

## Chapters 34: Ohm's Law

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**Text:**Chapter 34

Think and Explain: 1-3, 6-8, 10

Think and Solve: 1-6

**Vocabulary:**

Ohm's Law, resistance, resistivity, superconductor, current, amps, volts, ohms, kW-h, AC, DC

**Equations:**

$$I = \frac{Q}{t} \quad V = IR \quad P = IV \quad V = \frac{PE_e}{q} \quad P = \frac{PE_e}{t} \quad Q = ne$$

Constants:  $e = 1.6 \times 10^{-19} \text{ C}$        $1 \text{ kW} = 1000 \text{ W}$

**Key Objectives:***Concepts*

- correctly interpret a circuit diagram.
- correctly use ammeters and voltmeters in a circuit. (**Lab Practical!**)
- compare and contrast an ammeter and a voltmeter.
- explain what happens to electrons and energy in a circuit.
- explain how and why most material's resistance have a temperature dependence.
- compare and contrast an insulator, conductor and superconductor.
- explain what happens to electrons and energy when a light bulb is on and shining.

*Problem Solving*

- solve for the missing variable in Ohm's Law.
- calculate total charge or current given the current or total charge and time.
- convert between total charge and number of electrons.
- calculate the total energy from either power and time or voltage and charge.
- calculate the total cost of running an appliance for a given amount of time.
- solve for the missing variable in all of the given equations.