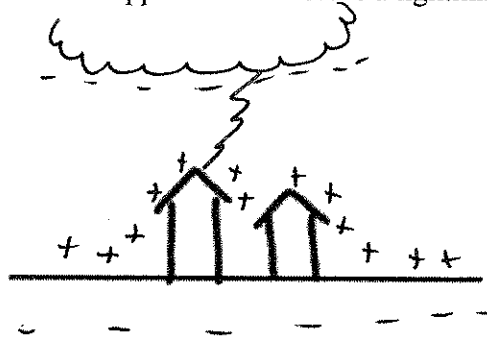


Chapter 19

- The charged parts in an atom are the Protons with a Positive charge and the electrons with a Negative charge.
- opposite charges attract while Like charges repel.
- What kind of charge will be repelled from a negative charge? Negative
- The attraction or repulsion of charges is affected by the **distance** between the charges. You get more attraction/repulsion when the charges are closer.
- Charges that are on a surface but do not move are called static charges.
- A neutral object becomes charged when it either gains or loses electrons or charges

Methods of charging (explain each):

- Friction Rubbing, electrons get transferred from one material to another. The one that gains e- becomes neg. other is positive
- Conduction transfer of charges by touching walking on carpet
- Induction charging by bringing a charged object near a neutral object like Balloon on a wall
- What is a conductor? (explain and gives some examples)
Material through which electrons flow easily - most metals
- What is an insulator? (explain and gives some examples)
material that does not allow electrons to flow. glass, rubber, wood
- What is an electric discharge? a spark - when electrons jump from one place to another.
- Make a diagram/drawing of what happens when there is a lightning strike. Include charges.



- The amount of potential difference is called Voltage and the units are the volt
- Explain what a battery is. a device that converts chemical energy to electrical energy. can be wet or dry
- What is a wet cell battery? a battery using weak acid solution with two metals such as copper and zinc (liquid)
- The first widely known wet cell battery was called a Voltaic Pile.

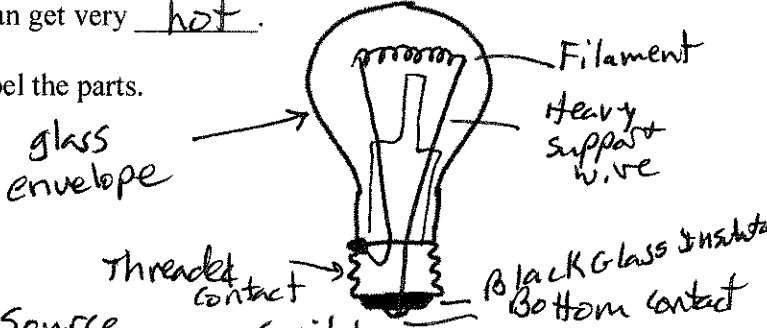
18. What is a Thermocouple and where might one be used? Two diff metals joined that produce electricity when there is a temperature difference. we use a special thermometer to measure temperature at
19. What is a photocell and where would one be used? Panel that produces electricity from light, calculator, the flame,
20. Many batteries come in different sizes but have the same voltage of 1.5 volts. What are the advantages and disadvantages of having **small batteries** such as the AAA batteries?
 Advantages - small, lightweight, sometimes cheaper
 Disadvantages - they do not last as long, especially under a heavy load.

21. The movement of charges is called current. A complete path for these charges is called simple closed circuit.

22. Resistance is the opposition to the flow of electrons. The symbol is R and the units are ohms.

23. Materials with low resistance are said to be good conductors. When electricity flows through a material with high resistance, the material can get very hot.

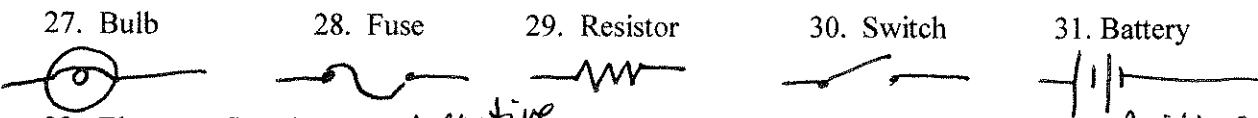
24. Light bulbs - finish drawing the light bulb and label the parts.



25. What are the parts of a simple circuit? Power Source, load, Switch, Path for electrons

26. What is the purpose of a switch? opens and closes the circuit (wire) which controls the flow of electricity

Draw the symbol for the following electrical items:



32. Electrons flow from the Negative end of the battery through the circuit to the Positive end.

33. A simple Series circuit only has one path for the electrons. All of the electrons flow through every part of the circuit.

34. What happens if one part of a series circuit is cut or broken? stops the flow of electricity and everything goes off.

35. What do we call a circuit with a break? open circuit

36. A Parallel circuit has several paths in it for electrons. If we have three bulbs in this kind of circuit and one bulb breaks, what happens to the other two bulbs?

stay on get brighter

37. Draw a diagram of a circuit that uses three bulbs and one battery and a switch that turns everything off at once. Make sure that the three bulbs are in parallel. Use proper symbols



38. What is a short circuit? *accidental pathway for electrons that usually does damage to the circuit.*

39. Describe Grounding *a safety feature where charges can be directed right into the earth or ground to protect you.*

40. What kind of circuits do you find in your home, and why? *parallel so that other devices are not affected when you add or remove things from*

41. What is electric power? *Rate at which the circuit, electricity is used, or does work, units are in watts*

$$P = IV$$

42. A refrigerator uses 540 watts for about 6 hours each day. If electricity costs 13 cents per kWh, how much does it cost to run the fridge for 30 days?

$$E = Pt = 540 \text{ W} \cdot 180 \text{ hr} = 97,200 \text{ Whr} = 97.2 \text{ kWhr}$$

$$97.2 \text{ kWhr} \cdot \frac{\$0.13}{\text{kWhr}} = \boxed{\$12.64 / \text{month}}$$

6 hrs / day 30 days = 180 hrs

43. Your house electric meter reading on May 1st was 64628 kWh. If your May electric bill was \$153.68, and the cost of electricity is 11 cents per kWh, what was the reading on your electric meter at the end of May?

$$\begin{array}{r} \text{end of month} \\ \$153.68 \end{array} \div \begin{array}{c} \text{Kwhr} \\ \$0.11 \end{array} = 1397 \text{ Kwhr}$$

$$- 64628 = 1397 \text{ Kwhr}$$

$$\times = 64628 + 1397$$

$$\boxed{x = 66025 \text{ Kwhr}}$$