**Electricity Unit Review**
**Science 10**

Define each of the following:

| | | | |
|---|---|---|---|
| Static electricity | electrostatics | law of electric charge | insulator |
| Conductor | series circuit | parallel circuit | charging by contact |
| charging by friction | charging by induction | discharge | electric potential |
| resistance | voltage | electric circuit | ohm's law |

Answer each of the following questions:

1. What particles in the atom move when electrical charge is transferred from one atom to another?

2. Which of the following is not part of the electrical nature of matter (circle the incorrect answer)
    a. All matter is made up of subatomic particles called atoms
    b. At the center of the atom is the nucleus in the center are the (+) and (0) charges, around the orbit are the (-) charges.
    c. If atoms gain electrons they become positively (+) charged

3. If each of the following items were rubbed together state which would be (-) and which would be (+)
    a. A cotton sweater and a pair of wool pants  b. Your hair and a plastic comb
    c. Your silk pj's and your cotton sheets

4. Explain why static electricity is worse in the winter?

5. Name and explain two ways to discharge objects.

6. Name the parts of an electric circuit and give an example of each one.

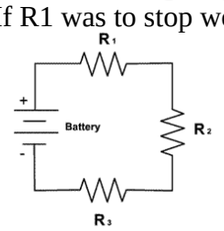
7. What is the difference between a closed circuit and an open circuit?

8. What is the difference between static electricity and current electricity?

9. In which direction does electricity flow and why?

10. What is the difference between a series circuit and a parallel circuit? If both a series and parallel circuit have the same amount of load, which will have the least resistance?

11. a. Is the following diagram an example of parallel or series?
    b. If R1 was to stop working explain what would happen to R2 and R3. Give reasons for your answer.




12. Draw the following as schematic circuit diagrams:
    a. A circuit that would power two flashlight bulbs in parallel. The switch controls both lights at the same time.
    b. A circuit that would power two motors in series.
    c. Two batteries connected in series, a switch to control each motor, and two motors connected in parallel.

13. What is the symbol and unit of measurement for each of the following
    a. electrical potential/voltage  b. electric current  c. electric resistance

14. Without changing the amount of voltage or resistance in a circuit with two 1.5 volt batteries and two light bulbs how can it be designed to have the least amount of resistance?

15. Explain the relationships between each of the following:
    a. Current and Resistance  b. Voltage and Current  c. Voltage and Resistance

16. Answer each of the following questions using the formulas for Ohm's Law
    a. How much current is running through a circuit which has a voltage of three 1.5V batteries and a resistance of 40 Ω?
    b. How many 1.5V batteries would be required to power a circuit with a current of 2A and a resistance of 1.5 Ω?
    c. Calculate the resistance flowing through a circuit with 120V and 0.5A of current.