**Terms and Ideas to know for Electricity Test**

**Parts of an Atom:**

Protons have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charge.

Electrons have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charge.

Neutrons have \_\_\_\_\_\_\_\_\_\_\_\_ charge.

Charges repel when:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Charges attract when: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Transfers of Charges:**

\_\_\_\_\_\_\_\_\_\_\_\_\_ is the transfer of charge when electrons from one object \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to another. An example is lightning.

Dragging feet on a carpet is an example of\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is the transfer of charges by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

When someone’s hair goes up because they are touching the Van de Graaf Generator it is an example of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is the transfer of charges through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |
| --- |
| **Use the words below for transfers of charge:**  For the first blank- Conduction Induction Friction  For the second blank- rubbing direct contact jump |

**Conductors and Insulators**

Circle the correct words in the parentheses to complete the sentence.

1. A conductor is something that (allows/does not allow) a charge to pass through easily.
2. An insulator is something that (allows/does not allow) a charge to pass through easily.

**Terms- Fill in what they are**

Circuits-

Electrolytes-

Wet Cell-

Dry Cell-

Static Electricity vs. Current-

Electrode-

**Ohm’s and Power**

Fill in the following circles for the formulas for Power and Ohm’s Law. You need to write the SYMBOL, UNIT, and TERM.

|  |  |
| --- | --- |
| Ohm’s Law Word Bank  Resistance Volts A  Current Ohm’s V  Voltage Amps Ω   * You need one from each column. | Power Word Bank  Power Volts A  Current Watts V  Voltage Amps W  You need one from each column. |

Watt- unit that describes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that energy is used by an electrical device.

Energy is never created or destroyed; it is converted from electrical energy to another form of energy like heat and light.

Energy is measured in joules Power= Joules per second

Energy= joules One Joule per second= one watt

**Calculate the amount of electrical power by an appliance by:**

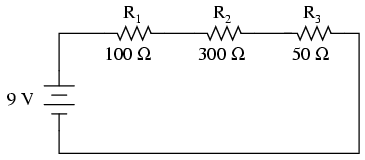
Current X Voltage= Power AV= W Kilowatt (kW) is 1,000 watts

Steps to solve-

1. If given watts of an appliance, multiple the number of watts by .001 or move the decimal three places to the left.
2. Multiply the number of kilowatts by the time the appliance was used for to get the kilowatt hours.
3. If asked to find the cost. Multiply the kilowatt hours by the amount you are charged for one kilowatt hour.

**Series Circuit**

Series circuit follows \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ path from positive end to the negative end.

Total\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a series circuit is equal to the sum of the individual resistances.

100Ω + 300Ω + 50Ω = 450Ω

Total voltage is the total voltage from the power sources (batteries).

9V (the battery)

* May need to add them together if you have more than one battery.

Voltage Drop

Voltage drop= Current through resistor x resistance of resistor.

Example(picture above with 9 volt battery)-

9V/ 450Ω= .02 amps .02 amps x 100Ω= 2V drop

.02 amps x 300Ω= 6V drop

.02 amps x 50Ω= 1V drop

*Amount of energy used by a series circuit must equal the energy supplied by the battery.*

If you add up all the voltage drops it equals the number of volts the battery provides.

Steps-

1. Find total voltage across the bulbs.
   1. Look at the power source (battery) and what it provides.
      1. If more than one add it up.
2. Find the total resistance of the circuit.
   1. Add the resistances of each bulb on the circuit.
3. Find the current in the circuit.
   1. Use the voltage and total resistance in the equation

A= V/Ω.

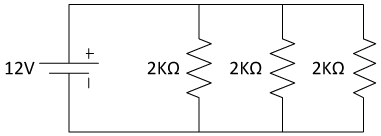
1. Find the voltage drop across each light bulb.
   1. Multiply the current of the circuit by the resistance of the bulb.
      1. Check yourself by adding up all the volts for each resistor and it should equal the total volts of the circuit.
2. Draw the path of the current.
   1. Start from the positive side of the battery and move around the circuit until you get to the negative.

Parallel Circuit

A parallel circuit has at least one point where the circuit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which creates more than one \_\_\_\_\_\_\_\_\_\_\_\_ for current.

Each path is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that flows into a branch in a circuit is the same amount that must flow out.

**Each branch has its own path so the voltage across each branch is equal to the battery’s voltage.**

Ω

Ω

Ω

Steps-

1. Find total voltage across **each bulb.**
   1. Look at the power source (battery) and what it provides.
      1. If more than one add it up.
2. Find the current in **each branch.**
   1. Use the voltage of the whole circuit and resistance in branch.

A= V/Ω.

1. Find the TOTAL current provided by the battery.
   1. Add up the current of each branch.
2. Find the TOTAL RESISTANCE.
   1. Use the **TOTAL current** and **TOTAL voltage** to calculate the resistance.

Ω= V/A