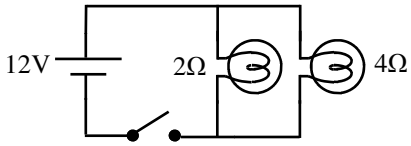
A-day: Due Thurs., Apr 17 (Assigned Tues., Apr 15)
B-day: Due Fri., Apr 18 (Assigned Wed., Apr 16)

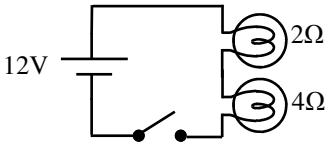
2008 Electricity 7

1. Basic power questions:
   A) Which is brighter a 60W or an 100W light bulb?
   B) So, brightness is not really about current it is about _____.



2. Using the parallel circuit at the right:
   A) Two objects in parallel have the same _____.
   B) Which one of the two resistors will have the most current?
   C) Which one has the most voltage?
   D) So, which one will use the most power?
   G) ***Rule***: For objects in parallel, they have the same _____. The _____ resistor has the most current, and therefore has the most power and is brighter.

3. Using the series circuit at the right:
   A) Two objects in series have the same _____.
   B) What is the total resistance of the two bulbs?
   C) What is the current flowing thru the circuit?

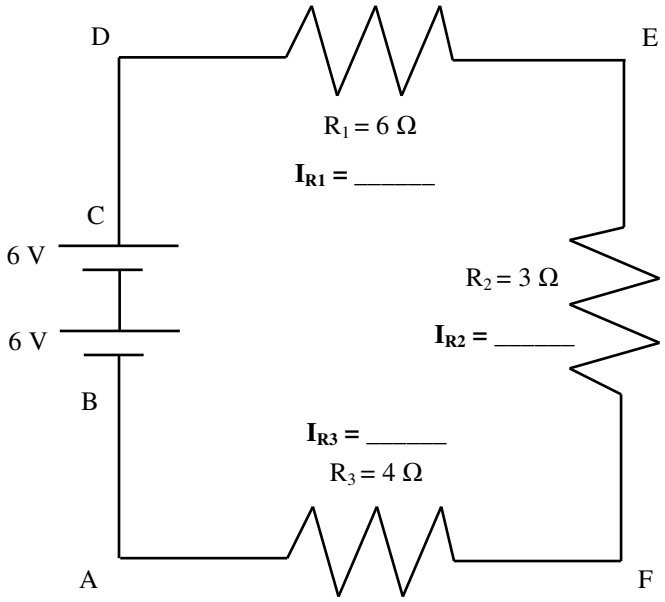


   D) Which one uses the most voltage?
   E) ***Rule***: For objects in series, they have the same _____. The _____ resistor has the most voltage, and therefore has the most power and is brighter.

4. For each of the following steps, LABEL the answers on the diagram (if applicable). Be certain to do each step in order.
   A) Calculate <u>and label</u> the total voltage: V_T =
   B) Calculate the total resistance: R_T =
   C) Calculate and label the total current: I_T =
   D) What is the current flowing thru R_1 (label it)?
   E) What is the current flowing thru R_2 (label it)?
   F) What is the current flowing thru R_2 (label it)?

G) Calculate the voltage used in R_1:

H) Calculate the power used by R_1:



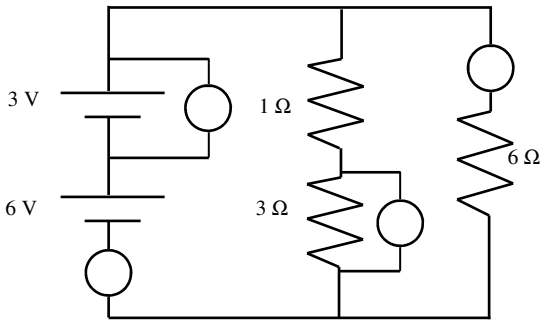
I) Calculate the power used by R_2:

J) Calculate the power used by R_2:

M) Calculate the total power used by circuit:

K) Calculate the power used by R_3:

L) Calculate the power used by R_3:



5. Each of the four circles in the circuit at the right symbolizes a meter. In each of the circles mark one of the following: Ammeter (A); Ohmmeter (O); Voltmeter (V). (*USE the notes. Don't just guess.)*

6. Find the total current in the circuit at the left. HINTS: You see that it is a parallel circuit, but that one branch of the circuit has resistors in series. Convert the two series resistors into one bigger resistor. Then find total voltage, current in each branch, then the total current.

7. 35 amps of current goes through a 40 amp fuse. What happens?
8. 25 amps of current goes through a 15 amp fuse. What happens?
9. Which do you have to replace: a fuse or a circuit breaker?
10. Three resistors are in parallel: 35Ω; 50Ω; 75Ω. WITHOUT CALCULATING: give an estimate of what the total resistance is. (You may use words like "less than", "greater than", etc.)

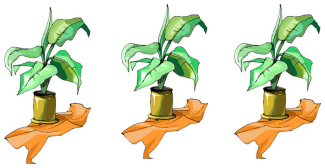
Seniors may stop.

11. Control, Experimental, or Responsive Variable?
    A. ____ What you are studying in the experiment.
    B. ____ There are many of these in a good experiment.
    C. ____ What happens in the experiment.
    D. ____ There is only one of these in a good experiment.
    E. ____ What you record in an experiment.
12. Why do good experiments have control setups? (*Explain <u>completely</u>.)*

13. A) What is the control setup for this experiment?
B) What is the experimental variable for this experiment?
C) Give two possible control variables for this experiment.

D) Which plant food is better?

E) What does the "No plant food" setup tell you about plant food A?



Plant Food A | *Plant Food B* | *No Plant Food*

Start	10 cm	10.1 cm	9.8 cm
week 1	11.1 cm	12.2 cm	11.8 cm
week 2	12.7 cm	14.5 cm	13.2 cm

14. A pharmaceutical company has developed a new acne drug. To get this new drug approved, they need to do scientific trials to prove effectiveness. What would be the control setup for this drug?

15. Which of the following statements could be supported by the scientific method and why?
    A) "Come to Willarby Auto Store—the best car dealership in town."

    B) "Try Dry-Toes Powder. A recent independent research company proved Dry-Toes Powder kept feet dry up to 30% longer than any other foot powder."

    C) "Acorn Powder helps you live longer and stronger. 89 year old Ethyl Krumke swears by Acorn Powder. 'I take my Acorn Powder every day, just like my mother!' "