

Electricity Unit Guide (so far....)

Static Electricity

- Define static electricity
- Describe how static electricity is generated in various materials
- Differentiate between static and current electricity
- Describe the types of charges on objects. Include:
 - (i) positive charge
 - (ii) negative charge
 - (iii) neutral
- Describe how the charges on objects can change. Include:
 - (i) neutral objects can develop a positive charge
 - (ii) neutral objects can develop a negative charge
 - (iii) positively charged objects can become neutral
 - (iv) negatively charged objects can become neutral
- Define electric discharge and give an example
- Define the Laws of Electric Charges. Include:
 - (i) like charges repel
 - (ii) unlike charges attract
 - (iii) charged objects attract some neutral ones
- Provide examples of how knowledge of static electricity has resulted in the development of the following technologies:
 - (i) lightning rods
 - (ii) electrostatic air cleaners

Current Electricity

- Describe the flow of charge in an electric circuit using precise language
- Define potential energy (identify that electric potential is provided at the source and “used” by the circuit elements (a potential or voltage drop occurs))
- Define electric potential difference (voltage)
- Identify the volt (V) as the SI unit for electric potential difference
- Describe how an electrochemical cell (i.e. battery) produces a supply of electric charge.

Include:

(i) 2 electrodes of different materials

(ii) electrolyte

- Define the coulomb (C) as the unit for charge
- Define electric current
- Identify the ampere (A) as the SI unit for current
- Define electric circuit and describe the parts of an electric circuit. Include:

(i) source of electrical energy

(iii) control/switch

(ii) electrical load

(iv) conductor

- Create circuit diagrams using appropriate circuit symbols. Include symbols for:

(i) bulb

(iv) wires

(vii) voltmeter

(ii) cell

(v) resistors

(viii) open switch

(iii) battery

(vi) ammeter

(ix) closed switch

- Define electrical resistance
- Identify the ohm (Ω) as the SI unit for electrical resistance
- List the factors which affect the amount of resistance in a wire. Include:
 - (i) length
 - (ii) diameter
 - (iii) type
 - (iv) temperature
- State Ohm’s Law

- given voltage drop and current through a resistor, calculate its resistance
- given voltage drop and resistance, calculate current through a resistor
- given current through a resistor and its resistance, calculate the voltage drop