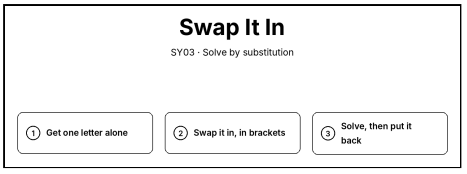
Swap It In: teacher script

SY03-V1 · SY03 Solve by substitution · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 73 seconds as a video.

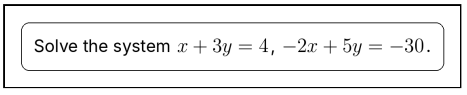
01



Say. Swap it in. Get one letter alone. Swap it into the other equation, in brackets. Solve, then put it back to find the other letter.

Draw. Write the title “Swap It In” and the steps: 1. Get one letter alone; 2. Swap it in, in brackets; 3. Solve, then put it back.

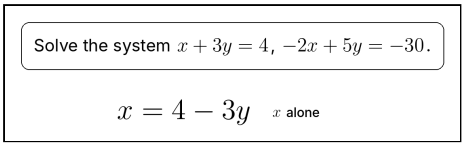
02



Say. Solve the system x + 3y = 4 and −2x + 5y = −30.

Draw. Clear the board. Write “Solve the system x + 3y = 4, −2x + 5y = −30.” in a box at the top.

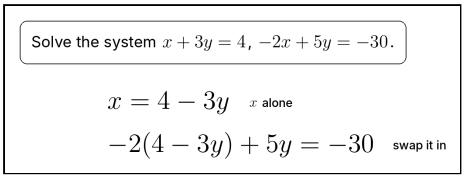
03



Say. Get x alone in the first equation: x = 4 − 3y.

Draw. Write x = 4 − 3y on the next line. Beside it, write “x alone”.

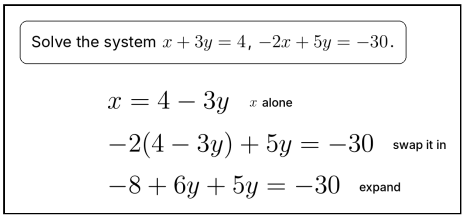
04



Say. Swap it into the second equation, in brackets. Now there is only y.

Draw. Write −2(4 − 3y) + 5y = −30 on the next line. Beside it, write “swap it in”.

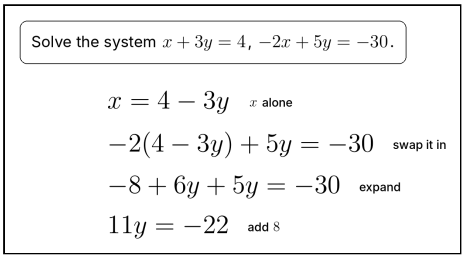
05



Say. Expand: negative two times four is negative eight, and negative two times negative three y is six y.

Draw. Write −8 + 6y + 5y = −30 on the next line. Beside it, write “expand”.

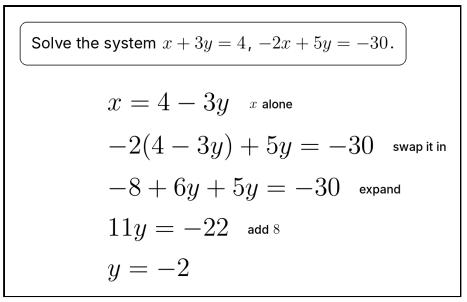
06



Say. Collect the y terms and add eight to both sides: 11y = −22.

Draw. Write 11y = −22 on the next line. Beside it, write “add 8”.

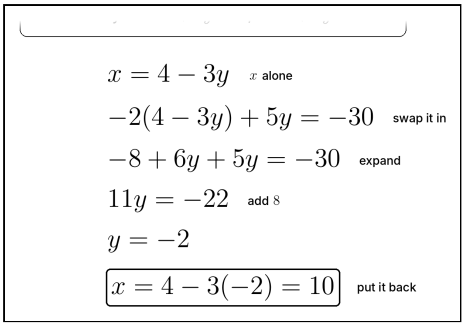
07



Say. So y = −2.

Draw. Write y = −2 on the next line.

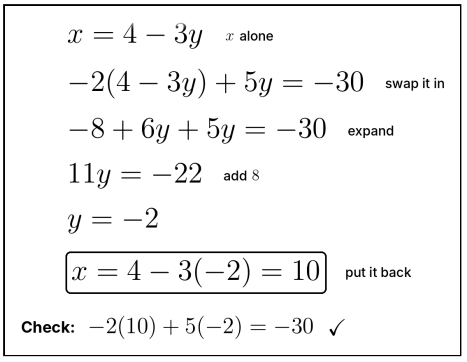
08



Say. Put it back: x = 4 − 3(−2), which is ten. The solution is ten, negative two.

Draw. Write x = 4 − 3(−2) = 10 and box it on the next line. Beside it, write “put it back”.

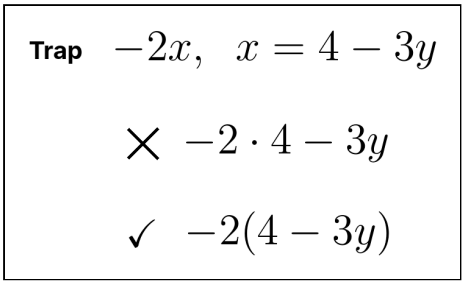
09



Say. Check in the second equation: negative twenty minus ten is negative thirty.

Draw. Below, write “Check: −2(10) + 5(−2) = −30” and tick it ✓.

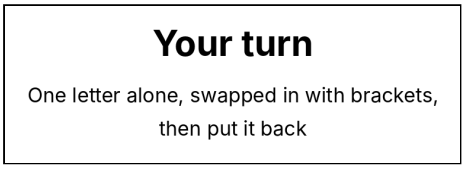
10



Say. Watch for the trap: dropping the brackets. Negative two multiplies the whole of 4 − 3y.

Draw. Clear the board. Write “Trap” and −2x, x = 4 − 3y. Below, write −2 · 4 − 3y and cross it out ×. Then write −2(4 − 3y) with a tick ✓.

11



Say. Now it is your turn. Get one letter alone, swap it in with brackets, then put it back.

Draw. Point to today’s activity: One letter alone, swapped in with brackets, then put it back