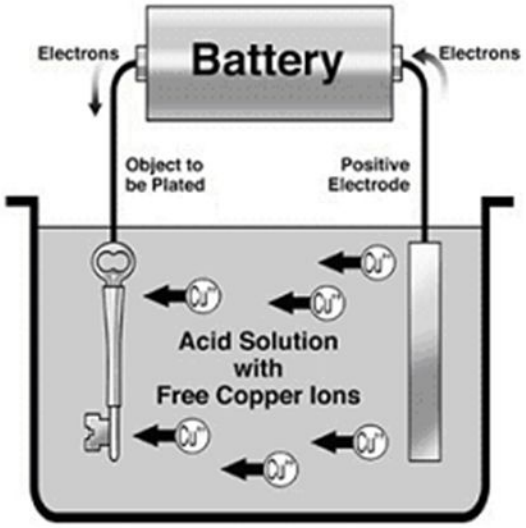
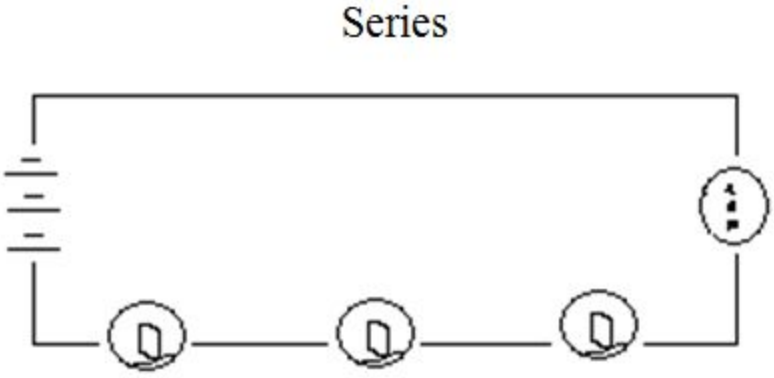
Science 9 Final Review ANS

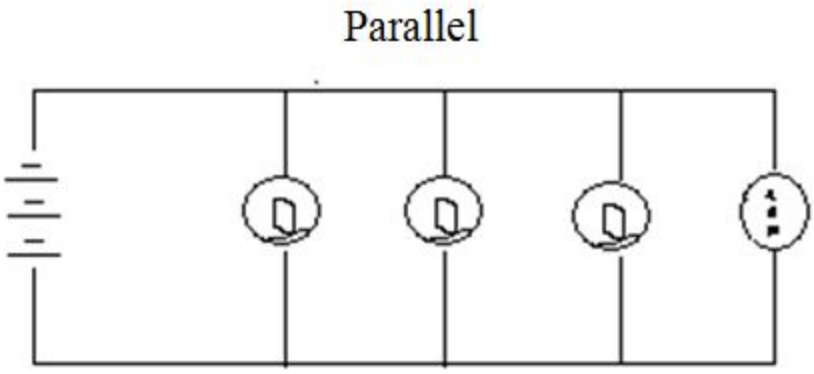
1. Unplug appliances before fixing them. Do not operate appliances near water because impure water contains ions that will conduct a current

2. Diagram



3. Diagram





4. Some of the features that are included in electrical circuits to make them more convenient are switches, rheostats, fuses and breakers.

5. It is important to consider power rating when shopping for a new appliance because an appliance that uses a lot of power is not very efficient and will cost a lot of money to run. (Power consumption of a device indicates how many joules per second are used by a device. EnerGuide labels display this for shoppers by stating how much energy is needed to operate the device for a month. By choosing devices with a lower power rating, the consumer will have lower energy usage).

6. Generators work by moving a wire, usually wrapped into a coil, through a magnetic field. When the coil of wire is moved past the permanent magnets, electricity flows through the wire (electromagnetic induction).

7. One of the outstanding problems when creating devices is overcoming friction. Friction converts the source energy into thermal energy, which is considered wasted since the energy was not converted into the useful mechanical energy. Therefore when creating devices, consideration must be given to reducing friction. This may involve making articulations smoother, lubricating joints, or making moving objects more aerodynamic.

8. A well insulated oven, fridge or house helps reduce pollution by preventing heat or cool air from escaping thus reducing the amount of energy that is needed to heat or cool.

9. Digital transmission and storage of information has made it easier to transport and store large amounts of information and it has made it more convenient and quicker to do many things. Problem: theft or information, cost, waste materials.

10. A thermocouple is a device consisting of two wires of different metals joined such that a voltage is produced between the ends in proportion to the different in their temperature. They are useful for measuring temperature in areas that are difficult to access. Ovens do the exact opposite. They convert electrical energy into thermal energy.

11. The four parts of an electric motor are the brushes, the commutator, the armature with wire coil, and the permanent magnets.

12. Electrochemistry is the study of chemical reactions involving electricity. Obtaining electricity form a chemical cell is just one of the many applications of electrochemistry.

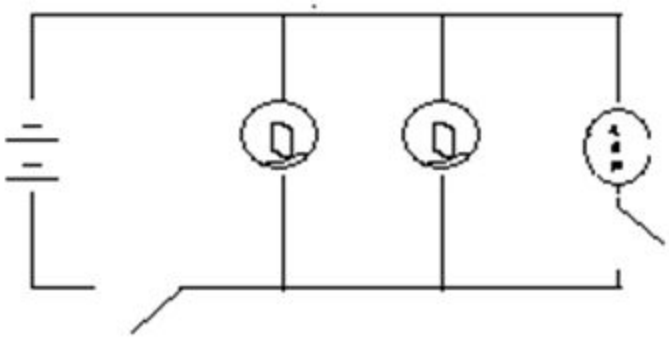
13. a) Yes is will move because like charges repel.
    b) It will move towards object A.

14. When you rub your feet on the carpet, electrons transfer from the carpet to your body. The excess charge of electrons in your body repels the electrons in the door knob. The side of the door knob closest to you becomes positively charged. As you move closer the electrons in your hand are attracted to the positive charge on the door knob. You may feel a shock or see a spark as you reach to touch the door knob. The resulting spark is referred to as electrical discharge. (Note: This is the same force that created lightning – static electricity – the build up of a charge on an object they may be attracted to another object and jump to that object).

15. Current electricity is electricity that flows continuously. Static electricity is a stationary electrical charge that my jump to another object, but is not continuous.

16. Three ways you can protect yourself from electric shock are to unplug appliances before working on them, never operate electrical appliances near water, remove jewelry if working in an area where the is an increased risk of shock

17. Two sources of energy are fossil fuels and hydroelectricity. Fossil fuels are burned to heat up water into rising steam which spins a turbine to generate electricity. Hydroelectric energy is produced from water being held behind a dam, which then flows though a turbine spinning it to generate electricity.
18. Diagram.



19. In order to construct a wet cell you need to following: an acidic electrolyte, two metal electrodes of different metals, conducting wire and a load.

20. You could turn off the lights that you are not using, and buy more efficient appliances.

MULTIPLE CHOICE

21. B
22. B
23. C
24. D
25. D
26. A

NUMERICAL RESPONSE

1. 12.5
2. 12.0
3. 17.6