

Chapter 2 Study Guide – Answer Key

Read each question and circle the best answer.

1. Why is copper classified as a conductor?
 - A. Electric current travels easily through copper.
 - B. Copper may gain or lose electric charges.
 - C. Copper resists the flow of electrical current.
 - D. None of the other answer choices

2. Why are the wires in electric circuits often coated with plastic?
 - A. The plastic carries the electric current.
 - B. The plastic keeps the electric current inside the wire.
 - C. The plastic allows the wire to bend into different shapes.
 - D. The plastic acts as a switch to turn the electric current on or off.

3. Which set of materials could be used to make an electromagnet?
 - A. A D-cell battery, a box of paper clips, and a switch
 - B. A bar magnet, a copper wire, and a light bulb
 - C. A bar magnet, a spool of electrical wire, and an electrical outlet
 - D. An iron nail, a spool of electrical wire, and a D-cell battery

4. What parts make up a typical electric circuit?
 - A. A battery, nail, switch, and wire
 - B. An energy source, magnet, switch, and wire
 - C. An energy source, resistor, switch, and wire
 - D. None of the other answer choices

5. An electromagnet would be most useful for which of these tasks?
- A. Lifting a piano from the street to the fourth floor of a building
 - B. Separating a mixture of coins into pennies, nickels, dimes, and quarters
 - C. Removing the metal objects from trash at a recycling center
 - D. Removing the glass objects from trash at a recycling center
6. What makes a material a good conductor?
- A. A conductor makes it difficult for electricity to flow through it.
 - B. A conductor allows electricity to flow through it.
 - C. A conductor transforms electrical energy into other forms of energy.
 - D. None of the other answer choices
7. How do electric charges flow in a circuit?
- A. From one end of the circuit to the other end
 - B. From a point in the middle of the circuit to two ends
 - C. In a loop around the circuit
 - D. All of the other answer choices
8. Electrons are flowing through the wires of a circuit. Which of these actions will stop the electrons from flowing?
- A. Bend one of the wires without breaking it.
 - B. Coat the wires with thick plastic.
 - C. Replace the wires in the circuit with thicker wires.
 - D. Remove the battery or other power source from the circuit.
9. In order for electricity to flow, it must follow a(n)
- A. network of wires called a grid.
 - B. complete path called an open circuit.
 - C. complete path called a closed circuit.
 - D. None of the other answer choices

10. Jane sees a battery on one table and a light bulb on another table. She may not move either the battery or the light bulb. What does she need to complete a circuit and light the light bulb?

- A. One wire that is twice the distance between the battery and the light bulb
- B. Two wires, each long enough to connect the battery and the light bulb
- C. Another battery that she can place next to the light bulb
- D. Another light bulb that she can place next to the battery

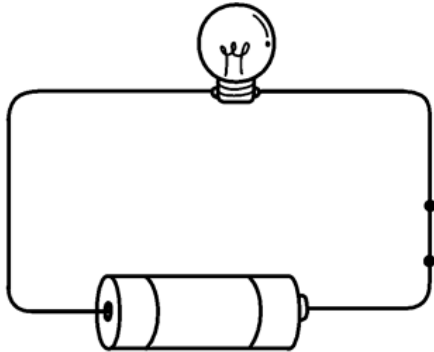
11. Which of the following **best** describes an electromagnet?

- A. A magnet created when electric current flows through wire coiled around an iron bar
- B. A magnet created when wire is wrapped around an iron bar
- C. A magnet that is attracted to anything with an electric current
- D. None of the other answer choices

12. Catalina wants to make an electromagnet using materials she already has. She plans to wrap the middle of a long piece of wire around an object and then connect the ends of the wire to a battery. Which of the following would be the best object for her to wrap with the wire?

- A. A rolled-up newspaper
- B. A plastic bottle
- C. An iron screw
- D. A glass jar

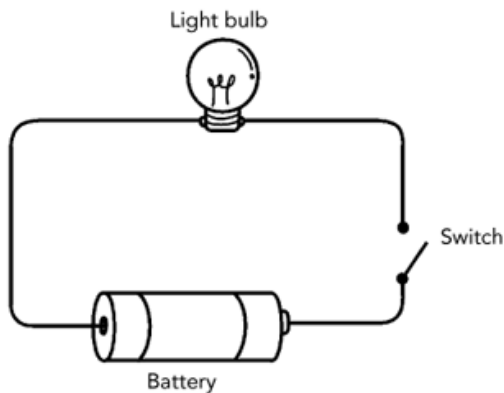
13. Look at the picture of an electrical circuit.



Noah thinks that glass is a good electrical insulator. How can he use the electrical circuit to test his claim?

- A. Replace the light bulb with a piece of glass to see whether the glass lights up.
- B. Add a piece of glass to the circuit to see whether it melts.
- C. Replace the battery with a piece of glass to see whether the light bulb still comes on.
- D. Replace one of the wires with a piece of glass to see if the light bulb still comes on.

14. Emma wants to investigate how electricity flows through a circuit. She gathers three pieces of wire, a battery, a light bulb, and a metal switch. First she puts on her safety gloves. Then she uses the wires to fasten together the battery, the light bulb, and the switch. The drawing shows the circuit that Emma makes.



When Emma turns the switch on, the bulb lights up. If Emma replaces the metal switch with one made of plastic, what will happen when she turns the switch on?

- A. That will close the circuit and the bulb will come on.
- B. The circuit will stay open and the bulb will not come on.
- C. That will close the circuit and the bulb will not come on.
- D. The circuit will stay open and the bulb will come on.

15. Which is one way to increase the strength of an electromagnet?
- A. Coil the wire around an aluminum core
 - B. Add more coils of wire
 - C. Decrease the amount of electric current
 - D. Remove some coils of wire
16. A washing machine is an example of transforming
- A. electricity into motion energy.
 - B. motion energy into electric energy.
 - C. electricity into light.
 - D. heat into motion energy.
17. Which of the following uses resistors to transform electricity into heat?
- A. A toaster
 - B. A car engine
 - C. A gas stove
 - D. A wind turbine