



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.

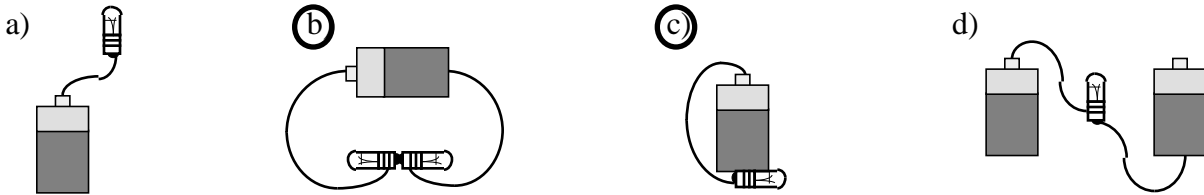
NAME \_\_\_\_\_

DATE \_\_\_\_\_

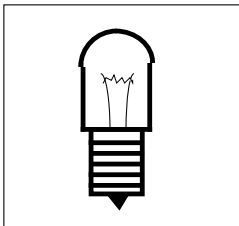
1. Circle the objects that conduct electricity. *You can circle more than one answer.*

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

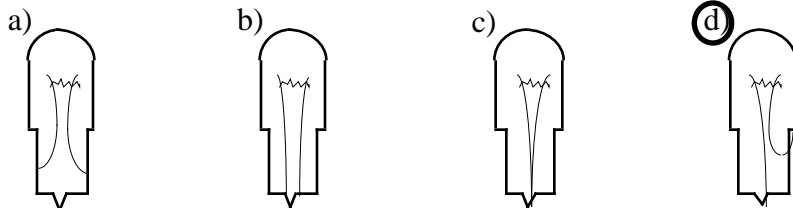
2. Circle each drawing in which the light bulb(s) would be lit. *You can circle more than one answer.*



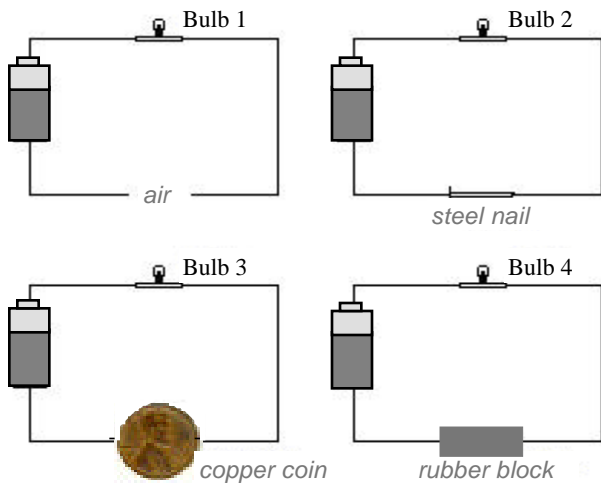
The drawing in the box shows a light bulb.



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.*



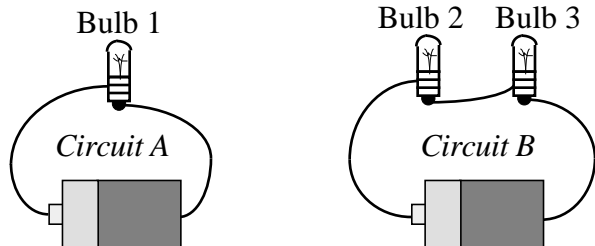
The drawings show a battery and a light bulb connected by wires to various substances.



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.

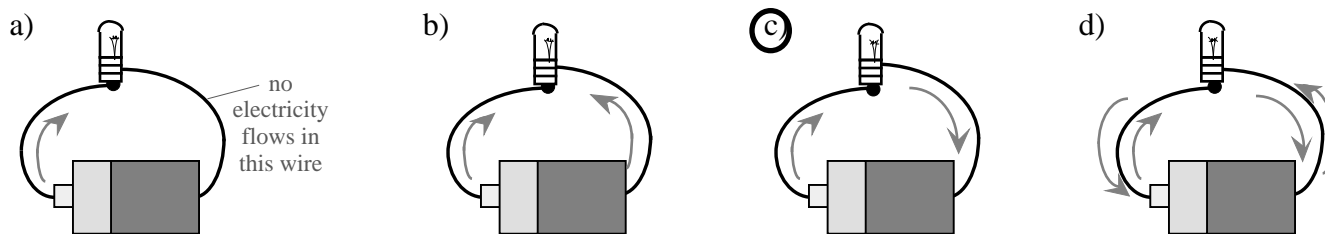


5. How does the brightness of Bulb 1 in Circuit A compare to the brightness of Bulb 2 in Circuit B?

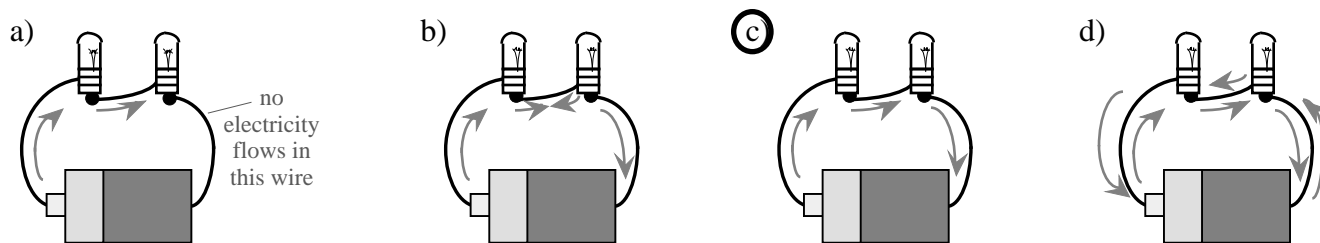
*Circle only one answer.*

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

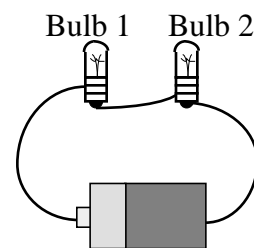
6. The drawings below show a circuit with one light bulb. Circle the drawing that shows the scientific view of the flow of electricity through a circuit. *Circle only one answer.*



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.

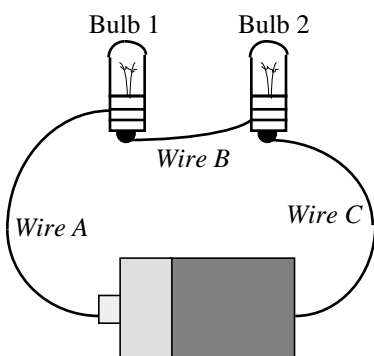


8. How does the brightness of Bulb 1 compare to Bulb 2?

*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.*

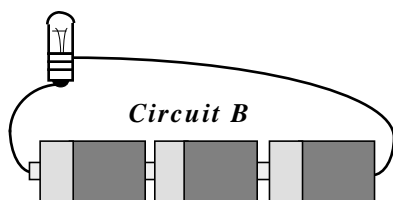
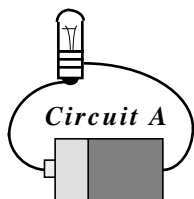
- a) Wire A has the most current.
- b) Wire B has the most current.
- c) Wire C has the most current.
- d) Wire A has more than Wire B, which has more than Wire C.
- e) Wires A, B and C have the same amount of current.

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.

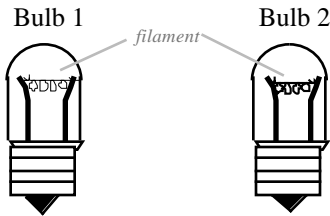


11. How does the brightness of the light bulb in Circuit A compare to the brightness of the light bulb in Circuit B?

*Circle only one answer.*

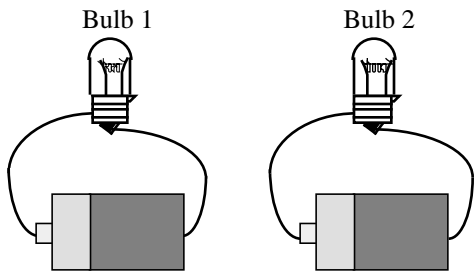
- a) Circuit A's light bulb is brighter.
- b) Circuit B's light bulb is brighter.
- c) They are the same brightness.

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.



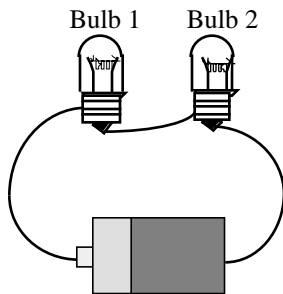
12. Through which filament will electricity flow more easily if these bulbs are placed in identical circuits? *Circle only one answer.*

- 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.*

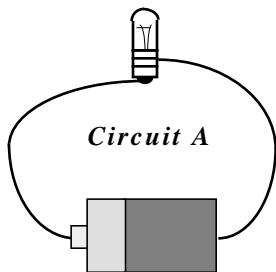
- a) Bulb 1 will be brighter.
- b) Bulb 2 will be brighter.
- c) Both will be the same brightness.



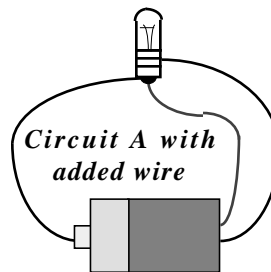
14. If the light bulbs are connected to the same battery in a circuit, how will their brightness compare? *Circle only one answer.*

- 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.