A-day: Due Thurs., Apr 10 (Assigned Tues., Apr 8)
B-day: Due Fri., Apr 11(Assigned Wed., Apr 9)

2008 Electricity 5

Equations	
In Series	$R_T = R_1 + R_2 \ldots$
In Parallel	$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \ldots$

Example: 3 resistors are in parallel: 4Ω, 5Ω, and 7Ω. Find the total resistance of three resistors.

Solution: Since in parallel use:

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \ldots \qquad \frac{1}{R_T} = \frac{1}{4} + \frac{1}{5} + \frac{1}{7}$$

$$\frac{1}{R_T} = .25 + .2 + .143 \qquad \frac{1}{R_T} = .593$$

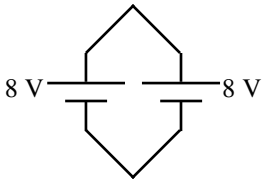
$$R_T = \frac{1}{.593} = 1.7\Omega$$

1. Series or parallel?

A. ___ Only one path for the electricity to flow.
B. ___ Paths are dependent on each other (*one affects the other*).
C. ___ How your house is wired.
D. ___ Paths are independent of each other.
E. ___ If one light turns off, the others stay on.
F. ___ If you turn off one light, all the lights turn off.
G. ___ Has more than one path for the electricity to flow.
H. ___ Two devices have the same current.
I. ___ Two devices have the same voltage.

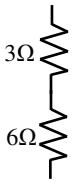
2. Decide if the following are in parallel or series and find the total voltage or total resistance.

A. Parallel or series?



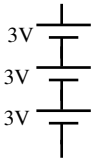
Vt = _____

B. Parallel or series?



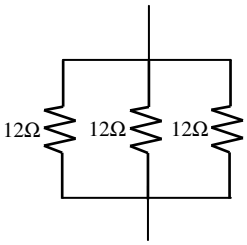
Vt = _____

C. Parallel or series?

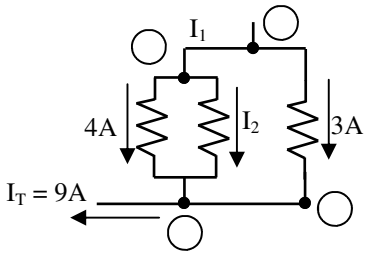


Vt = _____

D. Parallel or series?



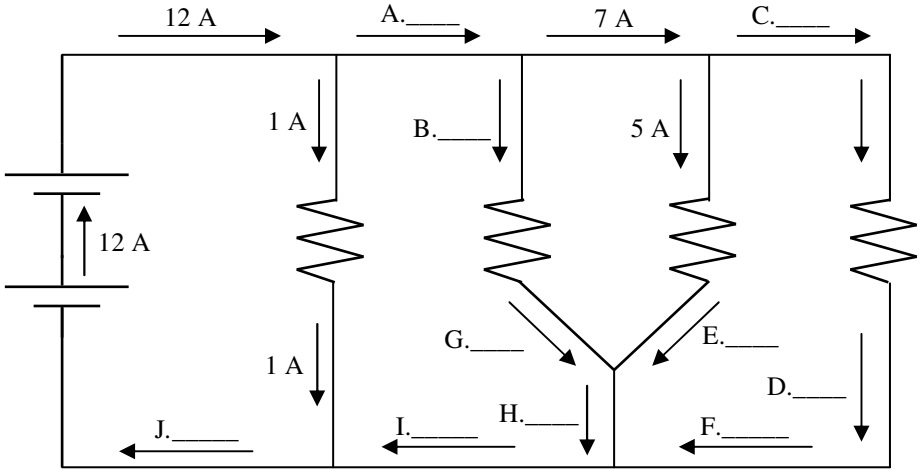
Vt = _____



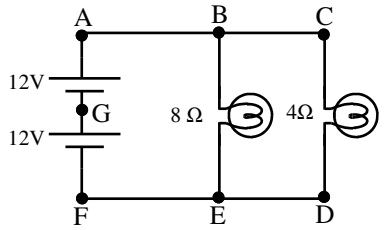
3. A. In each of the circles at the left, label them as S (split) or J (join).
   B. Use the diagram, what is I_1 =
   C. I_2 =

4. What do we call a place where electricity splits in a circuit?

5. Objects is series have the same _____. Objects in parallel have the same _____.



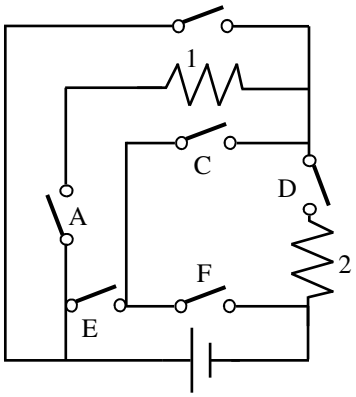
6. A. Fill in the blanks in the diagram. Big Hint: Fill them in in order.
   B. What is the total current in the circuit?
   C. If each battery is 3 v, what is the total voltage?
   D. What is the total resistance of the circuit?



7. Use the diagram to answer:
   A) Total voltage: B) Parallel or series?
   C) Which light bulb will have more current flowing thru it?
   D) V at F? E) V at B =
   F) V from B to E (V_{BE}) =
   G) Find the current going thru the 8 Ω resistor.

   H) Find the current going thru the 4 Ω resistor.

   H) What is the I_T?



8. In the above diagram, which switches allow:
   A) only resistor 1 to have current in it?

   B) only resistor 2 to have current thru it?

   C) to by-pass both resistors?

   D) for electricity to go thru both resistors?

9. From your book: If current is the amount of charge that flows each second (Amps = Coulombs/Sec), then how many electrons flow in 4 seconds from a 1.5 amp circuit?