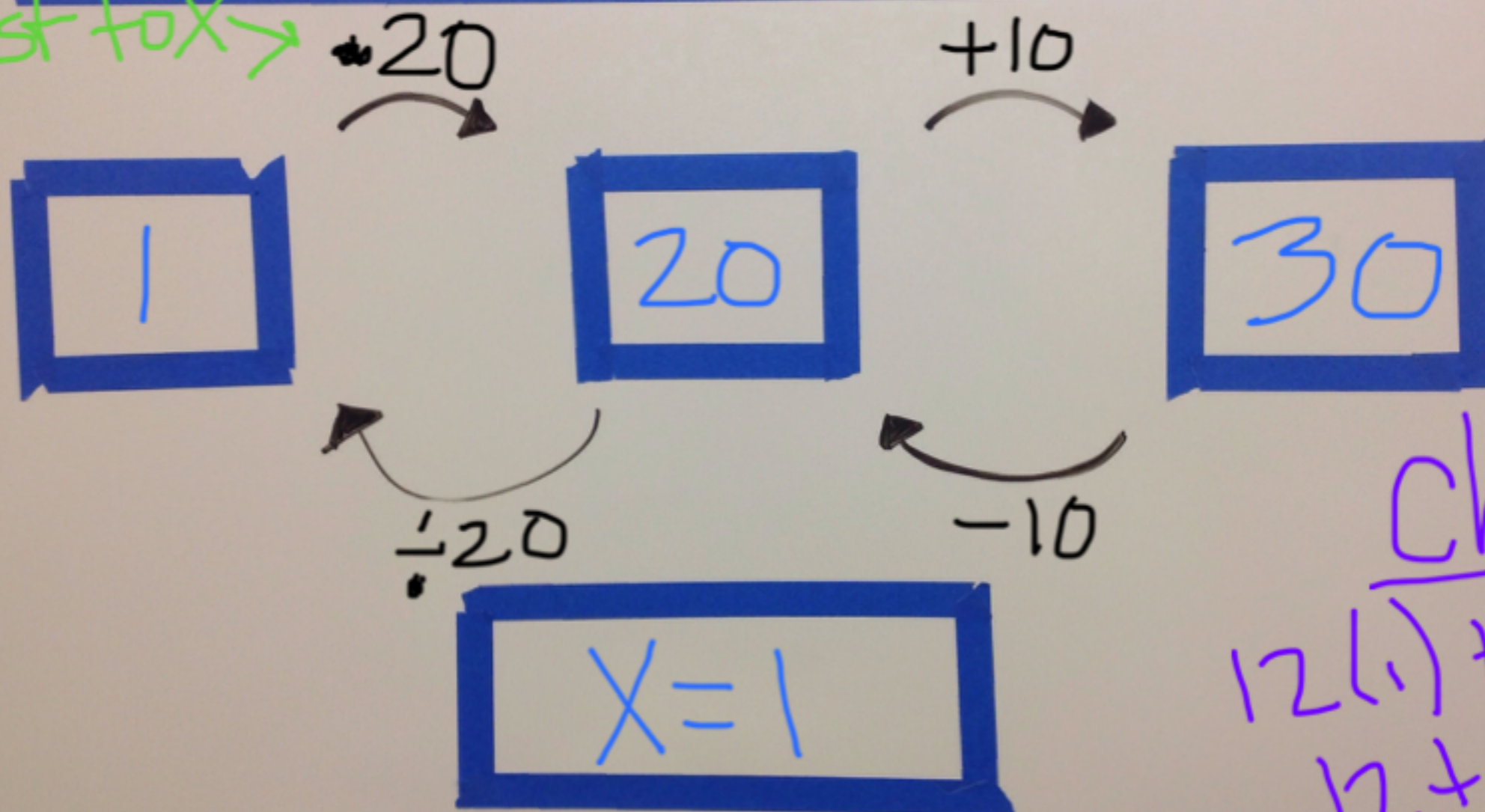


# Combining Like Terms Multi-Step Equations

$$12x + 8x + 10 = 30$$

$$20x + 10 = 30$$

closest to  $x \rightarrow$



Check

$$12(1) + 8(1) + 10 = 30$$
$$12 + 8 + 10 = 30$$
$$30 = 30 \checkmark$$

$$2x - 4x + 8 = 10$$

$$\boxed{-2x + 8 = 10}$$

$\begin{array}{r} -8 \\ -8 \end{array}$

$$\frac{-2x = 2}{-2 \quad -2}$$

$$\boxed{x = -1}$$

## Box Method

- ① Combine like terms
- ② Put box around  $x$  and number closest to it

check

$$2(-1) - 4(-1) + 8 = 10$$

$$-2 - (-4) + 8 = 10$$

$$-2 + 4 + 8 = 10$$

$$10 = 10 \checkmark$$

$$3x + 2x - 9 = 16$$

$$5x + 9 = 16$$

$$\begin{array}{r} +9 \\ +9 \end{array}$$

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

$$\boxed{x = 5}$$

Vertical  
Method

Check

$$3(5) + 2(5) - 9 = 16$$

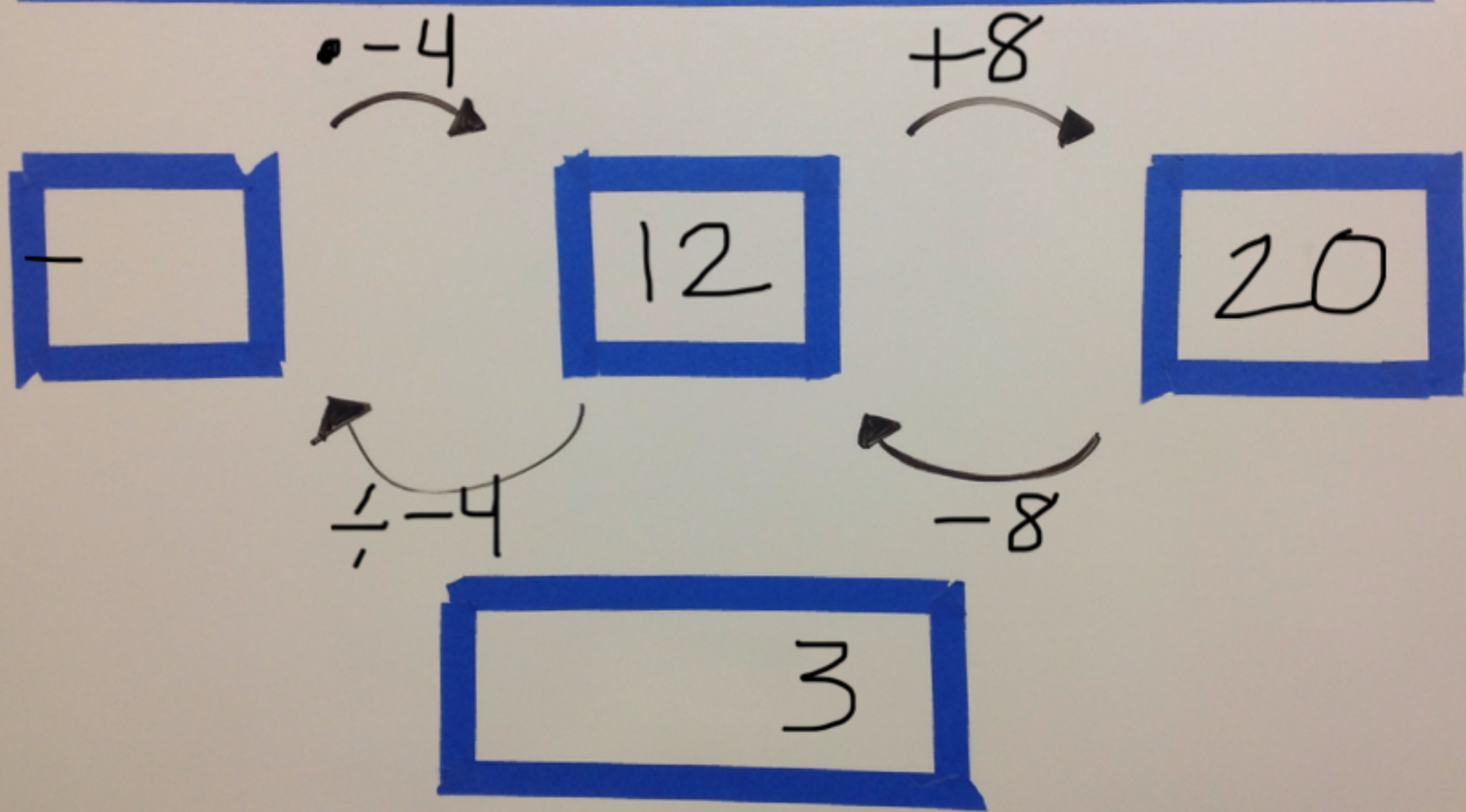
$$15 + 10 - 9 = 16$$

$$16 = 16 \checkmark$$

$$8 - 3x + 4x - 5x = 20$$

$$8 + (-3x) + 4x + (-5x) = 20$$

$$8 - 4x = 20$$



$$4 - 2x - 3x + 4x = 7$$

$$4 - 1x = 7$$

-4                      -4

$$\frac{-1x}{-1} = \frac{3}{-1}$$

$$x = -3$$

$$4x + (+x) + 2 = 17$$

$$4x + x + 2 = 17$$

$$5x + 2 = 17$$

-2                      -2

$$\frac{5x}{5} = \frac{15}{5}$$

$$x = 3$$

$$\frac{1}{5}x + \frac{2}{5}x + 8 = 20$$

$$\begin{array}{r} \frac{3}{5}x + 8 = 20 \\ -8 \quad -8 \end{array}$$

$$\begin{array}{r} \frac{3}{5}x = 12 \\ \cdot \frac{5}{3} \quad \cdot \frac{5}{3} \end{array}$$

$$\boxed{x = 20}$$

$$\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$$

$$\begin{array}{l} 12 \div \left(\frac{3}{5}\right) \\ 12 \cdot \frac{5}{3} = \frac{60}{3} = 20 \end{array}$$