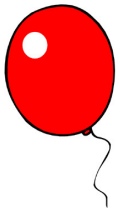
A-day: Due Fri., Apr 4 (Assigned Wed., Apr 4)
B-day: Due Mon., Apr 7 (Assigned Thurs., Apr 3)

2008 Electricity 3

1. A piece of plastic pipe was rubbed with a piece of fur.
   A. Is the plastic positive or negative?
   B. When the plastic is suspended and another charged piece of plastic is brought close, does the suspended plastic pipe move away or come towards the second pipe?
   C. Then a piece of glass is rubbed with silk. Is the suspended plastic pipe attracted to or repelled by the glass rod?
   D. So is the glass rod positive or negative?

2. A balloon is rubbed on your hair on one side and gains electrons.



   A. Is the rubbed side positive or negative?
   B. Is the other side charged, too?
   C. Why or why not?

   D. If a second balloon is charged and the two are suspended by string, what happens?

   E. When the balloon is brought close to water, the water moves toward the balloon. Why?

3. Electroscope questions.
   A. When a negative rubber rod is placed near the top of the electroscope the leaves move apart. Why? (*Be specific*…)

   B. Next I touch my finger to the electroscope. Where do the electrons go?

   C. Afterward I touch the electroscope is it positive or negative?
   D. Do the leaves fall down or raise up?
   E. Why?

   F. How did I neutralize the electroscope?

   G. When the electroscope is neutral, what happens if I bring a positive piece of glass near?

4. When I put a metal rod near the Van de Graff, it arced from the Van de Graff to the metal rod.
   A. Why?

   B. When the rod was close to the Van de Graff (small gap) was the arc big or small?
   C. When the gap was small, was the time between arcs big or small?
   D. When the gap was bigger, was the arc big or small?
   E. When the gap was bigger, was the time between arcs big or small?
   F. Why is there this difference in arc size and arc frequency?

5. Do have to rub something to charge it? Explain.

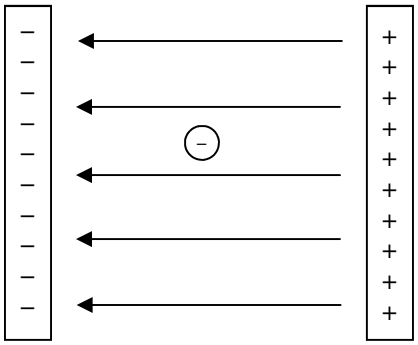
6. By contact, induction, or polarization?

   A. ____ Can only occur with conductors.
   B. ____ Can only occur with insulators.
   C. ____ Rubbing is a form.
   D. ____ No charges are lost or gained.
   E. ____ Charge is given an alternative path to escape.
   F. ____ Why a balloon sticks to a wall.

7. A positive rod is brought close to a metal object, which is then charged by induction. Afterwards, is the metal positively or negatively charged?

8. To increase the PE of the charges above, would you bring them closer together or farther apart?

9. To decrease the PE of the charges above, would you bring them closer together or farther apart?



10. A negatively charged particle is between two parallel charged plates.
    A. To increase the potential electric energy of the particle, would you move it to the left or to the right?
    B. If the charged particle is moved exactly vertically (up), does the potential electric energy increase or decrease?
    C. Is the direction of the electric field positive or negative?
    D. If the particle has a charge of 5 μC, is moved to the right 2 cm and the electric field has a strength of 22 N/C, calculate the change of potential electric energy of the particle.

Seniors can stop, now.

11. A liquid is poured onto a piece of metal. Later on the metal seems to have softened.

    A) Which is the solvent?

    B) What is happening to the metal?

12. Circle the solvent and underline the solute.

    Salt water

    Sugar water

    A solution of 20% HCl and 80% water.

    Chocolate milk

    Rubbing alcohol: 60% alcohol; 40% water.

13. 50 mL of a solvent can hold 80g of a solute, are the following amounts of solvent saturated, unsaturated, or supersaturated?

    A. _____ 35 g. C. _____ 82 g E._____75 g
    B. _____ 80 g D. _____ 100 g F._____81 g

14. A liquid is poured onto a piece of metal. Later on the metal seems to have softened.
    A) Which is the solvent? B) What is happening to the metal?

15. What happens if you add more solute to a saturated solution?

16. What happens if you add more solute to a supersaturated solution?

17. Which will dissolve faster?
    A. In hot water or in cold water? B. Stirred or not stirred? C. Large particles or small particles?

18. A. Which holds more solid solute: hot or cold liquids? . Which holds more gaseous solute: hot or cold solvents?

19. How do plants get water from their roots up to their leaves?

20. Do metals become positive or negative?
21. Would a metal be attracted to water's hydrogens or oxygen?
22. Would a nonmetal be attracted to water's hydrogens or oxygen?
23. Why are water bugs able to "walk on water"?

24. How do plants get water from their roots up to their leaves?