Friedman...**



Example 19.7

INSTRUCTIONS

1. Open Xm19-07.
- 2 Rank each variable.
- 3 Click **Stat**, **Basic Statistics**, and **Correlation**.



Chapter 20

Example 20.1

1. Open Xm20-01.
2. Click **Stat**, **Time series**, and **Moving Averages...** . Fill in the dialog box as shown below.

Moving Average

Variable: 'Gas sales' MA length: 3

☒ Center the moving averages

☐ Generate forecasts

Number of forecasts:

Starting from origin:

Select

Time... Options... Storage...

Graphs... Results...

Help OK Cancel

3. Click **Graphs...**

Moving Average - Graphs

Time series plot (including optional forecasts)

☐ Plot predicted vs. actual

☒ Plot smoothed vs. actual

☐ Do not display plot

Residual Plots

☒ Individual plots

☐ Histogram of residuals

☐ Normal plot of residuals

☐ Residuals versus fits

☐ Residuals versus order

☐ Four in one

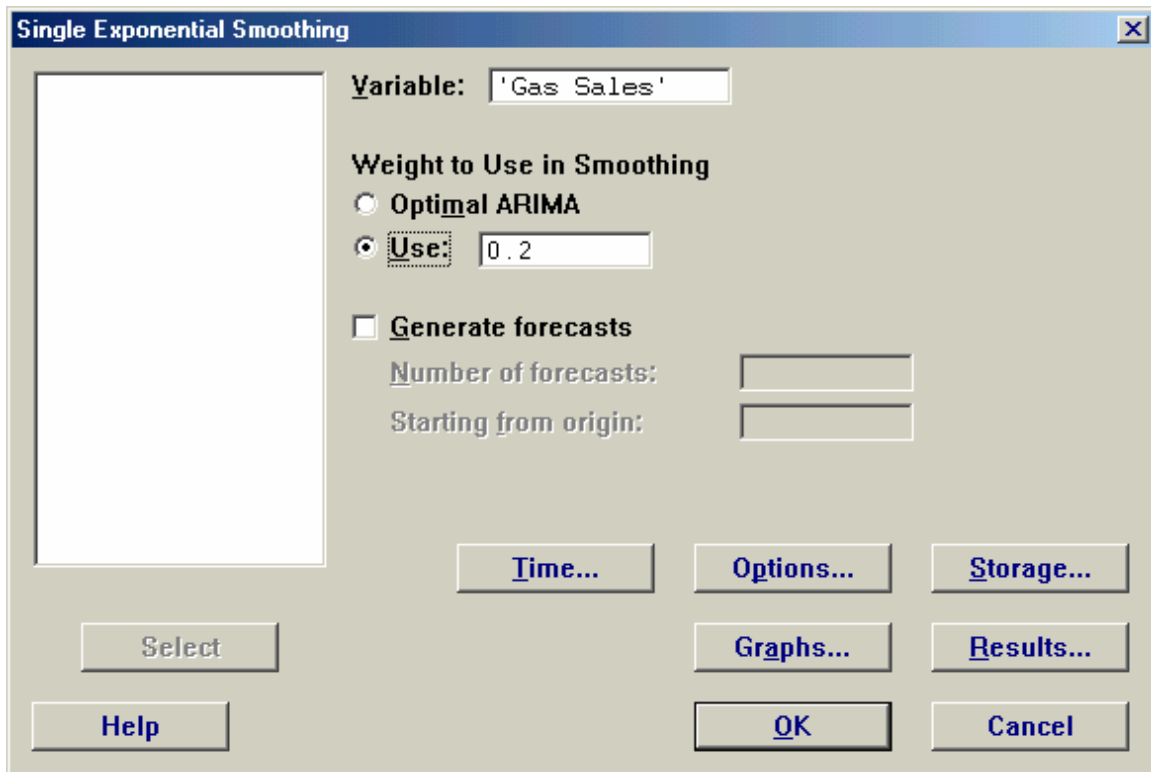
Residuals versus the variables:

Select

Help OK Cancel

Example 20.2

1. Open Xm20-01.
2. Click **Stat**, **Time Series**, and **Single Exp Smoothing....**and fill in the box.



The image shows a 'Single Exponential Smoothing' dialog box. On the left is a large empty rectangular box. To its right, the 'Variable:' field contains the text 'Gas Sales'. Below this, the section 'Weight to Use in Smoothing' has two radio buttons: 'Optimal ARIMA' (unselected) and 'Use:' (selected). The 'Use:' radio button is followed by a text box containing '0.2'. Below these, there is a checkbox for 'Generate forecasts' which is currently unchecked. To the right of this checkbox are two text boxes: 'Number of forecasts:' and 'Starting from origin:'. At the bottom of the dialog, there are several buttons: 'Select' (below the large box), 'Time...' (below 'Generate forecasts'), 'Options...' (below 'Number of forecasts:'), 'Storage...' (below 'Starting from origin:'), 'Help' (bottom left), 'Graphs...' (bottom middle), 'Results...' (bottom right), 'OK' (bottom center), and 'Cancel' (bottom right).

Single Exponential Smoothing

Variable: 'Gas Sales'

Weight to Use in Smoothing

☐ Optimal ARIMA

☒ Use: 0.2

☐ Generate forecasts

Number of forecasts:

Starting from origin:

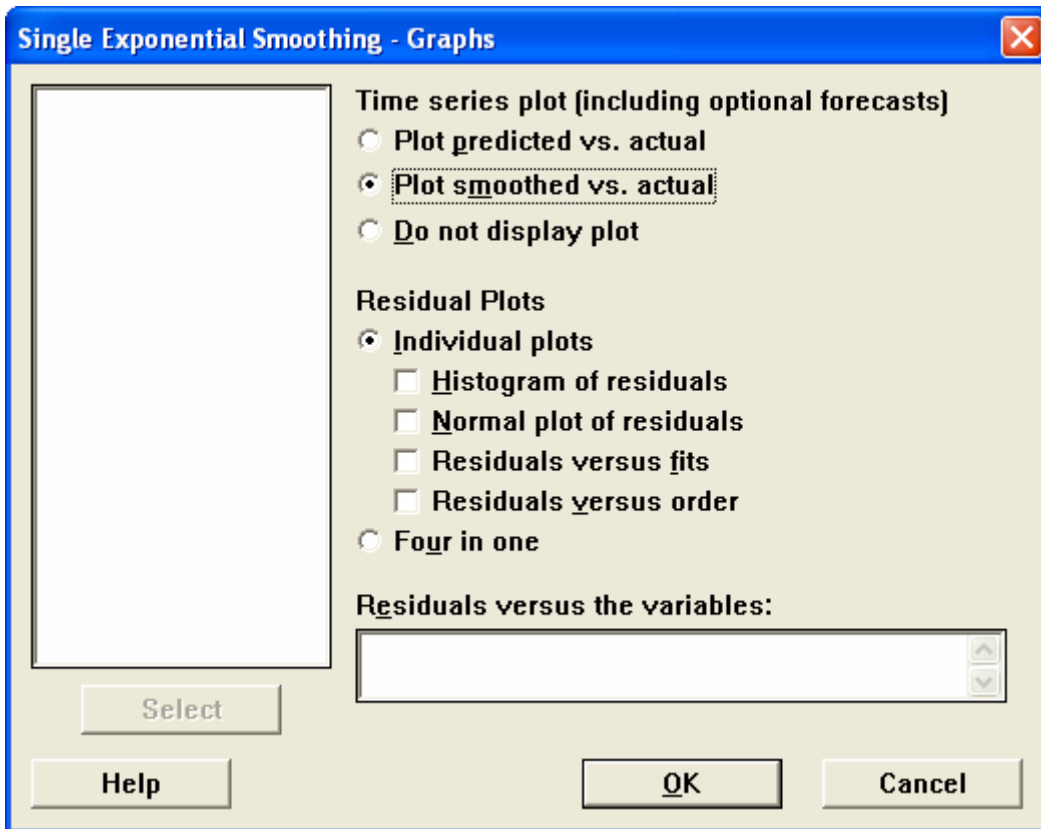
Select

Time... Options... Storage...

Help Graphs... Results...

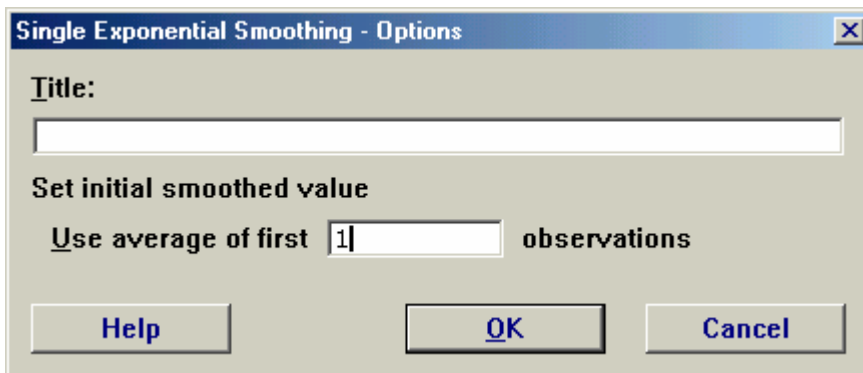
OK Cancel

3. Click **Graphs....**

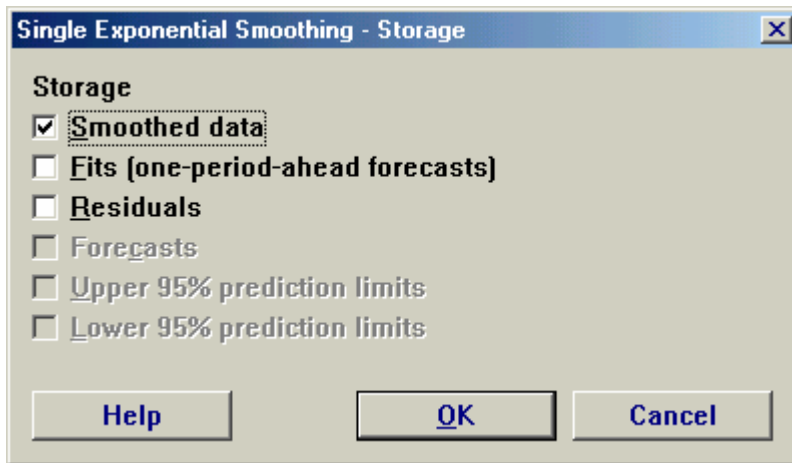


4. Click

OK and Options...

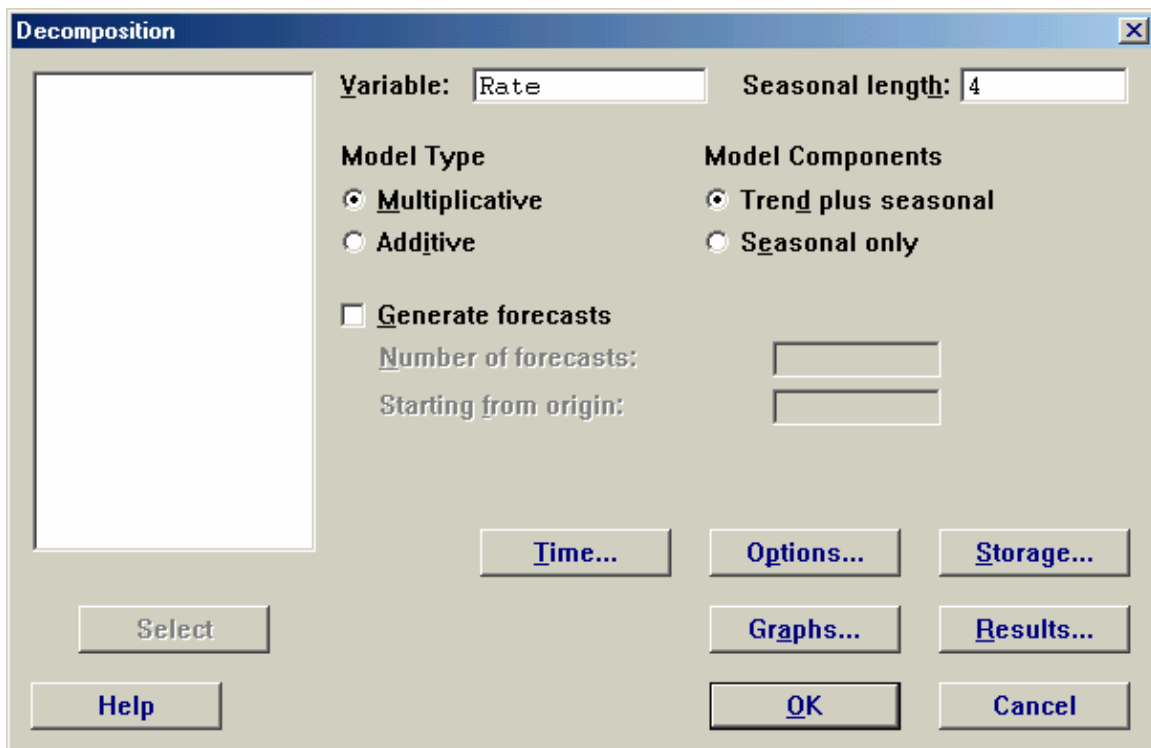


5. Click **OK**. Click **Storage...** and **Smoothed data**.

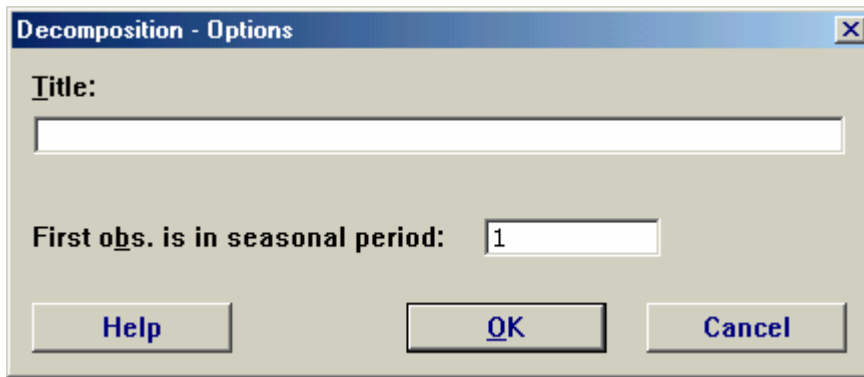


Example 20.3

1. Open file Xm20-03.
2. Click **Stat**, **Time Series**, and **Decomposition...**



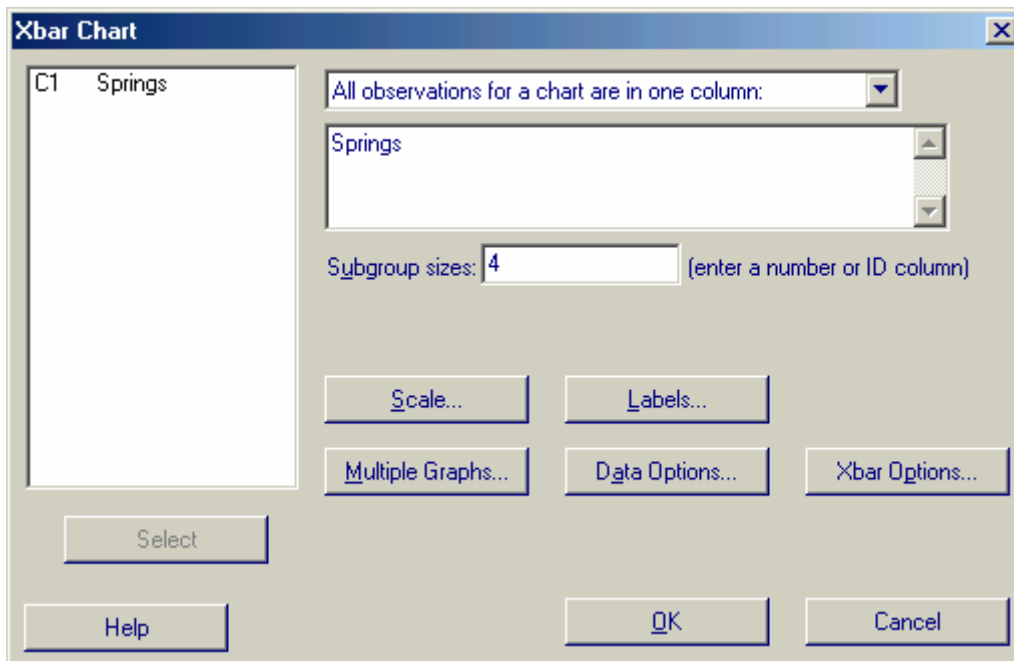
3. Click **Options...**



Chapter 21

Example 21.1

1. Open Xm21-01.
2. Click **Stat**, **Control Charts**, **Variable charts for subgroups**, and **Xbar....**



3. Click **Xbar Options....** and **Estimate**.

Xbar Chart - Options

Parameters Estimate S Limits Tests Stages Box-Cox Display Storage

Omit the following subgroups when estimating parameters (eg, 3 12:15)

Method for estimating standard deviation

Subgroup size > 1

☐ Rbar
☐ Sbar
☒ Pooled standard deviation

☒ Use unbiasing constant

Help OK Cancel

Example 21.2

1. Open Xm21-01.
2. Click **Stat, Control Charts, Variable charts for subgroups, and S....**

S Chart

C1 Springs

All observations for a chart are in one column:

Springs

Subgroup sizes: 4 (enter a number or ID column)

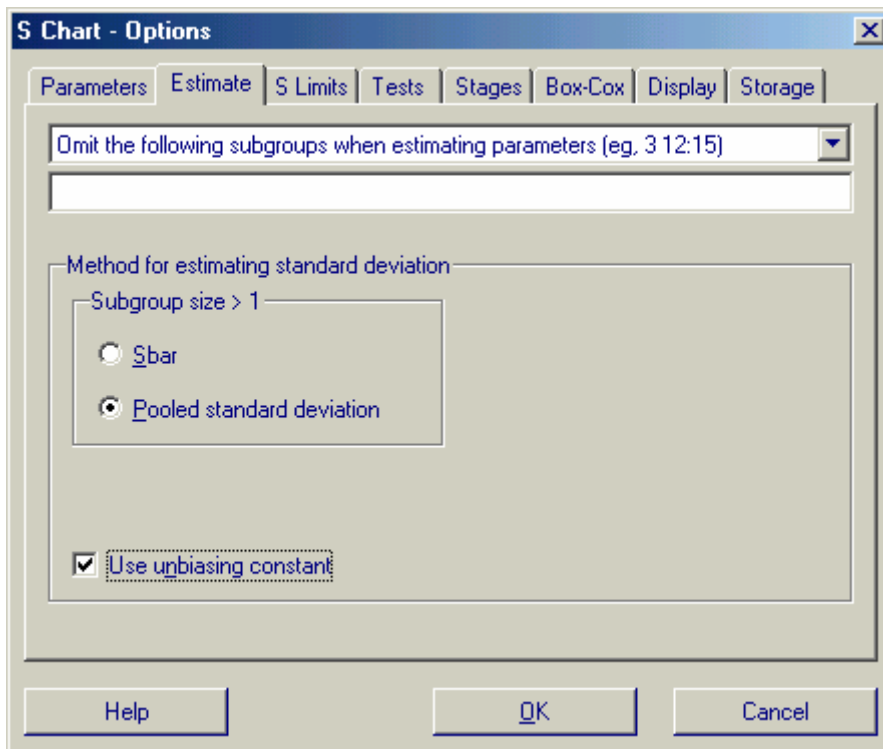
Scale... Labels...

Multiple Graphs... Data Options... S Options...

Select

Help OK Cancel

3. Click **S Options...** and **Estimate...**



Detecting the Source of Defective Disks Example

1. Open Xm21-00.
- 2 Click **Stat, Control Charts, Attribute Charts, and P...**

P Chart

C1 Disks

Variables:
Disks

Subgroup sizes: 200
(enter a number or column containing the sizes)

Scale... Labels...
Multiple Graphs... Data Options... P Chart Options...

Select

Help OK Cancel

3 Click **P Chart Options...** and **S Limits**.

P Chart - Options

Parameters Estimate S Limits Tests Stages Display Storage

Display control limits at:
These multiples of the standard deviation: 1 2 3

Place bounds on control limits:

☐ Lower standard deviation limit bound:

☐ Upper standard deviation limit bound:

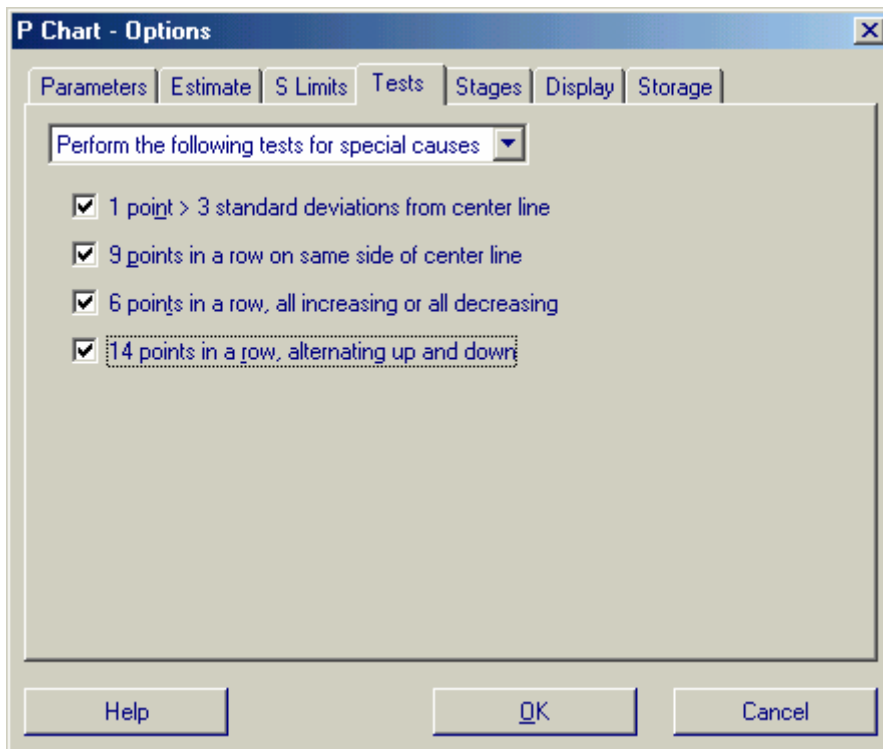
When subgroup sizes are unequal, calculate control limits:

☒ Using actual sizes of the subgroups

☐ Assuming all subgroups have size: 1

Help OK Cancel

4. Click **Tests**.



The image shows the 'P Chart - Options' dialog box in Minitab, with the 'Tests' tab selected. The dialog box has a title bar with a close button. Below the title bar are six tabs: 'Parameters', 'Estimate', 'S Limits', 'Tests', 'Stages', 'Display', and 'Storage'. The 'Tests' tab is active, showing a dropdown menu with the text 'Perform the following tests for special causes'. Below this menu are four checked options: '1 point > 3 standard deviations from center line', '9 points in a row on same side of center line', '6 points in a row, all increasing or all decreasing', and '14 points in a row, alternating up and down'. At the bottom of the dialog box are three buttons: 'Help', 'OK', and 'Cancel'.

P Chart - Options

Parameters Estimate S Limits **Tests** Stages Display Storage

Perform the following tests for special causes ▼

- ☒ 1 point > 3 standard deviations from center line
- ☒ 9 points in a row on same side of center line
- ☒ 6 points in a row, all increasing or all decreasing
- ☒ 14 points in a row, alternating up and down

Help OK Cancel