Isolating y In Variable Expressions

Determine what changes have to be made when isolating y (getting y by itself on one side of the equal sign, and everything else on the other).

Example: $2 + y = 3x$

- What needs to be moved?
  - The positive 2 must be moved to the right side of the equal sign.
- How do you move the positive 2?
  - Subtract 2 from both sides.

$$2 + y = 3x$$
$$-2 \quad\quad -2$$
$$y = 3x - 2$$ (Always place the number with the variable first)

Example: $4 - y = 6x$

- What needs to be moved?
  - The positive 4 must be moved to the right side of the equal sign.
- How do you move the positive 4?
  - Subtract 4 from both sides.

$$4 - y = 6x$$
$$-4 \quad\quad -4$$
$$-y = 6x - 4$$ (Always place the number with the variable first)

- What is the problem with the variable expression?
  - The y is negative. The rule is that you cannot have y be a negative.
- What must we do to make it a positive variable?
  - We have to "transfer the negative," or change the sign of every number in the variable expression
  - $-y = 6x - 4$ becomes **$y = -6x + 4$**

Example: $-8 + 2y = 6x$

- What needs to be moved?
  - The negative 8 must be moved to the right side of the equal sign.
- How do you move the negative 8?
  - Add 8 to both sides.

$$\begin{array}{rr} -8 + 2y = & 6x \\ \underline{+8} & \underline{+8} \\ 2y = & 6x + 8 \end{array}$$

(Always place the number with the variable first)

- What is the problem with the variable expression?
  - There is a 2 connected to y.
- What must we do to get rid of the 2 connected to y?
  - We have to divide both sides by 2
  - $\dfrac{2y}{2} = \dfrac{6x + 8}{2}$
  - $y = 3x + 4$