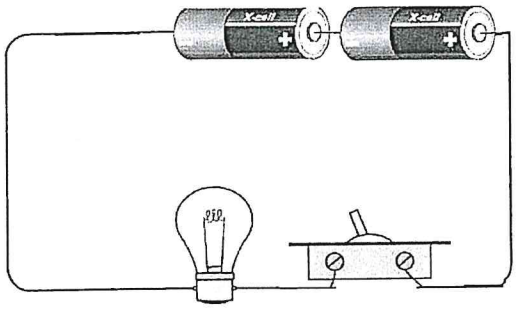
pHET CIRCUIT CONSTRUCTION KIT

Hypothesis: A source of electrical energy, connecting wires, a switch, and a device operated by electricity can be connected to create an electric circuit.

Go to the website **http://phet.colorado.edu/en/simulation/circuit-construction-kit-dc**

Figure 1:



Results: Use the computer simulation to build the Pictorial (visual) circuit shown in figure 1. Close the switch to turn on the light bulb. If the light bulb does not turn on, then you contain an error somewhere in your circuit. You can remove connections by <u>right clicking</u> the circuit part or simply go to the <u>reset all</u> button to start over.

1) Draw the **Schematic diagram** for Figure 1 by replacing the pictures with circuit symbols. Check your answer by clicking the <u>schematic tab</u>	
2) Describe the **position of the switch** when the light bulb turns ON / OFF.	ON: OFF:
3) What happens to the **light produced** if you disconnect the wires?	
4) What happens to the **light produced** if you switch the location of the wires?	
5) What happens if you connect a complete circuit **without a switch**?	
6) If a circuit is not built correctly, then a **fire** can result. Play with the animation and discover <u>**2 ways**</u> a fire can be created	1. 2.

Analysis and Communication:

a) What happens to the stored energy in the battery when the switch is closed?

b) What direction does the electrical energy move around the circuit?

c) What happens to the electrical energy as it passes through the light bulb?

d) (i) Which of the four parts of the circuit can be removed while allowing the circuit to continue to function?

(ii)Why is it usually included in the circuit?

e) List two different ways of turning the light bulb on and off?

f) Would you expect the circuit to operate differently if...

(i) the wire connections on the switch were reversed?

(ii) the switch were connected to the other side of the light bulb?

If time, play with the circuit simulation and build a circuit that has more than 2 batteries, o more than 1 light bulb. Notice what happens to the speed of electrical energy throughout the circuit and the amount of light produced by the light bulb.