Ch 16 #13

Calculate the force between any pair of charges (48.4N) and realize that this force is equal for every charge pair.

Then think in terms of x- and y-components of forces acting on each individual charge.

Ch 16 #16a

If you're at all confused, just realize that the 'Q' is an actual amount of charge, and 2Q is therefore twice as much charge, 3Q is three times as much charge, and so on. So you can actually work this one in a similar manner to #14, just with variables instead of all numerical values. Just realize that you'll have three different force values (with components) you're calculating, and you can end with some vector addition of their coefficients.

Ch 16 #20

This is an equilibrium problem, similar to the example in class. But be careful to put in some thought prior to doing any math, about the general location of the 3rd charge. (On the example in class, the original two charges had the same sign, but these two charges have opposite signs. Can the equilibrium position lie *between* the two charges? *Outside* of the two charges? On which side?)

Ch 16 #21a

Start with two equations, the first having to do with the total of the two charges, and the other having to do with the force between the charges. Then substitute the first equation into the second, to get an equation with only 1 variable. To solve this equation, you'll need to use the quadratic formula. …with terms multiplied by 10^{-6} and 10^{-9}, oh joy!

Ch 16 #22

Realize that whatever electrons are transferred, the object that gains electrons gains a negative charge -Q, and the object losing the electrons gains an equal positive charge +Q.

At the end of this problem, just make sure to remember that it didn't ask for charge, but instead asked for # of electrons.