



Use appropriate tools strategically.

## Make a Table

**QUESTION** How can you use a graphing calculator to create a table for a function?

You can use a graphing calculator to create a table for a function when you want to display many pairs of input values and output values or when you want to find the input value that corresponds to a given output value.

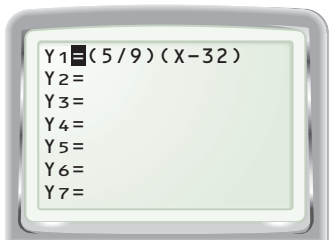
In the example below, you will make a table to compare temperatures in degrees Celsius and temperatures in degrees Fahrenheit for temperatures at or above the temperature at which water freezes, 32°F.

**EXAMPLE** Use a graphing calculator to make a table

The formula  $C = \frac{5}{9}(F - 32)$  gives the temperature in degrees Celsius as a function of the temperature in degrees Fahrenheit. Make a table for the function.

**STEP 1** Enter equation

Rewrite the function using  $x$  for  $F$  and  $y$  for  $C$ . Press  $\boxed{Y=}$  and enter  $\frac{5}{9}(x - 32)$ .



**STEP 2** Set up table

Go to the TABLE SETUP screen. Use a starting value (TblStart) of 32 and an increment ( $\Delta$ Tbl) of 1.



**STEP 3** View table

Display the table. Scroll down to see pairs of inputs and outputs.

| X  | Y1      | Y2 |
|----|---------|----|
| 32 | 0       |    |
| 33 | .55556  |    |
| 34 | 1.11111 |    |
| 35 | 1.66667 |    |
| 36 | 2.22222 |    |
| 37 | 2.77778 |    |

**PRACTICE**

- You see a sign that indicates that the outdoor temperature is 10°C. Find the temperature in degrees Fahrenheit. *Explain* how you found your answer.
- Water boils at 100°C. What is the temperature in degrees Fahrenheit?

**Make a table for the function. Use the given starting value and increment.**

- |   |   |
|---|---|
| 3. $y = \frac{3}{4}x + 5$<br>TblStart = 0, $\Delta$ Tbl = 1 | 4. $y = 4x + 2$<br>TblStart = 0, $\Delta$ Tbl = 0.5 |
| 5. $y = 7.5x - 0.5$<br>TblStart = 1, $\Delta$ Tbl = 1       | 6. $y = 0.5x + 6$<br>TblStart = 3, $\Delta$ Tbl = 3 |

# Scatter Plots and Functions

**MATERIALS** • tape measure • graph paper



Model with mathematics.

**QUESTION** How can you tell whether a graph represents a function?

A *scatter plot* is a type of display for paired data. Each data pair is plotted as a point. In this activity, you will work in a group to make a scatter plot. You will measure the height of each student in your group and the length of his or her forearm. The length of the forearm is the distance from the elbow to the wrist.

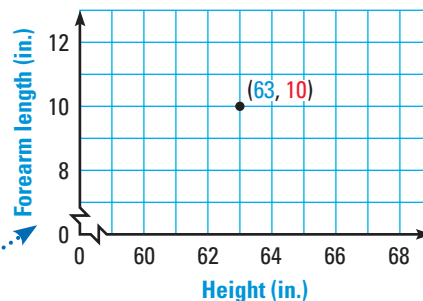


**EXPLORE** Collect data and make a scatter plot

**STEP 1** *Collect data* Measure the height of each student in your group and the length of his or her forearm. Record the results for each student in one row of a table like the one shown.

| Height (inches) | Forearm length (inches) |
|-----------------|-------------------------|
| 63              | 10                      |
| ?               | ?                       |

**STEP 2** *Make a scatter plot* Use graph paper to draw axes labeled as shown. Then plot the data pairs (*height*, *forearm length*). For example, plot the point **(63, 10)** for a student with a height of 63 inches and a forearm length of 10 inches.



The symbol ↴ on an axis represents a break in the axis.

**DRAW CONCLUSIONS** Use your observations to complete these exercises

1. Examine your scatter plot. What does it suggest about the relationship between a person's height and the person's forearm length?
2. Compare your table with those of the other groups in your class. Determine which of the tables represent functions and which do not.
3. Is it possible to determine whether a table represents a function by looking at the corresponding scatter plot? *Explain.*