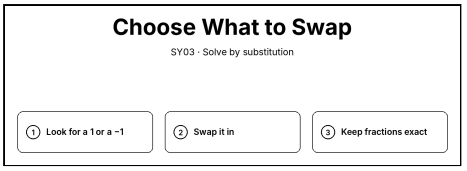
Choose What to Swap: teacher script

SY03-V2 · SY03 Solve by substitution · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 72 seconds as a video.

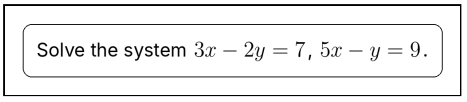
01



Say. Choose what to swap. Look for a letter with one or negative one in front of it: getting it alone brings no fractions. Swap it in. And when fractions do come, keep fractions exact.

Draw. Write the title “Choose What to Swap” and the steps: 1. Look for a 1 or a −1; 2. Swap it in; 3. Keep fractions exact.

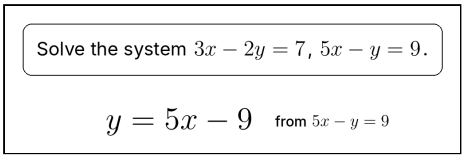
02



Say. Solve the system 3x − 2y = 7 and 5x − y = 9.

Draw. Clear the board. Write “Solve the system 3x − 2y = 7, 5x − y = 9.” in a box at the top.

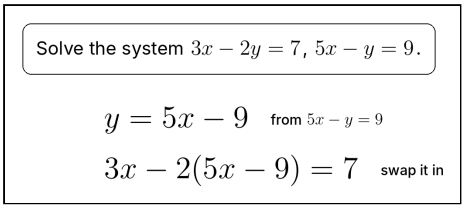
03



Say. Only y in the second equation has a one in front of it, with a minus sign. Get it alone: y = 5x − 9.

Draw. Write y = 5x − 9 on the next line. Beside it, write “from 5x − y = 9”.

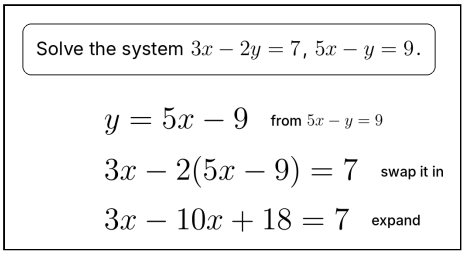
04



Say. Swap it into the first equation, in brackets.

Draw. Write 3x − 2(5x − 9) = 7 on the next line. Beside it, write “swap it in”.

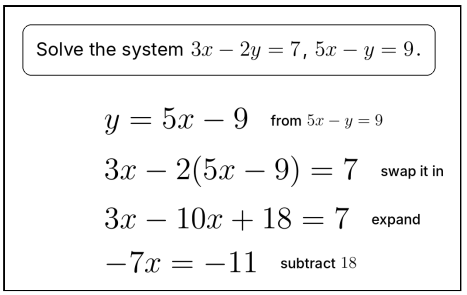
05



Say. Expand: negative two times negative nine is plus eighteen.

Draw. Write 3x − 10x + 18 = 7 on the next line. Beside it, write “expand”.

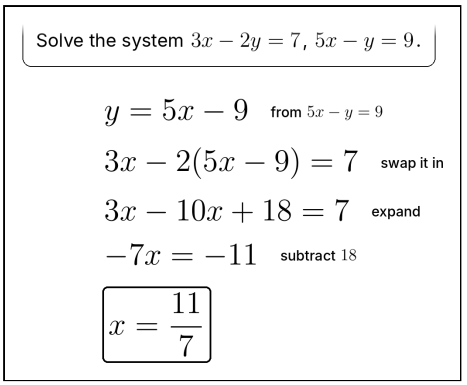
06



Say. Collect the x terms and subtract eighteen: −7x = −11.

Draw. Write −7x = −11 on the next line. Beside it, write “subtract 18”.

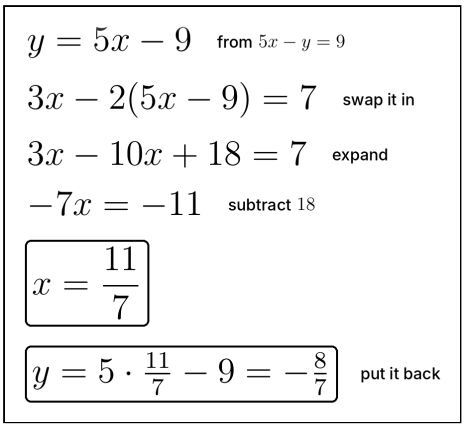
07



Say. Divide by negative seven: x is eleven sevenths. A fraction: keep it exact.

Draw. Write x = 11/7 and box it on the next line.

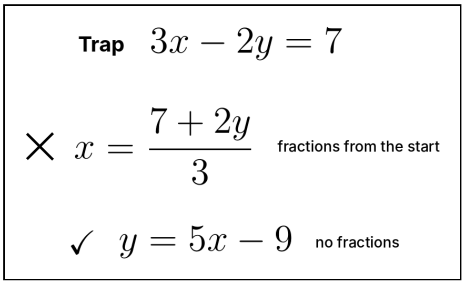
08



Say. Put it back: five times eleven sevenths, minus nine, is negative eight sevenths.

Draw. Write y = 5 · 11/7 − 9 = −8/7 and box it on the next line. Beside it, write “put it back”.

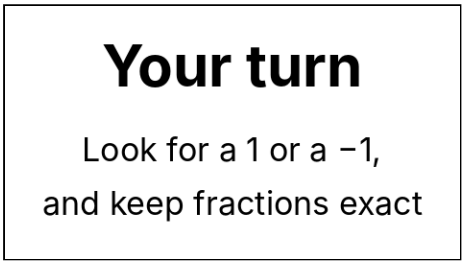
09



Say. Watch for the trap: getting the first letter you see alone. That works, but it brings fractions straight away. Pick the letter that has a one in front of it.

Draw. Clear the board. Write “Trap” and 3x − 2y = 7. Below, write x = (7 + 2y)/3 and cross it out ×. Then write y = 5x − 9 with a tick ✓.

10



Say. Now it is your turn. Look for a one or a negative one, and keep fractions exact.

Draw. Point to today’s activity: Look for a 1 or a −1, and keep fractions exact