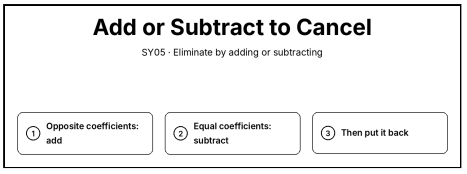
Add or Subtract to Cancel: teacher script

SY05-V1 · SY05 Eliminate by adding or subtracting · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 77 seconds as a video.

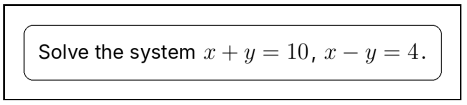
01



Say. Add or subtract to cancel. When a letter has opposite coefficients, add the equations. When it has equal coefficients, subtract. Then put it back for the other letter.

Draw. Write the title “Add or Subtract to Cancel” and the steps: 1. Opposite coefficients: add; 2. Equal coefficients: subtract; 3. Then put it back.

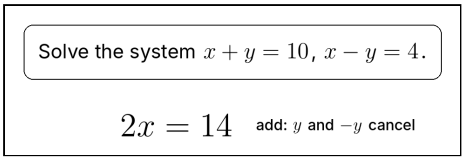
02



Say. Solve the system x + y = 10 and x − y = 4.

Draw. Clear the board. Write “Solve the system x + y = 10, x − y = 4.” in a box at the top.

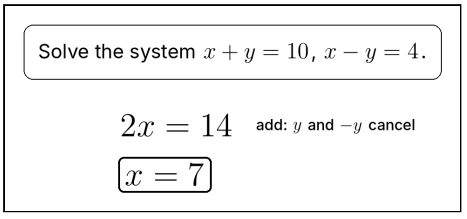
03



Say. Add the equations. y and −y cancel: 2x = 14.

Draw. Write 2x = 14 on the next line. Beside it, write “add: y and −y cancel”.

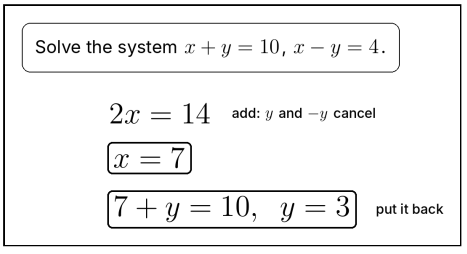
04



Say. So x = 7.

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

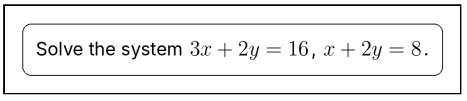
05



Say. Put it back into the first equation: 7 + y = 10, so y = 3. The solution is seven, three.

Draw. Write 7 + y = 10, y = 3 and box it on the next line. Beside it, write “put it back”.

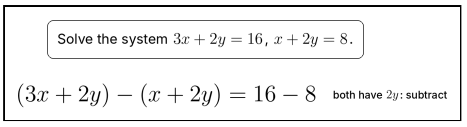
06



Say. Now 3x + 2y = 16 and x + 2y = 8.

Draw. Clear the board. Write “Solve the system 3x + 2y = 16, x + 2y = 8.” in a box at the top.

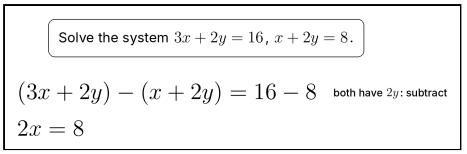
07



Say. Both have 2y, so subtract the whole second equation, right side too.

Draw. Write (3x + 2y) − (x + 2y) = 16 − 8 on the next line. Beside it, write “both have 2y: subtract”.

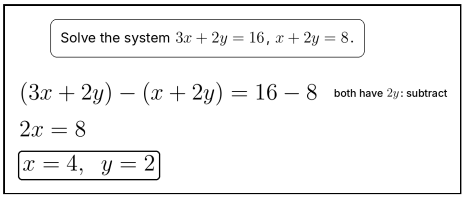
08



Say. That leaves 2x = 8.

Draw. Write 2x = 8 on the next line.

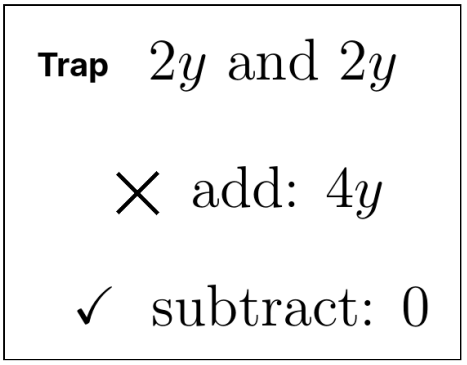
09



Say. So x = 4, and from 4 + 2y = 8, y = 2.

Draw. Write x = 4, y = 2 and box it on the next line.

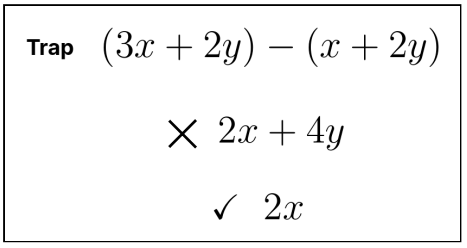
10



Say. Watch for the trap: adding when they are equal. Equal coefficients cancel only when you subtract.

Draw. Clear the board. Write “Trap” and 2y and 2y. Below, write add: 4y and cross it out ×. Then write subtract: 0 with a tick ✓.

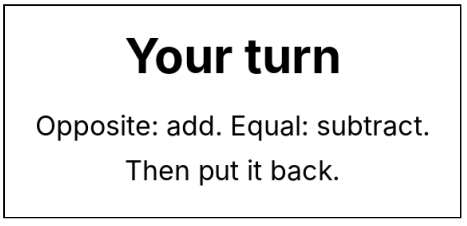
11



Say. And watch for taking away only the first term. Taking away the second equation changes the sign of every term in it.

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

12



Say. Now it is your turn. Opposite coefficients: add. Equal coefficients: subtract. Then put it back.

Draw. Point to today’s activity: Opposite: add. Equal: subtract. Then put it back.