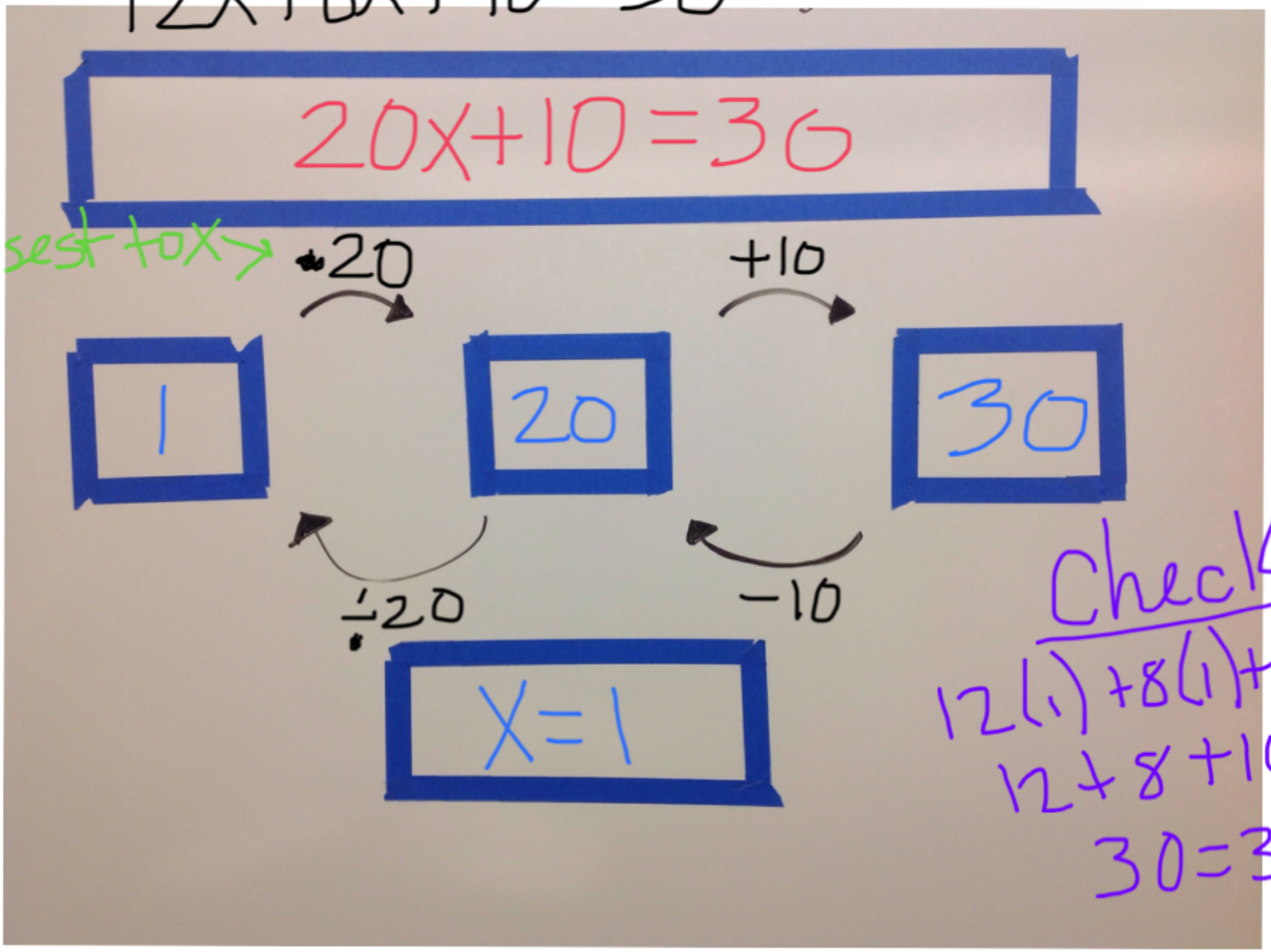
Combining Like Terms Multi-Step Equations

$12x+8x+10=30$



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

$$-2x + 8 = 10$$

$$-8 \quad -8$$

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

$$x = -1$$

Box Method

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

Check

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

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

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

$$10 = 10 \checkmark$$

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

$$5x-9=16$$

$$+9 \quad +9$$

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

$$\boxed{x=5}$$

Vertical Method

Check

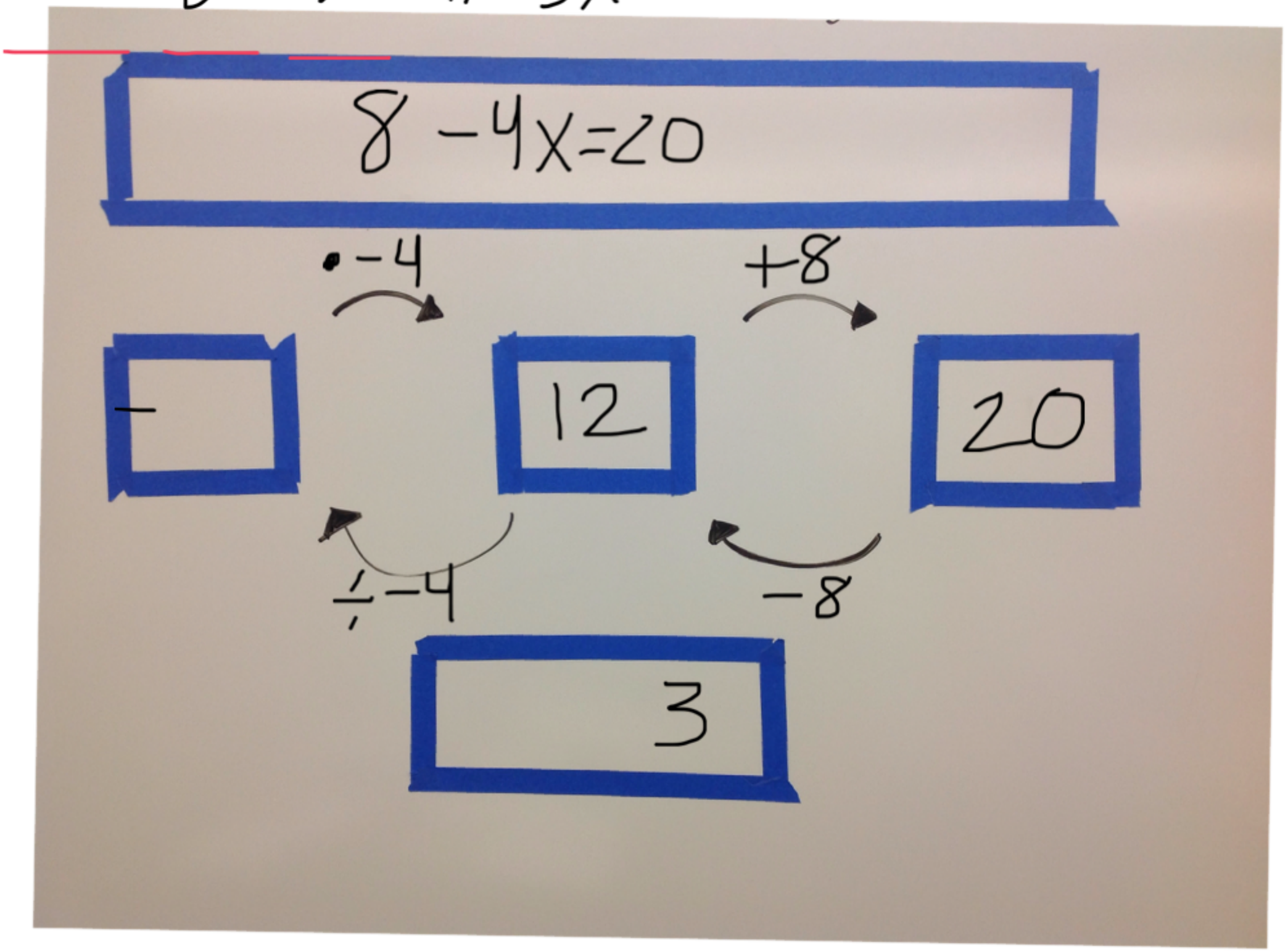
$$3(5)+2(5)-9=16$$

$$15+10-9=16$$

$$16=16\checkmark$$

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

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



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

$4-1x=7$

$-4 \quad -4$

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

$x=-3$

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

$4x+x+2=17$

$5x+2=17$

$-2 \quad -2$

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

$x=3$

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

$$\frac{3}{5}x + 8 = 20$$

$$-8 \quad -8$$

$$\frac{3}{5}x = 12$$

$$\div \frac{3}{5} \quad \div \frac{3}{5}$$

$$\boxed{x = 20}$$

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

$$12 \div \left(\frac{3}{5}\right)$$

$$12 \cdot \frac{5}{3} = \frac{60}{3} = 20$$