



# UNIT 4 – ELECTRIC CIRCUITS

IPOD Questions

# IT'S *THE* PROBLEM OF *THE* DAY

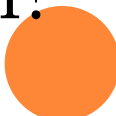
## o IPOD # 15

- a) A lamp with a resistance of  $30\ \Omega$  is connected to a voltage source. The current in the circuit is  $3.0\ \text{A}$ . What is the voltage of the source?
  
- b) The current in a circuit is  $2\ \text{A}$ . If the voltage is tripled and the resistance is cut in half, what is the new value of current in the circuit?



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## o IPOD # 16

- a) What is the current through a 75-W light bulb that is connected to a 120-V outlet?
  - b) A classroom TV, rated at 170 W, was left on overnight and was running for a total of 24 hours that day (in school & out of school). How much energy (in kWh) was consumed & how much did it cost the school at \$0.14 per kWh?
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### ○ IPOD # 17

- A  $2\ \Omega$  and a  $4\ \Omega$  resistor are connected in **series** across a 12-V battery.
  - Draw the circuit
  - What is the equivalent (total) resistance?
  - What is the current?
  - What is the potential drop (voltage) across each resistor?
  - What is the power developed by each resistor?
  - What is the total power developed by the circuit?



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## ○ PROMPT # 18

- Two resistors,  $40\text{-}\Omega$  and  $10\text{-}\Omega$ , are connected in parallel across a  $120\text{-V}$  generator.
  - Draw the circuit
  - What is the equivalent (total) resistance?
  - What is the current through the entire circuit?
  - What is the current through each branch of the circuit?
  - What is the power developed by each resistor?
  - What is the total power developed by the circuit?



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## ○ IPOD # 19

- A  $2\ \Omega$  resistor is connected across a 9-V battery.
  - What is the current in the circuit?
  - How much power is developed by the resistor?
  - The device is on an average of 6 hours per day. How much energy does it use (in kWh) per day? Per 30 days?
  - If it costs \$0.12 per kWh, how much does it cost to run for a day? For 30 days?



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## ○ *EXTRA PROMPT*

- In this circuit, three resistors receive the same amount of current (4 amps) from a single source. Calculate the amount of voltage "dropped" by each resistor.
- In this circuit, three resistors receive the same amount of voltage (24 volts) from a single source. Calculate the amount of current "drawn" by each resistor.

