# Effects of Electric Current — Joule's Law & Power

STUDENT PRACTICE WORKSHEET

Name: _____ Date: _____ Score: _____ / 10

**Q1. What is the SI unit of heat energy produced in an electrical conductor?**

(A) Watt (W)
(B) Joule (J)
(C) Ampere (A)
(D) Volt (V)

Calculation / Rough Work Space

**Q2. According to Joule's Law, which equation represents heat energy $H$ produced by current $I$ through resistance $R$ in time $t$?**

(A) $H = V \times I$
(B) $H = I^2 R t$
(C) $H = V / R t$
(D) $H = P t^2$

Calculation / Rough Work Space

**Q3. If the electric current flowing through a fixed resistor is doubled, how does the heat energy generated change?**

(A) Increases by 2 times
(B) Increases by 4 times
(C) Decreases to half
(D) Remains unchanged

Calculation / Rough Work Space

**Q4. Which of the following is the correct formula for electric power $P$ in terms of voltage $V$ and resistance $R$?**

(A) $P = V \times R$
(B) $P = V^2 / R$
(C) $P = I^2 V$
(D) $P = V R t$

Calculation / Rough Work Space

**Q5. Why is a safety fuse wire constructed using a tin-lead alloy?**

(A) High melting point & zero resistance
(B) Low melting point & appropriate resistance
(C) High boiling point & high conductivity
(D) Low ductility

Calculation / Rough Work Space

**Q6. What is the commercial unit of electrical energy consumed in households?**

(A) Watt-second

(B) Kilowatt-hour (kWh)

(C) Volt-Ampere

(D) Ohm-metre

Calculation / Rough Work Space

**Q7. An electrical appliance rated $230\ V$ consumes $920\ W$ power. What is the current drawn by the appliance?**

(A) $2\ A$

(B) $4\ A$

(C) $6\ A$

(D) $10\ A$

Calculation / Rough Work Space

**Q8. How are high-power electrical appliances connected in domestic distribution wiring?**

(A) Series connection

(B) Parallel connection

(C) Single line loop

(D) Open circuit

Calculation / Rough Work Space

**Q9. What is the primary function of earthing in household electrical wiring?**

(A) Increase electrical voltage

(B) Prevent electric shock during insulation leakage

(C) Reduce electricity bill

(D) Boost current frequency

Calculation / Rough Work Space

**Q10. An electric heater of $100\ \Omega$ resistance operates on a $200\ V$ line for $10\ s$. Calculate heat $H$ generated.**

(A) $2{,}000\ J$

(B) $4{,}000\ J$

(C) $20{,}000\ J$

(D) $40{,}000\ J$

Calculation / Rough Work Space