

Thinking about CURRENT Electricity



Developed with funds provided by the National Science Foundation

Some items on this assessment were drawn from existing databases of items, such as released items from the TIMSS.

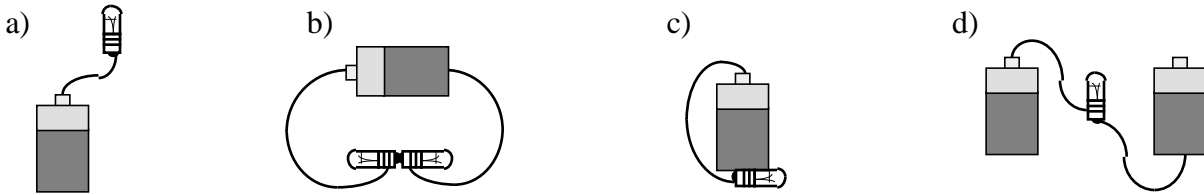
NAME _____

DATE _____

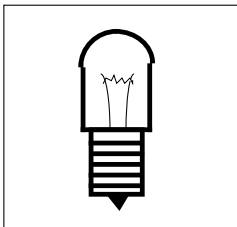
1. Circle the objects that conduct electricity. *You can circle more than one answer.*

- a) balloon
- b) feather
- c) magnet
- d) paper clip
- e) cork
- f) water
- g) steel nail
- h) rubber comb

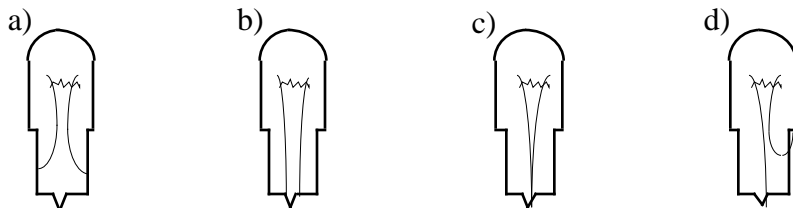
2. Circle each drawing in which the light bulb(s) would be lit. *You can circle more than one answer.*



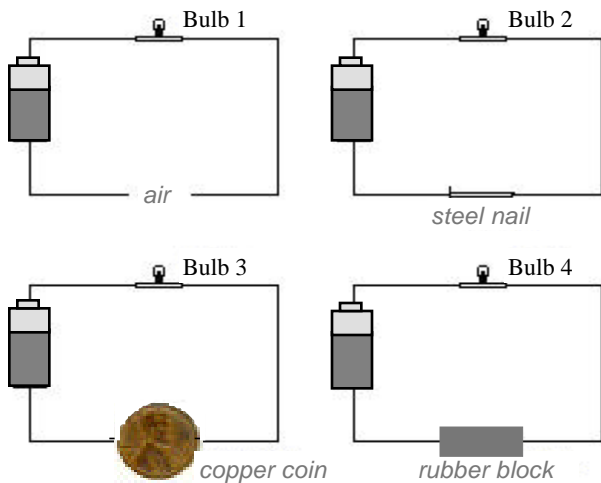
The drawing in the box shows a light bulb.



3. Circle the drawing below that shows what we would see if we could see inside the base of the light bulb? *Circle only one answer.*



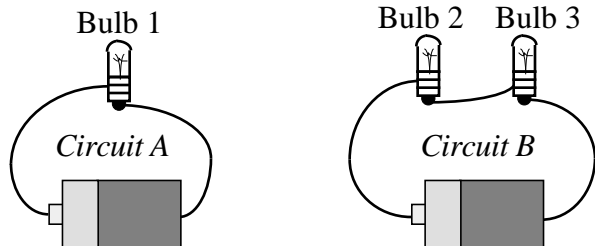
The drawings show a battery and a light bulb connected by wires to various substances.



4. Which of the light bulbs will light? *Circle only one answer.*

- a) 1 and 2 only
- b) 2 and 3 only
- c) 3 and 4 only
- d) 1, 2 and 3 only
- e) 2, 3 and 4 only

The drawings show two circuits that Maria built with identical batteries and identical bulbs.

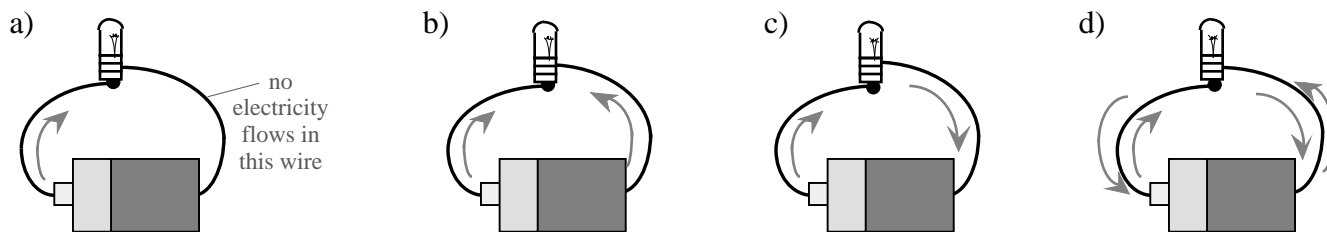


5. How does the brightness of Bulb 1 in Circuit A compare to the brightness of Bulb 2 in Circuit B?

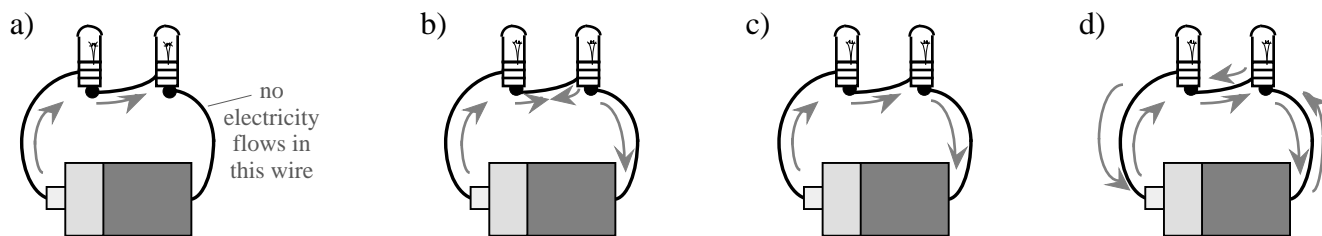
Circle only one answer.

- a) Bulb 1 is brighter than Bulb 2.
- b) Bulb 2 is brighter than Bulb 1.
- c) They are the same brightness.

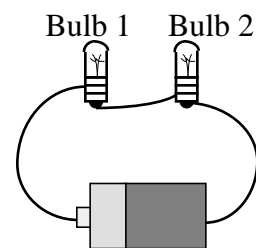
6. The drawings below show a circuit with one light bulb. Circle the drawing that shows the scientific view of the flow of electricity through a circuit. *Circle only one answer.*



7. The drawings below show a circuit with two light bulbs. Circle the drawing that shows the scientific view of the flow of electricity through a circuit. *Circle only one answer.*



The drawing shows a circuit with two identical light bulbs. Both light bulbs are lit.

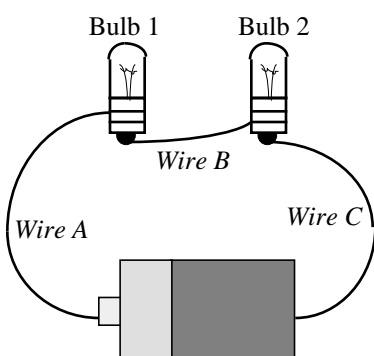


8. How does the brightness of Bulb 1 compare to Bulb 2?

Circle only one answer.

- a) Bulb 1 is brighter than Bulb 2.
- b) Bulb 2 is brighter than Bulb 1.
- c) The light bulbs are the same brightness.
- d) The light bulbs look like they are the same brightness but they really are different; we just can't see it with our eyes.

The light bulbs in the circuit are lit.



9. How does the amount of current in the wires compare?

Circle only one answer.

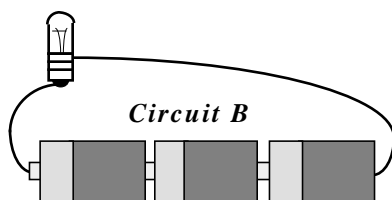
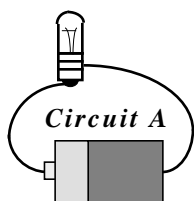
- a) Wire A has the most current.
- b) Wire B has the most current.
- c) Wire C has the most current.
- d) Wire A has more than Wire B, which has more than Wire C.
- e) Wires A, B and C have the same amount of current.

10. If Bulb 1 burns out, what will happen to Bulb 2?

Circle only one answer.

- a) It will burn out like Bulb 1.
- b) It will go out because the circuit is no longer complete.
- c) It will stay the same brightness because it is still in the circuit.
- d) It will get brighter because it will use the energy that was used by Bulb 1 before.

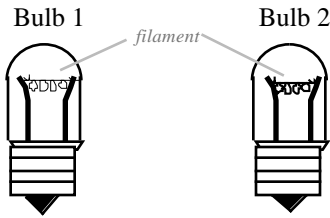
The drawings below show two circuits that Jason built with identical batteries and light bulbs. Circuit A has 1 battery, and Circuit B has 3 batteries. Both light bulbs are lit.



11. How does the brightness of the light bulb in Circuit A compare to the brightness of the light bulb in Circuit B?
Circle only one answer.

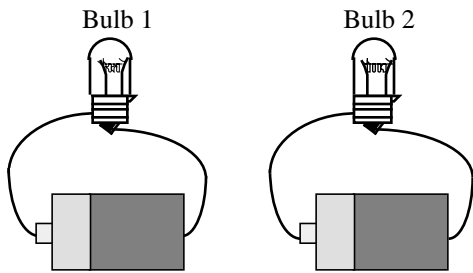
- a) Circuit A's light bulb is brighter.
- b) Circuit B's light bulb is brighter.
- c) They are the same brightness.

The light bulbs in the drawings for questions 12-14 are identical except that the filament in Bulb 1 is thinner than the filament in Bulb 2.



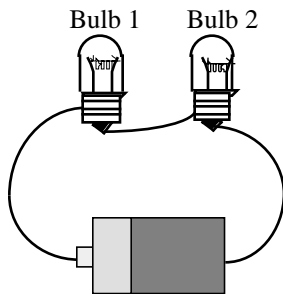
12. Through which filament will electricity flow more easily if these bulbs are placed in identical circuits? *Circle only one answer.*

- a) Bulb 1
- b) Bulb 2
- c) The flow is the same through each.



13. If the light bulbs are in identical circuits, how will their brightness compare? *Circle only one answer.*

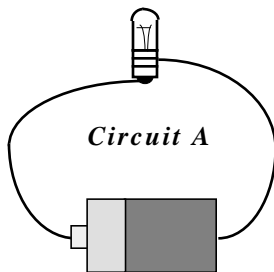
- a) Bulb 1 will be brighter.
- b) Bulb 2 will be brighter.
- c) Both will be the same brightness.



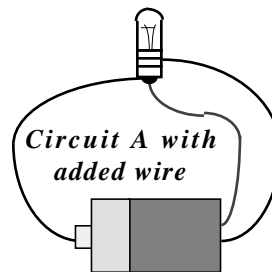
14. If the light bulbs are connected to the same battery in a circuit, how will their brightness compare? *Circle only one answer.*

- a) Bulb 1 will be brighter.
- b) Bulb 2 will be brighter.
- c) Both will be the same brightness.

The light bulb in this circuit is lit.



A wire has been added to the circuit as shown.



15. In the circuit with the added wire, will the light bulb light? *Circle only one answer.*

- a) Yes, because the light bulb is connected to both ends of the battery.
- b) Yes, because electricity will flow through all the wires and through the light bulb.
- c) No, because the extra wire blocks electricity from getting to the light bulb.
- d) No, because electricity will mostly flow through the extra wire and not through the light bulb.