Ohm's Law – Using Simulators: Class Demonstration

Introduction:
Ohm's law is used to define resistance through the equation R = V/I, where R is the resistance of the circuit element in ohms, V is potential difference across the circuit element in volts, and I is the current in amperes that goes through the circuit.

In this demonstration lab, applet programs from the Internet are used to simulate real experiments. Measurements are taken, confirming and demonstrating this law. While this law is really a definition of resistance, it is normally written in the form V= IR.

Part I: URL - http://ngsir.netfirms.com/englishhtm/Circuit.htm
Fill in the missing blanks in the table from the circuit simulator.

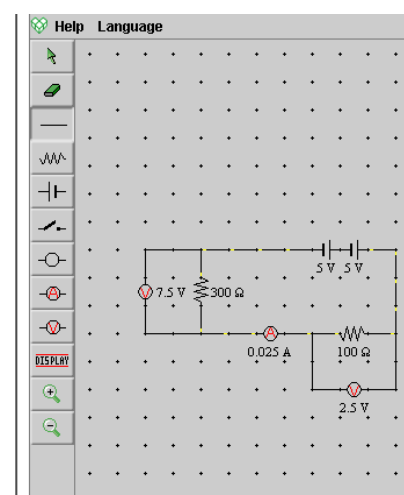| V (volts)	I (amps)	R (ohms)
6 V	A	10Ω
6 V	A	500Ω
6 V	A	10kΩ
6 V	A	Ω
6 V	A	Ω
6 V	A	Ω
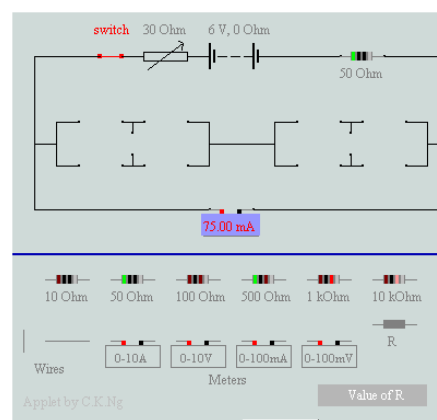
Part II: URL - http://canu.ucalgary.ca/map/content/circuitbuilder/basic/simulate/practice/
Observe how this simulator works, and fill in the table below for the circuit shown on the right.
To create circuits with this simulator:

- Click on the tool that you want to use. Then, place the cursor where you want that element placed, and click to place. Information about that circuit element is shown at the bottom of the screen. In many cases, you can change the values below before you place on the diagram.
- The eraser tool removes circuit elements by clicking on them.
- The wire tool works by dragging the wire where you want it to go. Sometimes, wires must be placed one division at a time.
- Complex circuits can be built from the various circuit elements.

V (volts)	I (amps)	R (ohms)
V	A	Ω
V	A	Ω

Practice problems using Ohm's Law – Show your work.

1. A 100 Ω resistor is placed in a circuit where it has a potential difference of 5.0 volts. What is the current passing through the resistor?

2. A 50 volt battery is used in a circuit to provide a current of 0.20A. What resistance value must be used to limit the current to that value?