

# Solving Systems Using a Calculator

An example of a *system of linear equations* in two variables  $x$  and  $y$  is the following:

$$y = 2x + 4 \quad \text{Equation 1}$$

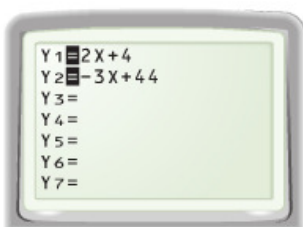
$$y = -3x + 44 \quad \text{Equation 2}$$

A *solution* of a system of equations in two variables is an ordered pair  $(x,y)$  that is a solution of both equations.

## Using Tables

### STEP 1 Enter equations

Press  $\boxed{Y=}$  to enter the equations. Enter Equation 1 as  $y_1$  and Equation 2 as  $y_2$ .



### STEP 2 Make a table

Set the starting  $x$ -value of the table to 0 and the step value to 1. Then use the *table* feature to make a table.

X	Y1	Y2
0	4	44
1	6	41
2	8	38
3	10	35
4	12	32

X=0

### STEP 3 Find the solution

Scroll through the table until you find an  $x$ -value for which  $y_1$  and  $y_2$  are equal. The table shows  $y_1 = y_2 = 20$  when  $x = 8$

X	Y1	Y2
4	12	32
5	14	29
6	16	26
7	18	23
8	20	20

X=8

## Using Graphs

You can use the *intersect* feature of a graphing calculator to get an answer that is very close to, and sometimes *exactly* equal to, the actual solution.

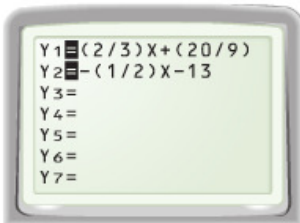
Use a graphing calculator to solve the system.

$$6x - 9y = -20 \quad \text{Equation 1}$$

$$2x + 4y = -52 \quad \text{Equation 2}$$

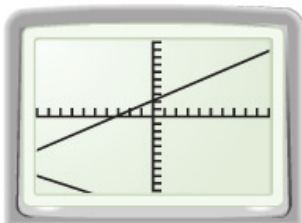
### STEP 1 Enter equations

Solve each equation for  $y$ . Then enter the revised equations into a graphing calculator.



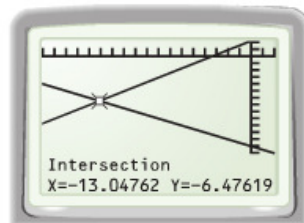
### STEP 2 Graph equations

Graph the equations in the standard viewing window.



### STEP 3 Find the solution

Adjust the viewing window, and use the *intersect* feature to find the intersection point.



► The solution is about  $(-13.05, -6.48)$ .

7	18	23
8	20	20
9	22	17

$(8, 20)$