

**Math 7 Notes**  
(Section 6-1)  
**Solve One-Step Addition & Subtraction Equations**

An equation is a sentence stating that two quantities are equal.

The value of a variable that makes an equation true is called the solution of the equation.

**Example:**  $x = 4$  is the solution to the equation  $x + 2 = 6$

We will be solving equations algebraically using proper steps based on these properties:

**\*\*Subtraction Property of Equality**

$$\text{If } a = c \quad \text{then} \quad a - b = c - b$$

**\*\*Addition Property of Equality**

$$\text{If } a = c \quad \text{then} \quad a + b = c + b$$

If we add or subtract a number to one side of an equation, we must add or subtract the same thing to the other side of the equation.

**Solve:**  $x + 9 = -2$

Subtract 9 from both sides.

$$\begin{array}{r} x + 9 = -2 \\ -9 \quad -9 \\ \hline x = -11 \end{array}$$

This means  $-2 - 9$   
 $-2 + -9$   
 $-11$

$$x = -11$$

**Check:**  $x + 9 = -2$  Copy original equation

$$-11 + 9 \stackrel{?}{=} -2$$

Substitute your solution for the variable

$$-2 = -2 \checkmark$$

**Solve:**  $-1 + n = 10$

$$\begin{array}{r} -1 + n = 10 \\ +1 \quad +1 \\ \hline 0 + n = 11 \end{array}$$

← may skip this line

$$n = 11$$

**Check:**

$$-1 + n = 10$$

$$-1 + 11 \stackrel{?}{=} 10$$

$$10 = 10 \checkmark$$

Solve:  $-5 = n + 12$

$$\begin{array}{r} -5 \\ -12 \quad -12 \\ \hline -17 = n + 0 \\ -17 = n \end{array}$$

$-5 - 12$   
 $-5 + -12$

Check:

$$\begin{array}{l} -5 = n + 12 \\ -5 \stackrel{?}{=} -17 + 12 \\ -5 = -5 \checkmark \end{array}$$

Solve:  $-2 = n - 8$

$$\begin{array}{r} -2 \\ +8 \quad +8 \\ \hline 6 = n + 0 \\ 6 = n \end{array}$$

$-2 + 8$

Check:

$$\begin{array}{l} -2 = n - 8 \\ -2 \stackrel{?}{=} 6 - 8 \\ -2 \stackrel{?}{=} 6 + -8 \\ -2 = -2 \checkmark \end{array}$$

Solve:  $4.3 + n = -9.85$

$$\begin{array}{r} 4.3 + n = -9.85 \\ -4.3 \quad -4.3 \\ \hline n = -14.15 \end{array}$$

$\begin{array}{r} 9.85 \\ + 4.3 \\ \hline 14.15 \end{array}$

Check:

$$\begin{array}{l} 4.3 + n = -9.85 \\ 4.3 + -14.15 \stackrel{?}{=} -9.85 \\ -9.85 = -9.85 \checkmark \end{array}$$

$\begin{array}{r} 4.3 \\ - 14.15 \\ \hline -9.85 \end{array}$

Solve:  $n + \frac{3}{5} = -\frac{1}{2}$

$$\begin{array}{r} n + \frac{3}{5} = -\frac{1}{2} \\ -\frac{3}{5} \quad -\frac{3}{5} \\ \hline n = -\frac{11}{10} \\ \text{OR } n = -1\frac{1}{10} \end{array}$$

$-\frac{1}{2} - \frac{3}{5}$   
 $-\frac{1}{2} + -\frac{3}{5}$   
 $-\frac{5}{10} + -\frac{6}{10}$   
 $-\frac{11}{10}$

Check:

$$\begin{array}{l} n + \frac{3}{5} = -\frac{1}{2} \\ -\frac{11}{10} + \frac{3}{5} \stackrel{?}{=} -\frac{1}{2} \\ -\frac{11}{10} + \frac{6}{10} \stackrel{?}{=} -\frac{1}{2} \\ -\frac{5}{10} \stackrel{?}{=} -\frac{1}{2} \\ -\frac{1}{2} = -\frac{1}{2} \checkmark \end{array}$$