

Ohm's law

1) Determine R for each of the following. Express your answer in the most appropriate units.

a) $E = 50\text{V}$, $I = 2.5\text{A}$

b) $E = 37.5\text{V}$, $I = 1\text{mA}$

c) $E = 2\text{kV}$, $I = 0.1\text{kA}$

d) $E = 4\text{kV}$, $I = 8 \times 10^{-4}\text{A}$

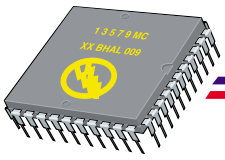
2) A $48\ \Omega$ hot water heater is connected to a 120V source. What is the current drawn?

3) How much voltage can be applied to a $560\ \Omega$ resistor if the current must not exceed 50mA .

4) If $I = 36\text{mA}$ when $E = 12\text{V}$, what is I if the 12V source is

A) replaced by an 18V source

B) replaced by a 4V source



5) A warning light draws 125 mA when dissipating 15 Watts. What is its resistance?

6) What IR drop occurs when 90W is dissipated by a 10 Ω resistor.

7) The load on a 120 V circuit consists of six 100 -W lamps, a 1.2 kW heater, and an electric motor drawing 1500 W. If the circuit is fused at 30 A, what happens when a 900W toaster is plugged in.? **Justify your answer.**

8) A portable radio transmitter has an input power of 0.455 kW. How much current does it draw from a 12V battery?

9) Determine which, if any, of the following resistors may have been damaged by overheating. **Justify your answer.**

- A) 560 Ω , ½ watt, with 75 volts across it.
- B) 3 Ω , 20W, with 4A through it
- C) ¼ watt, with 0.25 mA through it and 40 V across it.
