

3.4 Solve Equations Using Tables a.5

QUESTION How can you use a spreadsheet to solve an equation with variables on both sides?

You can use a spreadsheet to solve an equation with variables on both sides by evaluating the left side of the equation and the right side of the equation using the same value of the variable. If the left side and right side are equal, then the value of the variable is a solution.

EXAMPLE Solve an equation using a spreadsheet

Solve $19(x - 1) - 72 = 6x$.

STEP 1 Enter data and formulas

Label columns for possible solutions, left side, and right side in row 1. Enter the integers from 0 through 10 as possible solutions in column A. Then enter the formulas for the left side and the right side of the equation in columns B and C.

	A	B	C
1	Possible solutions	Left side	Right side
2	0	=19*(A2-1)-72	=6*A2
3	1	=19*(A3-1)-72	=6*A3
...
12	10	=19*(A12-1)-72	=6*A12

STEP 2 Compare columns

Compare the values of the left side and the values of the right side. The left side and right side values are equal when $x = 7$. So, the solution is 7.

	A	B	C
1	Possible solutions	Left side	Right side
...
8	6	23	36
9	7	42	42
10	8	61	48

DRAW CONCLUSIONS Use your observations to complete these exercises

In Exercises 1–3, use a spreadsheet to solve the equation.

- $15x + 6 = 6x + 24$ 2. $8x - 17 = 5x + 70$ 3. $18 - 2(x + 3) = x$
- Not all equations have integer solutions. Consider the equation $4.9 + 4.8(7 - x) = 6.2x$.
 - Follow Step 1 above using $4.9 + 4.8(7 - x) = 6.2x$.
 - Add a fourth column that shows the difference of the value of the left side and the value of the right side. Find consecutive possible solutions between which the differences of the values of the left side and right side change sign.
 - Repeat Step 1. This time use the lesser of the two possible solutions from part (b) as the first possible solution, and increase each possible solution by 0.1. Can you identify a solution now? If so, what is it?