



Equations with variables on both sides

Sections 3.4

Solving for the variable

- **GOAL:** To get the variable by itself
- **Steps:**
 - Get the variable on one side (try to keep it positive)
 - "Undo" by performing the opposite operation
 - Follow the REVERSE of the order of operations

Examples:

1. $2x + 4 = 6x$

$$\begin{array}{r|l} -2x & -2x \\ \hline 4 = 4x & \end{array}$$
$$\frac{4}{4} = \frac{4x}{4}$$

$x = 1$

3. $6a = -2(a - 2)$

$$\begin{array}{r|l} +2a & +2a \\ \hline 6a = -2a + 4 & \\ +2a & +2a \\ \hline 8a = 4 & \end{array}$$
$$\frac{8a}{8} = \frac{4}{8}$$

$a = \frac{1}{2}$

2. $-5x + 3 = -12x$

$$\begin{array}{r|l} +5x & +5x \\ \hline -3 = -7x & \end{array}$$
$$\frac{-3}{-7} = \frac{-7x}{-7}$$

$x = -\frac{3}{7}$

4. $5m - 18 = -4m$

$$\begin{array}{r|l} -5m & -5m \\ \hline -18 = -9m & \\ -9 & -9 \\ \hline 2 = m & \end{array}$$

$$\frac{-2}{10} = \frac{10x}{10}$$

$$x = -\frac{1}{5} = -0.2$$

Examples:

$$5. \quad \begin{array}{l} \cancel{-3x} - 5 = 7x - 3 \\ \div 1x \quad +3x \\ -5 = 10x - 3 \\ +3 \quad +3 \end{array}$$

$$7. \quad \begin{array}{l} \cancel{7x} - 8 = \cancel{7x} - 5 \\ -1x \quad -1x \end{array}$$

$$-8 = -5$$

No Solution

$$2 = 3x - \cancel{10} \quad +10$$

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

$$4 = x$$

$$6. \quad 2x + 2 = 5(x - 2)$$

$$\cancel{2x} + 2 = 5x - 10$$

$$\begin{array}{l} -2x \quad -2x \\ 2 = 3x - 10 \end{array}$$

$$8. \quad 12 + 5c = -4c - 6$$

$$\begin{array}{l} +4c \quad +4c \\ 12 + 9c = -6 \\ -12 \quad -12 \end{array}$$

$$\frac{9c}{9} = \frac{-18}{9}$$

$$c = -2$$

Classwork

- Pg 157 # 4-11
- Wkst 3.4 A # 1-9 together

Homework

- Wkst 3.4 A # 10-18