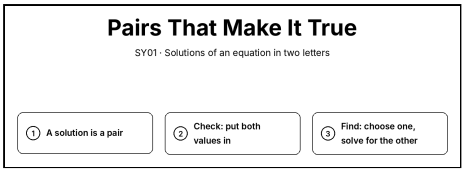
Pairs That Make It True: teacher script

SY01-V1 · SY01 Solutions of an equation in two letters · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 80 seconds as a video.

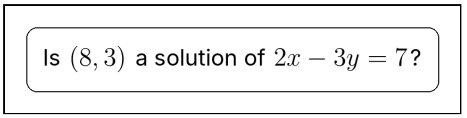
01



Say. Pairs that make it true. A solution of an equation in two letters is a pair of numbers. To check a pair, put both values in. To find a pair, choose a value for one letter, and solve for the other.

Draw. Write the title “Pairs That Make It True” and the steps: 1. A solution is a pair; 2. Check: put both values in; 3. Find: choose one, solve for the other.

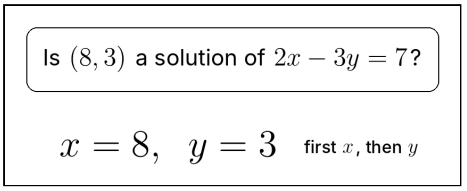
02



Say. Is eight, three a solution of 2x − 3y = 7?

Draw. Clear the board. Write “Is (8, 3) a solution of 2x − 3y = 7?” in a box at the top.

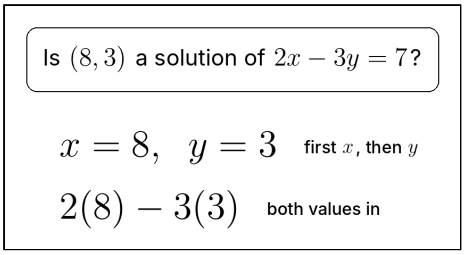
03



Say. The first number goes with x and the second with y, in the order of the alphabet.

Draw. Write x = 8, y = 3 on the next line. Beside it, write “first x, then y”.

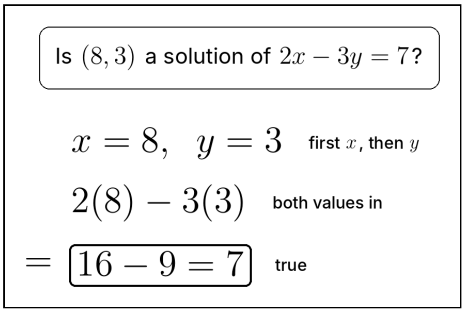
04



Say. Put both values in, in brackets: two times eight, minus three times three.

Draw. Write 2(8) − 3(3) on the next line. Beside it, write “both values in”.

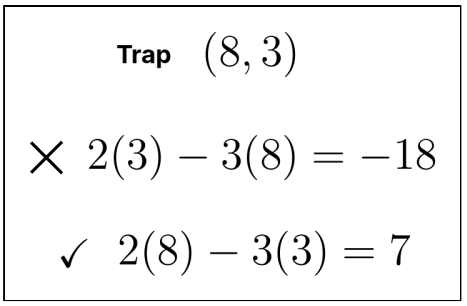
05



Say. Sixteen minus nine is seven. True: eight, three is a solution.

Draw. Write = 16 − 9 = 7 and box it on the next line. Beside it, write “true”.

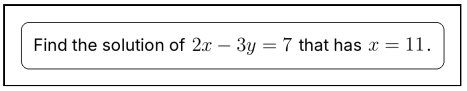
06



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

Draw. Clear the board. Write “Trap” and (8, 3). Below, write 2(3) − 3(8) = −18 and cross it out ×. Then write 2(8) − 3(3) = 7 with a tick ✓.

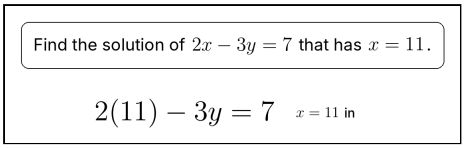
07



Say. Now find the solution of the same equation that has x = 11.

Draw. Clear the board. Write “Find the solution of 2x − 3y = 7 that has x = 11.” in a box at the top.

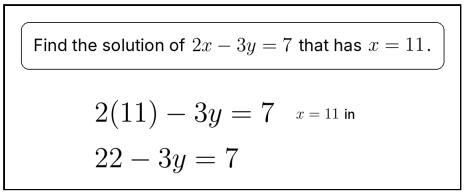
08



Say. Put eleven in for x. Now there is only one letter.

Draw. Write 2(11) − 3y = 7 on the next line. Beside it, write “x = 11 in”.

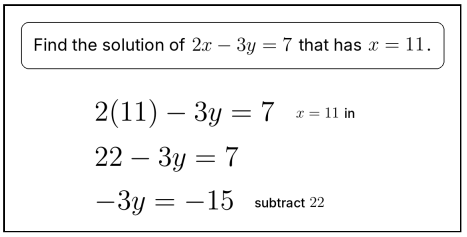
09



Say. Two times eleven is twenty-two.

Draw. Write 22 − 3y = 7 on the next line.

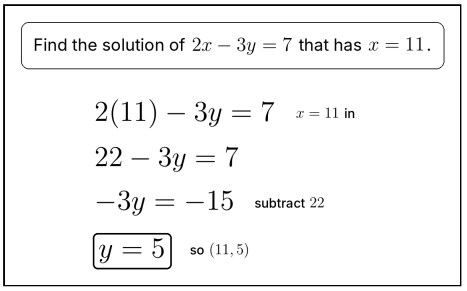
10



Say. Subtract twenty-two from both sides: −3y = −15.

Draw. Write −3y = −15 on the next line. Beside it, write “subtract 22”.

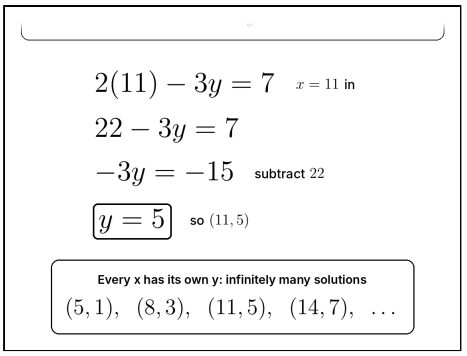
11



Say. Divide by negative three: y = 5. So eleven, five is a solution.

Draw. Write y = 5 and box it on the next line. Beside it, write “so (11, 5)”.

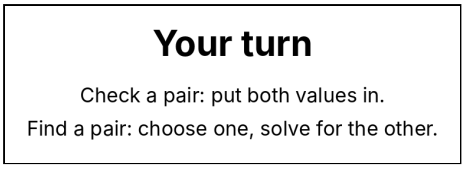
12



Say. Every value of x gives its own y, so the equation has infinitely many solutions.

Draw. Write the rule in a box: (5, 1), (8, 3), (11, 5), (14, 7), \dots.

13



Say. Now it is your turn. Check a pair by putting both values in. Find a pair by choosing one value and solving for the other.

Draw. Point to today’s activity: Check a pair: put both values in. Find a pair: choose one, solve for the other.