How to Get Microsoft Excel to Create Box-and-Whisker Plots
(Note: This tutorial was created using Excel 2003.)

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Assignment: Create a box-and-whisker plot for the 5-number summary given below for 2001 SAT scores:

statistics	MIN	Q1	median	Q3	MAX
scores	200	440	510	590	800

Although Microsoft Excel has a "chart wizard" that will allow one to make several different graphs, it does not have the capability to make a box-and-whisker plot directly. Therefore, we will need to adapt what is available. Just follow these step-by-step instructions and you should be able to produce a box plot without too much difficulty.

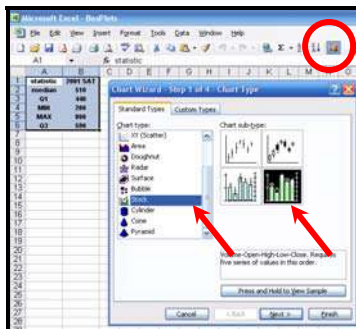1.   In a new worksheet, enter the necessary information (as shown in the figure):

in cell A1: statistics	in cell B1: 2001 SAT
in cell A2: median	in cell B2: 510
in cell A3: Q1	in cell B3: 440
in cell A4: MIN	in cell B4: 200
in cell A5: Q3	in cell B5: 590

★ You need to enter the information in the order as presented for this to work properly. So make sure that you are entering the correct information.
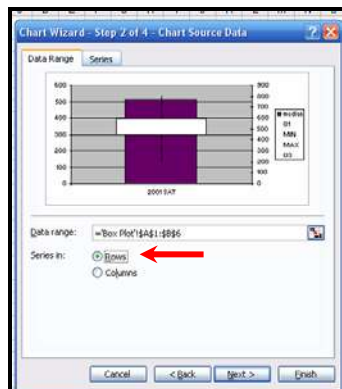
1.   Highlight cells A1 through B6.

2.   Select the "chart wizard" by clicking on its icon in the tool bar located on the top of the screen.

3.   When the chart type dialog box appears, choose the **STOCK** chart type and the fourth chart sub-type.
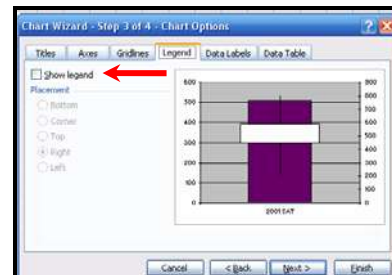
4.   Click NEXT.

5.   When the next dialog box appears, select the **ROW** (rather then the COLUMN) option for the "series in" category.
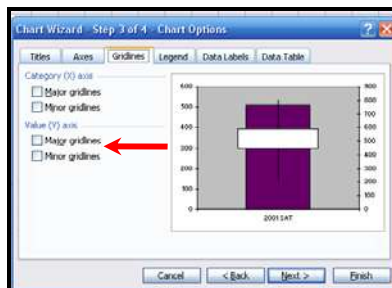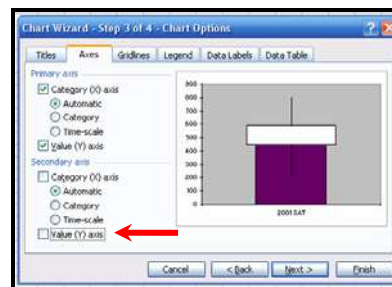

6.   Click NEXT.

7.   When the next dialog box appears, under the **LEGEND** tab, clear the **SHOW LEGEND** option.
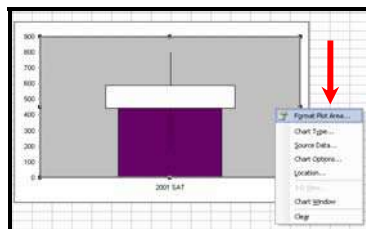

8.   Under the **GRIDLINES** tab, clear all gridlines.

9.   Under the **AXES** tab, clear the **VALUE (Y) AXIS** for the secondary axis.
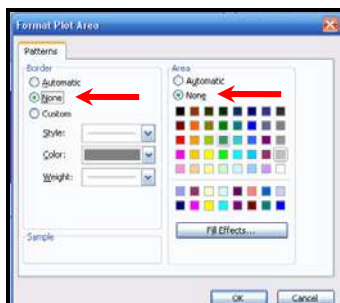

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10. Then, click FINISH.

11. Right-click on the gray-shaded (plot) area. Select the **FORMAT PLOT AREA** option on the short-cut menu that appears.
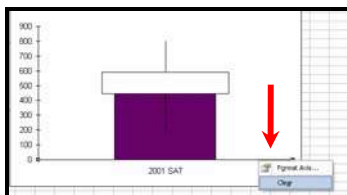
12. In the "format plot area" dialog box, choose the **NONE** options under both border and area.
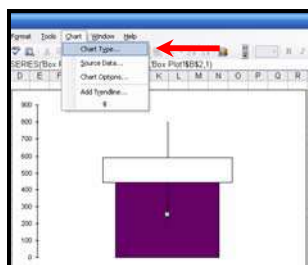
13. Click OK.

14. Aim the cursor at the horizontal axis and right-click the mouse. Choose the **CLEAR** option on the short-cut menu.
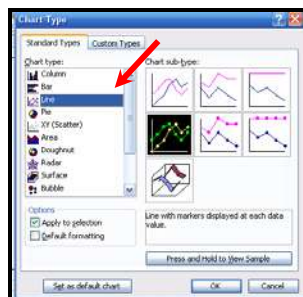
15. Click once somewhere on the purple (colored) column to select the series. (Do not click on the white column.)

16. Under the **CHART** menu at the top of the screen, select **CHART TYPE**.

17. When the chart type dialog box appears, select **LINE**.
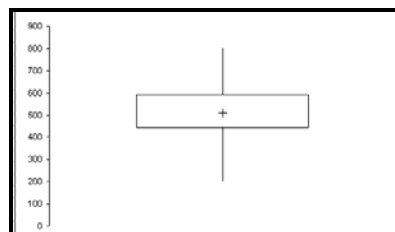
18. Click OK.

19. The large purple column will disappear, leaving an asterisk in the middle of the graph. Right-click on the asterisk. Select **FORMAT DATA SERIES** on the short-cut menu.
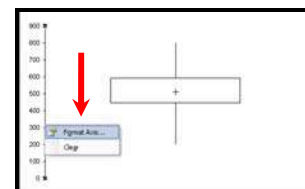
20. On the "format data series" dialog box:
   - Change the **marker** to a plus sign (+).
   - Make the **foreground** black.
   - Make the marker's **size** at least 9.

21. Click OK after all of the changes are made. The box plot will now look like:

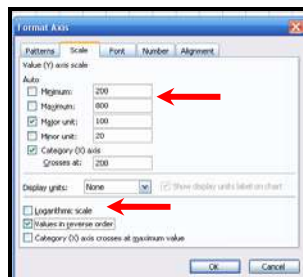22. Aim the cursor at the vertical axis and right-click. Choose the **FORMAT AXIS** option on the short-cut menu

23. On the "format axis" dialog box, **PATTERNS** tab:
   - Select the **CROSS** option for the major tick mark type.
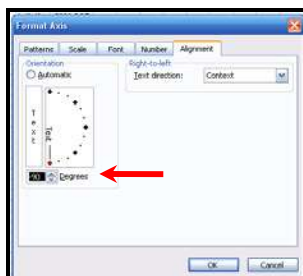   - Select the **CROSS** option for the minor tick mark type.

24. On the "format axis" dialog box, **SCALE** tab:
    - Make the minimum value = MIN = 200.
    - Make the maximum value = MAX = 800.
    - Make the major unit = 100.
    - Make the minor unit = 20.
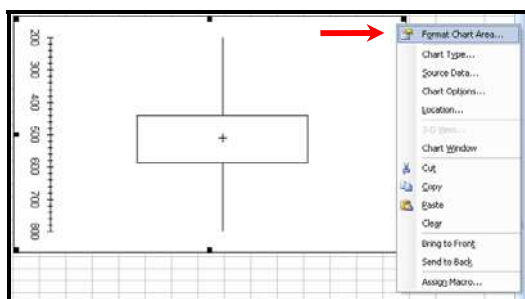   - Select the VALUES IN REVERSE ORDER option at the bottom of the box.

25. On the "format axis" dialog box, **ALIGNMENT** tab: Make the **ORIENTATION** = –90 degrees.
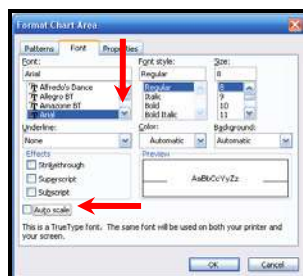

26. Click OK.

27. Right-click anywhere near the border of the box plot. Choose the **FORMAT CHART AREA** option on the short-cut menu.

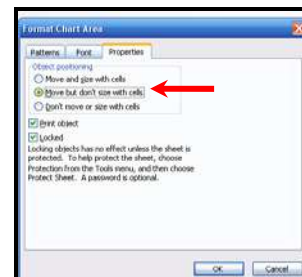28. On the "format chart area" dialog box, **FONT** tab:
    - Select the font you wish to use. (I suggest using ARIAL but any will do.)
    - Select the font
    - style. (I suggest REGULAR.)
    - Select the size. (I suggest font size 8.)
    - Clear the AUTO-SCALE option.

(You need to do these steps so that when you resize your graph the software doesn't change the font size that you selected.)
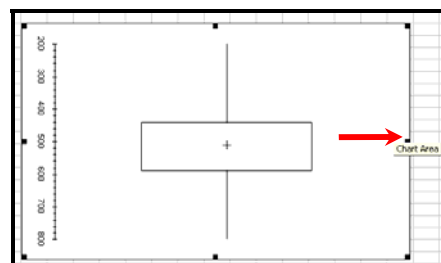
29. On the "format chart area" dialog box, **PROPERTIES** tab: Select the second choice under **OBJECT POSITIONING**. (You should do this so that the graph is not affected when you change column widths.)
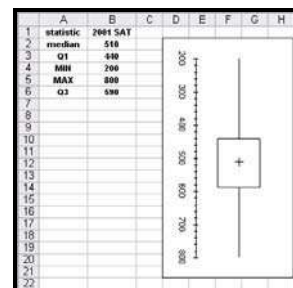

30. Click OK.

31. Now, to resize the box plot – click anywhere near the border to the graph. Small black boxes will appear on the border of the graph. To resize the graph, you will click-and-drag the cursor in a particular direction so that the graph is resized. Since we want to make the graph smaller, click-and-drag to little box that is indicated by a **RED** arrow. Move the cursor to the left until the graph fits into 4 columns.
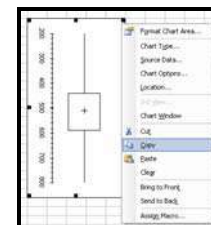

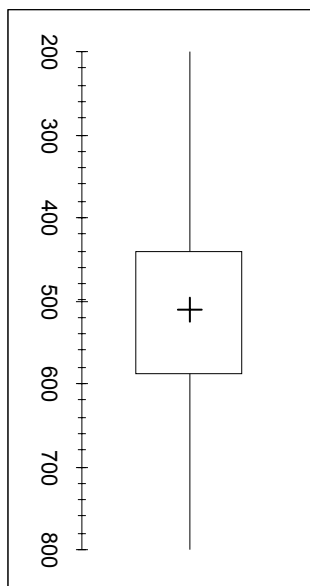In the illustration at the right, the box plot was made to fit within cells D2 to H21.

★ NOTE: If you wish to CUT&PASTE the box plot into Microsoft Word, you will need to have the word processing software open before you complete the next step.

32. Right-click near the border of the box plot. Select the **COPY** option on the short-cut menu.

33. Then go to Microsoft Word, click wherever you want the box plot to appear in your document and **PASTE** in the box plot. (You can PASTE into a Word document in a number of ways: EDIT menu → PASTE, RIGHT-CLICK → PASTE, or the CRTL+V keyboard shortcut.)

The copied box plot will look like the one below. (For instructional purposes, this graph is the actual size that will be PASTED into your document.):
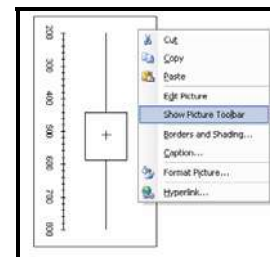

If you don't care about the orientation of the copied box plot, you have finished creating your graph. (You do not need to complete the next steps.)

However, if you wish to have the box plot flipped so that the axis appears on the bottom, continue with the next few steps.
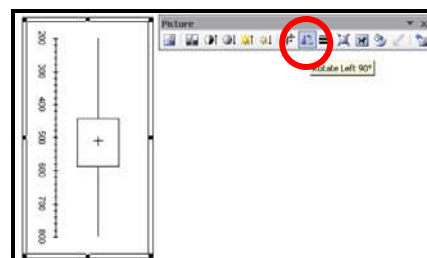
These additional steps will reorient the box plot as that the axis appears on the bottom of the graph:

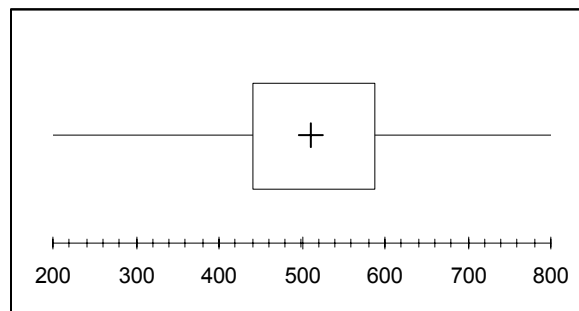34. Right-click the copied box plot. Choose the **SHOW PICTURE TOOLBAR** option.

35. The 7th icon from the right in the "picture toolbar" is a **ROTATE LEFT 90°** option. (This will flip the box plot so that the axis will now appear on the bottom.)

36. Click the **ROTATE LEFT 90°** icon.

The final product will look like this (actual-sized) box-and-whisker plot:

The 5-number summary is illustrated within the box-and-whisker plot:
- MIN = far left tip of left-hand "whisker"
- Q1 = left-hand side of the rectangle
- MEDIAN = plus sign (+)
- Q3 = right-hand side of the rectangle
- MAX = far right tip of right-hand "whisker"