

Circuitry Ranking ~ Project

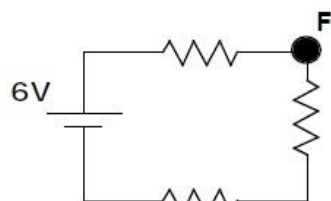
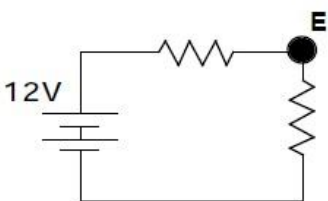
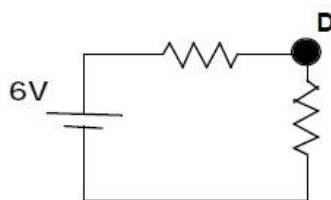
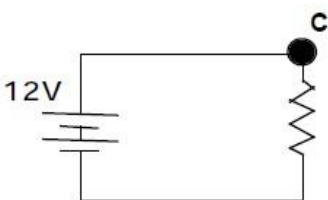
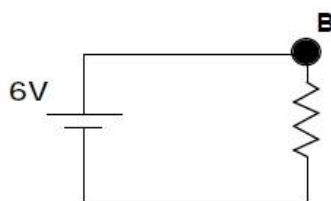
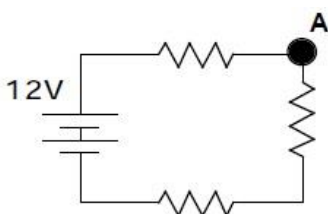
Name: _____

Potential Credits: /8

Complete the two ranking questions below. Follow the instructions and look for a general solution or set of rules (could be equations) that allows you to rank without calculating each individual description. Students that explain their ranking according to the physical laws that govern the description(s) as opposed to "crunching the numbers" will be awarded the highest grade. Be sure to state specifically what law(s) dictated your ranking and be sure to back up the law(s) with the general form of the equation(s) that describe the situations present.

Question 1:

All the resistors in the circuits below are identical at 2Ω each. The batteries are ideal with voltages of 6 or 12 volts as shown below. All connecting wires have negligible resistance. Rank the **current** passing through the upper right hand corner of each circuit from greatest to least. **4 marks.**



Greatest 1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6 ____ **Least**

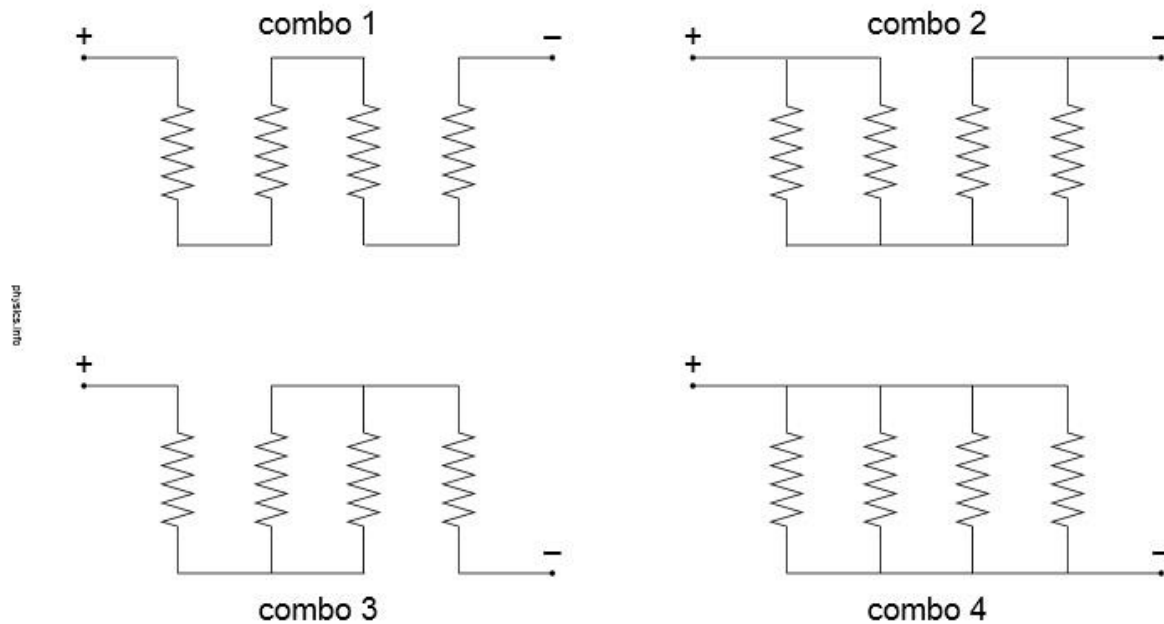
Or, all of these arrangements will have the same current at this location. _____

Or, all of these arrangements will have zero current at this location. _____

Please carefully explain your reasoning.

Question 2:

Given the 4 circuits below, and the fact that all resistors used are identical, rank the combos from lowest to highest total resistance within the circuits. **4 marks.**



Lowest 1 ____ 2 ____ 3 ____ 4 ____ **Highest**

Or, all of these arrangements will have the same resistance. _____

Please carefully explain your reasoning.