Static Electricity Review Answers

1) p) repel

2) t) electroscope

3) k) equal number of protons and electrons

4) j) negative

5) d) electrons

6) i) electrons move only within their atom

7) u) induction

8) u) induction

w) conduction

v) friction

9) f) prevent electron movement

g) ALLOW electrons to move freely

10) e) good conductors

g) electrons to move freely

11) r) Law of Electrostatics (Law of Repulsion and Attraction)

11) y) Lost 2 electrons

12) u) induction – objects are brought close but do not touch

13) z) ground

14) **w) Conduction** – electrons move from where there are many electrons to where there are few, **or o) Static Electricity**

15) c) lightning

**Multiple Choice**

1) c) move apart

2) a)

3) b) for friction

4) c) for induction – cloud comes near but does not touch the ground

5) a) an electric discharge

6) c)

7) b)

8) b)

9) Balloon & hair rubbing: friction. The hair should be drawn positive (lost electrons) and the rubber balloon should be drawn negative (gained electrons)

Balloon and neutral wall: induction when the balloon was brought near the wall; conduction because there was contact between the balloon and the wall

Balloon and hair rubbing Balloon and neutral wall

Method of charging: \_\_\_\_\_\_\_\_\_\_\_ Method of charging: \_\_\_\_\_\_\_\_\_\_\_\_\_

The charged balloon is attracted to a neutral wall. The balloon was neutral. Due to **friction** with the hair, the electrons in the hair moved to the balloon (see the triboelectric series). This left the hair positively charged and the balloon negatively charged (excess of electrons).

When the negatively charged balloon comes near the wall, induction occurs. The electrons in the balloon repel the electrons in the wall. This leaves the side of the wall closest to the negative balloon positively charged. The negative balloon is attracted to this positively charged side of the wall.

**Note:** A balloon is an insulator. Even upon contact with the wall, electrosn would not likely leave the balloon. However, if there was enough of a difference in the number of electrons between the wall and the balloon, we might see an electric discharge between the balloon and the wall (ie a spark). In this case, conduction would have occurred. Conduction only occurs when there is a lrge enough difference in the number of electrons in 2 areas. The electrons always move from where there are many of them to where there are fewer.