



# Graphing Calculator Investigation

A Follow-Up of Lesson 1-7

## Scatter Plots

Sharp EL-9900

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 Sharp EL-9900 graphing calculator to create scatter plots.

**SCIENCE** A zoologist studied 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. Use the table of data below to make a scatter plot.

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

### Step 1 Enter the data.

- Clear any existing lists.

KEYSTROKES: **STAT** **ENTER** **▲** **DEL**  
**ENTER**

- Enter the average number of nests as L1 and extinction times as L2.

KEYSTROKES: **STAT** **ENTER** 2 **ENTER** 1  
**ENTER** ... 2.2 **ENTER** **▶** 5.5  
**ENTER** 1.5 **ENTER** ... 1.9  
**ENTER**

The first data pair is (2, 5.5).

No	1: L1	2: L2	3: L3
1	2	5.5	
2	1	1.5	
3	2.8	3.1	
4	1.4	2.5	
5	4.5	10	
6	3.8	2.6	
7			

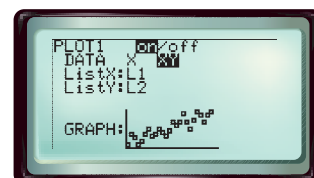
### Step 2 Format the graph.

- Turn on the statistical plot.

KEYSTROKES: **STAT PLOT** **ENTER** **ENTER**

- Select the scatter plot, L1 as the Xlist and L2 as the Ylist.

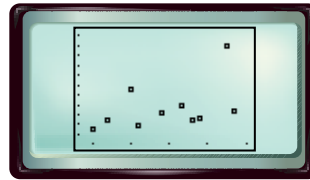
KEYSTROKES: **▼** **▶** **ENTER** **2nd F** **L1**  
**ENTER** **2nd F** **L2** **ENTER** **STAT PLOT**  
**ALPHA** **[G]** 3



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### Step 3 Graph the data.

- Display the scatter plot.  
KEYSTROKES: **ZOOM** 9
- Use the **TRACE** feature and the left and right arrow keys to move from one point to another.



### Exercises 1–3. See margin.

1. Press **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 average number of nests and extinction times? If so, write a sentence or two that describes the relationship.
4. Are there any differences between the extinction times of large birds versus small birds? **Sample answer: Large birds tend to have longer extinction times.**
5. Separate the data by bird size. Enter average number of nests and extinction times for large birds as lists L1 and L2 and for small birds as lists L3 and L4. Use the graphing calculator to make two scatter plots with different marks for large and small birds. Does your scatter plot agree with your answer in Exercise 4? Explain.

**5. See margin for graph. The plot shows larger birds tend to have longer extinction times.**

For Exercises 6–8, make a scatter plot for each set of data and describe the relationship, if any, between the  $x$ - and  $y$ -values. **6–8. See margin for graphs.**

6. 

$x$	$y$
70	323
80	342
40	244
50	221
30	121
80	399
60	230
60	200
50	215
40	170

**As  $x$  increases,  $y$  increases. There is a positive relationship.**

7. 

$x$	$y$
8	89
5	32
9	30
10	18
3	26
4	72
10	51
7	34
6	82
7	60

**no relationship**

8. 

$x$	5.2	5.8	6.3	6.7	7.4	7.6	8.4	8.5	9.1
$y$	12.1	11.9	11.5	9.8	10.2	9.6	8.8	9.1	8.5

**As  $x$  increases,  $y$  decreases. There is a negative relationship.**

9. **RESEARCH** Find two sets of data on your own. Then determine whether a relationship exists between the data. **Sample data: year vs. 100-meter dash times; year vs. school enrollment.**