SOLVING EQUATIONS

63. SOLVING A LINEAR EQUATION

To solve an equation, do whatever is necessary to both sides to **isolate the variable.** To solve $5x - 12 = -2x + 9$, first get all the x's on one side by adding $2x$ to both sides: $7x - 12 = 9$. Then add 12 to both sides: $7x = 21$, then divide both sides by 7 to get: $x = 3$.

64. SOLVING "IN TERMS OF"

To solve an equation for one variable **in terms of** another means to **isolate the one variable on one side of the equation,** leaving an expression containing the other variable on the other side. To solve $3x - 10y = -5x + 6y$ for x in terms of y, isolate x:

$$3x - 10y = -5x + 6y$$
$$3x + 5x = 6y + 10y$$
$$8x = 16y$$
$$x = 2y$$

65. TRANSLATING FROM ENGLISH INTO ALGEBRA

To translate from English into algebra, look for the key words and systematically turn phrases into algebraic expressions and sentences into equations. Be careful about order, especially when subtraction is called for.

Example: The charge for a phone call is r cents for the first 3 minutes and s cents for each minute thereafter. What is the cost, in cents, of a call lasting exactly t minutes? ($t > 3$)

Setup: The charge begins with r, and then something more is added, depending on the length of the call. The amount added is s times the number of minutes past 3 minutes. If the total number of minutes is t, then the number of minutes past 3 is $t - 3$. So the charge is $r + s(t - 3)$.