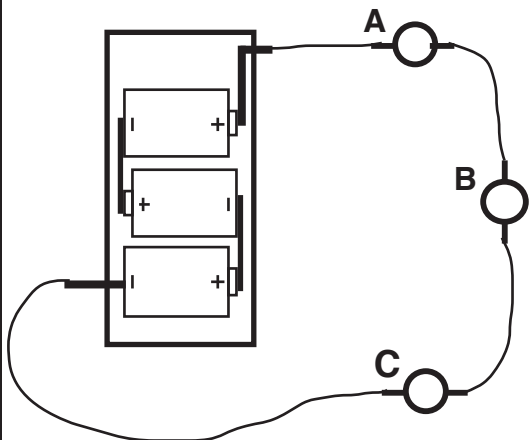


Homework Questions – Section 1

1. In the following circuit, which bulb lights first? _____

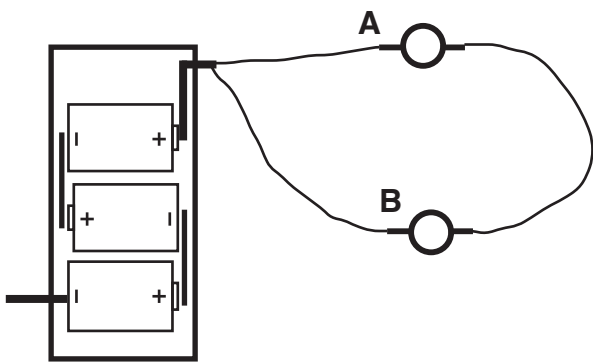


- (A) Bulb A
- (B) Bulb B
- (C) Bulb C
- (D) They all light at the same time.
- (E) Bulbs A and C light first, then bulb B lights

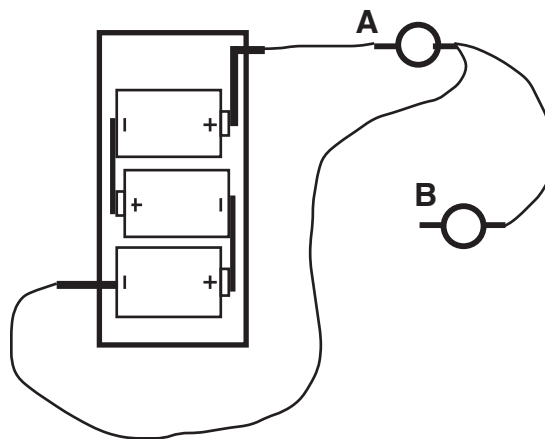
Explain your answer.

2. Study the three loops shown below.

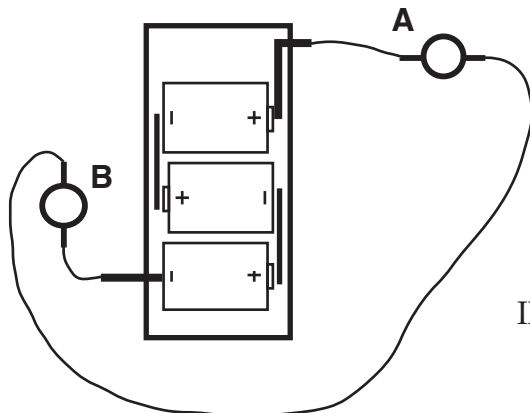
For each loop, state which of the bulbs will light.



I. _____

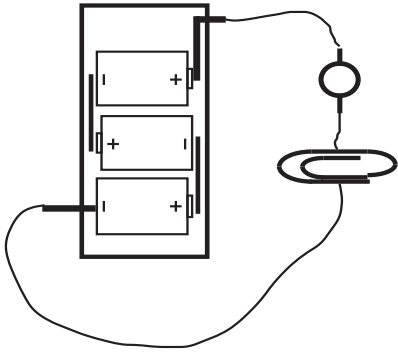


II. _____

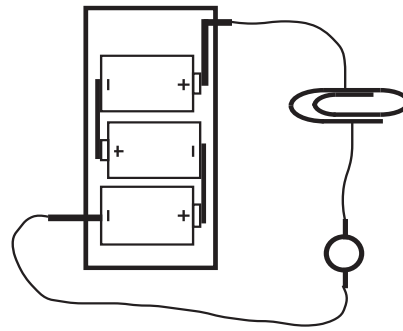


III. _____

3. Study the two circuits below in which a paper clip has been inserted between wires in a circuit.



Circuit A



Circuit B

Which of the following statements are true? _____

- (A) The bulb will light more brightly in Circuit A .
- (B) The bulb will light more brightly in Circuit B
- (C) The bulb will be the same brightness in either case.
- (D) The bulb will not light.

4. Support your answer to Question #3 using the words “insulator” and “conductor” correctly as part of your explanation.

5. Write in your own words a definition of the word circuit which anyone could use to determine if a given set of connections is or is not a circuit.

6. We have observed in several activities that as soon as a very small gap is produced anywhere in the circuit, the bulbs go out. Would you classify air as a conductor or an insulator? Explain.

7. Indicate whether each of the following statements is **True** or **False**. Then state evidence which either supports or contradicts each statement.

___ (A) Charge moves out of both ends of the battery into the loop.

Evidence:

___ (B) Light bulbs are non-directional devices. (Whichever way they are connected in the circuit, they behave the same way if you turn them around.)

Evidence:

___ (C) The battery determines the direction of flow of charge in a circuit.

Evidence:

___ (D) A compass can be used to determine the exact direction that charge flows in a circuit.

Evidence:

___ (E) Metal substances are generally conductors.

Evidence:

8. A group of adventurous students decided to see if it is possible to light two bulbs at once without any sockets using a 3-cell battery. Figure 1 shows a set of connections they discovered in which both bulbs lit.

(A) Draw a colored line which shows the continuous conducting path.

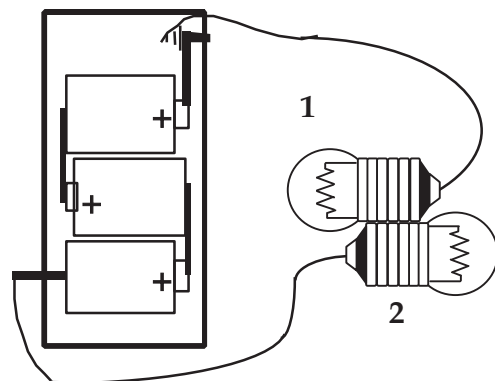


Figure 1

(B) Figures 2 and 3 show some other possible connections. Decide which, if any, bulbs will light and draw a line showing the continuous conducting path.

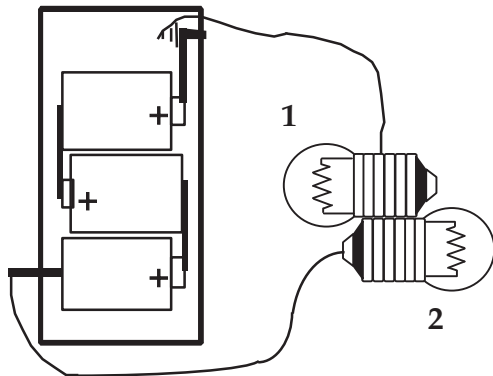


Figure 2

Bulb 1: _____

Bulb 2: _____

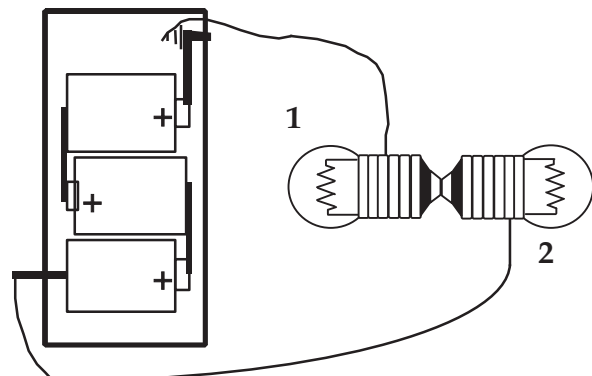


Figure 3

Bulb 1: _____

Bulb 2: _____