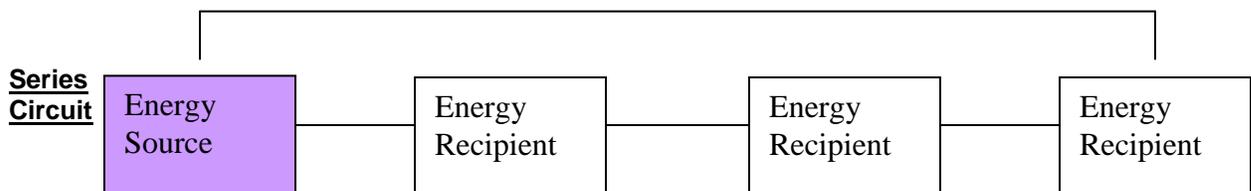
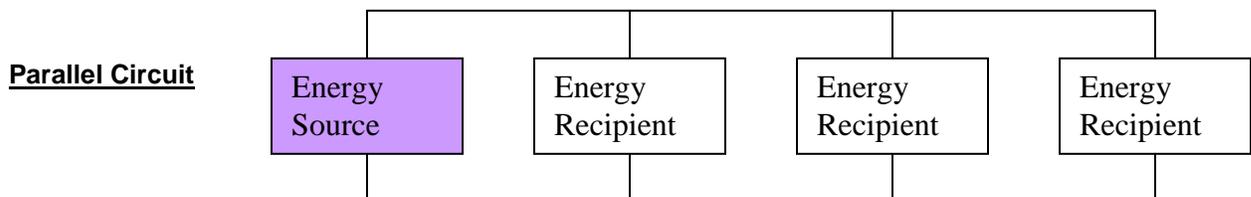


## Electricity & Energy Circuits

A circuit is the path followed by an electric **current**.<sup>1</sup> A circuit is made up of three parts. The first part is an energy source, such as a battery or **generator**.<sup>2</sup> The second part is an energy **recipient**,<sup>3</sup> such as a motor or lamp. The third part is a connection, such as a wire or cable, that carries energy from the source to the recipient. There are two basic types of circuits: series circuits and parallel circuits.



Series circuits are easy to understand if you think about old Christmas lights, or any strand of light bulbs linked to each other. What happens if one bulb goes out on the strand of lights? They all go out. This is because in a series circuit the energy has to go through one 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.



A parallel circuit can be more efficient than a series circuit. Energy is passed through both the 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.

<sup>1</sup> **current** – a flow of electricity through a wire

<sup>2</sup> **generator** – a machine that produces electricity

<sup>3</sup> **recipient** – a person or thing that receives something

In practice, almost all electrical devices have complex circuits. Complex circuits do not use just one type of circuit. Instead, complex circuits utilize a combination of both series and parallel types. Devices that use complex circuits include computers and television sets.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. According to this passage, what is the second part of a circuit?
  - a. Electric current
  - b. Energy source
  - c. Energy recipient
  - d. Generator
  
2. What role do the two diagrams play in the passage?
  - a. They illustrate two types of circuits that are described in the text of the passage.
  - b. They contradict the information described in the text of the passage about series and parallel circuits.
  - c. They illustrate how series and parallel circuits combine to form a complex 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. All the lights except for that one would stay lit.
  - c. The energy source would stop working.
  - d. The circuit would become a simple circuit.

4. Read these sentences:

“Complex circuits do not use just one type of circuit. Instead, complex circuits **utilize** a combination of both series and parallel types.”

The word **utilize** means

- a. to make use of
  - b. to provide energy for
  - c. to create
  - d. to burn out
- 
5. The primary purpose of this passage is to describe
    - a. how Christmas lights work
    - b. how different types of circuits work
    - c. what complex circuits are
    - d. the types of circuits found in computers

6. How is energy passed in a parallel circuit?

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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?

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8. The question below is an incomplete sentence. 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. on the other hand
- b. previously
- c. however
- d. consequently

9. Read the following sentence.

**Complex circuits use a combination of both series and parallel types in devices like television sets.**

Answer the questions below based on the information provided in the sentence you just read. One of the questions has already been answered for you.

Use what? \_\_\_\_\_

Where? \_\_\_\_\_

10. **Vocabulary Word:** efficient (*adj.*): able to work successfully without wasting time or energy.

Use the vocabulary word in a sentence: \_\_\_\_\_

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**Teacher Guide and Answers**

**Passage Reading Level:** Lexile 830

**Featured Text Structure:** Descriptive – the writer explains, defines or illustrates a concept or topic

**Passage Summary:** The passage describes what circuits are and how they work. It also provides an overview of the two major types of circuits, series and parallel.

1. According to this passage, what is the second part of a circuit?
  - a) Electric current
  - b) Energy source
  - c) **Energy recipient**
  - d) Generator
  
2. What role do the two diagrams play in the passage?
  - a) **They illustrate two types of circuits that are described in the text of the passage.**
  - b) They contradict the information described in the text of the passage about series and parallel circuits.
  - c) They illustrate how series and parallel circuits combine to form a complex 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) **All the lights except for that one would stay lit.**
  - c) The energy source would stop working.
  - d) The circuit would become a simple circuit.

4. Read these sentences:

“Complex circuits do not use just one type of circuit. Instead, complex circuits **utilize** a combination of both series and parallel types.”

The word **utilize** means

- a) to make use of
- b) to provide energy for
- c) to create
- d) to burn out

5. The primary purpose of this passage is to describe

- a) how Christmas lights work
- b) how different types of circuits work
- c) what complex circuits are
- d) the types of circuits found in computers

6. How is energy passed in a parallel circuit?

**Suggested answer:** 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?

**Suggested answer:** 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.

8. The question below is an incomplete sentence. 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) on the other hand
- b) previously
- c) however
- d) **consequently**

9. Read the following sentence.

**Complex circuits use a combination of both series and parallel types in devices like television sets.**

Answer the questions below based on the information provided in the sentence you just read. One of the questions has already been answered for you.

What? complex circuits

Use what? **use a combination of both series and parallel types**

Where? **in devices like television sets**

10. **Vocabulary Word:** efficient (*adj.*): able to work successfully without wasting time or energy.

Use the vocabulary word in a sentence: answers may vary.