Electric Charge Activity

Part I

1. Click HERE to download and open the "Balloons and Static Electricity" PhET simulation.
2. Check "Show all Charges." Nothing else should be checked.
3. Rub the balloon on the shirt
4. What overall charge does the balloon now have?

   _____
5. What overall charge does the shirt now have?

   _____
6. What happens when you drag the balloon away from the shirt and let it go? _____
7. Why?

   _____

   _____
8. Reset.
9. Check "Wall."
10. Rub the balloon on the shirt again.
11. What happens to the negative charges in the wall when you move the balloon near it?

    _____

    _____
12. What happens to the positive charges in the wall when you move the balloon near it?

    _____

    _____
13. Why don't all the positive charges move toward the balloon?

    _____
14. Hold the balloon in between the wall and shirt and release it
15. Why doesn't the balloon just stay in the middle?

    _____

    _____

    _____

Part II

1. Click HERE to download and open the "John Travoltage" PhET simulation.
2. Experiment by rubbing Travolta's foot against the carpet and touching his finger to the door handle.
3. Now try building up charge while his finger is on the door.
4. What happens?

   _____

   _____
5. Move his finger away again and build up another charge. Let's say that the blue charges which are built up on John are electrons.
6. When Travolta's finger is near the door knob, what do you think happens to the electrons currently in the metal door knob?

   _____

   _____
7. This induces a local _____ charge in the door knob.
8. Why are shocks worse when you touch conductors rather than insulators? _____

   _____

   _____
9. If you take your hat off on a dry winter day, sometimes your hair will stand up. Explain this phenomenon.

   _____

   _____

   _____

   _____

Part III

1. Click HERE to download and open the "Electric Field Hockey" PhET simulation.
2. The goal of this game is to get the black positive puck to go in the goal.

3. How can you set up just one negative charge to score a goal? (Remember to hit start)

   _____

   _____

4. Clear each time you try a new set up. Reset if you want to retry your current set up.
5. How can you set up just one positive charge to score a goal?

   _____

   _____

6. Change the mass and see what happens.
7. What happens when the mass is smaller?

   _____

8. Why does the mass affect the speed if it is not a part of the electric force equation (Coulomb's Law)?

   _____

   _____

9. Now play the game. You can practice a little bit if you want.
10. Set "Difficulty" to 1, then 2, and then 3. Hint: Checking the "Field" box might help you.