

**Student Name:** \_\_\_\_\_

**Class:** \_\_\_\_\_

**Due Date:** \_\_\_\_\_

## Introduction and Objectives

### Learning Objectives:

- Understand the basic components of a lighting circuit
- Identify and describe the functions of switches, sockets, and wiring
- Design a simple lighting circuit
- Apply critical thinking and problem-solving skills in troubleshooting

### Pre-Assignment Questions:

1. What is the primary purpose of a lighting circuit?

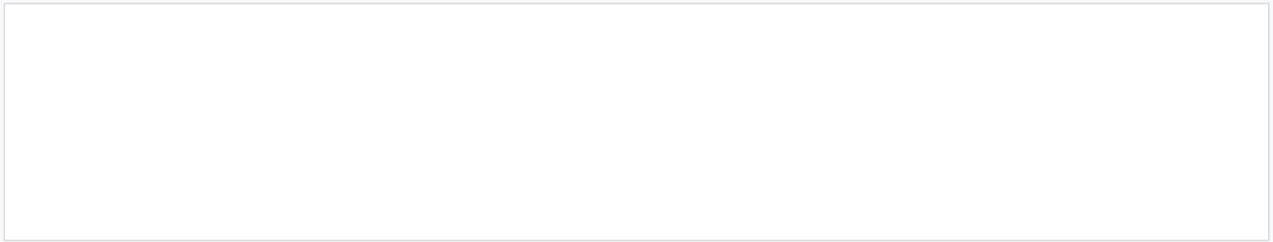
2. What are the three main types of wires in a lighting circuit?

## Activity 1: Diagram Analysis

**Analyze the provided diagrams of simple lighting circuits and identify the following components:**

- Switches
- Sockets
- Wiring (including live, neutral, and earth wires)
- Fuses or circuit breakers

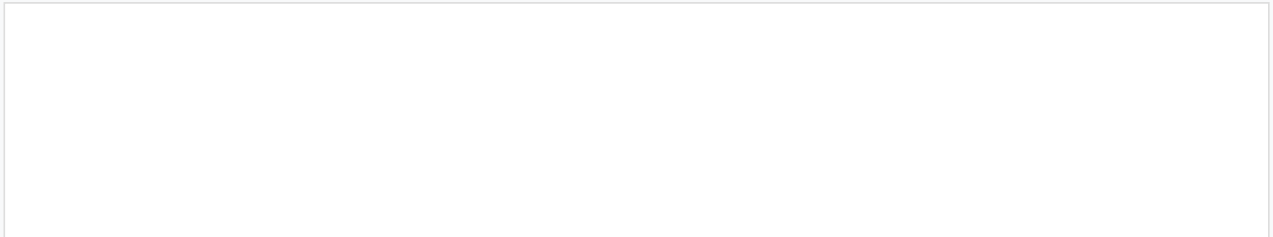
**Label each component in the diagrams and describe their functions in a short paragraph.**



**Example Diagram:**

Switch → Socket → Live Wire → Neutral Wire → Earth Wire → Fuse

**Analyze and label the components in the example diagram.**



## Activity 2: Short Answer Questions

**Answer the following short answer questions to demonstrate your understanding of lighting circuits:**

1. What is the purpose of a switch in a lighting circuit, and how does it control the flow of electricity?

2. Describe the difference between a live wire and a neutral wire in a lighting circuit.

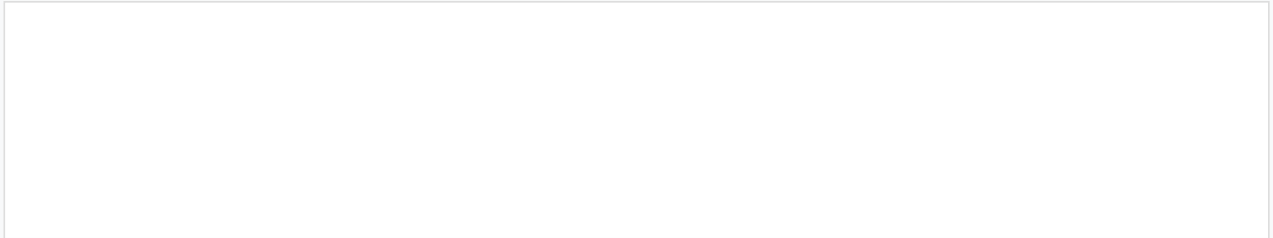
3. What safety feature is a fuse or circuit breaker, and how does it protect the circuit?

### Activity 3: Circuit Design

**Design a simple lighting circuit for a small room using the components learned in class.**

**Consider the following:**

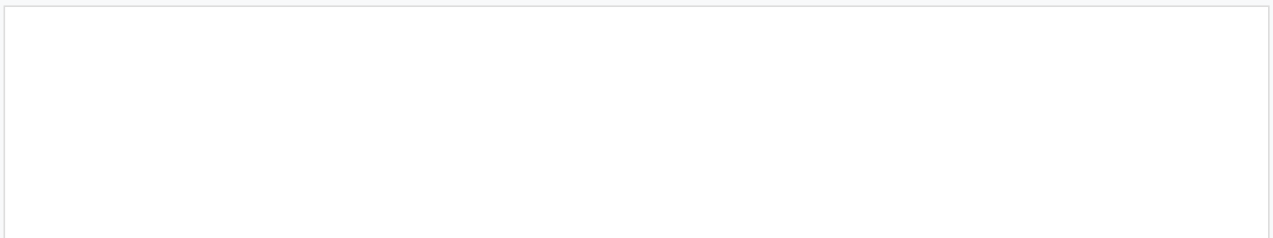
- The circuit should include at least one switch and one socket.
- The circuit should be safe and efficient.
- Use proper wiring colors and symbols in your design.



**Example Circuit Design:**

Switch → Socket → Live Wire → Neutral Wire → Earth Wire → Fuse

**Use the example circuit design as a reference to create your own design.**



#### Activity 4: Real-World Application

**Research and write a short essay on a real-world application of lighting circuits, such as smart home systems or energy-efficient lighting solutions.**

**Consider the benefits and challenges of implementing such systems.**

**Example Topic:** Smart Home Lighting Systems

**Research and write about the benefits and challenges of implementing smart home lighting systems.**

## Activity 5: Troubleshooting

**Imagine you are an electrician tasked with troubleshooting a faulty lighting circuit.**

**Describe the steps you would take to identify and fix the problem, considering safety protocols and diagnostic tools.**

**Example Scenario:** A lighting circuit is not working due to a faulty switch.

**Describe the steps you would take to identify and fix the problem.**

**Reflect on your learning and understanding of lighting circuits and maintenance.**

**Ask yourself:**

- Can I identify and describe the components of a lighting circuit?
- Do I understand how these components work together?
- Can I design a simple lighting circuit that is safe and efficient?
- How does this learning apply to real-world scenarios and my future career in Electrical Engineering?

**Self-Assessment Questions:**

1. What did I learn about lighting circuits and maintenance in this assignment?

2. What challenges did I face, and how did I overcome them?

## Additional Resources

**For further learning and support, consider the following resources:**

- Online tutorials and videos on lighting circuits and electrical safety.
- Textbooks and educational websites on Electrical Engineering.
- Real-world examples of lighting circuits in homes and public spaces.

**Example Resource:** Online Tutorial on Lighting Circuits

**Use the online tutorial to further your understanding of lighting circuits and maintenance.**

