Topic 5B: Current, Resistance, Ohm's Law, Power

Skill 40: Ohm's Law

$I = V/R$ $R = V/I$ $V = IR$

"The Vulture flies over the Indian or the rabbit"

When a circuit "obeys Ohm's Law" it is not heating up so, resistance is constant.

Ohm's Law applies to individual components and to the entire circuit

V = Potential Difference $V = W/q$

I = Current $I = q/t$

R = Resistance $R = \frac{\rho L}{A} = \frac{\rho L}{\pi r^2}$

Skill 41: Electrical Power & Energy

Power is the Rate of Energy $P = W/t$

Work or energy is the product of potential difference and charge $W = Vq$

$$P = \frac{Vq}{t} = VI = \frac{V}{R} = I^2R$$

(measured in WATTS)

(sub $I = V/R$ and $V = IR$)

or Work equals Power (rate of work) multiplied by time

$W = Pt$ so $Vq = VIt = \frac{V^2}{R}t = I^2Rt$ measured in Joules or eVs

To identify the correct relationship or graph

- List 3 variables involved out of the 4 possible V I R P
- Find the equation that includes those 3
  - rearrange in terms of what you are solving for or "y-axis"
- Determine if relationship is direct, direct square, inverse or other and apply