Science 9 - Static Electricity Worksheet (Chapter 9.1)

1. Depending on its atomic structure and chemistry, some materials hold electrons more tightly than other materials. The substances are placed in a list in order of the strength of electric attraction. This list is called the "**electrostatic series**". If any two materials are rubbed together, the material which holds electrons more tightly will grab electrons from the other material and become _____ charged. The material which holds electrons more loosely will give up electrons and become _____ charged.

Electrostatic Series

(-) holds electrons tightly

gold
sulphur
brass
copper
rubber (ebonite)
vinyl (polythene)
cotton
aluminum
paraffin wax
silk
lead
fur
wool
glass
acetate

(+) holds electrons loosely

a. Which of the following holds electrons most tightly?
   cotton, wool, copper, sulfur _____
b. What charge will result on *wool* if it is rubbed with *vinyl*? _____
c. If *acetate* is rubbed with *silk*, what charge will the acetate have _____
d. When *glass* is rubbed with *cotton*, what charge does the glass have? _____
e. When you pull you clothes out of the dryer, you find that your *wool* socks are stuck to your *cotton* sweater.
   i. What charge do the socks carry? _____
   ii. What charge is on the sweater? _____
   iii. What force holds the socks and sweater together? _____

Multiple choice: Circle the letter for the **best** answer:

2. Which of the objects in **bold** would get a negative charge?
   a. rub **glass** with wool
   b. rub **glass** with silk
   c. rub **vinyl** with wool
   d. rub **acetate** with cotton

3. A ***plastic ball*** hanging by a string is repelled from a ***positively charged plastic rod***. What can you conclude?
   a. the ball is positively charged
   b. the ball is negatively charged
   c. the ball could be positively charged or neutral
   d. the ball could be negatively charged or neutral

   In the space below, draw a sketch depicting the situation (show the ball, and the charges)

4. A ***negatively charged piece of ebonite*** attracts a ***rubber balloon***. What can you conclude?
   a. the balloon is positively charged
   b. the balloon is negatively charged
   c. the balloon could be positively charged or neutral
   d. the balloon could be negatively charged or neutral

   In the space below, draw a sketch depicting the situation (show the ebonite, the balloon, and the charges)

5. What happens when a ***positively charged rod*** is brought near a ***neutral pith ball*** electroscope?
   a. protons in the electroscope are attracted to the positive rod
   b. protons in the electroscope are repelled by the rod
   c. electrons in the electroscope are repelled to the far side of the electroscope
   d. electrons in the electroscope are attracted to the near side of the electroscope

   In the space below, draw a sketch depicting the situation (show the ball, the charged rod, and the charges)