

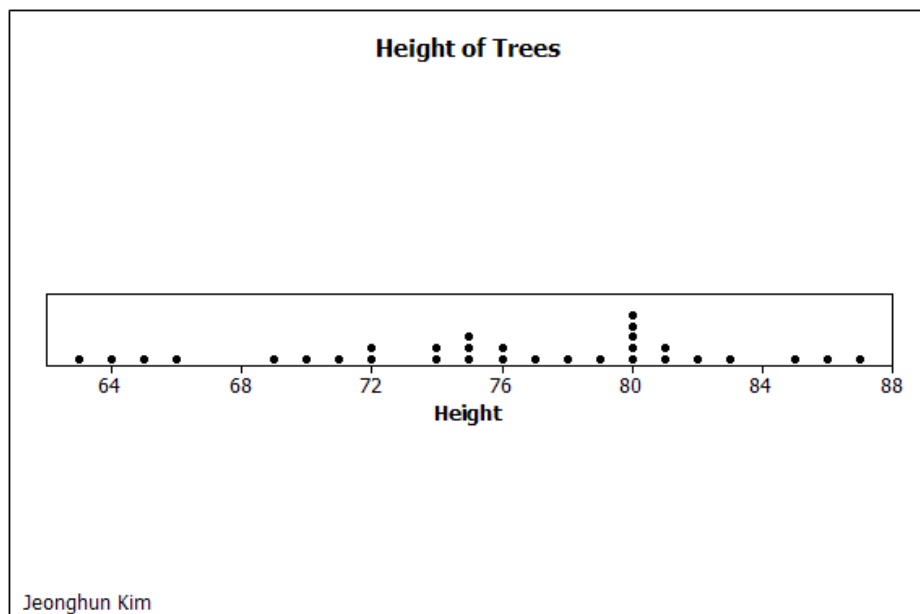
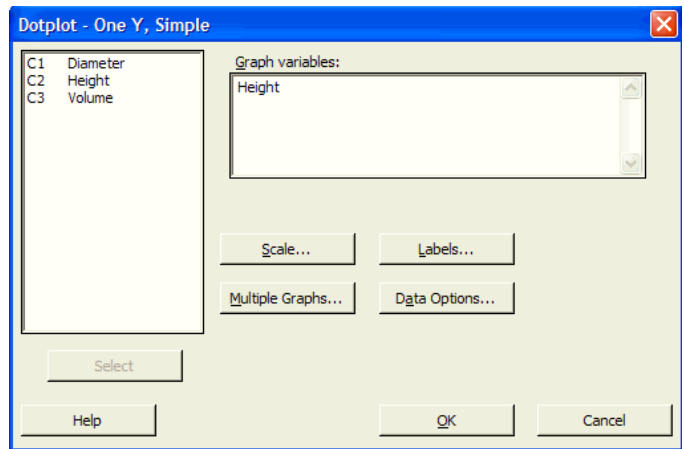
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LESSON 4 - ADVANCED GRAPHING

In this lesson you will learn to use Minitab to create dot plots, pie charts, and stem and leaf plots. Be sure your tool bars are set up as shown in Lesson 3 (See page 12).

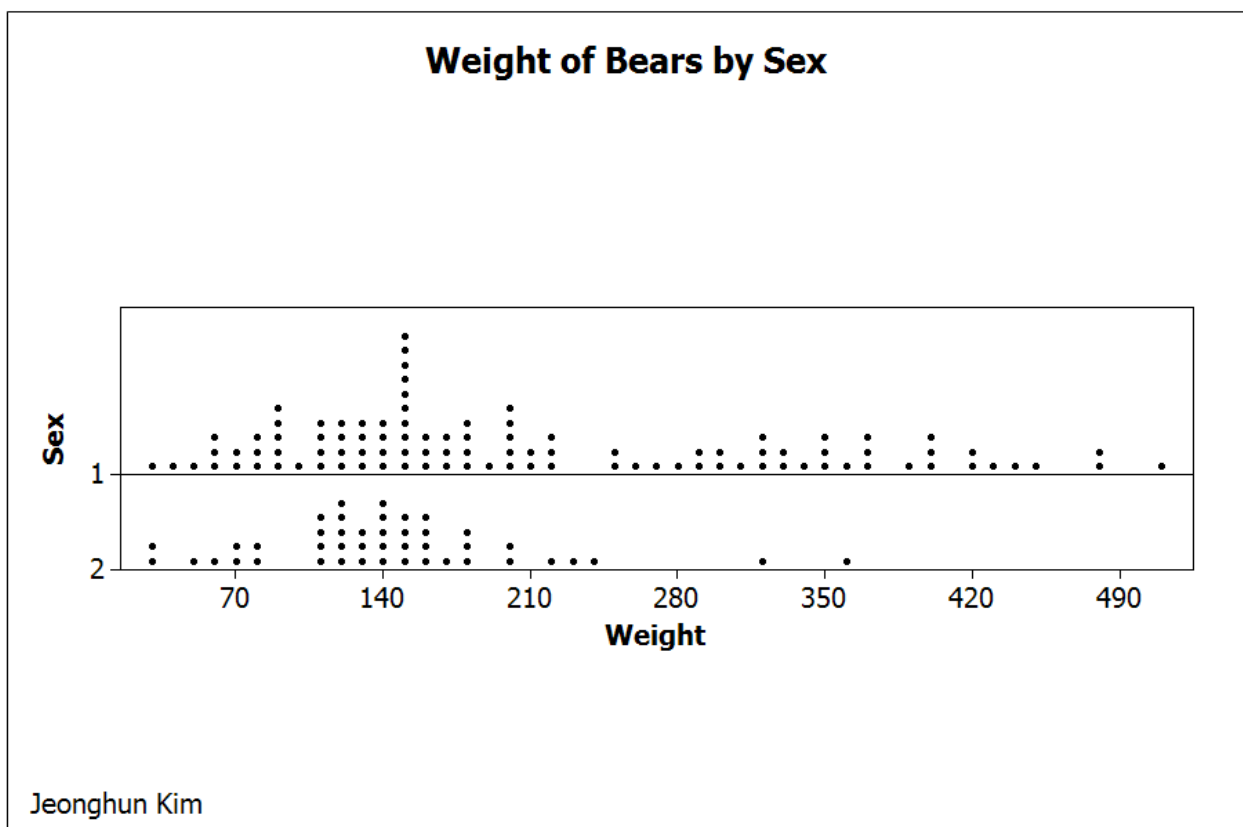
DOT PLOTS

If you have a worksheet open, close it and retrieve the worksheet **Trees.MTW** from **K:\Minitab16\Sample Data**. Clear everything below the date/time stamp then type your name, Lesson 4 and Example on separate lines below the time/date stamp. You will create a dotplot of the variable Height. Click on **Graph > Dotplot**. Click "OK" on the first dialog box that opens, and a second dialog box will appear (shown on the right). The cursor should be in the "Graph variables:" box. Click on C2 Height in the box on the left. Click on the "Select" button and your dialog box should look as it does on the right. Now click on "Labels" and a new dialog box with several blank boxes will appear. Type "Height of Trees" into the box called "Title:" and your name into the box called "Footnote 1:". Now click on "OK" to close the Labels dialog box then "OK" on the Dotplot dialog box to create the graph. The dotplot appears in its own graph window. It is shown below (after the background has been made white).



SEPARATING BY VARIABLE

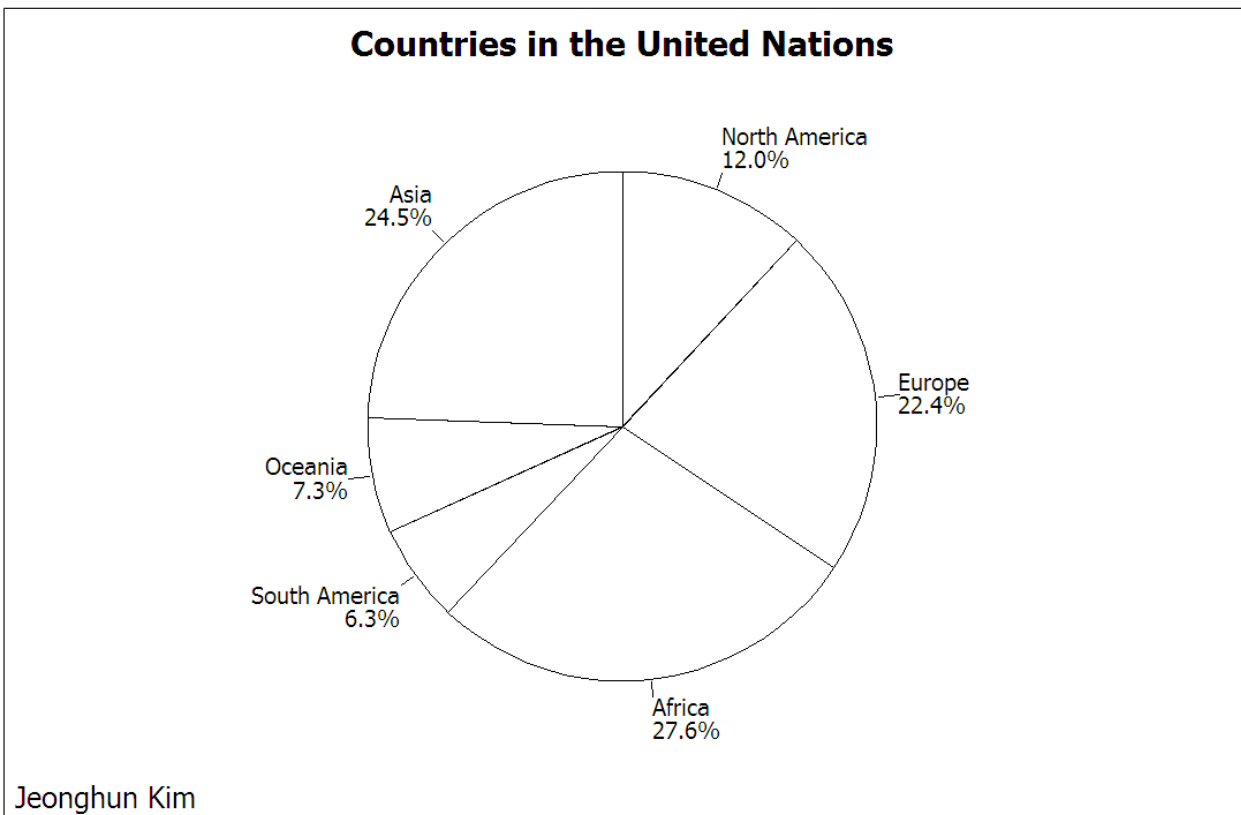
Close your graph and your data window from the previous example, and open the worksheet **K:\Minitab16\Sample Data \Bears.MTW**. We will create two dot plots, one of the weight of the male bears and another of the female bears. Click **Graph > Dotplot** and in this dialog box choose "With Groups" then click "OK". In the next dialog box select C10 Weight into the "Graph variables:" box, then select "C4 Sex" into the "Categorical variables for grouping:" box. The rest of the process is the same as before. You should get the graph shown below after making it all black and white.



PIE CHARTS

Now let us make a pie chart. We will use Problem 23 on page 64 as an example. Enter the data into columns C1 and C2 and label them Continent and Num.Countries respectively. Each number in the second column represents the number of Countries of the United Nations by Continent. Click on **Graph > Pie Chart**. Click on "Chart values from a table" on the dialog box. Locate the cursor in the "Categorical variable: ". Click on C1 Continent in the box on the left. Click on "Select" button. Select C2 Num.Countries in "Summary variables:" Now click on

"Labels" and add a title for the graph and your name as a footnote as we did in Lesson 3. Let's use "Countries in the United Nations". Then you should have a colorful pie chart. First change the background area to white. To make the pie white, edit the "Pie" in the same way that we edited the bars in the histograms in Lesson 3. Now we will display data values in the graph. Click on Editor > Add > Slice Labels. Then check "Category name", "Percent", and "Draw a line from label to slice" on the dialog box so that it match the figure to the right. Click on "OK". It is not necessary to display the Category box in the graph any more. Select the Category box and delete it. Then you should now see the graph below. Note: If you want to print a colored pie chart, you do not need to edit it.



STEM AND LEAF PLOTS

We will use Problem 17 on page 63 to create a stem and leaf plot. First enter the data and

name the variable (let's call it X). In the session window define the variable (X = Score on a biology exam). Click on **Graph > Stem-and-Leaf** and select the variable C1 X into the "Graph variable: " box. We need to tell Minitab how far apart we want the stems to be. In this case we want the stem unit to be 10. Type 10 in the box marked "Increment: " then click "OK". After deleting excess blank lines and other unnecessary output from the session window, your display should look like the figure below.

```

X = score of a biology exam

Stem-and-Leaf Display: X

Stem-and-leaf of Score  N  = 24
Leaf Unit = 1.0

 2   6   78
 7   7  35569
(9)  8  002355778
 8   9  01112455

```

Notice that unlike other graphs, the stem-and-leaf graph is printed in the session window, not in a graph window. Also notice that the key is indicated by the statement "Leaf Unit = 1.0", which gives us the information, which in this case would be $3\frac{3}{4} = 34$. We can also divide stems by assigning the number 5 in "Increment". You should see the graph below.

```

X = score of a biology exam

Stem-and-Leaf Display: X

Stem-and-leaf of Score  N  = 24
Leaf Unit = 1.0

 2   6   78
 3   7   3
 7   7  5569
11  8  0023
(5)  8  55778
 8   9  011124
 2   9   55

```

Notice that each number in the first column of the graph indicates cumulated number of data values from the top stem or from the bottom stem to the one containing the number. The number 5 in the fourth row (5) in the second graph above indicates that the median is in this line of the graph. Of course it is neither cumulated from the top nor from the bottom.

MINITAB ASSIGNMENT 4

See instructions on page 8.

1. Open the worksheet K:\Minitab16\Sample Data\Student14\Depth.MTW.
Create several dotplots of this data as follows:
 - (a). Create one dotplot of the variable Error.
 - (b). Create dotplots of the variable Error grouped by AgeGroup.
 - (c). Create dotplots of the variable Error grouped by Light.

2. Open the worksheet K:\Minitab16\Sample Data\Student9\Steals.MTW. The data represents the total number of bases that Rickey Henderson stole on the given day of the week. Display the data in the session window and create a pie chart. Remember to display categories and percentages in the graph.

3. Display the stem-and-leaf plot from Problem 10 on page 62 in the session window. Type your answer to the Problem in the session window.

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