Simulation Lab: Resistance in Series and Parallel Circuits

Purpose: To determine the relationship between voltage drop and current in both parallel and series circuits.

Materials: Online simulation -
http://phet.colorado.edu/simulations/sims.php?sim=Circuit_Construction_Kit_DC_Only

Part A – Resistance in a Series Circuit

***** reminder $R_T = V_T/I_T$

1. Create a circuit with two resistors connected to a battery all in series.

Voltage (V)		Current (A)		Resistance (Ω)	
V_1		I_1		R_1	
V_2		I_2		R_2	
V_T		I_T		R_T	

2. Create a circuit with three resistors connected to a battery all in series.

Voltage (V)		Current (A)		Resistance (Ω)	
V_1		I_1		R_1	
V_2		I_2		R_2	
V_3		I_3		R_3	
V_T		I_T		R_T	

Part B – Resistance in a Parallel Circuit

1. Create a circuit with two resistors connected in parallel to a battery.

Voltage (V)		Current (A)		Resistance (Ω)	
V_1		I_1		R_1	
V_2		I_2		R_2	
V_T		I_T		R_T	

2. Create a circuit with three resistors connected in parallel to a battery.

Voltage (V)		Current (A)		Resistance (Ω)	
V_1		I_1		R_1	
V_2		I_2		R_2	
V_3		I_3		R_3	
V_T		I_T		R_T	

Analysis:

1. As more resistors are added in <u>series</u> what happens to the <u>total resistance</u>?

2. As more resistors are added in <u>parallel</u> what happens to the <u>total resistance</u>?