Electricity Test Review (Ch. 32-25)

Formulas Provided: $F = K\dfrac{q_1 q_2}{d^2}$ $\qquad I = \dfrac{V}{R}$ $\qquad P = IV \text{ or } P = \dfrac{V^2}{R}$

Coulomb's Law $\qquad\qquad$ Ohm's Law $\qquad\qquad$ Power

1. How do charges act: (2 positive, 2 negative, or one positive and one negative.)
2. Describe electric fields and how charges interact in the fields.
3. What types of charges will repel.
4. What are the ways you can charge an object?
5. Use Coulomb's law to explain the factors that determine how strong the force of attraction or repulsion is between two like or unlike charges.
6. According to Coulombs law what happens to the force between charges if you A) double one charge, B) double both charges, C) decrease the distance by one half, D) Double the Distance.
7. What two things do you need to allow charge to flow through a circuit?
8. Be able to briefly summarize the law of conservation of charge.
9. Be able to describe what charge, potential difference (AKA voltage), and resistance are.
10. Compare and contrast an electrical conductor and insulator.
11. What are the SI units for charge, potential difference (AKA voltage), and resistance?
12. What is charge?
13. Compare and contrast series and parallel circuits. Which is used to wire electricity through a house or building and why?

Problems: Be able to solve for any part of Coulomb's Law, Ohm's Law (both work problems and circuits), and Power.

A. Draw a series circuit with a 24 V battery and the following bulbs connected in series 5 ohms, 3 ohms and 4 ohms. What is the total resistance?
B. The same series circuit above (A), what is the total current?
C. The same series circuit above (A), what is voltage drop through the 4 Ω resistor?
D. Draw a parallel circuit with a 24 V battery and the following bulbs connected in parallel: 5 ohms, 3 ohms and 4 ohms. What is the total resistance in this circuit?
E. In the same parallel circuit above (part C), what is the total current?
F. In the same parallel circuit above (part C), what is the current through just branch 2 (the 3 Ω branch)?
G. Add the above in parallel.
H. V= IR, when a 9V battery is connected to a resistor, and 4 amps of current are flowing through it, what is the value of the resistor?
I. When connected to a 120 V power supply, how much current exists through a 200 ohm resistor?
J. How much power is used by a 12V batter that draws 3 amps of current?
K. What is the current through a 75 Watt light bulb that is in a 120 volt circuit?
L. A 12V car battery is connected in a circuit and provides 5 A of current. What is the resistance in their circuit?