Pairs That Make It True

SY01-V1 · storyboard · SY01 Solutions of an equation in two letters. Read each picture with its sentences.

Picture 1

Is $(8, 3)$ a solution of $2x - 3y = 7$?

$x = 8, \quad y = 3$ first x, then y

$2(8) - 3(3)$ both values in

$= \boxed{16 - 9 = 7}$ true

1. Is eight, three a solution of 2x − 3y = 7?
2. The first number goes with x and the second with y, in the order of the alphabet.
3. Put both values in, in brackets: two times eight, minus three times three.
4. Sixteen minus nine is seven.
5. True: eight, three is a solution.

Picture 2

Trap $(8, 3)$

$$\times \; 2(3) - 3(8) = -18$$

$$\checkmark \; 2(8) - 3(3) = 7$$

6. Watch for the trap: swapping the numbers.
7. x is the first number, eight, not three.

Picture 3

$$2(11) - 3y = 7 \quad x = 11 \text{ in}$$

$$22 - 3y = 7$$

$$-3y = -15 \quad \text{subtract } 22$$

$$\boxed{y = 5} \quad \text{so } (11, 5)$$

Every x has its own y: infinitely many solutions

$$(5, 1), \quad (8, 3), \quad (11, 5), \quad (14, 7), \quad \ldots$$

8. Now find the solution of the same equation that has x = 11.
9. Put eleven in for x.
10. Now there is only one letter.
11. Two times eleven is twenty-two.
12. Subtract twenty-two from both sides: −3y = −15.
13. Divide by negative three: y = 5.
14. So eleven, five is a solution.
15. Every value of x gives its own y, so the equation has infinitely many solutions.