Steps Reasons and Rules for Algebraic Problems

All algebraic problems must be done in a vertical format (all the equal signs line up in one column.) Each line must have only one step EXCEPT that the arithmetic step and some notation steps can be combined with any other step. The reason must be given for each step and must be one from the following list.

Step	**Abbreviation**	**Explanation and comments**
Arithmetic	Arith.	Doing any arithmetic that is possible, this includes taking powers or roots.
Change of Notation	Not.	This step is shifting from one notation to another way of writing the same thing. In this class we will use this step in changing back and forth between: 1) Subtracting and 'adding the opposite.' 2) Dividing and 'multiplying by the reciprocal.'
Distributive Property	Dist.	A common form of simplification. $a(b + c)$ becomes $ab + ac$.
Multiplying by one	Mult. by 1	Used when getting common denominators. This step is usually NOT used on equations.
Substitution (evaluation)	Sub.	Exchanging a 'letter' for an expression that it equals. Primarily used in evaluating expressions, applying formulas, and checking solutions to equations.
The following step can only be used on Equations.		
Golden Rule	GRule	Add/Subtract/Multiply/Divide the same expression to both sides of an equation.

A sample problem using the required form:

$$1 = x - 3(x+2)$$

$$1 = x - 3x - 6 \quad \text{Dist.}$$

$$1 + 6 = -2x - 6 + 6 \quad \text{G Rule / Arith}$$

$$7 = -2x \quad \text{Arith.}$$

$$\frac{7}{-2} = \frac{-2x}{-2} \quad \text{G Rule}$$

$$-\frac{7}{2} = x \quad \text{Arith.}$$