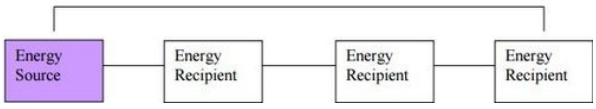
Electricity & Energy: Circuits

by ReadWorks

An electric circuit is the complete path of an electric current. The simplest electric circuit is made up of two components, or parts. The first component is an energy source, such as a battery or generator. The second component is a wire or cable that carries energy from one end of the source. Then it connects back to the source at the other end.

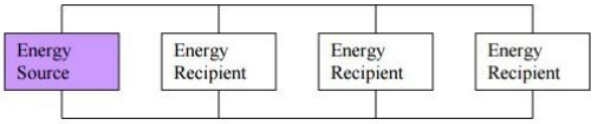
Usually a simple circuit has an energy recipient, such as a motor or lamp. An energy recipient is connected to the electric circuit by the wire or cable. There are two basic types of electric circuits: series circuits and parallel circuits.

Series Circuit



Series circuits are easy to understand if you think about certain strands of light bulbs linked to each other. One example is Christmas lights. With some Christmas lights, all of the lights don't work when one bulb goes out. Why does this happen? This is because in a series circuit the energy has to go through one energy recipient to get to the next. If a bulb blows out, the energy stops at that bulb. It never makes it to the next bulb.

Parallel Circuit



In a parallel circuit, energy is passed through the energy recipients and through a second connection. As long as there's an energy source, electricity will always be able to reach each recipient. If there is a problem with one recipient, the other recipients are not affected.

In practice, most electrical devices have combination circuits. Combination circuits do not use just one type of circuit. Instead, combination circuits utilize both series and parallel types. Devices that use combination circuits include computers and television sets. More complex circuits often have more electric components like switches and resistors, which limit the electric current flow.

Name: _____ **Date:** _____

1. According to this passage, what is the second component of a circuit?

A. electric current
B. energy source
C. energy recipient
D. wire or cable

2. What role do the two diagrams play in the passage?

A. They illustrate two types of circuits that are described in the text.
B. They contradict the information described in the text about series and parallel circuits.
C. They illustrate how series and parallel circuits combine to form a combination circuit.
D. They illustrate information about circuits not discussed in the text of passage.

3. What would happen if one light went out in a parallel circuit?

A. All of the lights would go out.
B. The circuit would become a simple circuit
C. All the lights except for that one would stay lit.
D. The energy source would stop working.

4. Read these sentences: "Combination circuits do not use just one type of circuit. Instead, combination circuits **utilize** both series and parallel types."

The word **utilize** means

A. to make use of
B. to burn out
C. to provide energy for
D. to create

5. The primary purpose of this passage is to describe

A. what combination circuits are
B. how Christmas lights work
C. the types of circuits found in computers
D. how different types of circuits work

6. How is energy passed in a parallel circuit?

7. What evidence from this passage could support the idea that a strand of lights might benefit from using a parallel circuit instead of a series circuit?

8. Choose the answer that best completes the sentence.

In a series circuit, energy is passed from one recipient to the next; _____, the flow of energy stops if one of the recipients has a problem.

A. previously
B. however
C. on the other hand
D. consequently

9. Vocabulary Word: source (*noun*): the start or cause of something.

Use the vocabulary word in a sentence:

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6. How is energy passed in a parallel circuit?

In a parallel circuit, energy is passed through each of the recipients and through a second connection.

7. What evidence from this passage could support the idea that a strand of lights might benefit from using a parallel circuit instead of a series circuit?

Using a series circuit, the whole strand of lights can go out if one bulb burns out. With a parallel circuit, the other energy recipients are not affected if one recipient has a problem.

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