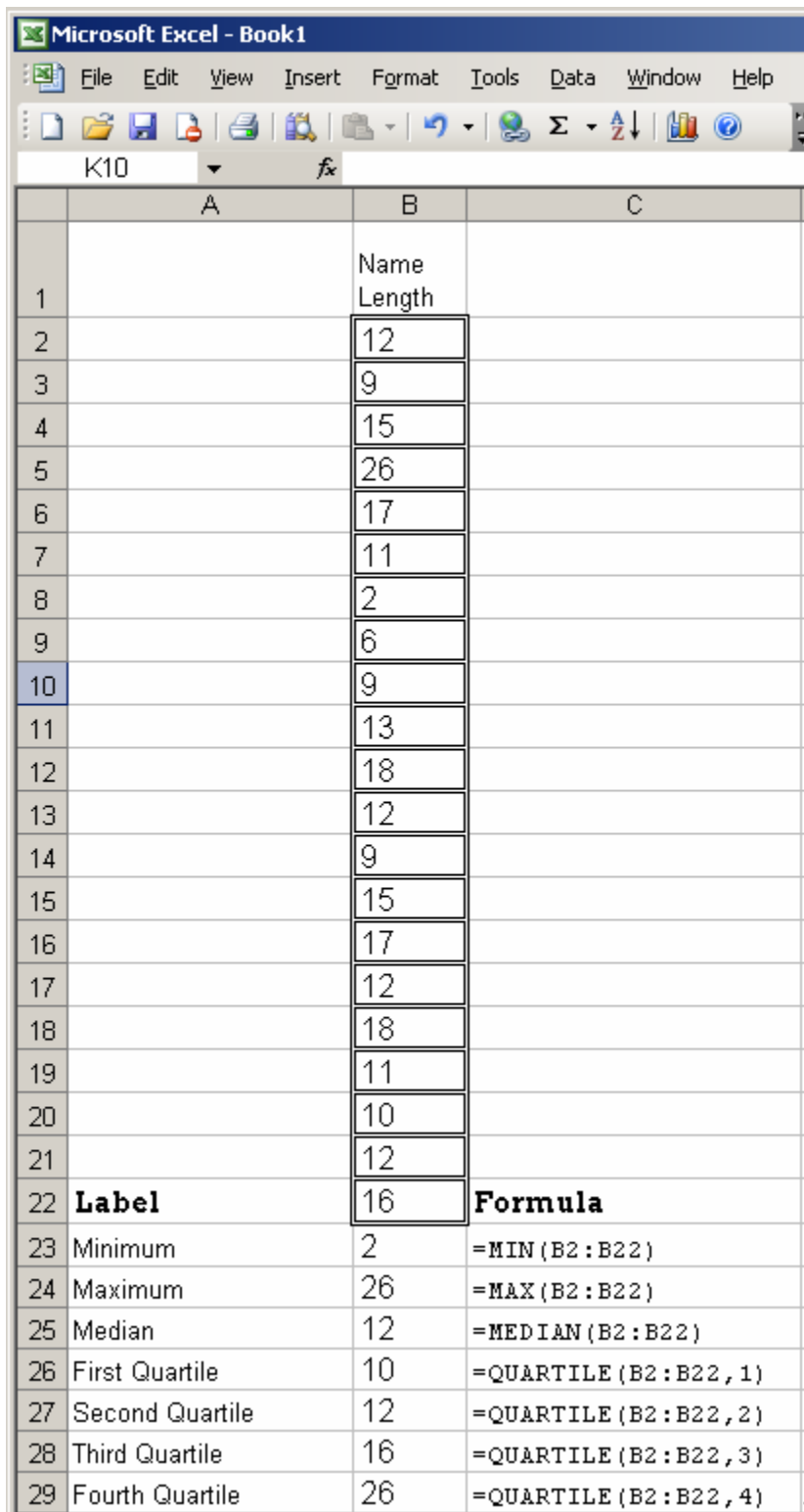


Creating a Box-and-Whisker Graph in Excel:

It's not as simple as selecting "Box and Whisker" from the Chart Wizard. But if you've made a few graphs in Excel before, it's not that complicated to convince Excel to create a Box-and-Whisker graph. Here are the steps to follow:



The screenshot shows an Excel spreadsheet with the following data and formulas:

	A	B	C
1		Name Length	
2		12	
3		9	
4		15	
5		26	
6		17	
7		11	
8		2	
9		6	
10		9	
11		13	
12		18	
13		12	
14		9	
15		15	
16		17	
17		12	
18		18	
19		11	
20		10	
21		12	
22	Label	16	Formula
23	Minimum	2	=MIN(B2:B22)
24	Maximum	26	=MAX(B2:B22)
25	Median	12	=MEDIAN(B2:B22)
26	First Quartile	10	=QUARTILE(B2:B22,1)
27	Second Quartile	12	=QUARTILE(B2:B22,2)
28	Third Quartile	16	=QUARTILE(B2:B22,3)
29	Fourth Quartile	26	=QUARTILE(B2:B22,4)

Step One:

Enter your data into a column in Excel. I usually choose column B, so that I can put labels in column A.

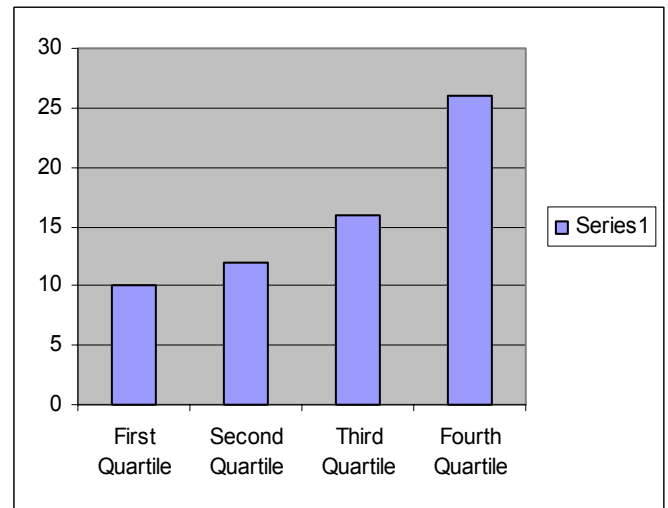
I used border outlines to help me distinguish between my data and the results of the formulas that come after it.

Step Two:

Enter the formulas directly beneath the list of numbers. If you are new to formulas such as MIN, MAX, MEDIAN, and QUARTILE, looking at the formula in column C might help.

MIN, MAX, and MEDIAN, only require the range of cells in order to return the value. QUARTILE also needs a comma, followed by the number of the quartile.

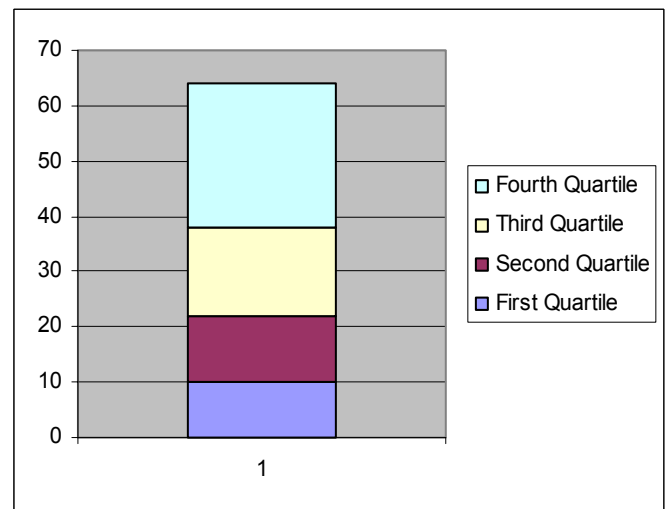
Label	16	Formula
Minimum	2	=MIN(B2:B22)
Maximum	26	=MAX(B2:B22)
Median	12	=MEDIAN(B2:B22)
First Quartile	10	=QUARTILE(B2:B22,1)
Second Quartile	12	=QUARTILE(B2:B22,2)
Third Quartile	16	=QUARTILE(B2:B22,3)
Fourth Quartile	26	=QUARTILE(B2:B22,4)



A Note About Graphing:

If you are used to using the Chart Wizard in Excel, you might think you would just select your quartiles and then graph them. It makes sense, but the default column graph gives you four parallel bars. That's not going to help you with a Box and Whisker graph. The other option that might seem to work is a stacked bar graph.

A stacked bar graph is actually what we want. But we don't want all the quartiles added up — the maximum value on this chart is above 60, far greater than our maximum.



What we want is a combination of the two graphs. We want to stack those 4 values up, but since it's going to add them together, we are going to have to calculate the differences first. If we stack up the difference between each quartile, we'll get a really nice box-and-whisker graph.

Step Three:

Calculate the differences. I label this section "To Graph" so that no one who looks at my spreadsheet will get confused between the "actual" first quartile of 10 and the "To Graph" first quartile — 8 (the difference between the first quartile and the minimum of 2.)

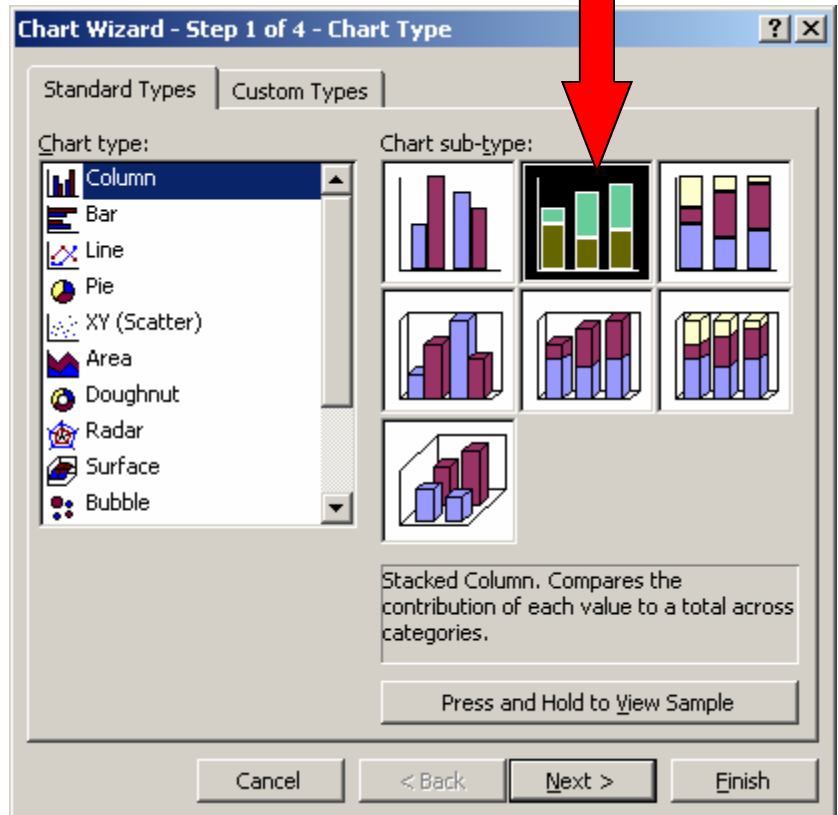
	A	B	C
22	Label	16	Formula
23	Minimum	2	=MIN(B2:B22)
24	Maximum	26	=MAX(B2:B22)
25	Median	12	=MEDIAN(B2:B22)
26	First Quartile	10	=QUARTILE(B2:B22,1)
27	Second Quartile	12	=QUARTILE(B2:B22,2)
28	Third Quartile	16	=QUARTILE(B2:B22,3)
29	Fourth Quartile	26	=QUARTILE(B2:B22,4)
30			
31			
32	To Graph:		
33	Minimum	2	=B23
34	First Quartile	8	=B27-B23
35	Second Quartile	2	=B28-B27
36	Third Quartile	4	=B29-B28
37	Fourth Quartile	10	=B30-B29

Step Four:

Graph the “To Graph” section. Select your five “To Graph” labels and their number.

	To Graph:	
32	Minimum	2
33	First Quartile	8
34	Second Quartile	2
35	Third Quartile	4
36	Fourth Quartile	10

If you haven't created a stacked column graph before, it's right next to the default regular column graph button.



Press “Next”

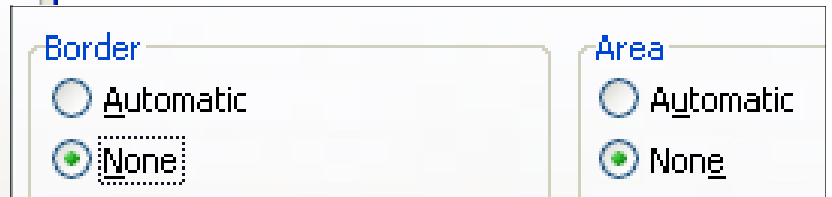
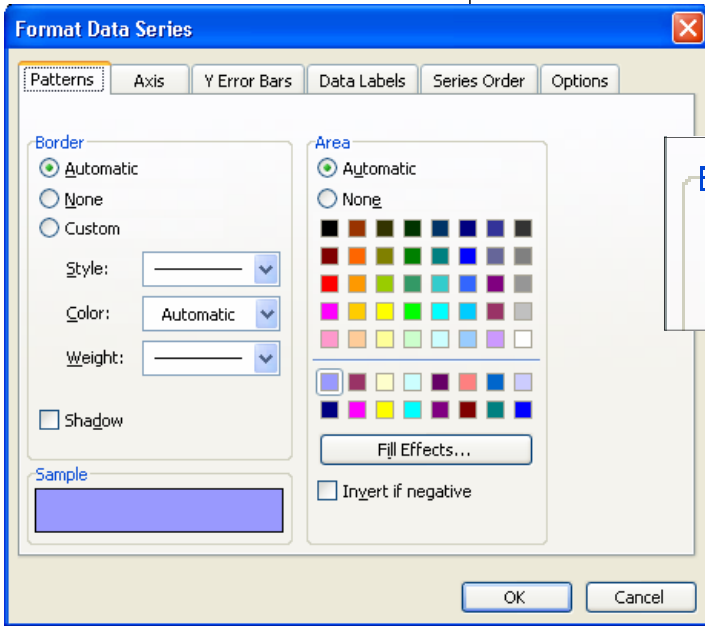
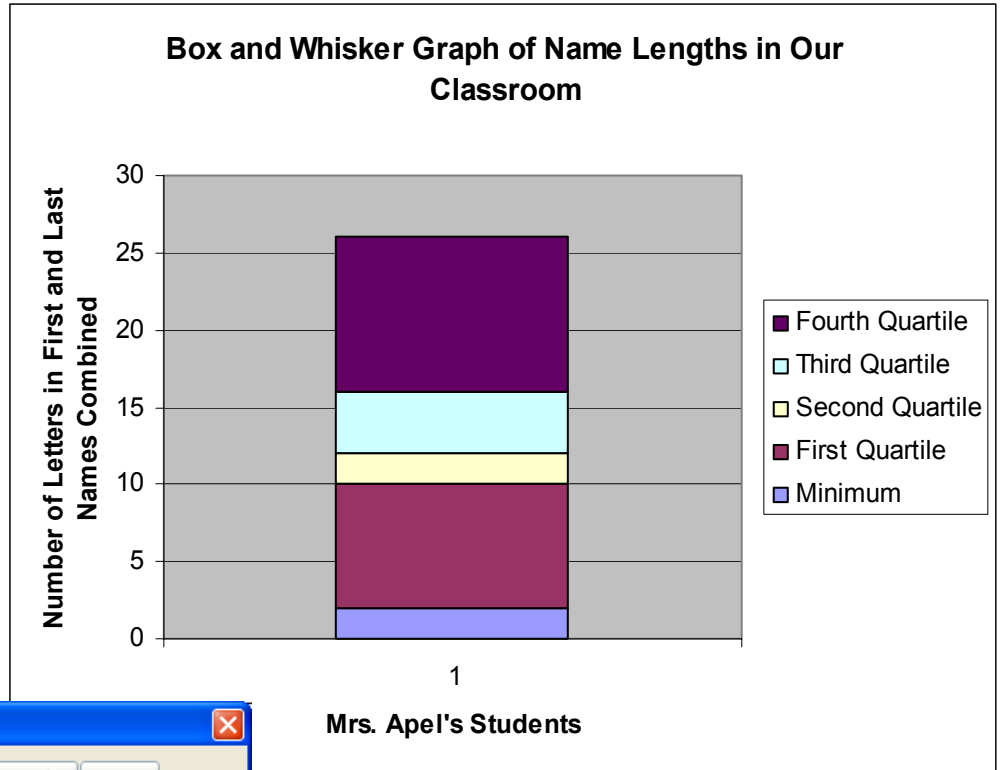


Make sure you choose “Rows” for your series.

Step Five:

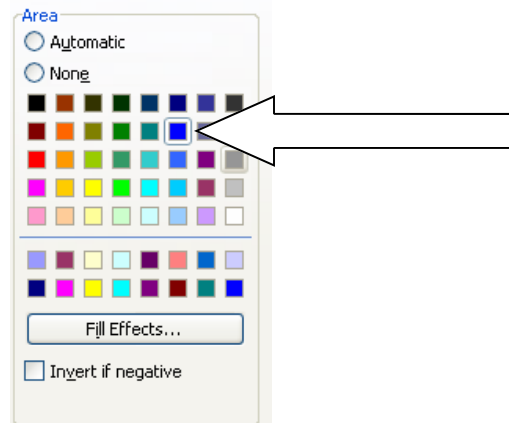
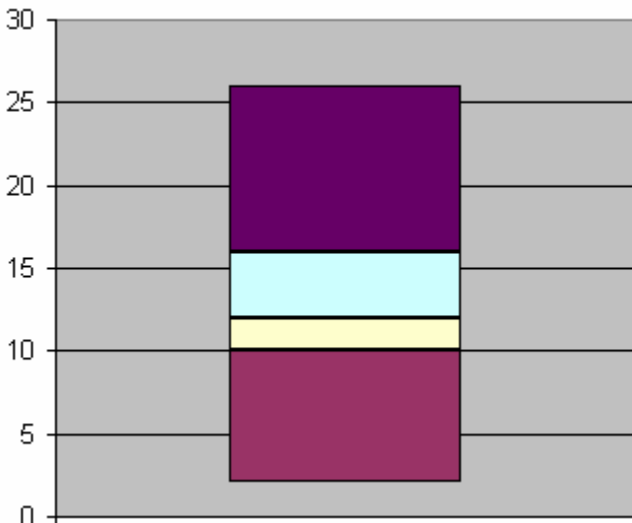
Now we need to make this look like a Box and Whisker graph. You can see the four quadrants or quartiles. And the blue bar at the bottom, connecting the minimum to the axis.

First make the blue bar turn invisible by double clicking it and eliminating both the line around it and the fill inside it.



Change the Border and the Area to "None" and press OK. The blue box at the bottom disappears!

You can make the colors more meaningful as well. The sky blue and yellow boxes are the "Box" in our box-and-whisker graph. I like the top box to be blue and the bottom box to be red. Filling that in is the same as the above — you just choose a color instead.



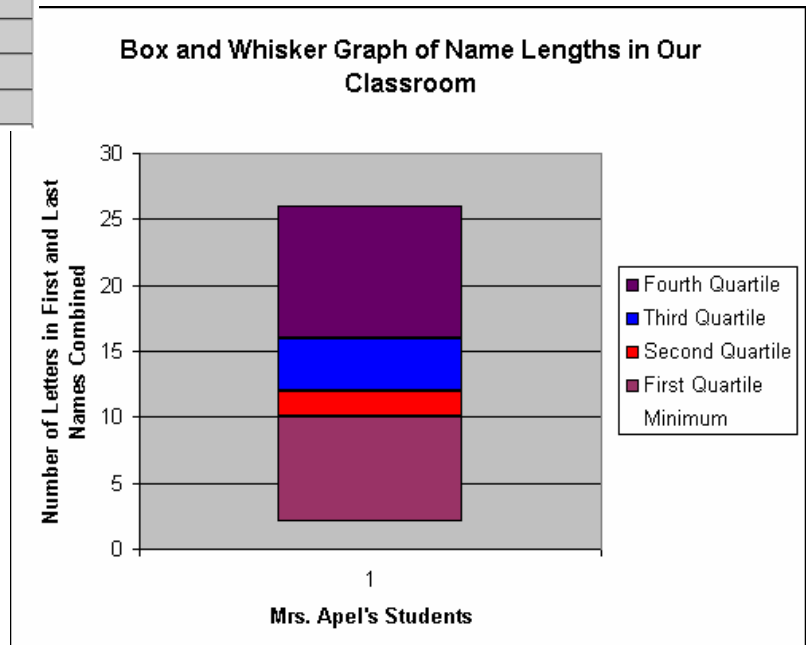
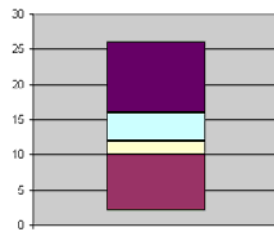
Step Six:

Here comes the best part:
Creating the “whisker.”

We’ve changed the colors of the middle 2 quartile/quadrants to blue and red already.

Now we adjust the area fill of the top and bottom purple boxes — our whiskers. Instead of a color, we’re going to make them filled with a picture.

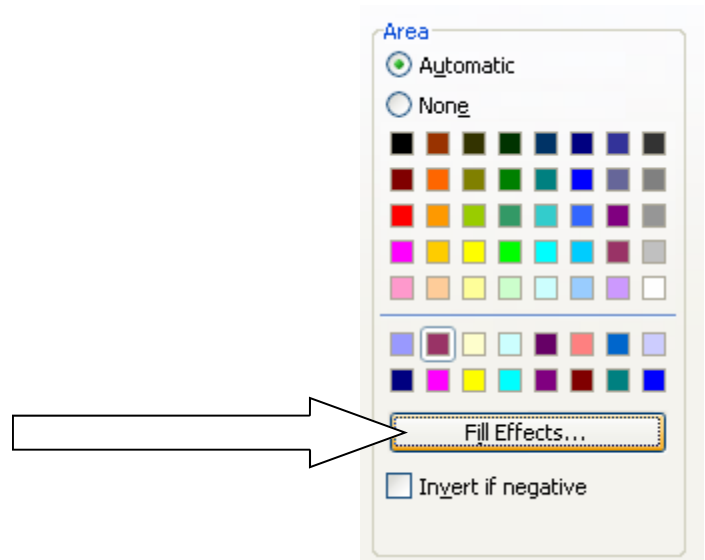
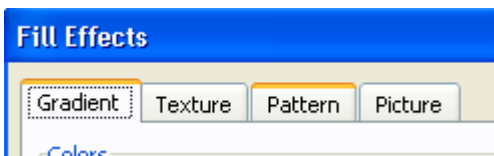
First, though, you need a picture to use. Most people who fill their spreadsheet columns in with images use a photo. We’re going to use a whisker-shaped image. If you want to draw your own, you can. Or you can use the ones I’ve already drawn. Download them from our website at



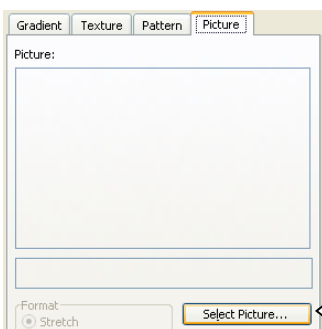
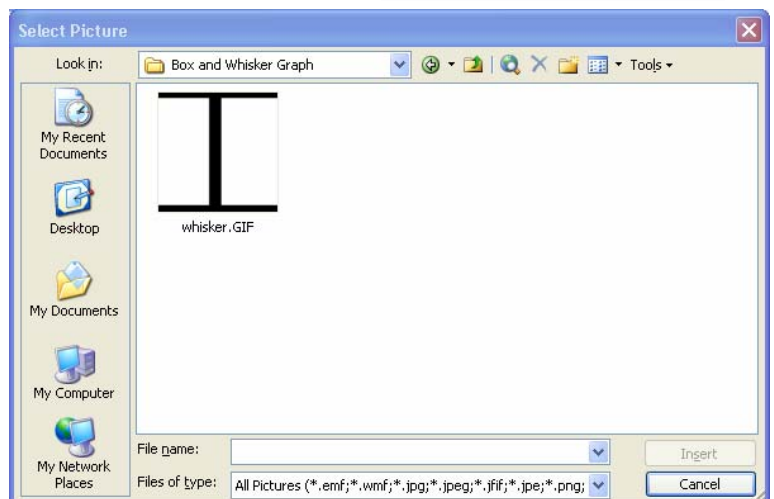
<http://www.aes.ac.in/es/technology/inserVICES/Box-and-whisker/index.shtml>

The file you need is called [Whisker.gif](#). Save it to your computer somewhere — your desktop or someplace where you can find it later.

Now return to your graph and double-click the top purple box. Click the Fill Effects button on the options window.

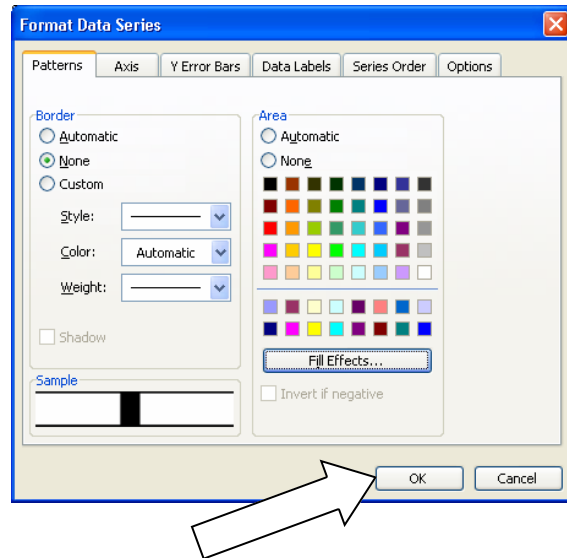
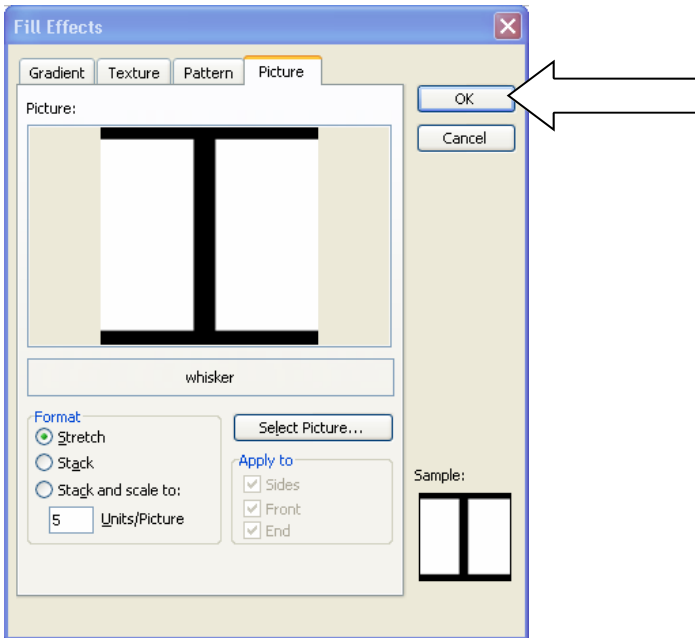


Choose the fourth tab — the one marked Picture. This will let you choose the Whisker.Gif as a filled-in background for your top purple box.

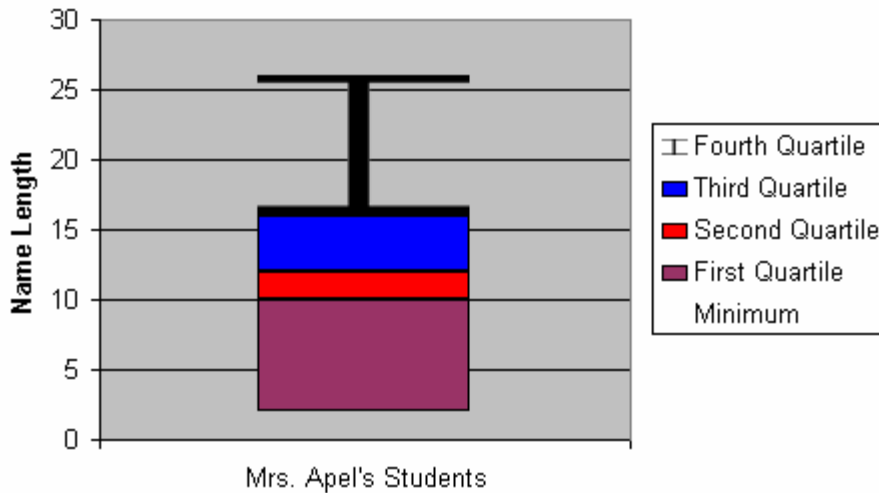


Choose Select Picture, then find the place where you saved the Whisker.gif.

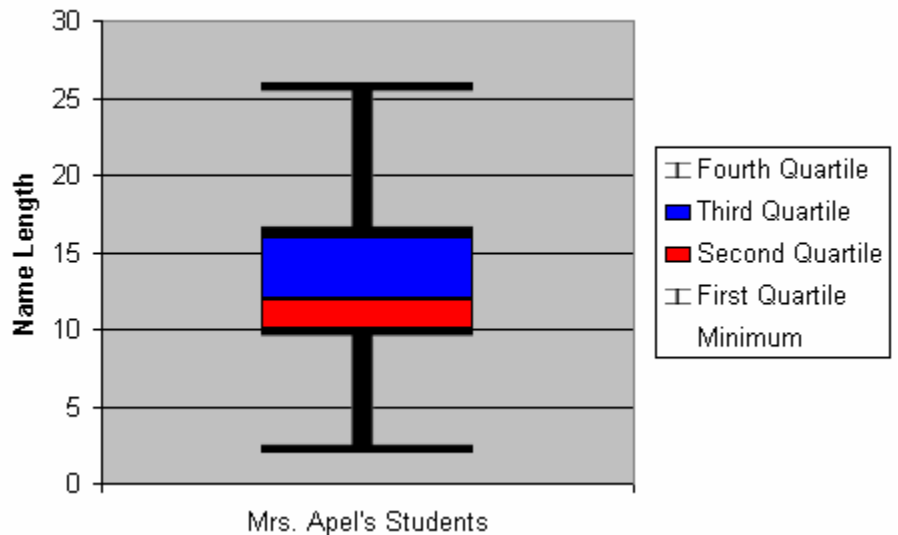
Press OK to select the picture, and then OK again to “Format the Data Series” with the Whisker image.



And there you have it! A whisker!

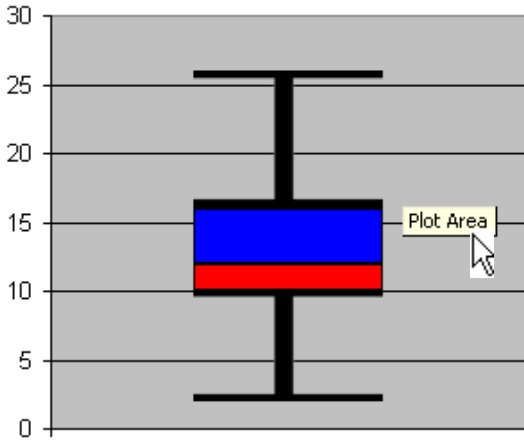


Now do the bottom box the same way.

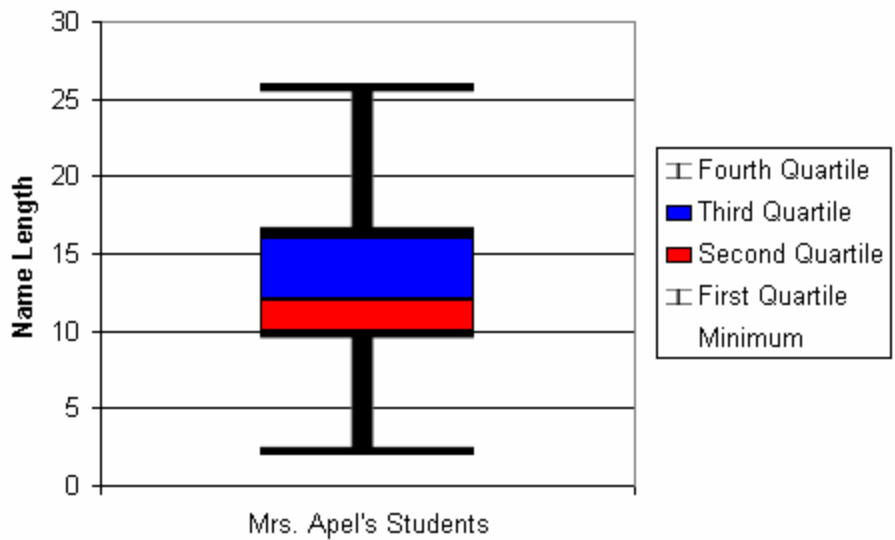


Step 7:

I think graphs are easier to read (and look nicer when printed) if they have a white background, instead of Excel's default grey. If you want to make your background white, just double-click anywhere in the grey "Plot Area" and choose the color white for your background fill.

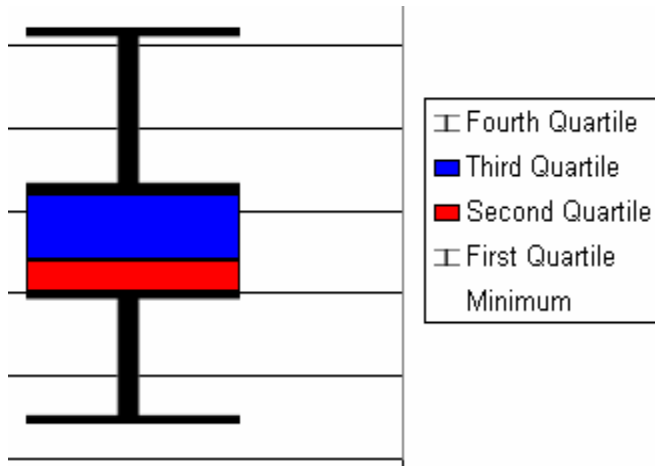


Doesn't that look nicer?



Step 8:

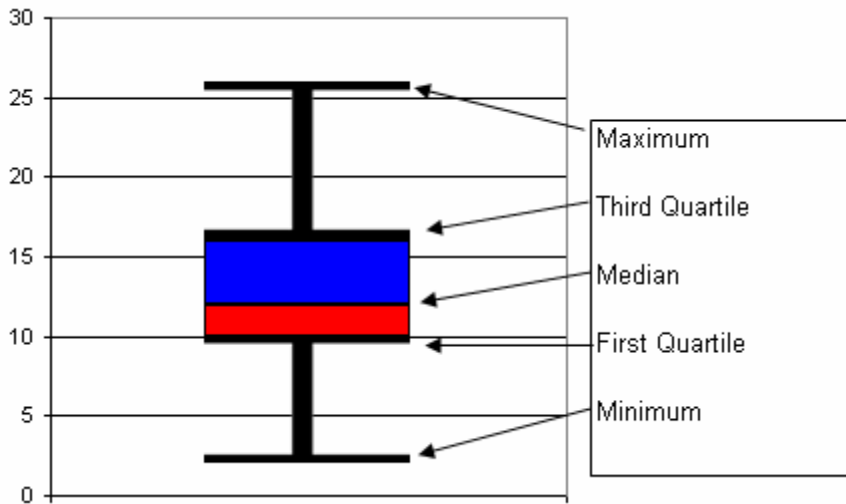
One last change to make. And you can skip this — it's sort of minor. But I think it makes the graph easier to read.



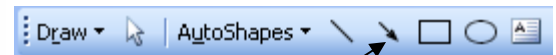
The existing legend is just a little bit misleading. The important parts of this graph aren't indicated well with this legend. The actual "First Quartile" is not the entire bottom whisker — it's the point where the whisker and the red box meet.

I like to delete the legend and put in my own text box, with arrows showing the actual placement of the points.

You can delete the legend by clicking it once, then pressing the "Del" or "Delete" button on your keyboard.



It's easy to insert a text box and some arrows. The Text Box button looks like this:



And the arrow button looks like this.

This is great for the first time you show someone a graph like this. But once they're used to it, it might be even better to use a data table in your text box instead. Our Box and Whisker graph would look even better like this:

