

# **Chapter 3**

## **Solving Linear Equations**

## Section 3.1 Solving Equations Using Addition & Subtraction

### Inverse Operations

### Transformations That Produce Equivalent Equations

1. add the same value to both sides of an equation
2. Subtract the same value to both sides of an equation
3. simplify both or one side of an equation
4. interchange terms on one side of an equation.

\*\*\* Golden Rule of Solving Equations \*\*\*

Whatever you do to one side of the equation, you must always do to the other!!!

### Examples

1.  $x - 9 = 17$   
 $+9 \quad +9$

$x = 26$   
 $\checkmark 26 - 9 = 17$

4.  $-11 = n + 2$   
 $-2 \quad -2$   
 $-13 = n$

$\checkmark -11 = -13 + 2$   
 $-11 = -11$

2.  $x - 5 = -21$

$x - 5 = -21$   
 $+5 \quad +5$   
 $x = -26$

5.  $3 - x = -15$

$-x + 3 = -15$   
 $-3 \quad -3$   
 $-x = -18$   
 $+x \quad +x$   
 $x = 18$

3.  $-x = 5$

$x = -5$

Opposite rule

$\checkmark 3 - 18 = -15$   
 $\checkmark 15 - 15 = 0$

6. The normal high temperature in January in Bismarck, North Dakota is  $20^{\circ}$  F and the normal low temperature is  $-2^{\circ}$  F. How many degrees apart are the normal high and low temperatures?

$20 - (-2) = x$   
 $22^{\circ} F = x$

7. Match the real life problem with the equation.

a.  $x + 7 = 9$

b.  $x - 2 = 7$

c.  $9 - x = 7$

a

You have  $x$  dollars and your friend repays you the \$7 he owes you. You now have \$9. How much did you have originally?

c

A 9-foot post extends  $x$  feet below ground and 7 feet above ground. What is the length  $x$  buried below ground?

b

The temperature was  $x^{\circ}$  F. It fell  $2^{\circ}$  F and is now  $7^{\circ}$  F. What was the original temperature?

