Algebra I
Lesson 2-1: Solving Equations by Adding or Subtracting
Mrs. Snow, Instructor

In an equation, the terms on the left side are equal to the terms on the right side. The equation is in balance. Whatever mathematical task we perform to the left side of the equation, it is OK, *as long as we perform the same mathematical task to the right side of the equation.*

Equations are used in all areas of life. Equations are used to calculate the amount of paint needed to paint a room, to determine how many sodas may be purchased, to figure out how much money is needed to pay all of the monthly bills, and so on. These equations all have one thing in common, a variable. When we set about solving for the variable we will use our basic arithmetic skills to do so.

How do we solve for a variable?   Get the variable by itself, and use arithmetic operations that will "undo" what is going on in the equation

Inverse Operations, *a.k.a. opposites*	
Operation	**Inverse (opposite)**
Addition +	Subtraction −
Subtraction −	Addition +

Solve each equation:

$x - 5 = 12$ $+5 \quad +5$ $x = 17$	1. get x by itself 2. add 5 to each side	$14 = h - 6$	1. get h by itself 2. add ___ to each side	$m - \dfrac{2}{7} = \dfrac{3}{7}$

$y + 9 = 17$ $-9 \quad -9$ $y = 8$	1. get y by itself 2. subtract _____ from each side	$23 = g + 11$	$2.8 = r + 0.6$	$-8 + b = 6$	$x + 5 = -14$

Application:
A pizza costs $13.75. If you have$8.15, how much more money do you need for the pizza?

- What is your equation?
- What is your answer? (Remember your units!)

Mrs. Snow bought cookies for her class. The cookies cost $12.00. She had $17.55 left in her wallet, how much money did Mrs. Snow originally have?

- How much money was in the wallet before buying the cookies?????   Answer: I don't know, so put down a variable!
- The variable minus _____? Equals _____?
- What is your equation?
- What is your answer? (Remember your units!)

Simplify: $-63 \div (-7)$	Give the side length of a square with the given area: $225m^2$	Simplify each expression: $8[-5 - (3 + 2)]$
$\frac{3}{7} \div \left(-\frac{4}{7}\right)$	$36ft^2$	$1 - [4^2 - (12 - 15)^2]$
$(-12)(-6)$	$100cm^2$	$\frac{-12+(-6)}{6}$
$-3 - 4$	write the phrase as an algebraic expression: "the sum of 8 and the product of 7 and -2"	Nate runs 8 miles each week. Write an expression for the number of miles he runs in *n* weeks. How many miles does he run in 5 weeks?