




OHM'S LAW

Circuits and
Ohm's Law $I = \frac{\Delta Q}{\Delta t}$



Khan Academy



RESISTANCE

Resistance is the property of any material that slows down the flow of electrons and converts electrical energy into other forms of energy.



CURRENT

The measure of how much charge is flowing past a given point.



VOLTAGE

How much “potential difference” is “pushing” the charges across a wire.



OHM'S LAW

The mathematical relationship between Resistance, Voltage and Current.

$$V=IR$$

$$R = \frac{V}{I}$$

1) WHAT IS THE RESISTANCE OF A FLASHLIGHT BULB IF THERE IS A CURRENT OF 0.75 A THROUGH THE BULB WHEN CONNECTED TO A 3.0 V BATTERY?

2) THE CURRENT THROUGH A LOAD IN A CIRCUIT IS 1.5 A. IF THE POTENTIAL DIFFERENCE ACROSS THE LOAD IS 12 V, WHAT IS THE RESISTANCE OF THE LOAD?

3) A 60 V POTENTIAL DIFFERENCE IS MEASURED ACROSS A LOAD THAT HAS A RESISTANCE OF 15 OHMS. WHAT IS THE CURRENT THROUGH THIS LOAD?

UNIT PREFIXES:

MILLI (m) = 1/1000

KILO (K) = 1000

MEGA (M) = 1 000 000

4) WHAT IS THE VOLTAGE ACROSS A $12\text{ K}\Omega$
LOAD THAT ALLOWS A CURRENT OF 6.0 mA ?

5) A 15 mA CURRENT FLOWS THROUGH A
400 Ω LAMP. WHAT IS THE VOLTAGE ACROSS
THE LAMP?

6) A $12\text{ k}\Omega$ LOAD IS CONNECTED TO A 90 V POWER SUPPLY. WHAT IS THE CURRENT THROUGH THE LOAD IN MILLIAMPS?

7) A DEVICE DRAWS A CURRENT OF 1.2 MA WHEN CONNECTED TO 120 V. WHAT IS THE RESISTANCE IN KILO-OHMS OF THIS DEVICE?