Notes & Steps

Key idea

Undo add/subtract first, then undo multiply/divide. Do the same to both sides.

$2x + 3 = 11$ (add then multiply)

Step 1: Subtract 3

$$2x + 3 - 3 = 11 - 3$$

$$2x = 8$$

Step 2: Divide by 2

$$\frac{2x}{2} = \frac{8}{2}$$

$$x = 4$$

Check: $2 \times 4 + 3 = 11$

$5y - 7 = 18$ (subtract then multiply)

Step 1: Add 7

$$5y - 7 + 7 = 18 + 7$$

$$5y = 25$$

Step 2: Divide by 5

$$\frac{5y}{5} = \frac{25}{5}$$

$$y = 5$$

Check: $5 \times 5 - 7 = 18$

$\frac{b}{2} + 5 = 9$ (add then divide)

Step 1: Subtract 5

$$\frac{b}{2} + 5 - 5 = 9 - 5$$

$$\frac{b}{2} = 4$$

Step 2: Multiply by 2

$$\frac{b}{2} \times 2 = 4 \times 2$$

$$b = 8$$

Check: $8 \div 2 + 5 = 9$

$\frac{c}{3} - 1 = 4$ (subtract then divide)

Step 1: Add 1

$$\frac{c}{3} - 1 + 1 = 4 + 1$$

$$\frac{c}{3} = 5$$

Step 2: Multiply by 3

$$\frac{c}{3} \times 3 = 5 \times 3$$

$$c = 15$$

Check: $15 \div 3 - 1 = 4$

Try these

1. $2x + 3 = 11$
2. $3a - 4 = 14$
3. $\frac{b}{2} + 5 = 9$
4. $\frac{c}{3} - 1 = 4$

Common mistake

Undoing in wrong order. For $2x + 3 = 11$, subtract 3 first, *then* divide by 2. Doing divide first gives $x + 3 = 5.5$ which is incorrect.