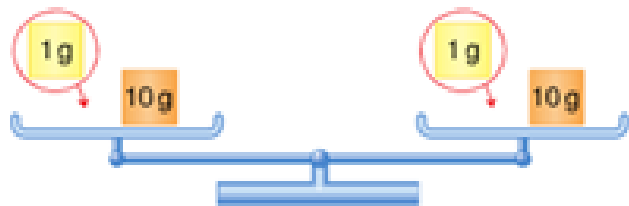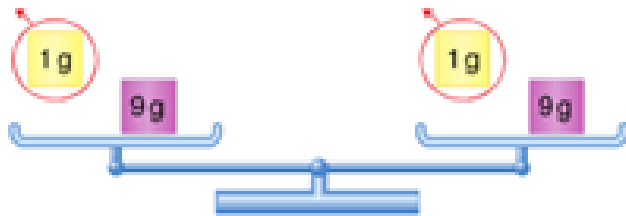= symbol means both sides are exactly the same.

We can use a balance scale to show that the two sides are the same

If we add or subtract from one side we have to do it to the other side as well for the scale to stay balanced

both sides are 11 now

$$+{}^1_1 0 = 10 {}_{+1}$$

both sides are 8 now

$$-{}^9_1 = 9 {}_{-1}$$

Example 1

Herman is in the last round of the spell-a-thon in his school.
A contestant receives 3 points for every word spelled correctly.
Herman has 42 points. How many words has he spelled correctly?

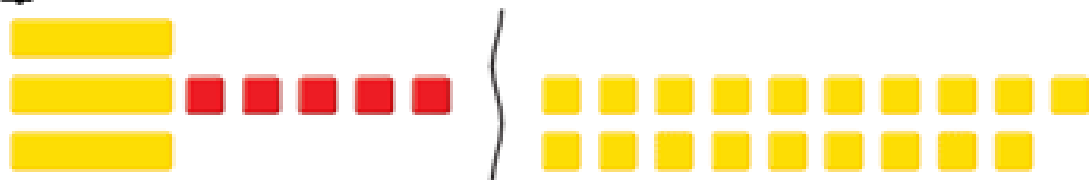$$3w = 42$$
$$\div 3 \qquad\qquad \div 3$$
$$\boxed{w = 14}$$

Example 2

Jodee is also a contestant in the spell-a-thon.
A contestant receives 3 points for every word spelled correctly.
Because of a technical penalty, Jodee loses 5 points. She now has 19 points.
How many words has Jodee spelled correctly?

$\rightarrow 3w$

$\rightarrow 3w - 5 = 19$

Let j represent the number of words Jodee has spelled correctly.
Then, the number of points she receives is $3j$.
When the penalty is considered, the number of points is $3j - 5$.
So, the equation is: $3j - 5 = 19$

Yellow is positive. Red is negative. Sticks represent "x" and little blocks represent "1"

$\blacksquare = -1$

$\blacksquare = +1$

$= x \text{ (or any}$

$= -x \text{ letter)}$

Yellow is positive. Red is negative. Sticks represent "x" and little blocks represent "1"

$$3x - 5 = 19$$
$$+5 \quad\quad +5$$
$$3x = 24$$
$$\frac{3x}{3} = \frac{24}{3}$$
$$\boxed{x = 8}$$

$x = 8$
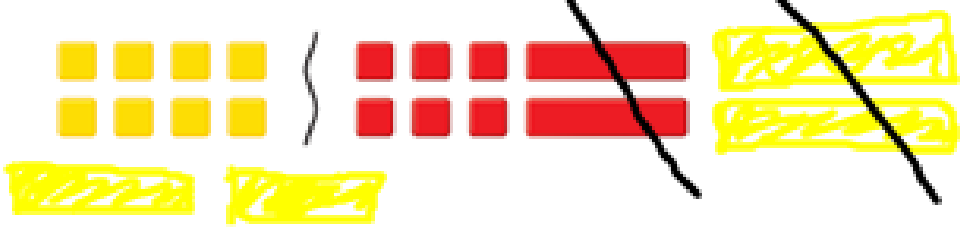
GOAL IN BALANCING IS ALWAYS TO GET DOWN TO ONE YELLOW STICK (X)
ON ONE SIDE

Use algebra tiles to solve: $8 = -6 - 2x$

WE WANT A YELLOW STICK IN THE END. NOT RED. SO ADD 2 YELLOW
STICKS TO BOTH SIDES TO ELIMINATE THE REDS

$$8 = -6 - 2x$$
$$+6 \quad +6$$
$$\frac{14}{-2} = \frac{-2x}{-2}$$
$$\boxed{-7 = x}$$

$$\boxed{x = -7}$$

PRACTICE PG 324 #5-9, 10a, 11, 13