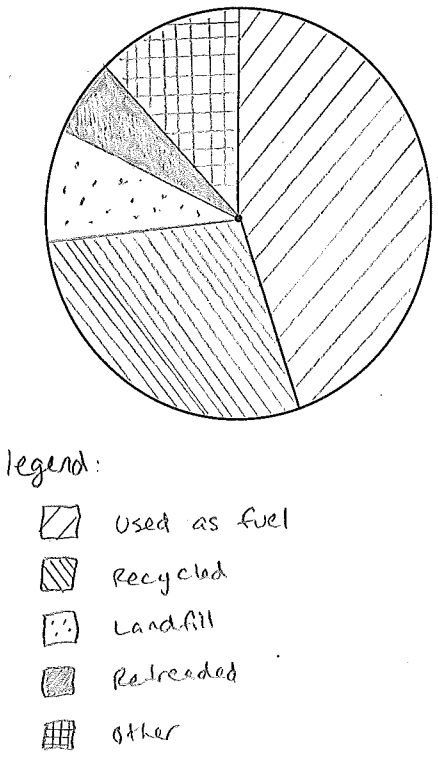
Math 189 – Chapter 2: Graphs of Qualitative Data

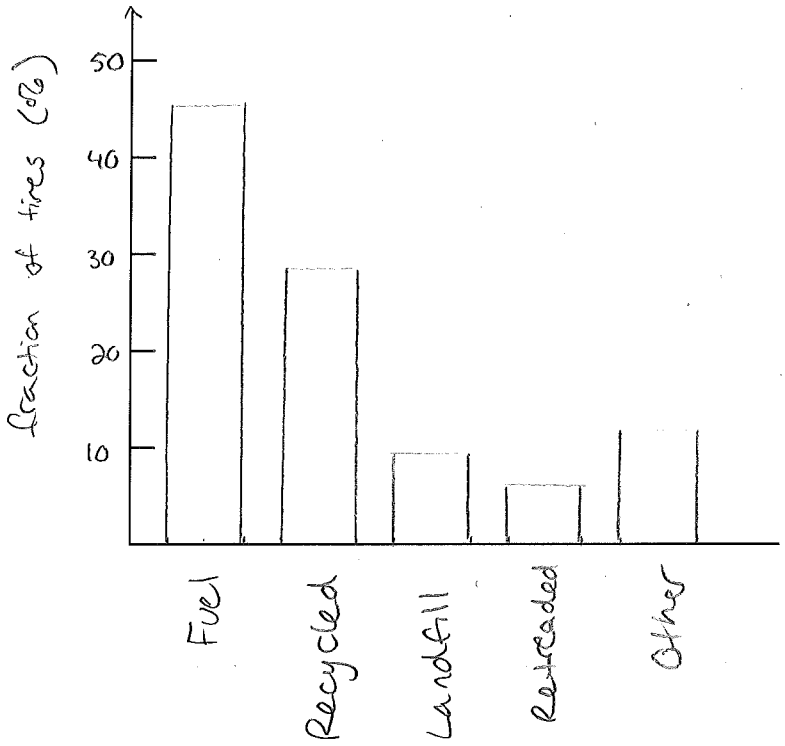
Example:

The table below shows the fate of the estimated 290 million automobile tires that are scrapped in the US each year, as of 2003.

	Number	Percentage	Pie Slice (°)
Used as fuel	130 million	45%	161°
Recycled into other products	81 million	28%	101°
End up in landfills	27 million	9%	34°
Retreaded	17 million	6%	21°
Other	35 million	12%	43°
Total	290 million		

(Source: US Environmental Protection Agency, http://www.epa.gov/epaoswer/non-hw/muncpl/tires/basic.htm#markets, accessed April 3, 2007)





Math 189 – Chapter 2: Graphs of Quantitative Data

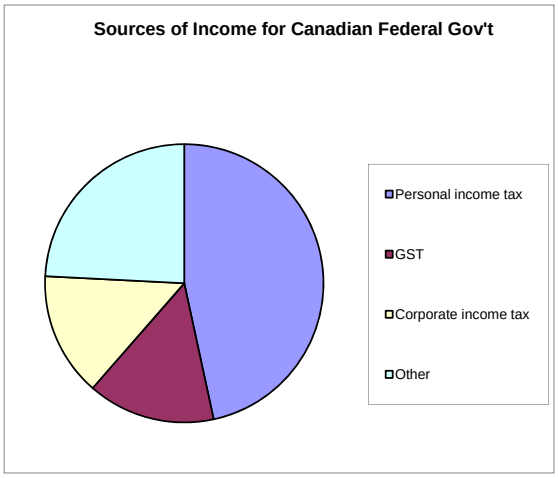
Pie charts and bar graphs – may also be used for *univariate* quantitative data

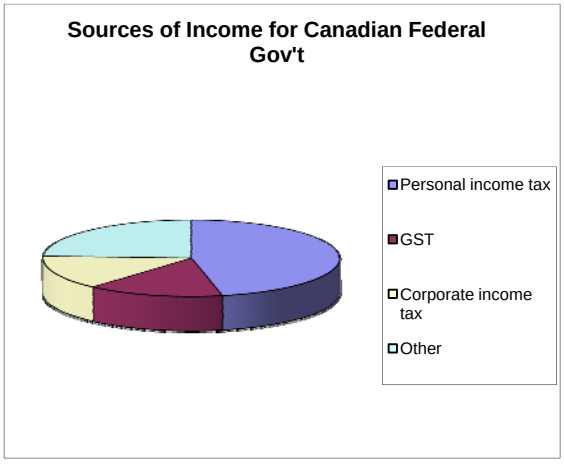
Example:

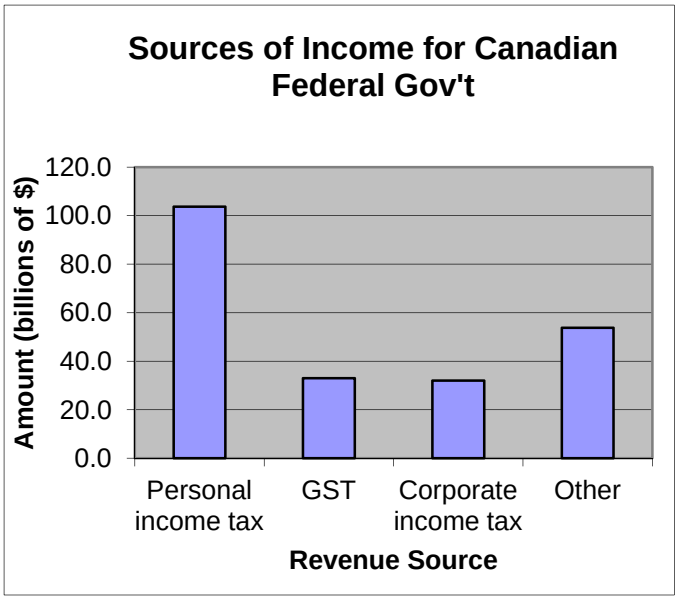
Your tax dollars at work: where does the money for the Canadian federal budget come from? According to a Government of Canada website, it comes from the following sources:

Source	Amount (billions of $)
Personal income tax	103.7
GST	33.0
Corporate income tax	32.0
Other	53.8

(Source: Department of Finance Canada, http://www.fin.gc.ca/taxdollar06/text/html/taxdollar06_e.html, accessed April 3, 2007)







Histograms – also used for *univariate* data

A histogram looks similar to a bar chart, but histograms are used for quantitative data, and the data points are grouped into "bins" before graphing. There is no set rule for the number of "bins", or classes, you should use but in general the more data points you have, the larger the number of classes you should use.

Note: if the dependent variable (on the *y*-axis) is expressed in terms of a fraction or percentage of the total number of data points, the graph is called a "relative frequency histogram".

Example

Twelve software engineers in the Greater Victoria area were picked randomly from an industry list and asked what their yearly salary was (in thousands of dollars)*, with results displayed in the list below.

79, 83, 94, 88, 98, 106, 76, 71, 82, 86, 63, 90

*totally fictitious data

The mean and standard deviation of this sample data are 84.7 and 11.8 thousand dollars, respectively, and the data are plotted in the histogram below.

Figure 2: Salaries of Victoria Engineers

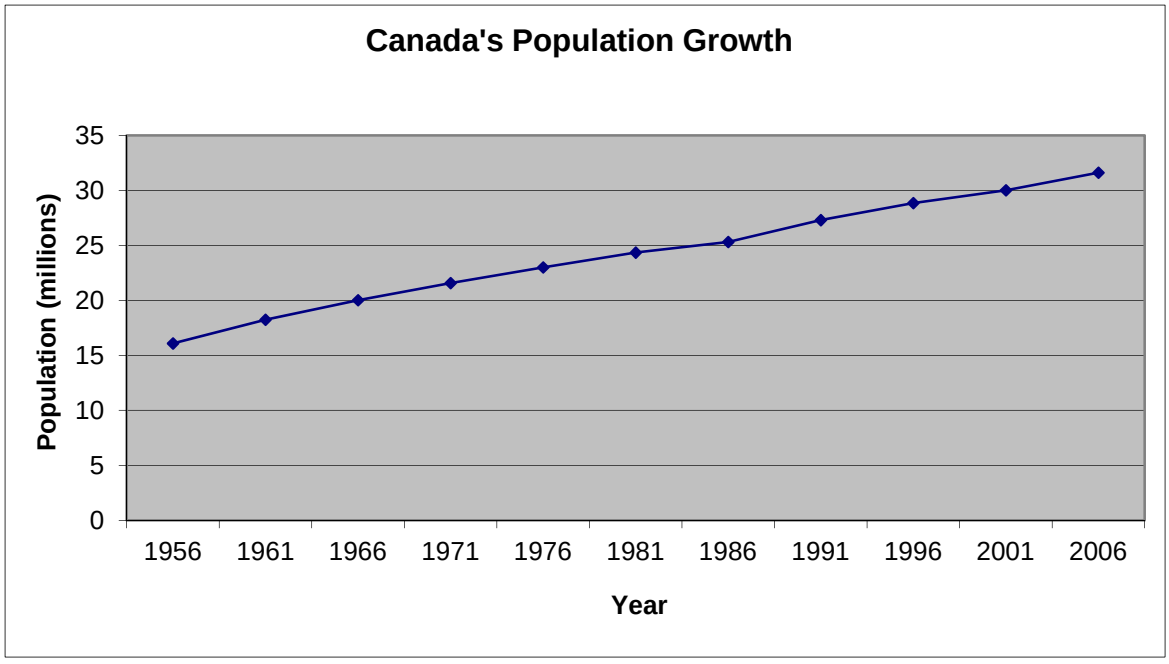
Line graphs – used for *bivariate* data

Example

According to the Statistics Canada website, Canada's population has grown with time over the past fifty years as is shown in the table below.

Year	Population
1956	16,081,000
1961	18,238,000
1966	20,015,000
1971	21,568,000
1976	22,993,000
1981	24,343,000
1986	25,309,000
1991	27,297,000
1996	28,847,000
2001	30,007,000
2006	31,613,000

(Source: Statistics Canada, http://www12.statcan.ca/english/census06/analysis/popdwell/NatlPortrait1.cfm, accessed April 3, 2007)



note: if the line is omitted, then the graph is called a **scatterplot**