

1.3 Use Tables to Solve Equations

TEKS a.1, a.5, a.6, 2A.2.A

QUESTION How can you use tables to solve linear equations?

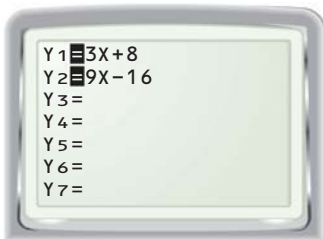
You can use the *table* feature of a graphing calculator to solve linear equations.

EXAMPLE Solve a linear equation

Use the *table* feature of a graphing calculator to solve the equation $3x + 8 = 9x - 16$.

STEP 1 Enter expressions

Press $\boxed{Y=}$. Enter the left side of the equation as $y_1 = 3x + 8$. Enter the right side of the equation as $y_2 = 9x - 16$.



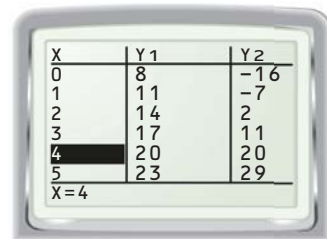
STEP 2 Make a table

Press $\boxed{2nd} \boxed{[TBLSET]}$. Set the starting x -value TblStart to 0 and the step value ΔTbl (the value by which the x -values increase) to 1.



STEP 3 Identify solution

Press $\boxed{2nd} \boxed{[TABLE]}$ to display the table. Scroll through the table until you find an x -value for which both sides of the equation have the same value.



Both sides of the equation have a value of 20 when $x = 4$. So, the solution of $3x + 8 = 9x - 16$ is 4.

PRACTICE

Use the *table* feature of a graphing calculator to solve the equation.

1. $7x - 3 = -x + 13$
2. $-6x + 8 = 12 - 5x$
3. $-2x - 13 = -3x - 5$
4. $22 + 15x = -9x - 2$
5. $4x + 27 = -8 + 11x$
6. $7 - 8x = -9 - 10x$

7. **REASONING** Consider the equation $4x + 18 = 9x - 9$.
 - a. Attempt to solve the equation using the *table* feature of a graphing calculator with step value $\Delta Tbl = 1$. Between what two integers does the solution lie? How do you know?
 - b. Use a smaller value of ΔTbl to find the exact solution.

8. **WRITING** Solve the equation $3x + 8 = 9x - 16$ by writing it in the form $ax + b = 0$, entering $y_1 = ax + b$ on a graphing calculator, and using a table to find the x -value for which $y_1 = 0$. What are the advantages and disadvantages of this method compared to the method shown above?