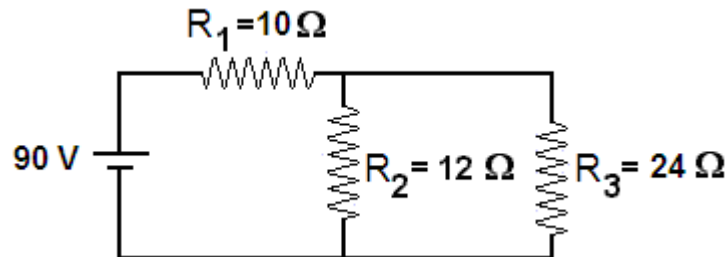# Physics II

Electric Power

$$Power = VI = \frac{V^2}{R} = I^2 R$$

Problem 1.- Find the power delivered by the voltage source:

Problem 2.- Which has more resistance a 100-W light bulb or a 75-W light bulb? Explain your rationale.

Problem 3.- If two identical resistors are connected in series to a battery, does the battery have to supply more power or less power than when only one of the resistors is connected?

Problem 4.- If you are given two identical speakers with resistance of 4Ω each, and an amplifier with an output resistance of 8Ω. How should you connect the speakers to get the maximum power output?
(a) In series   (b) In parallel   (c) Connect just one.

Problem 4a.- If you are given two identical speakers with resistance of 8Ω each, and an amplifier with an output resistance of 8Ω. How should you connect the speakers to get the maximum power output?
(a) In series   (b) In parallel   (c) Connect just one.
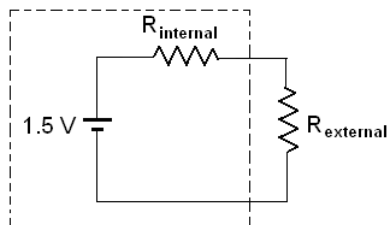
Problem 4b.- The output of an amplifier can be modeled as a 1.5-volt source in series with an internal resistance of $R_{internal}$=5Ω.
a) What external resistance will give the maximum power transfer?
b) How much power is dissipated in the **external** resistance then?

Problem 5.- A model of a battery is represented by an ideal 12-V voltage source in series with an internal resistance of 0.5Ω

Calculate the power delivered to a lamp whose resistance is 2.5 Ω

$R_i = 0.5\Omega$