How to Use a Voltmeter and an Ammeter
Physics

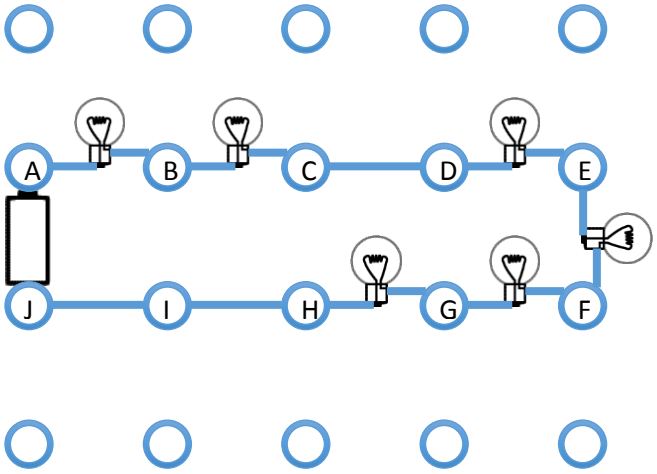
Name _____
1 2 3 4 5 6 7 8

www.simbucket.com -> simulations -> DC Circuit Builder

Part I: Using a Voltmeter

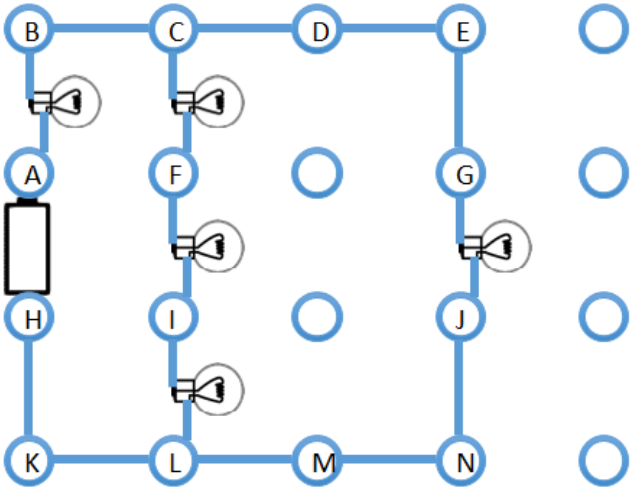
1. Create the 2 circuits below in DC Circuit Builder. Using the voltmeter, determine how much the voltage drop across each set of test points. Use this data to complete the tables

Circuit #1



Circuit 1	
Voltage Difference Between Test Points A and C	_____V
Voltage Difference Between Test Points E and H	_____V
Voltage Difference Between Test Points A and J	_____V

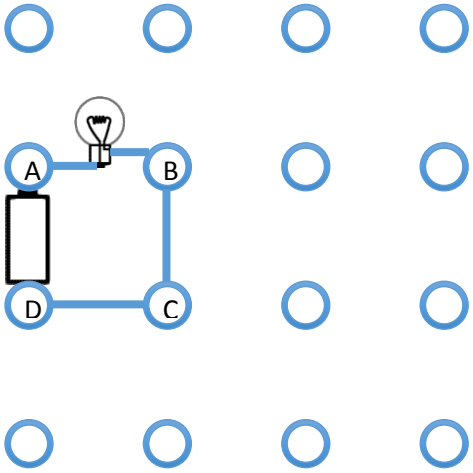
Circuit #2



Circuit 2	
Voltage Difference Between Test Points B and G	_____V
Voltage Difference Between Test Points C and L	_____V
Voltage Difference Between Test Points E and N	_____V

2. In a real circuit, the voltage values of every piece of metal aren't conveniently displayed like they are for this simulation. What information does a real voltmeter provide if it is used on a real circuit?

Part II: Using an Ammeter



Create this circuit in DC Circuit Builder.

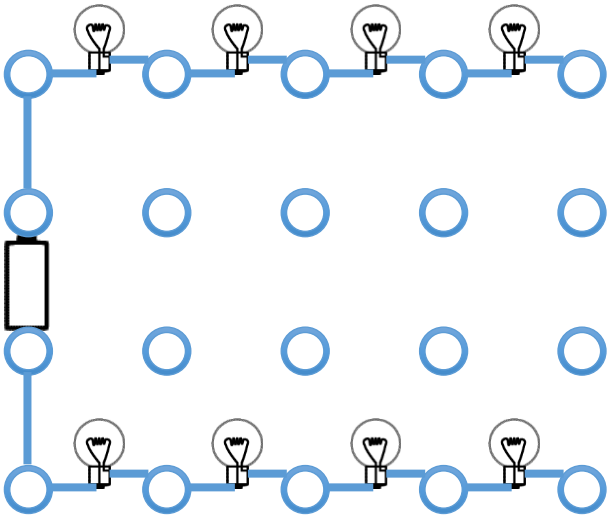
3. Remove the wire between Point B and Point C. The bulb should go out.

a. Switch to "Voltmeter and Ammeter". Using the ***voltmeter***, attach the red lead to Point B and the black lead to Point C. What happens?

b. Remove the voltmeter from the circuit. Using the ***ammeter***, attach the ***red ammeter lead*** to Point B and the ***black ammeter lead*** to Point C. What happens?

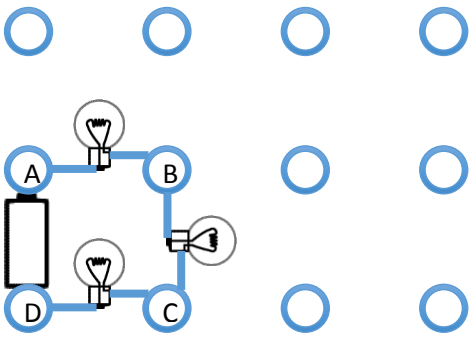
c. In order to use an ammeter, we must remove a wire from the circuit. Why?

4. Create the incomplete circuit below. Attach one ammeter lead to a random point in the top row of bulbs and the other ammeter lead to a random point in the bottom row of bulbs.



Which bulbs light? Which bulbs don't light? Why?

5. Create the simple series circuit to the right. Place the leads of the ammeter on Points B and C. What happens? Why?



SERIES CIRCUITS:

1 battery, 1 switch, 1 lightbulb

Circuit Diagram:

Voltage across the lightbulb: _____ V
Voltage across the battery: _____ V
Current throughout the circuit: _____ A

1 battery, 1 switch, 2 lightbulbs

Circuit Diagram:

Voltage across the lightbulb #1: _____ V
Voltage across the lightbulb #2: _____ V
Voltage across the battery: : _____ V
Current somewhere in the circuit: _____ A
Current somewhere different in the circuit: _____ A

1 battery, 1 switch, 3 lightbulbs

Circuit Diagram:

Voltage across the lightbulb #1: _____ V
Voltage across the lightbulb #2: _____ V
Voltage across the lightbulb #3: _____ V
Voltage across the battery: : _____ V
Current somewhere in the circuit: _____ A
Current somewhere different in the circuit: _____ A
Current somewhere different in the circuit: _____ A

Q: What happens to the voltage of each light bulb as more light bulbs are added into the circuit in series?

Q; Does the current of the circuit change as more electrical loads (light bulbs) are added in series?

PARALLEL CIRCUITS:_____

1 battery, 2 switches, 2 lightbulbs (each switch controls one light bulb)

Circuit Diagram:

Voltage across the battery: _____V
Voltage across lightbulb #1: _____ V
Voltage across lightbulb #2: _____ V
Current near the battery: _____ A
Current near lightbulb #1: _____ A
Current near lightbulb #2: _____ A

1 battery, 3 switches, 3 lightbulbs (Each switch controls one lightbulb)

Circuit Diagram:

Voltage across lightbulb #1: _____ V
Voltage across lightbulb #2: _____ V
Voltage across lightbulb #3: _____ V
Voltage across the battery: : _____ V
Current near the battery: _____ A
Current near lightbulb #1: _____ A
Current near lightbulb #2: _____ A
Current near lightbulb #3: _____A

Experiment with various circuits and organizations and try to fill in the table below with the words *SHARED* or *SAME*.

Type of Circuit	Voltage	Current
Series		
Parallel		