

Chapter 34 Electric Current

Calculating Power

If four 1.5-V batteries deliver 1.25-A current to a small motor, what is the power provided to the motor?

1. Read and Understand

What information are you given?

$$\text{voltage} = V = 4 \times 1.5 \text{ V} = 6.0 \text{ V}$$

$$\text{current} = I = 1.25 \text{ A}$$

2. Plan and Solve

What unknown are you trying to calculate?

$$\text{power} = P = ?$$

What mathematical expression can you use to calculate the unknown?

$$P = VI$$

$$P = (6.0 \text{ V})(1.25 \text{ A}) = 7.5 \text{ W}$$

3. Look Back and Check

Is your answer reasonable?

Yes, the number calculated is a product of current and voltage and the units indicate power.

Math Practice

On a separate sheet of paper, solve the following problems.

1. An 8.0-V power supply delivers a 1.75-A current to a circuit. Calculate the power provided to the circuit.
2. How much power is used by a set of lights operating on a 12-V battery and 2.75 A?
3. A 15-W motor draws a current of 1.25 A. What is the voltage impressed across the circuit?