

# Phet Simulator: Static Electricity!

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Part A:** Go to the following: <http://phet.colorado.edu/en/simulation/balloons-and-static-electricity> and click **Play!**

- 1) Take a moment to look at the items the simulator window is displaying (balloon, sweater, wall, charges, etc.)
- 2) a) **Sketch** the charges on the sweater AND the balloon in the **BEFORE** box to the left.  
b) Then, rub the balloon on the sweater and watch what happens! Draw the charges on both items in the **AFTER** box on the right.

Sweater and balloon <u>BEFORE</u>	Sweater and balloon <u>AFTER</u>
Overall charge of sweater: _____ Overall charge of balloon: _____	Overall charge of sweater: _____ Overall charge of balloon: _____

- 3) Remove the balloon from the sweater and attempt to place it **directly in between the sweater and the wall**. Do this several times and observe what happens. **Explain** why the balloon is attracted to one item more than the other.

---

---

---

- 4) Bring the balloon all the way to the wall so that they are touching and release it. Is the balloon is able to stick to the wall? Do you think it is as **strong** an attraction as to the sweater? **Explain** why or why not.

---

---

---

- 5) Click "**Reset Balloon**" and then click on the image of TWO balloons just above the "**Reset Balloon**" button. Figure out the following missions and **draw diagrams demonstrating how you are able to accomplish each mission!**

a) Make the two balloons **repel!**

b) Make the two balloons **attract!**

Charges of Balloons: \_\_\_\_\_

Charges of Balloons: \_\_\_\_\_

## Part B: John Travoltage!

Go to the following: <http://phet.colorado.edu/en/simulation/john-travoltage> and click **Play!**

1) Drag John Travoltage's FOOT across the carpet. Describe what happens!

---

---

2) a) Why does **carpet** tend to produce differences in static electricity more than hardwood or tile floors (think!)?  
b) Why do you sometimes feel a shock when you touch **metallic** objects (like the doorknob)?

---

---

---

3) Why doesn't John Travoltage get a shock if he touches the doorknob **without** rubbing his foot on the carpet?

---

---

4) Observe which **direction** the spark travels when John Travoltage's finger comes close to the metal doorknob.  
a) Draw a diagram of his finger and the doorknob below.  
b) Label the **CHARGES** (positive, negative, neutral) of both objects and show the direction the spark is traveling!

5) Think about one time you clearly remember experiencing a static electric shock. What must have caused the build up of charges to occur? Which way did the spark travel in your example when you felt a shock? **Draw a diagram below that clearly shows the build up of charge in all objects involved and shows the way the spark traveled:**