Activity:

Follow the steps in the "Action!" section of p.222-223. This activity will familiarize you with the CANSIM database.

Recall:

- **Numerical** data can be **continuous** or **discrete**.
- **Categorical** data can be **ordinal** or **nominal**.

Data Sources:

1. **Primary source data** has been collected directly by the researcher. The researcher who collects the data will often have access to the data from an individual respondent, which is called **microdata**.

2. **Secondary source data** is used by someone other than those who collected it. This data is generally summarized and reported as **aggregate data**, which the individual microdata can no longer be determined.

3. **Cross-sectional data** observes and/or compares variables about subjects (which could be people, companies, countries, etc.) **at the same point in time**.

Analyzing Data:

Tables of data are sometimes difficult to interpret, particularly when there is a lot of data or there are many variables to compare. When data are displayed in graphical form, they are often easier to analyze.

Example 1 – Domestic Airfares for 10 Canadian Cities

The following table shows cross-sectional data of average domestic airfares for 10 Canadian cities for 2010 and 2011. The data was collected by Statistics Canada using a *stratified random sample* (see previous notes).

1. Does the table show microdata or aggregate data? How do you know?

2. Is this primary or secondary source data? Why?

City	2010	2011	2010 to 2011
	Dollars		% Change
Canada	182.5	190.7	4.5
Calgary	165.5	176.2	6.5
Edmonton	160.8	170.0	5.7
Halifax	172.0	179.3	4.2
Montréal	191.1	194.1	1.6
Ottawa	196.0	194.8	–0.6
Regina	168.1	177.8	5.8
Saskatoon	170.2	178.8	5.1
Toronto	205.2	214.9	4.7
Vancouver	199.2	206.7	3.8
Winnipeg	181.0	189.4	4.6

3. Identify the independent and dependent variables.

4. Why do you suppose a stratified random sample was used to collect this data?

5. The data for this graph has been provided to you using Google Classroom.
   a) Highlight cells A3:C13.
   b) Insert a chart using the selected data (Insert Menu → Chart)
   c) In the "Chart editor", change the chart type to "Column chart"
      • Notice that some of the bars may be quite different. Look at the data for these bars and ask yourself if the chart provides a good visual representation of the data.
   d) In the "Chart editor", select the "CUSTOMIZE" tab.
      • Choose the "Vertical axis".
      • Change the "min" value to 0.
   e) Modify the chart title and axes labels to reflect the data from the table.

6. What observations can you make from the graph? Confirm your observations using the table of data.

Example 2 – Bounce Height vs Drop Height for a Rubber Ball

Suppose you conducted an experiment, dropping a ball from various heights and measuring the height of the bounce. The provided table shows an example of the results you might obtain.

Drop Height (cm)	Bounce Height (cm)
0	0
10	7
20	14
30	21
40	30
50	38
60	46
70	51
80	60
90	62
100	70

1. Is this primary or secondary source data? Explain.

2. Identify the independent and dependent variables.

3. Which variable is being *controlled* in this experiment?

4. The data for this graph has been provided to you using Google Classroom.
   a) Highlight cells A2:B12.
   b) Insert a chart using the selected data (Insert Menu → Chart)
   c) In the "Chart editor", change the chart type to "Scatter".
   d) In the "Chart editor", select the "CUSTOMIZE" tab.
      • In the "Series" menu, select the "Trendline" checkbox to show the line of best fit.
      • Change the "min" value to 0.
   e) Modify the chart title and axes labels to reflect the data from the table.

Assigned Work: p.230 # 1 – 5, 6abc, 8ab