SECOND TERM
WEEKLY LESSON NOTES
WEEK 8

Week Ending:	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Forces & Energy
Class: B9	**Class Size:**	**Sub Strand:** Electricity and Electronics

Content Standard: B9.4.2.1 Construct electrical circuits and illustrate how electrical energy is transformed into other forms of energy and perform electrical calculations	**Indicator:** B9.4.2.1.1 Demonstrate transformation of electrical energy to other forms of energy in both series and parallel circuits and perform simple calculations involving the flow of current in circuits/.	**Lesson:** 1 of 2

Performance Indicator: Learners can describe the impact of changes in electrical circuits on the output of bulbs and describe how electrical energy transformation occurs in series and parallel circuits	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation

References: Science Curriculum Pg. 109

Key words: Electrical circuits, Voltage, Current, Resistance, Series circuits

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a simple demonstration of a basic electrical circuit involving a bulb, battery, and wires. Ask students to observe and discuss what happens when different changes are made to the circuit, such as adding more bulbs, changing the resistance, or altering the arrangement. Encourage predictions about the impact on the output of bulbs. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Define key terms: electrical circuits, voltage, current, resistance, series circuits, parallel circuits. Discuss the flow of electrical energy in a circuit and introduce the concept of energy transformation. Present diagrams of series and parallel circuits on the whiteboard. Discuss how the arrangement of components affects the output in terms of brightness and energy distribution.	Bulbs, batteries, wires, resistors Multimeters Diagrams of series and parallel circuits

	Conduct a hands-on activity where students construct simple electrical circuits with different configurations, measure voltage, current, and resistance using multimeters, and observe the impact on the bulbs. Discuss the observations, emphasizing the differences between series and parallel circuits and the concept of energy transformation. Conduct a short discussion on real-life applications of series and parallel circuits, connecting the lesson content to practical scenarios such as household wiring or electronic devices. Guide learners to calculate the potential difference in a circuit using the formula: V = IR (where I is the current and R the resistance) Example 1: If the current (I) in a circuit is 2 Amperes and the resistance (R) is 5 Ohms, what is the potential difference (V)? <u>Solution</u> Current (I): 2 Amperes Resistance (R): 5 Ohms V=IR V=(2A)×(5Ω) V=10Volts Example 2: In a different circuit, the current (I) is 3 Amperes, and the resistance (R) is 8 Ohms. Calculate the potential difference (V) in this circuit. <u>Solution</u> Current (I): 3 Amperes Resistance (R): 8 Ohms V=IR V=(3A)×(8Ω) V=24Volts Example 3: For a circuit with a current (I) of 1.5 Amperes and a resistance (R) of 6 Ohms, determine the potential difference (V). <u>Solution</u> Current (I): 1.5 Amperes Resistance (R): 6 Ohms V=IR V=(1.5A)×(6Ω) V=9Volts	

	Example 4: If the current (I) in a particular circuit is 4 Amperes, and the resistance (R) is 10 Ohms, what is the potential difference (V)? <u>Solution</u> Current (I): 4 Amperes Resistance (R): 10 Ohms V=IR V=(4A)×(10Ω) V=40Volts <u>Assessment</u> 1. What happens to the brightness of bulbs if the voltage in a circuit increases? 2. How does adding more bulbs to a series circuit affect the current reaching each bulb? 3. What type of energy transformation happens inside a battery? 4. Why do bulbs in a parallel circuit shine brighter than those in a series circuit with the same voltage? 5. If the current (I) in a circuit is 2 Amperes and the resistance (R) is 5 Ohms, what is the potential difference (V)? 6. For a circuit with a current (I) of 1.5 Amperes and a resistance (R) of 6 Ohms, determine the potential difference (V).	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending:	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Forces & Energy
Class: B9	**Class Size:**	**Sub Strand:** Electricity and Electronics

Content Standard: B9.4.2.2 Demonstrate an understanding of Forward and Reverse Bias and explain the behavior of LEDs, Diodes, Resistors and Capacitors in electronic circuits	**Indicator:** B9.4.2.2.1 Describe forward bias and reverse bias and explain the relationship among the components, such as: LEDs, Diodes, Resistors and Capacitors, in an electronic circuit.	**Lesson:** 1 of 2

Performance Indicator: Learners can explain forward bias and reverse bias in an electronic circuit	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation

References: Science Curriculum Pg. 109

Key words: LED (Light Emitting Diode), Resistors, Capacitors, Electronic circuits

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson by showing a basic electronic circuit with an LED, battery, and resistor on the whiteboard. Ask students if they have any prior knowledge about the behavior of LEDs in circuits. Encourage a short discussion to activate their existing knowledge. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Define key terms: forward bias, reverse bias. Explain the concept of forward bias, where the voltage across the LED allows current to flow, causing it to emit light. Discuss reverse bias, where the voltage across the LED prevents current flow, resulting in the LED being off. Provide each student/group with a breadboard, LED, resistor, and battery. Instruct students to construct a simple circuit with the LED in forward bias and observe the LED's behavior. Have them modify the circuit to create reverse bias and note the changes in LED behavior. Discuss findings as a class.	LEDs Resistors (varying values) Capacitors Breadboards Jumper wires Batteries Switches

	Introduce resistors and capacitors to the class, explaining their roles in electronic circuits. Provide various resistors and capacitors for students to experiment with. Instruct students to construct different circuits involving resistors and capacitors and observe the effects on the LED. Discuss findings as a class. <u>Assessment</u> 1. In which bias does an LED light up? 2. What does a resistor do in a basic LED circuit? 3. How does connecting LEDs in parallel affect their brightness compared to a series connection? 4. What happens to the LED when connected in reverse bias?	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	