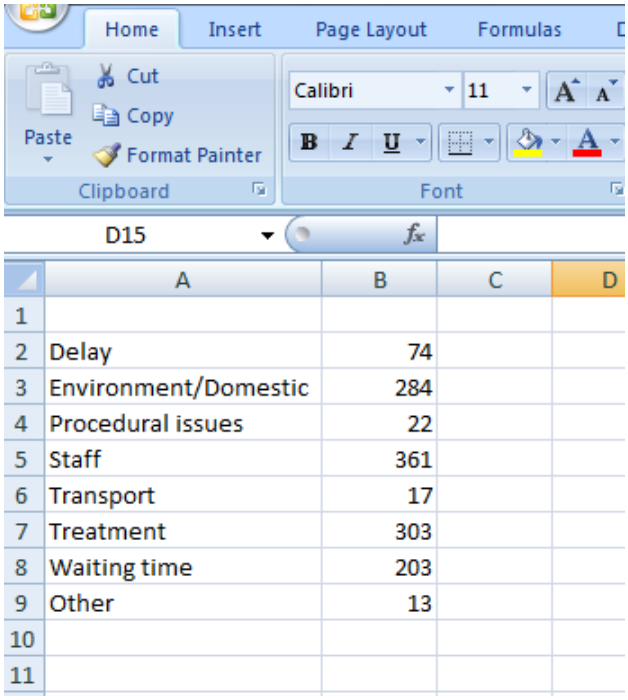
Scottish Improvement Skills

Create a Pareto chart on Excel 2007

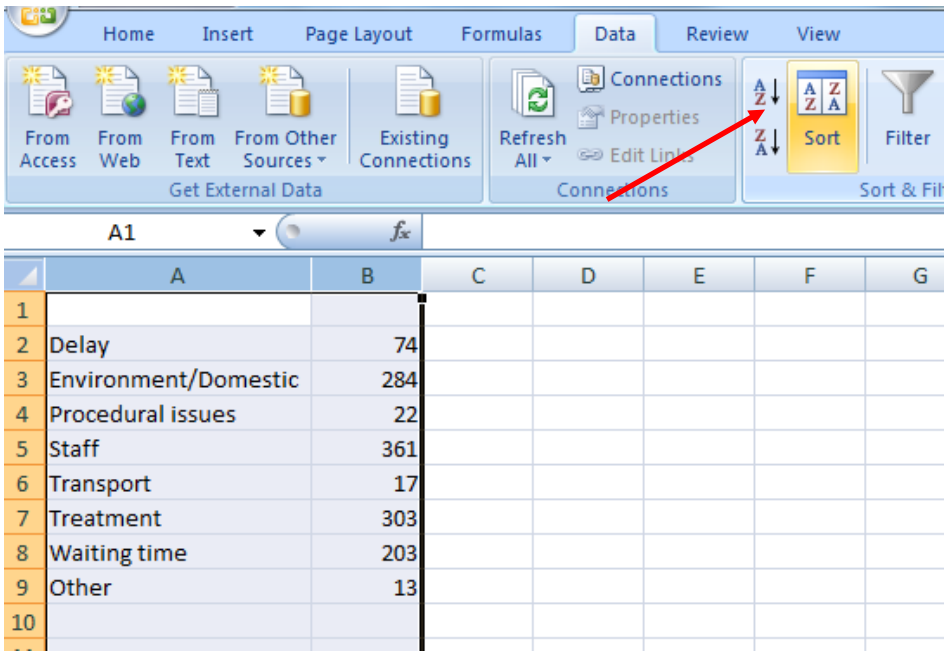
Create and save a new Excel worksheet. Some of the details of steps given below may vary slightly depending on how Excel has been used on your computer previously, but the general sequence and things to look out for will be the same.

What takes most time here is preparing your data. Once you've done that, creating the chart is straightforward.



	A	B	C	D
1				
2	Delay	74		
3	Environment/Domestic	284		
4	Procedural issues	22		
5	Staff	361		
6	Transport	17		
7	Treatment	303		
8	Waiting time	203		
9	Other	13		
10				
11				

Step 1
Enter your data on the worksheet in two columns (usually columns A and B), one for the horizontal axis (the categories that you want to prioritise) and one for the vertical axis (your data). In this example, the horizontal axis will be categories of complaint, and the vertical axis will be the number of complaints.
It doesn't matter what order you enter the categories in; you will change the sequence in the next steps. In this example the categories have been entered alphabetically, apart from 'Other'.



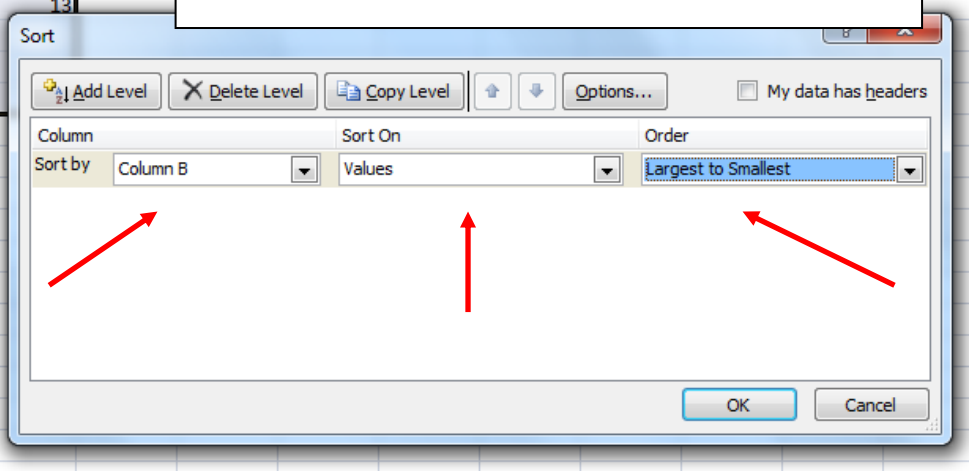
	A	B	C	D	E	F	G
1							
2	Delay	74					
3	Environment/Domestic	284					
4	Procedural issues	22					
5	Staff	361					
6	Transport	17					
7	Treatment	303					
8	Waiting time	203					
9	Other	13					
10							

Step 2
To get your data in the right order for a Pareto chart, select the two columns by clicking and dragging the downward arrow across the top of the columns.
Then select the Data menu above and select the 'Sort' button.

2	Delay	74
3	Environment/Domestic	284
4	Procedural issues	22
5	Staff	361
6	Transport	17
7	Treatment	303
8	Waiting time	203
9	Other	13

Step 3
In the 'Sort' dialogue box:

- In the 'Sort by' box select 'Column B'
- In the 'Sort On' box select 'Values'
- In the 'Order' box select 'Largest to Smallest'
- Select 'OK'



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	A	B	C	D
1	**Category of complaint**	**Number of complaints**	**Cumulative % of complaints**	**%**
2	Staff	361		
3	Treatment	303		
4	Environment/Domestic	284		
5	Waiting time	203		
6	Delay	74		
7	Procedural issues	22		
8	Transport	17		
9	Other	13		
10	Total	1277		
11				

Step 4
Scan the data and categories to check that it is in the right order – highest to lowest values, with categories next to the right data.
Add column headings:

- Category
- Number
- Cumulative %
- %

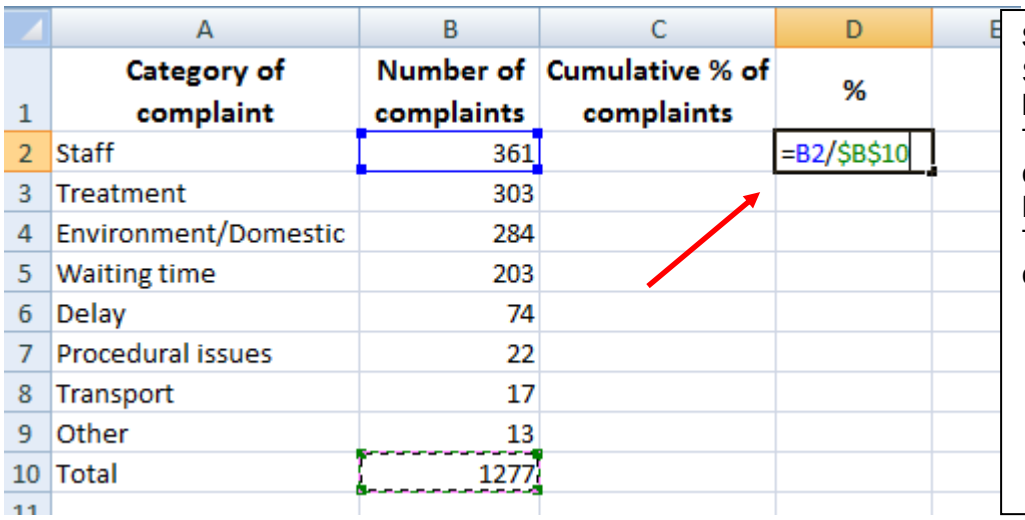
In the 'number' column, calculate the total.

SUM =B2/B10

	A	B	C	D
1	**Category of complaint**	**Number of complaints**	**Cumulative % of complaints**	**%**
2	Staff	361		=B2/B10
3	Treatment	303		
4	Environment/Domestic	284		
5	Waiting time	203		
6	Delay	74		
7	Procedural issues	22		
8	Transport	17		
9	Other	13		
10	Total	1277		
11				

Step 5 (a)
Ignore the Cumulative % column for now.
In the % column, calculate the % for the first category data:

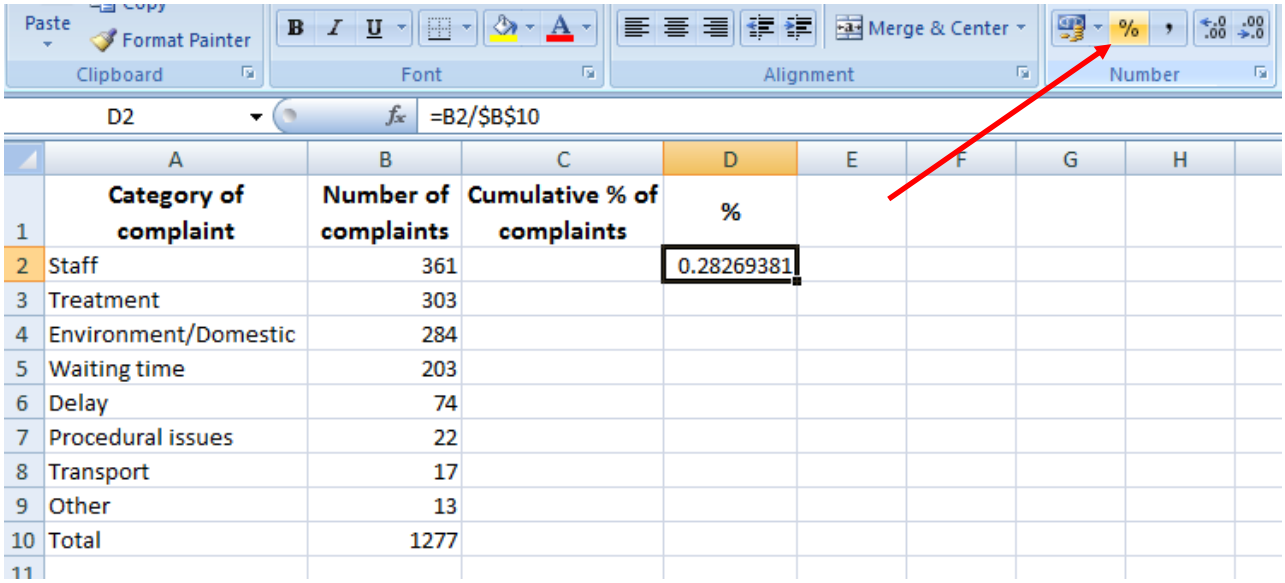
- Type =
- Select the data for the first category
- Type /
- Select the data for the total.



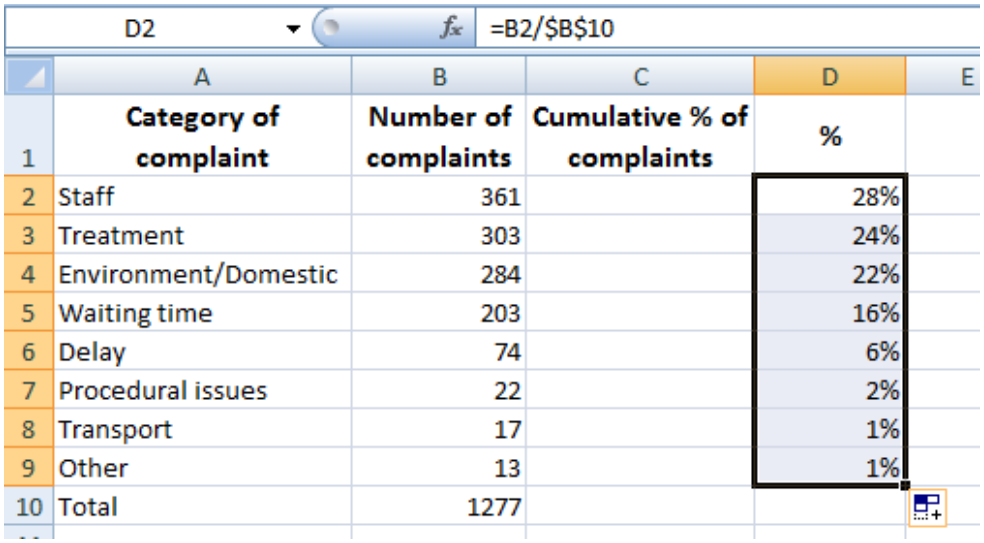
	A	B	C	D
1	Category of complaint	Number of complaints	Cumulative % of complaints	%
2	Staff	361		=B2/B10
3	Treatment	303		
4	Environment/Domestic	284		
5	Waiting time	203		
6	Delay	74		
7	Procedural issues	22		
8	Transport	17		
9	Other	13		
10	Total	1277		

Step 5 (b)
Select F4 (a keyboard function). This will change the calculation.
Now select 'return'. This completes the calculation.

Step 5 (c)
Select the 'Percent Style' button on the toolbar to format the percentage.

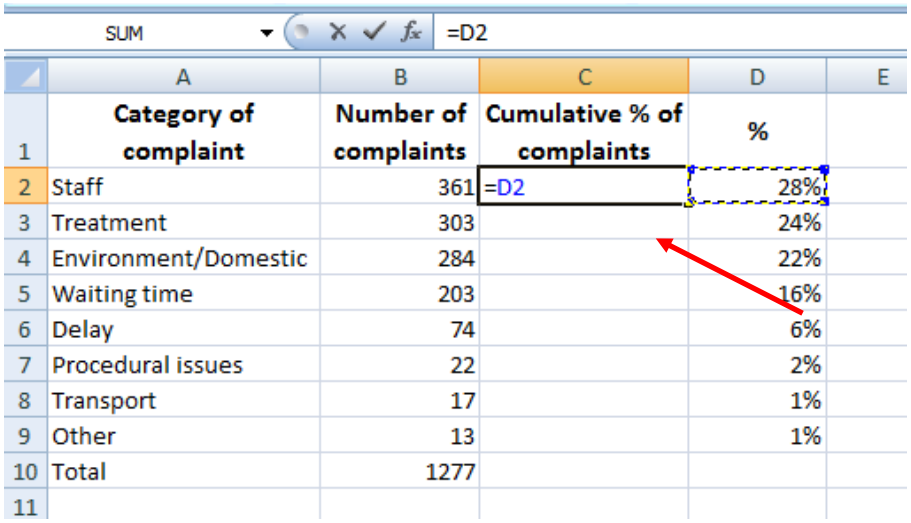


	A	B	C	D	E	F	G	H
1	Category of complaint	Number of complaints	Cumulative % of complaints	%				
2	Staff	361		0.28269381				
3	Treatment	303						
4	Environment/Domestic	284						
5	Waiting time	203						
6	Delay	74						
7	Procedural issues	22						
8	Transport	17						
9	Other	13						
10	Total	1277						



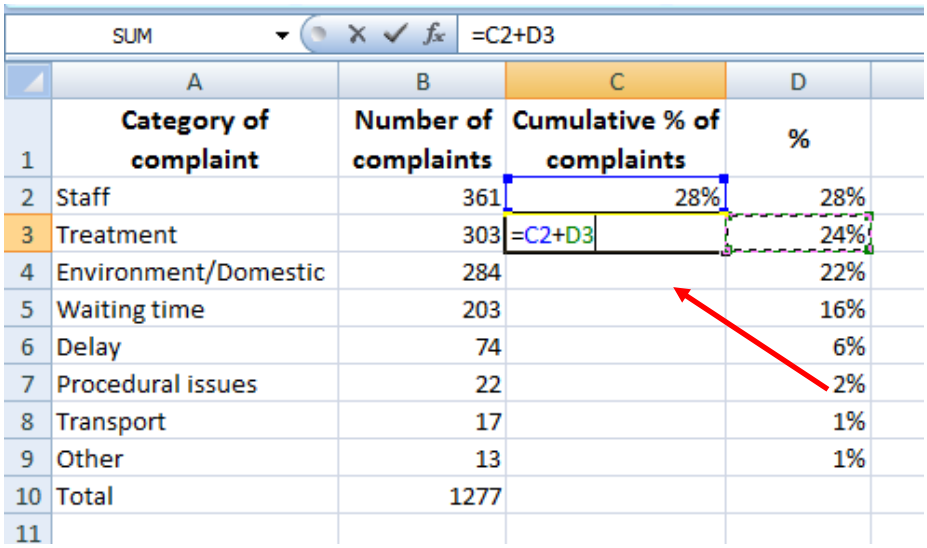
	A	B	C	D	E
1	Category of complaint	Number of complaints	Cumulative % of complaints	%	
2	Staff	361		28%	
3	Treatment	303		24%	
4	Environment/Domestic	284		22%	
5	Waiting time	203		16%	
6	Delay	74		6%	
7	Procedural issues	22		2%	
8	Transport	17		1%	
9	Other	13		1%	
10	Total	1277			

Step 5 (d)
Hover over the bottom right corner of the cell until you get a black **+**.
Drag down to the bottom of the final data item.
This gives you all your percentages.



	A	B	C	D	E
1	**Category of complaint**	**Number of complaints**	**Cumulative % of complaints**	**%**	
2	Staff	361	=D2	28%	
3	Treatment	303		24%	
4	Environment/Domestic	284		22%	
5	Waiting time	203		16%	
6	Delay	74		6%	
7	Procedural issues	22		2%	
8	Transport	17		1%	
9	Other	13		1%	
10	Total	1277			
11					

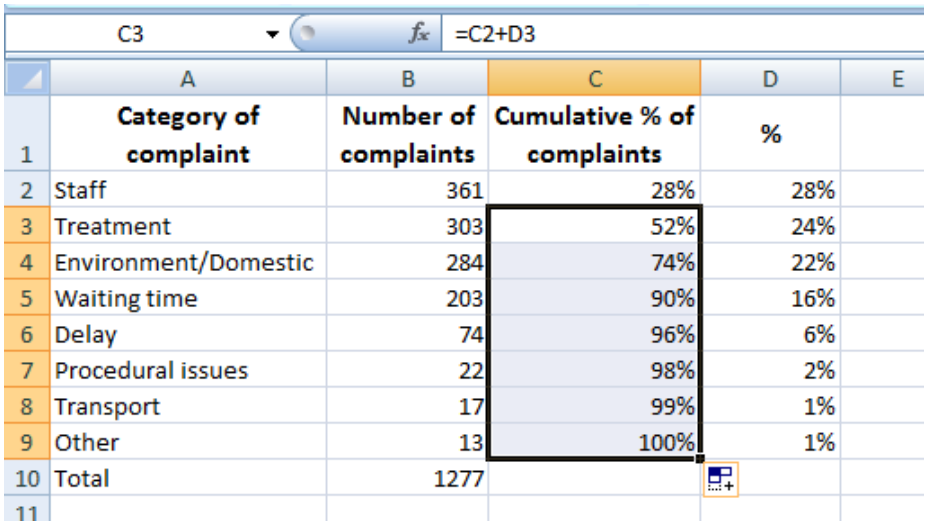
Step 6 (a)
Now you can complete the 'Cumulative %' column.
In the cell for the first item, type =
Then select the percentage for that item.
Then Enter.



	A	B	C	D
1	**Category of complaint**	**Number of complaints**	**Cumulative % of complaints**	**%**
2	Staff	361	28%	28%
3	Treatment	303	=C2+D3	24%
4	Environment/Domestic	284		22%
5	Waiting time	203		16%
6	Delay	74		6%
7	Procedural issues	22		2%
8	Transport	17		1%
9	Other	13		1%
10	Total	1277		
11				

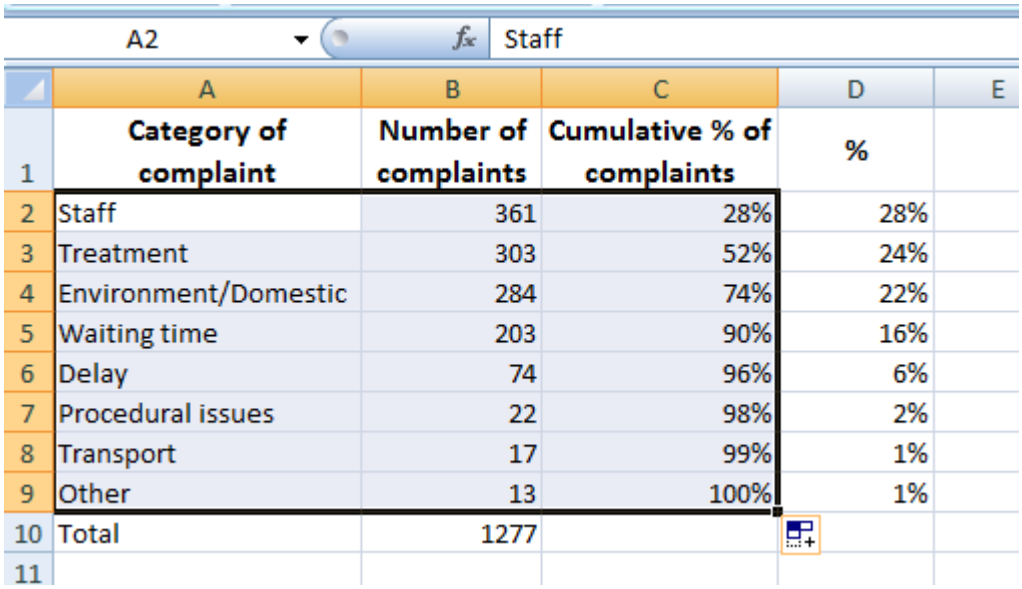
Step 6 (b)
- In the next cell, type =
- Select the cell above
- Type +
- Select the cell to the right.

Then Enter.



	A	B	C	D	E
1	**Category of complaint**	**Number of complaints**	**Cumulative % of complaints**	**%**	
2	Staff	361	28%	28%	
3	Treatment	303	52%	24%	
4	Environment/Domestic	284	74%	22%	
5	Waiting time	203	90%	16%	
6	Delay	74	96%	6%	
7	Procedural issues	22	98%	2%	
8	Transport	17	99%	1%	
9	Other	13	100%	1%	
10	Total	1277			
11					

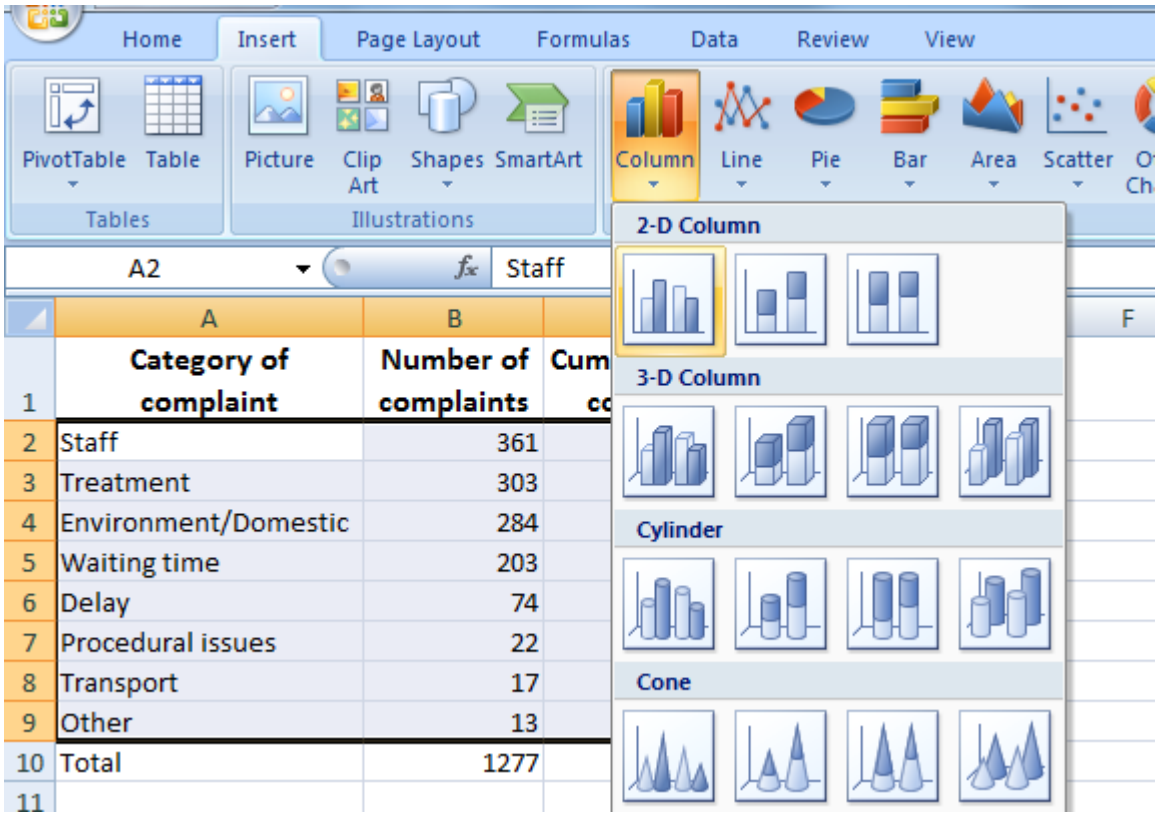
Step 6 (c)
Hover over the bottom right corner of the cell until you get a black **+**.
Drag down to the bottom of the final data item.
Now all your data is ready to create the Pareto chart.



	A	B	C	D	E
1	Category of complaint	Number of complaints	Cumulative % of complaints	%	
2	Staff	361	28%	28%	
3	Treatment	303	52%	24%	
4	Environment/Domestic	284	74%	22%	
5	Waiting time	203	90%	16%	
6	Delay	74	96%	6%	
7	Procedural issues	22	98%	2%	
8	Transport	17	99%	1%	
9	Other	13	100%	1%	
10	Total	1277			
11					

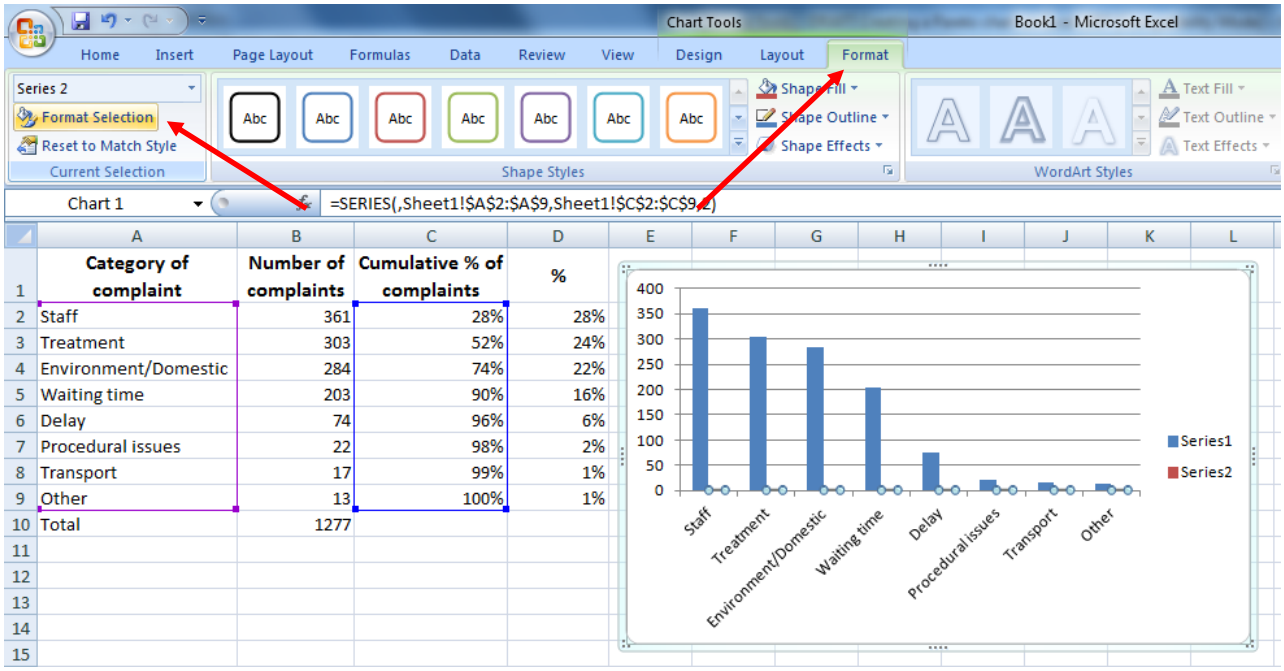
Step 7
Select cells in the three columns that you need for your chart.

Step 8
In the 'Insert' menu select 'Column' and then click on the Clustered Column chart.



	A	B
1	Category of complaint	Number of complaints
2	Staff	361
3	Treatment	303
4	Environment/Domestic	284
5	Waiting time	203
6	Delay	74
7	Procedural issues	22
8	Transport	17
9	Other	13
10	Total	1277
11		

Step 9
Select the chart so that Chart Tools is shown and then select ‘Format’.
In the drop down menu select ‘Series 2’. Then click ‘Format Selection’.



	A	B	C	D
1	Category of complaint	Number of complaints	Cumulative % of complaints	%
2	Staff	361	28%	28%
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5	Waiting time	203	90%	16%
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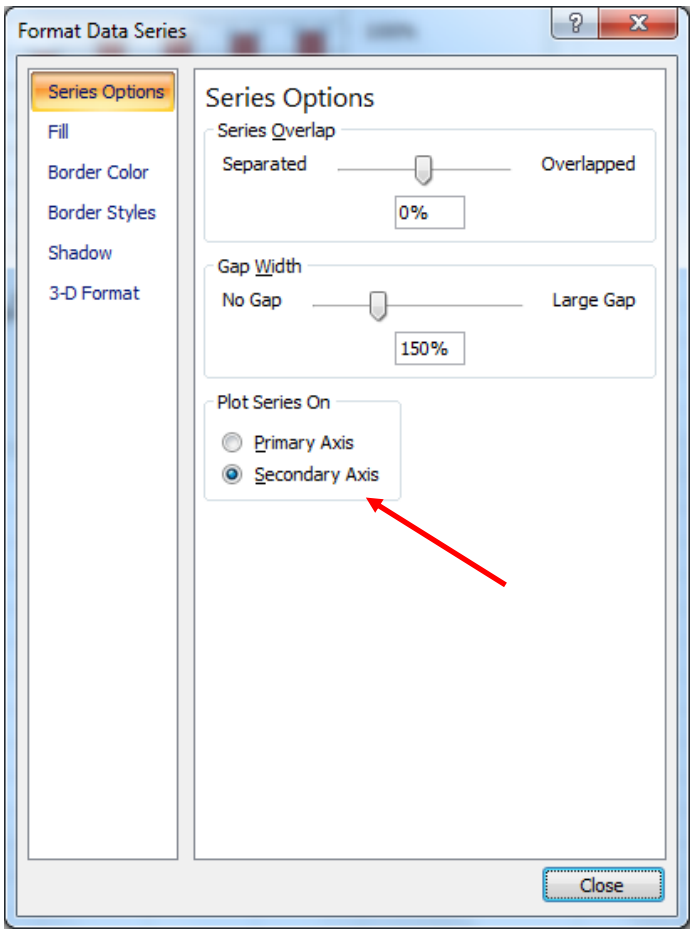
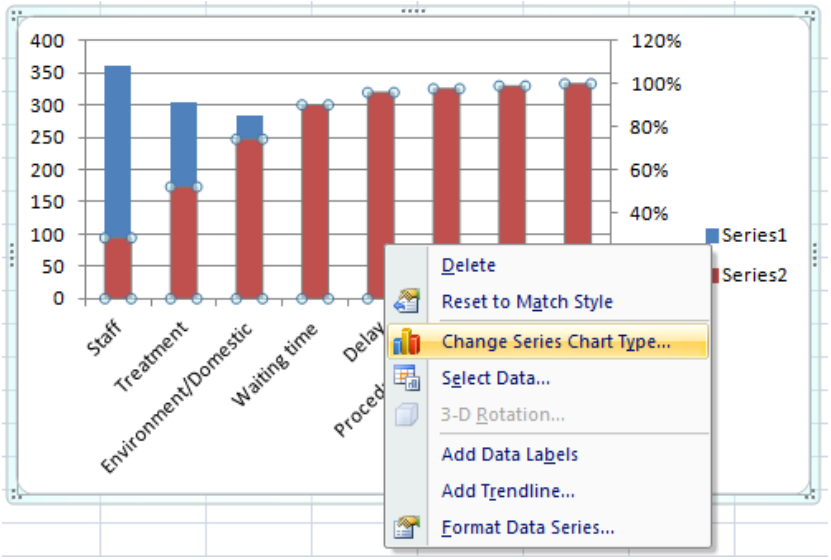
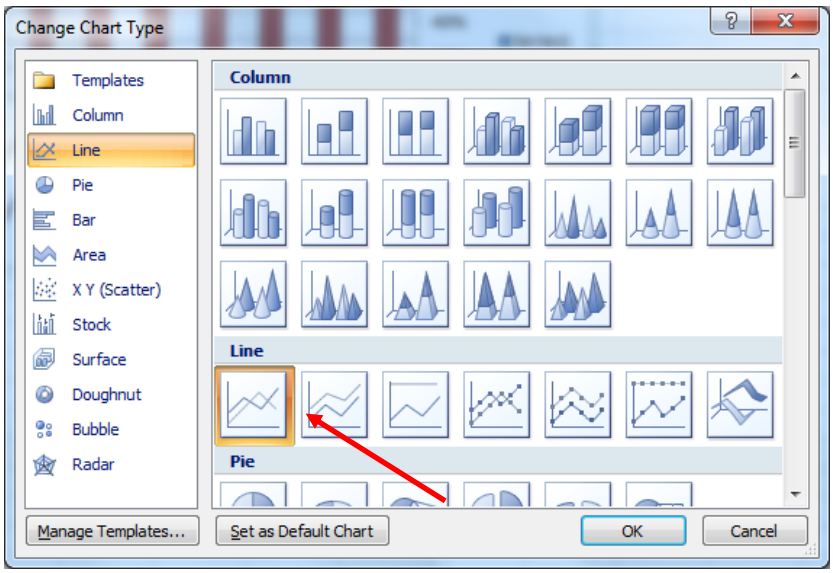
7	Procedural issues	22	98%	2%
8	Transport	17	99%	1%
9	Other	13	100%	1%
10	Total	1277		



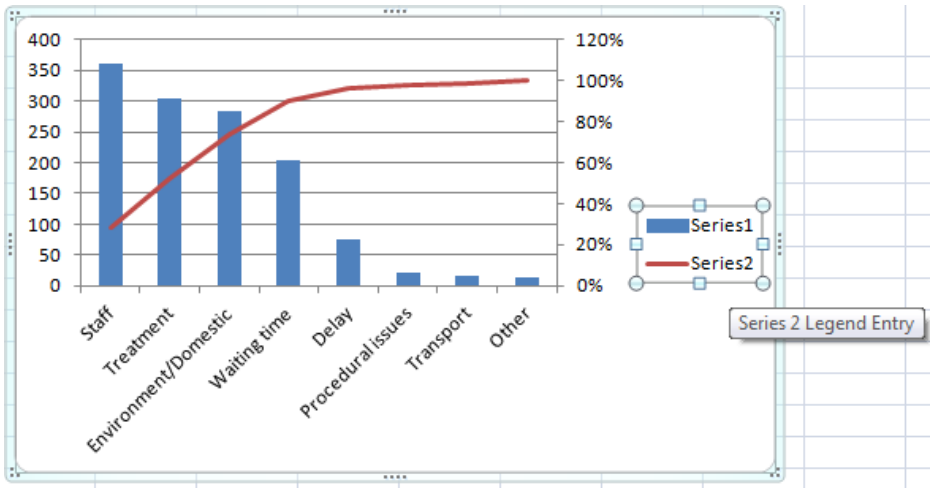
Step 10
In the ‘Format Data Series’ dialogue box select ‘Series Options’.
Select the ‘Secondary Axis’ button.
Click ‘Close’.



Step 11
Right click anywhere on the 'Series 2' columns and then select 'Change Series Chart Type'.

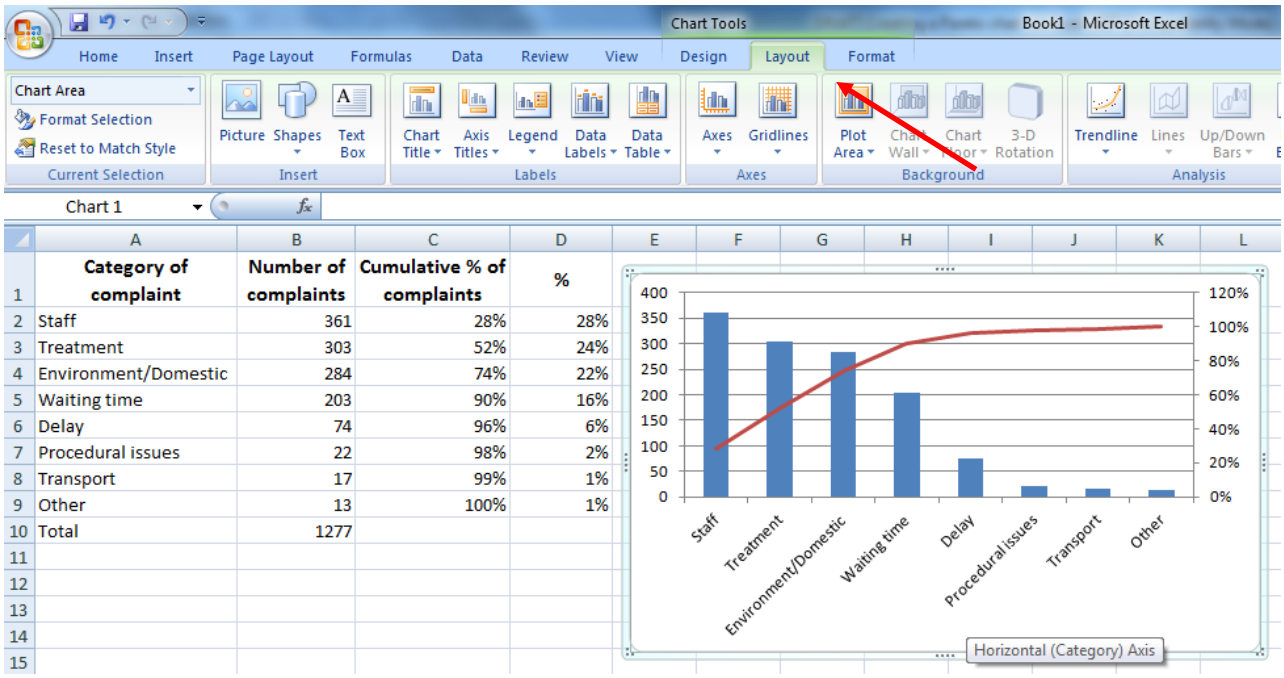


Step 12
Select the first Line chart and then click 'OK'.



Step 13
Click on 'Series 1 and Series 2' so that a box appears around them and then click 'Delete'.

Step 14
Select the chart so that Chart Tools is shown and then select 'Layout' so that you can add a title to your chart and label the three axes.



	Category of complaint	Number of complaints	Cumulative % of complaints	%
2	Staff	361	28%	28%
3	Treatment	303	52%	24%
4	Environment/Domestic	284	74%	22%
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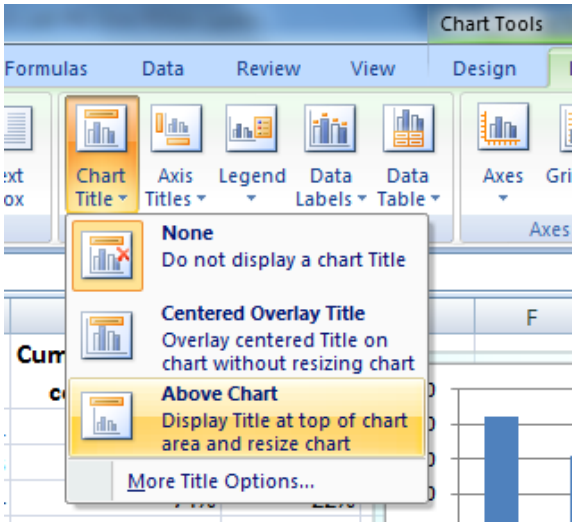
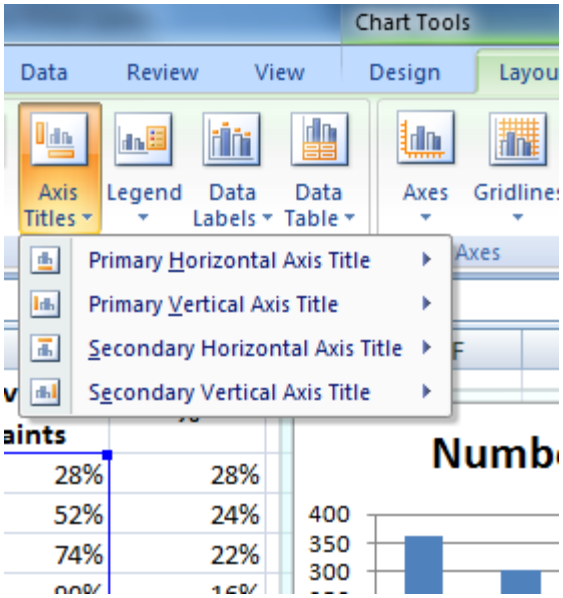
6	Delay	74	96%	6%
7	Procedural issues	22	98%	2%
8	Transport	17	99%	1%
9	Other	13	100%	1%
10	Total	1277		

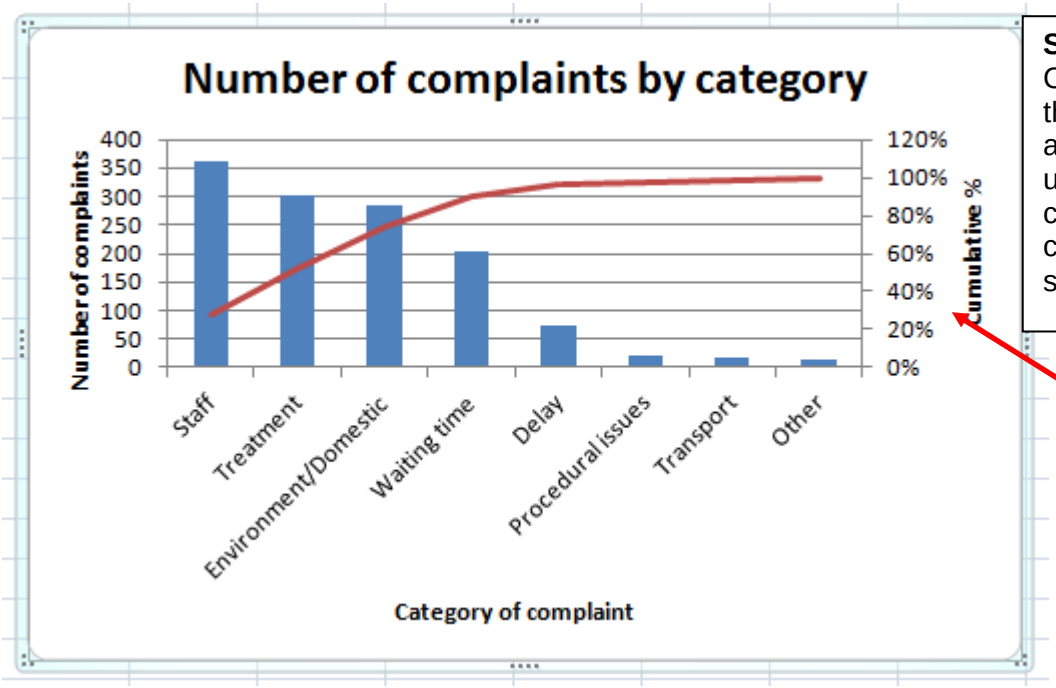


Step 15
Select 'Chart Title' and then select 'Above Chart' and type in the title of your chart.

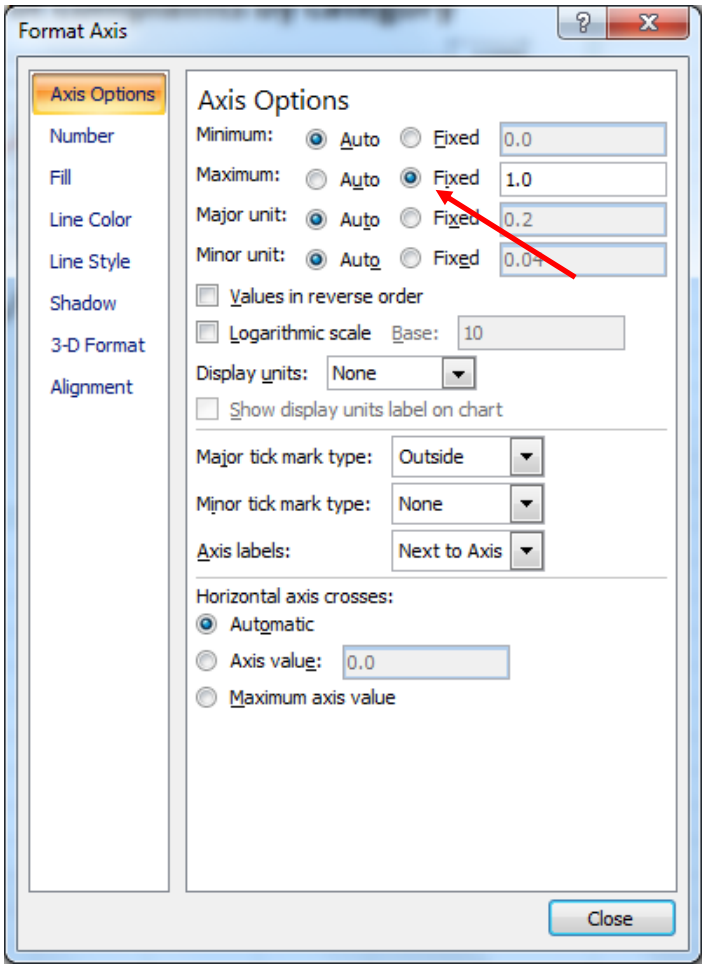


Step 16
Select 'Axis Titles' and then select each of the axes in turn and label them:

- Primary Horizontal Axis Title (Category)
- Primary Vertical Axis Title (Number)
- Secondary Vertical Axis Title (Cumulative %)



Step 17
Check the values on the Cumulative % axis. Often these go up to 120%. To change this, right click on the axis and select 'Format Axis'.



Step 17
Select 'Axis Options'.
In the 'Maximum' field select 'Fixed' and then enter 1.
Select 'Close'.

Step 18
Check that the highest percentage is now 100%.
The chart is now ready to analyse. First you may wish to format it to make it more visually effective e.g. change colours and background.