

PART I: Balloon and Sweater.

Name: _____

Look at this PHET and play around with it until you get a feel for how to work with it

http://phet.colorado.edu/sims/html/balloons-and-static-electricity/latest/balloons-and-static-electricity_en.html

1. Reset the sim and compare the numbers of + Charges (Protons) and the negative charges (Electrons).
2. How do they compare on the balloon? _____ The wall? _____ The sweater? _____
3. Move the balloon near (but not touching) the sweater and let go. Does it move? _____
4. Move the balloon near (but not touching) the wall and let go. Does it move? _____
5. Rub the balloon against the sweater and then bring it back about halfway between the sweater and the wall. How do the number of + and – charges now compare to each other on the balloon? _____

6. What is the net charge on the balloon? _____

7. What is the net charge on the sweater? _____

8. Notice that only the electrons moved. Why did the protons not move? _____

9. Let go of the balloon and describe the motion. _____

10. The word “dynamic” refers to an object in motion or in changing, while the word “static” refers to something that is not moving. In static electricity, the charges are not moving. When the balloons are in motion why would this be called static electricity?

11. Repeat with different numbers of electrons on the balloon and make a statement about how the *amount of charge* affects the *acceleration* on the balloon. _____

Click “remove wall” to give you more room. Click for two balloons and we will see how they interact:

13. Charge only **one** balloon and let it go near the other. Describe how the two balloons interact.

14. Charge **both** balloons and let them go (you will have to act fast to keep them away from the sweater!) Describe how the two balloons interact. _____

* Click the reset button (Go back to one balloon and the wall will be back).

15. Bring an uncharged balloon to the wall – does anything happen to the charges in the wall?

16. Now charge the balloon on the sweater, then bring it to the wall as before. Which charges move and which way? _____

17. Move the balloon up and down the wall. Does this have an effect on the negative charges? _____

Part II: John Travoltage:

Look at this PHET and play around with it until you get a feel for how to work with it:

https://phet.colorado.edu/sims/html/john-travoltage/latest/john-travoltage_en.html

1. Rub Travolta's foot on the rug one time. Move his hand to the door knob. What happens? _____
2. Move Travolta's hand back up. Rub his foot on the rug *three* more times. Now move his hand to the door knob. What happens? _____

3. *Click the reset button. *Point Travolta's hand to the door knob.* Rub his foot on the rug one time. What happens? _____ Why do you think this is different from #1? _____

4. *Click the reset button. *Point Travolta's hand to the door frame (higher than the door knob).* Rub his foot on the rug 10 times. Did his hand have to be pointing at the doorknob to shock him? _____ Why do you think this is the case? _____
