

Tables of Values

Tables of values are used to show the relationship between data items. You might use a table of values in science class. Scientists and researchers use tables of values to record their data and then analyze the data for a pattern. They can then use this pattern to make predictions. For example, a geologist who is studying earthquake activity might use a table of values to track the amount of underground movement versus distance from a fault line. She could then use the table to predict the distance the movement can be felt.

To complete a table of values that has missing numbers, look for a pattern in the data.

EXAMPLE A

Complete the table of values.

x	y
-3	17
-1	14
1	
3	8
	5
7	2

Step 1: Look for a pattern in the left column.

Step 2: Use the pattern rule to find the missing values in the left column.

Step 3: Look for a pattern in the right column.

Step 4: Use the pattern rule to find the missing values in the right column.

Solution:

x	y
-3	17
-1	14
1	11
3	8
5	5
7	2
9	-1

The numbers are increasing by 2.

$$3 + 2 = 5$$

$$7 + 2 = 9$$

The numbers are decreasing by 3.

$$14 - 3 = 11$$

$$2 - 3 = -1$$

Tables of Values (continued)

You can create a table of values from a linear equation by substituting values for x into the equation and solving for y .

EXAMPLE B

Complete the table of values for the equation.

$y = 3x - 4$	
x	y
-2	
-1	
0	
1	

Substitute each x -value into the equation and solve for y .

$$y = 3(-2) - 4$$

$$y = -6 - 4$$

$$y = -10$$

$$y = 3(-1) - 4$$

$$y = -3 - 4$$

$$y = -7$$

$$y = 3(0) - 4$$

$$y = 0 - 4$$

$$y = -4$$

$$y = 3(1) - 4$$

$$y = 3 - 4$$

$$y = -1$$

Solution:

$y = 3x - 4$	
x	y
-2	-10
-1	-7
0	-4
1	-1

Tables of Values (continued)

To determine whether an equation correctly represents data in a table of values, substitute each pair of x - and y -values into the equation and simplify. If you get a true statement in every case, the equation represents the data.

EXAMPLE C

Which equation represents the data in the table?

- A. $y = 3x - 3$

B. $y = x + 7$
- C. $y = 4x - 1$

D. $y = 2x - 5$

x	-2	3	8	13
y	-9	1	11	21

Step 1: Substitute x - and y -values into the first equation.
If any statement is false, move on to the next equation.

A. $y = 3x - 3$

$-9 \stackrel{?}{=} 3(-2) - 3$

$-9 \stackrel{?}{=} -9$ (true)

$1 \stackrel{?}{=} 3(3) - 3$

$1 \stackrel{?}{=} 6$ (false)

Step 2: Substitute x - and y -values into the second equation.
If any statement is false, move on to the next equation.

B. $y = x + 7$

$-9 \stackrel{?}{=} -2 + 7$

$-9 \stackrel{?}{=} 5$ (false)

Step 3: Substitute x - and y -values into the third equation.
If any statement is false, move on to the next equation.

C. $y = 4x - 1$

$-9 \stackrel{?}{=} 4(-2) - 1$

$-9 \stackrel{?}{=} -9$ (true)

$1 \stackrel{?}{=} 4(3) - 1$

$1 \stackrel{?}{=} 11$ (false)

Step 4: Substitute x - and y -values into the fourth equation.
If any statement is false, move on to another equation.

D. $y = 2x - 5$

$-9 \stackrel{?}{=} 2(-2) - 5$

$-9 \stackrel{?}{=} -9$ (true)

$1 \stackrel{?}{=} 2(3) - 5$

$1 \stackrel{?}{=} 1$ (true)

$11 \stackrel{?}{=} 2(8) - 5$

$11 \stackrel{?}{=} 11$ (true)

$21 \stackrel{?}{=} 2(13) - 5$

$21 \stackrel{?}{=} 21$ (true)

Solution: Equation D, $y = 2x - 5$, represents the data in the table.

PRACTICE

Complete each table of values.

1.

x	y
-4	4
-1	8
	12
5	
8	20

2.

x	y
-2	-2
3	6
8	14
	22
18	

3.

x	y
	-10
4	-8
-2	
-8	-4
-14	-2

Tables of Values (continued)

Complete the table of values for each equation.

4.

$y = 2x + 3$	
x	y
-2	
-1	
0	
1	
2	

5.

$y = x - 6$	
x	y
-2	
-1	
0	
1	
2	

6.

$y = 4x - 2$	
x	y
-2	
-1	
0	
1	
2	

7. Which equation represents the data in the table? Show your work.

x	2	4	6	8
y	1	5	9	13

- A. $y = \frac{1}{2}x$
- B. $y = x - 1$
- C. $y = 2x - 3$
- D. $y = 3x - 5$

8. Dave and Bonnie each made a table of values for the equation $y = \frac{1}{2}x - 2$. Dave said his table is correct. Bonnie said her table is correct. Who is correct? Explain your answer.

Dave's table

x	-4	-2	0	2
y	-4	-3	-2	-1

Bonnie's table

x	4	8	12	16
y	0	2	4	6