VUB Mini Course Solving Equation Notes Name_____

Solving linear equations

- Clear fractions by multiplying both sides of the equation by the LCD or least common denominator. This means you will be multiplying all terms by the LCD. Be careful with this step as it is easy to make a mistake.
- Clear decimals by multiplying both sides of the equation by the largest power of ten that will clear the decimal. Be careful with this step if a term does not have a decimal, as one must still multiply by the power of ten used to clear the decimal.
- Use the distributive property to clear all parentheses.
- Then collect like terms on each side of the equation.
- Undo the operations that have been used in the problem to get all variables on one side and all the numbers on the other side. Generally it is easier if you put the variables on the left side and the numbers on the right side.
- Solve for the given variable and check your answer in the original equation.

An **identity** is an equation with an infinite number of solutions. The solution set is $(-\infty,\infty)$

When solving an identity the variables and the numbers will cancel or drop out of both sides of the equation, leaving 0=0. This is not however the solution set, as the solution set is $(-\infty,\infty)$

A **contradiction** is an equation that has no solution. The solution set is $\varnothing$
When solving a contradiction the variables will cancel or drop out on both sides of the equation. This will leave just the numbers on both sides of the equation. The numbers are not the same on both sides of the equation. This means the numbers will not cancel or drop out. So the solution set is $\varnothing$