What We Know About Simple Series Circuits:

1. Electric current has a single pathway through the circuit. This means that the current passing through each electrical device (light bulb, resistor, etc.) in the pathway is the same.
2. The current in a series circuit is resisted by the resistance of the first device, the resistance of the second, etc., and so the total resistance to current in the circuit is the sum of the individual resistances along the circuit path. ($R_{eq} = R_1 + R_2 + \ldots$)
3. The current in the circuit is numerically equal to the voltage supplied by the source (battery) divided by the total resistance of the circuit. This is in accord with Ohm's Law.
4. The total voltage impressed across a series circuit divides among the individual electrical devices in the circuit so that the sum of the "voltage drops" across the resistance of each individual device is equal to the total voltage supplied by the source (battery).
5. The voltage drop across each device is proportional to its resistance. This follows from Ohm's Law.

What We Know About Simple Parallel Circuits:

1. The voltage drop is the same across each branch in a parallel circuit.
2. The total current in the circuit divides among the parallel branches. Because the voltage across each branch is the same, the amount of current in each branch is inversely proportional to the resistance of the branch.
3. The total current in a parallel circuit equals the sum of the currents in its parallel branches.
4. As the number of parallel branches is increased, the overall resistance of the circuit is decreased. Overall resistance is lowered with each added path between any two points of the circuit. This means the overall resistance of the circuit is less than the resistance of any one of the branches. ($1/R_{eq} = 1/R_1 + 1/R_2 + \ldots$)

Ohm's Law applies to series, parallel, and combination series/parallel circuits.

Current = Potential Difference / Resistance