

Physical Sciences, Grade 10, Electricity

Practice Questions

1. Define current, voltage, and resistance. State their SI units.
2. A charge of 12 C flows through a wire in 3 seconds. Calculate the current.
3. Calculate the voltage across a 5 ohms resistor if a current of 2 A flows through it.
4. In a series circuit with three resistors (2 ohms, 3 ohms, 5 ohms), calculate the total resistance.
5. In a parallel circuit with three resistors (6 ohms, 3 ohms, and 2 ohms), calculate the total resistance.
6. A 60 W light bulb operates at 230 V. Calculate the current drawn.
7. A kettle draws 10 A at 220 V. Calculate the power consumed.
8. How much energy is used by a 1000 W iron in 2 hours? Give the answer in kWh.
9. Describe the function of a fuse and circuit breaker.
10. A 40 ohms resistor has 5 A of current flowing through it. Calculate the power dissipated.

Memo / Answers

1. Current: flow of charge (A); Voltage: potential difference (V); Resistance: opposition to flow (ohms)

$$2. I = Q / t = 12 / 3 = 4 \text{ A}$$

$$3. V = IR = 5 * 2 = 10 \text{ V}$$

$$4. R_{\text{total}} = 2 + 3 + 5 = 10 \text{ ohms}$$

$$5. 1/R_{\text{total}} = 1/6 + 1/3 + 1/2 = (1+2+3)/6 = 6/6 \rightarrow R_{\text{total}} = 1 \text{ ohm}$$

$$6. I = P / V = 60 / 230 \sim 0.26 \text{ A}$$

$$7. P = IV = 10 * 220 = 2200 \text{ W or } 2.2 \text{ kW}$$

$$8. E = P * t = 1000 * 2 = 2000 \text{ Wh} = 2 \text{ kWh}$$

9. Fuse: melts to break the circuit if current is too high. Circuit breaker: trips to protect circuit.

$$10. P = I^2 * R = 5^2 * 40 = 25 * 40 = 1000 \text{ W}$$