DQ 1

* Yes and no. It all depends on which type of linear inequality or linear equation you are working with as well as the nature of the solution. Please note that just as we have linear equations in two, three, four, or however many number of variables, we can have linear inequalities with as many number of variables that we like.

Now, if say we have the compound (complex) linear inequality say

and .

In this case when we solve for , we get and . The only way this can happen/ naturally make sense is if is exactly : that is, In this case even though the solution could be written as a linear inequality, the proper representation is that of an equation. (Side note: Yes, somewhat, we can have inequalities represent equations)

* Here again it depends on whether we’re working with single inequalities and equations, or whether we’re comparing systems of inequalities and systems of equations. It also depends on the nature of the solution. However, if we’re comparing a single linear inequality to a system of two (or three) linear equations, then yes, the solutions are different primarily because with a system of two linear equations, we want a an *ordered pair*, while with a system of three linear equations, we want *an ordered triple*. The solution of the linear inequality in this case will not be an ordered pair or ordered triple.

DQ2

* Method 1: Pour the jar of coins out, and then slowly and carefully ask him to count the number of dimes and nickels in the jar.

Method 2 and 3: Set up a system of linear equations and then solve by substitution or elimination.

We let represent the number of nickels, and the number of dimes. The total number of coins in the jar is So then Now each nickel is and each dime is . Well will give us the total dollar amount of nickels, while will give us the total dollar amount of dimes. When we add up those two dollar amounts, we end up with . So then Now the two equations in the system become

……………………. (1)

………. (2)

I’ll do method of substitution, and have you try method of elimination: pick any variable of your choice from any of the equations and then solve for the variable. I’ll solve for in the first equation. In that case, . Now I substitute into (2). That is,

. Now we distribute and then solve for .

So the number of dimes is 400. This means that the number of nickels then is 190.

* Yes, we can do the problem by just counting the number of dimes and nickels in the jar.
* I didn’t do method of elimination, but if I did, then method of substitution would be much easier. Why, because the coefficients of and are both 1, and so it’s easy to solve for a variable and then substitute the results into another equation.