

You have learned that graphing ordered pairs as a scatter plot on a coordinate plane is one way to make it easier to “see” if there is a relationship. You can use a Casio FX-9750G graphing calculator to create scatter plots.

### ACTIVITY

**GEOGRAPHY** The U.S. Census Bureau estimated the population and area of certain countries. Mr. Henderson’s geography class wanted to see if there was a correlation between a country’s size and population. Use the table of data below to make a scatter plot.

Country	Hemisphere	Area (million square miles)	Population (millions)
Australia	Eastern	2.97	20.3
Brazil	Western	3.29	188.1
Canada	Western	3.86	33.1
Chile	Western	0.29	16.1
Egypt	Eastern	0.39	78.9
India	Eastern	1.27	1095.4
Japan	Eastern	0.15	127.5
Mexico	Western	0.76	107.5
Russia	Eastern	6.60	142.9
United States	Western	3.72	298.4

**Step 1** Enter the data.

- Clear any existing list.

KEYSTROKES: **MENU** **2** **F6**

Use the cursor to highlight the name of the list to be cleared and press **F4** **F1**

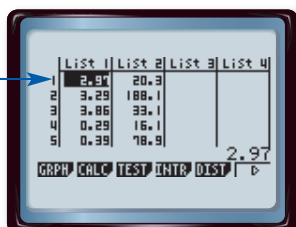
- Enter the area as List 1.

KEYSTROKES: 2.97 **EXE** 3.29 **EXE** ... 3.72 **EXE**

- Use the arrow keys to move the cursor to the top of List 2 and enter the population.

KEYSTROKES: **▶** 20.3 **EXE** 188.1 **EXE** 33.1 **EXE**  
... 298.4 **EXE**

The first data pair is (2.97, 20.3)



**Step 2** Format the graph.

- Turn on the statistical plot.

KEYSTROKES: **F1** **F6**

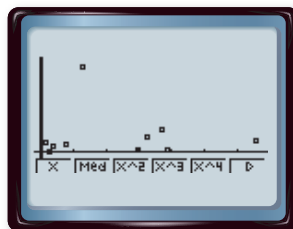
- Select the scatter plot, List1 as the XList, and List2 as the YList.

KEYSTROKES: **▼** **F1** **▼** **F1** **▼** **F2** **EXE**



**Step 3** Graph the data.

- To display the scatter plot press **F1**.
- Use the **Trace** feature and the left and right arrow keys to move from one point to another.



**Analyze the Results**

1. Press **SHIFT** [Trace]. Use the left and right arrow keys to move from one point to another. What do the coordinates of each data point represent?
2. Describe the scatter plot.
3. Is there a relationship between the area of a country and its population? If so, write a sentence or two that describes the relationship.
4. Are there any differences between the area of a country and its population?
5. Separate the data by hemisphere. Enter the area and population for the western hemisphere as lists **List 1** and **List 2** and for the eastern hemisphere as lists **List 3** and **List 4**. Use the graphing calculator to make two scatter plots with different marks for the western and eastern hemispheres. Does your scatter plot agree with your answer in Exercise 4? Explain.

**6. SCIENCE** A zoologist studied the extinction times (in years) of island birds. The zoologist wanted to see if there was a relationship between the average number of nests and the time needed for each bird to become extinct on the islands. The results are shown in the table.

Bird Name	Bird Size	Average Number of Nests	Extinction Time
Buzzard	large	2.0	5.5
Quail	large	1.0	1.5
Curlew	large	2.8	3.1
Cuckoo	large	1.4	2.5
Magpie	large	4.5	10.0
Swallow	small	3.8	2.6
Robin	small	3.3	4.0
Stonechat	small	3.6	2.4
Blackbird	small	4.7	3.3
Tree-Sparrow	small	2.2	1.9

- a. Use your graphing calculator to make a scatter plot of the data.
  - b. Is there a relationship between the average number of nests and extinction times? If so, write a sentence or two that describes the relationship.
  - c. Are there any differences between the extinction times of large birds versus small birds?
7. Make a scatter plot of the data and describe the relationship, if any, between the  $x$ - and  $y$ -values.

<b>x</b>	3.2	3.8	4.3	4.7	5.5	5.9	7.2	7.8	8.2
<b>y</b>	15.7	13.2	13.9	11.1	12.8	11.4	10.7	11.3	10.4

**8. RESEARCH** Find two sets of data on your own. Then determine whether a relationship exists between the data.