9.2 Part 1 Solve Linear Functions

Recall: Solving an equation means to replace the variable so a true sentence results.

The solution of an equation with two variables consists of two numbers, one for each variable.

Usually, the solution is expressed as an ordered pair.

An equation with two variables has an infinite number of solutions.

To find a solution of such an equation, choose any value for x, substitute that value into the equation, and find the corresponding value for y.

It is often convenient to organize the solutions in a table. One column for x, one for the equation/work, and one column for y.

Example: Find four solutions for each equation.

$y = x + 3$

x	y = x + 3	y
4	4+3	7
8	8+3	11
-12	-12+3	-9
18	18+3	21

Example: Find four solutions for each equation.

$y = 2x$

x	y = 2x	y
-4	$2 \cdot -4$	-8
5	$2 \cdot 5$	10
-6	$2 \cdot -6$	-12
7	$2 \cdot 7$	14

Example: Find four solutions for each equation.

$$y = 2x - 3$$

x		y
5	$2 \cdot 5 - 3 = 10 - 3$	7
-11	$2 \cdot -11 - 3 = -22 - 3$	-25
15	$2 \cdot 15 - 3 = 30 - 3$	27
-4	$2 \cdot -4 - 3 = -8 - 3$	-11

Example: Find four solutions for each equation.

$$y = -5x + 3$$

x		y
10	$-5 \cdot 10 + 3 = -50 + 3$	-47
-9	$-5 \cdot -9 + 3 = 45 + 3$	48
0	$-5 \cdot 0 + 3 = 0 + 3$	3
-7	$-5 \cdot -7 + 3 = 35 + 3$	38

Example: Find four solutions for each equation.

$$y = \frac{1}{2}x + 5$$

even #'s → 2

x		y
14	$\frac{1}{2} \cdot 14 + 5 = 7 + 5$	12
-2	$\frac{1}{2} \cdot -2 + 5 = -1 + 5$	4
8	$\frac{1}{2} \cdot 8 + 5 = 4 + 5$	9
0	$\frac{1}{2} \cdot 0 + 5 = 0 + 5$	5

Example: Find four solutions for each equation.

$$y = \frac{2}{3}x + 1$$

divisible by 3 → 3

x		y
0	$\frac{2}{3} \cdot 0 + 1 = 0 + 1$	1
-3	$\frac{2}{3} \cdot -3 + 1 = \frac{-6}{3} + 1 = -2 + 1$	-1
21	$\frac{2}{3} \cdot 21 + 1 = \frac{42}{3} + 1 = 14 + 1$	15
-333	$\frac{2}{3} \cdot -333 + 1 = \frac{-666}{3} + 1 =$	-221

$-222 + 1$