

Home Appliance Lab

You will be performing a lab to simulate the circuits in your kitchen. First research and find the resistance of the following appliances:

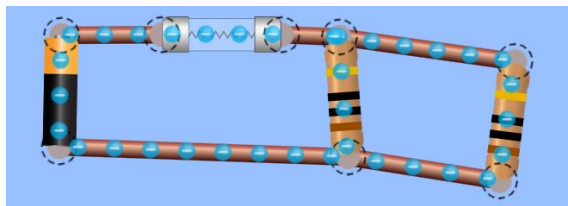
- A.) toaster
- B.) microwave
- C.) mixer
- D.) refrigerator
- E.) garbage disposal
- F.) Dish Washer

- A.) Draw a parallel circuit with all six of these appliances across the 120 V in your dwelling. Use physics to determine how much current will travel through this circuit. (through the voltage source)

Next, go to PHET:

https://phet.colorado.edu/sims/html/circuit-construction-kit-dc/latest/circuit-construction-kit-dc_en.html

- B.) Set up the same circuit on PHET with all 6 appliances and a fuse. Two appliances and a fuse are shown below as an example below:



- C.) Adjust the rating of the fuse by clicking on it and make the fuse value to be slightly higher than the value found for current in part A. Does the circuit still work?
- D.) Now add another resistor to the circuit. Does the fuse blow? If not, keep adding resistors until the fuse blows. Give a few observations here. Do some research and explain how a fuse works. Also explain how a circuit breaker works.
- E.) Make a circuit to simulate a circuit in your home. Remember, the fuse (circuit breaker) in your home is usually about 15 A. Choose several of your most favorite appliances and see how many appliances you can hook up to one outlet before blowing the circuit. Draw a diagram of the circuit and show all work. Give an interesting observation.

