

Question 1

In conducting our class experiments we found that several things were necessary to get our bulb to light. It was necessary for the wire to touch one end of the battery while the other end needed to be touching either the screw threads of the bulb or the rivet. The part (either the rivet or screw threads) that was not touching the wire then needed to touch the opposite end of the battery in order to complete the circuit. Based on this I came to the following conclusions about the students' disputes:

Both student statements have elements of truth but neither student has the total amount of information to be correct. Student one is correct when he states that when the bulb is screwed in it makes contact with the conductors and that this provides one point of contact but does not provide information about the second point of contact that is needed which is the screw threads. The second student does the opposite. He correctly states that the screw threads hold the bulb in place and make a connection with the conductors but does not correctly state the purpose of the rivet at the bottom.

Both illustrations show that there is not a complete circuit. Illustration 1 shows the electricity traveling through the conductor to the rivet and out the rivet without making contact with the screw threads. Illustration 2 shows the electricity traveling through the conductor to the screw threads and out the screw threads without making contact with the rivet. Neither case shows the total connections necessary to make the circuit complete.

Question 2

Part 1.1

There is a filament wire inside the bulb that is thinner than the support wires attached to it. One support wire is attached to one side of the filament. This support wire is attached to the metal screw thread. There is a second support wire that attaches to the other side of the filament and this connects to the rivet at the bottom of the bulb. There is a piece of insulating material that insulates the rivet at the end of the bulb from the screw thread so that a complete circuit can take place. (The insulators in the bottom of the bulb are strategically placed to promote the flow of energy along the conductors.) Prior Answer

(new answer) Lamps work because they have energy flowing through an open circuit. If the circuit is closed they will not work. Insulators keep the circuit open because they do not conduct energy. If they were made of conductive material, the circuit would close and the lamp would not work.

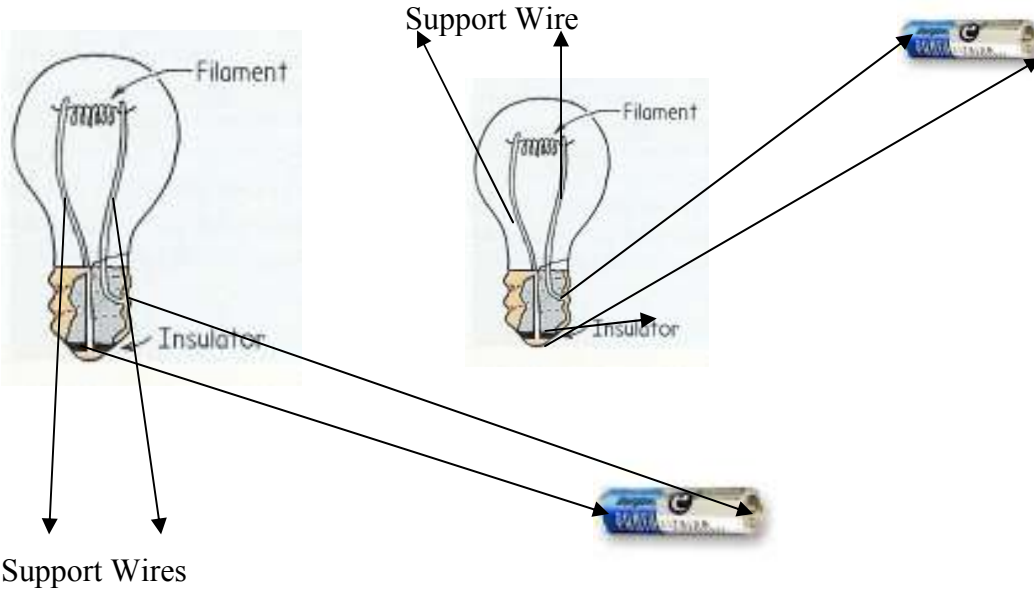
In order to get the bulb to light it is necessary for there to be a complete circuit. Attach a wire to one end of the bulb. Connect the wire to either the screw thread or the rivet of the bulb. Attach a second wire to the screw thread or rivet, whichever you did not already choose and then attach the other end of this wire to the battery. This will provide the necessary circuit to make the bulb light.

Pictures: (<http://sol.sci.uop.edu/~jfalward/physics17/chapter8/lightbulb2.jpg>

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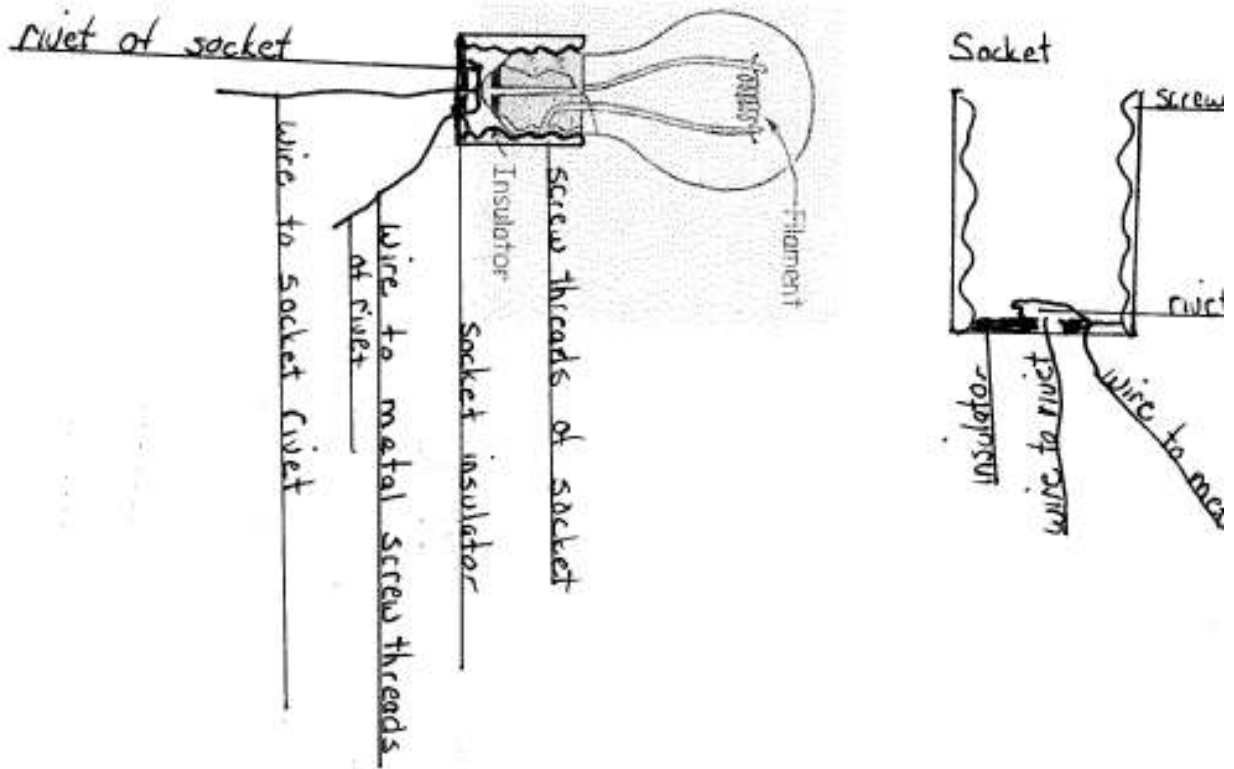
(<http://www.backpackinglight.com/backpackinglight/images/items/L91.jpg>)

Path



Part 1.2

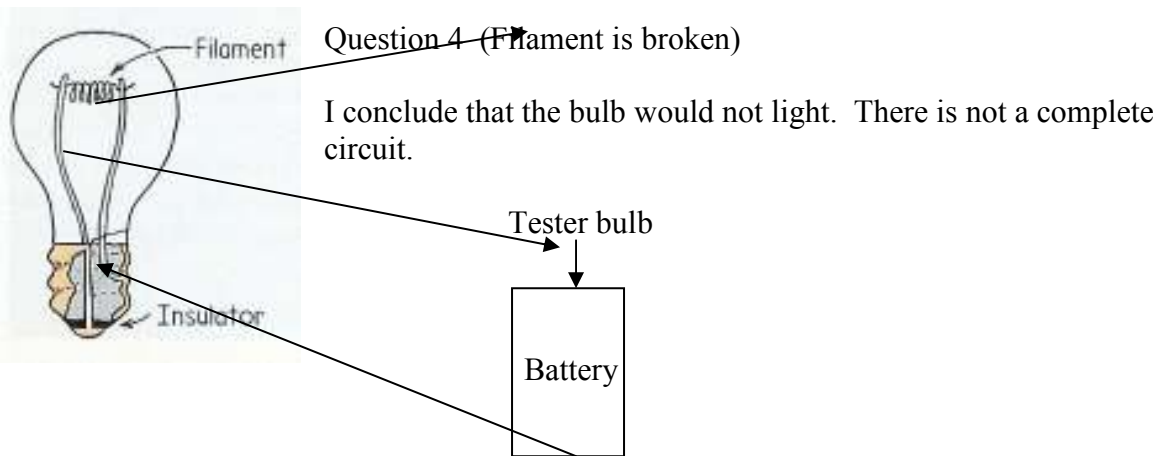
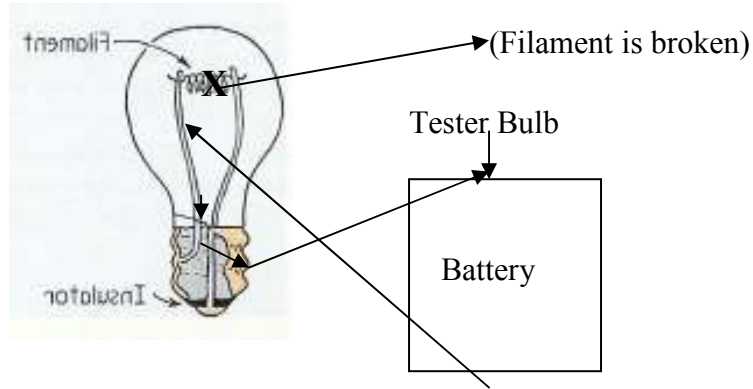
A socket is designed to hold the light bulb in place so the contacts of the light bulb can connect to complete the circuit. The socket is the base and the light bulb is the appendage. The rivet on the light bulb connects to the rivet on the socket which has an insulator just like the light bulb rivet that separates the current in the rivet from the current in the screw thread. The screw threads



on the light bulb connect to the screw threads on the socket. A wire is connected to the base of the socket directly into the rivet. Another wire connects to the screw threads of the socket. These contacts allow the circuit to complete.

Question 3

Figure three shows a light bulb that will not work because the filament is broken. It also depicts and describes a completed circuit with a tester bulb. My conclusion is that the support wire must be connected to the screw part of the light bulb because it must be traveling in a complete circuit in order to light the tester bulb.



There is not a complete circuit because the filament support wire is attached to the rivet and the insulator between the rivet and the screw part prevents the completion of the circuit. In class we found that the testing light would not work if an insulator was placed between the wires because it breaks the circuit.

Question 5

In class we needed to connect one wire to the battery and then to the screw thread or rivet of the bulb. This could be thought of as one end of the plug which is connected to a power source that will then connect to one side of the conductor in the bulb or appliance. In class we then connected the screw thread or rivet depending on which part the wire was touching to the battery in order to make the circuit complete. This can be thought of as the second prong because it completes the circuit. Two prongs are necessary to complete the system.

Question 6

No a lamp would not light because the circuit would not be complete. If a prong is missing then there is no circular connection to the power source.

