Prelab for   PHYS222
Kirchhoff Laws

Name_____   **Section**_____

1. Looking at Figure 20-1, how many different loops are in this circuit? Be mindful that you cannot cross a path more than one time (in a single loop). Show the loops on a diagram below.

2. What is Kirchhoff's Current Law?   It is a restatement of what fundamental law?

3. What is Kirchhoff's Voltage Law?

4. Simplify the following relationships using the given resistance and voltage values. ***You do not have to solve these equations***. You simply need to put them in a form where you can enter the appropriate terms in a simultaneous equation solving program or calculator.

You are thus solving two equations (with two unknown variables, I_1 & I_2 -See Lab theory section.) You will need equations with the forms $AI_1+BI_2=C$ and $DI_1 + EI_2=F$. Show all work.

$$E_1 - I_1R_1 - I_1R_2 + I_2R_2 - I_1R_3 = 0   ;   -E_2 - I_2R_4 - I_2R_5 - I_2R_2 + I_1R_2 = 0$$

$R_1=22$ ohms; $R_2=18$ ohms; $R_3= 15$ ohms; $R_4=10$ ohms; $R_5=12$ ohms

$E_1 =9.51$V and $E_2= 9.52$V