Choose What to Swap

SY03-V2 · storyboard · SY03 Solve by substitution. Read each picture with its sentences.

Picture 1

$$y = 5x - 9 \quad \text{from } 5x - y = 9$$

$$3x - 2(5x - 9) = 7 \quad \text{swap it in}$$

$$3x - 10x + 18 = 7 \quad \text{expand}$$

$$-7x = -11 \quad \text{subtract } 18$$

$$\boxed{x = \frac{11}{7}}$$

$$\boxed{y = 5 \cdot \frac{11}{7} - 9 = -\frac{8}{7}} \quad \text{put it back}$$

1. Solve the system 3x − 2y = 7 and 5x − y = 9.
2. Only y in the second equation has a one in front of it, with a minus sign.
3. Get it alone: y = 5x − 9.
4. Swap it into the first equation, in brackets.
5. Expand: negative two times negative nine is plus eighteen.
6. Collect the x terms and subtract eighteen: −7x = −11.
7. Divide by negative seven: x is eleven sevenths.
8. A fraction: keep it exact.
9. Put it back: five times eleven sevenths, minus nine, is negative eight sevenths.

Picture 2

Trap $3x - 2y = 7$

✗ $x = \dfrac{7 + 2y}{3}$ fractions from the start

✓ $y = 5x - 9$ no fractions

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