

## Static Electricity Activity

(using PhET – Balloons and Static Electricity)

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

1. Go to: [https://phet.colorado.edu/sims/html/balloons-and-static-electricity/latest/balloons-and-static-electricity\\_en.html](https://phet.colorado.edu/sims/html/balloons-and-static-electricity/latest/balloons-and-static-electricity_en.html)
2. The sweater, balloon and wall all have the same number of positive charges as negative charges. They are neutral.

What do you think will happen when the balloon is placed near the wall and sweater, without touching them.?

3. Place the balloon NEAR the wall WITHOUT TOUCHING it. Describe what happens to the positive and negative charges in the balloon and in the wall.

4. Place the balloon NEAR the sweater WITHOUT TOUCHING it. Describe what happens to the positive and negative charges in the balloon and in the sweater.

5. Drag the balloon over the sweater.

What happened?

6. An object is charged when the number of one type of charge (positive or negative) is greater than the other.

What would you consider the overall charge of each object? (circle one for each)

Sweater	Balloon	Wall
positive (+)	positive (+)	positive (+)
neutral	neutral	neutral
negative (-)	negative (-)	negative (-)

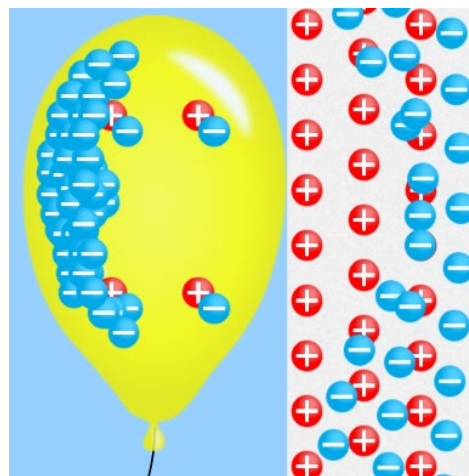
7. Move the balloon to a point approximately halfway between the sweater and the wall.

What happens? Why?

8. Move the balloon to the wall.

What happens to the charges in the wall?

This separation of charge is known as **polarization**. It occurs because the negative charges (electrons) are free to move while the positive charges (protons in the atoms) are fixed. In this case the electrons in the wall are repelled by the extra electrons on the balloon. This causes the wall to become positively charged.



When the balloon is moved away from the wall, the electrons are no longer repelled, and they return to their initial positions. In other words, they redistribute themselves evenly throughout the wall. The wall is no longer charged, but neutral.

Move the balloon vertically along the wall. Watch how the negative charges move.

9. We can confirm that the wall is attracting the balloon by removing the wall and watching the motion of the balloon.

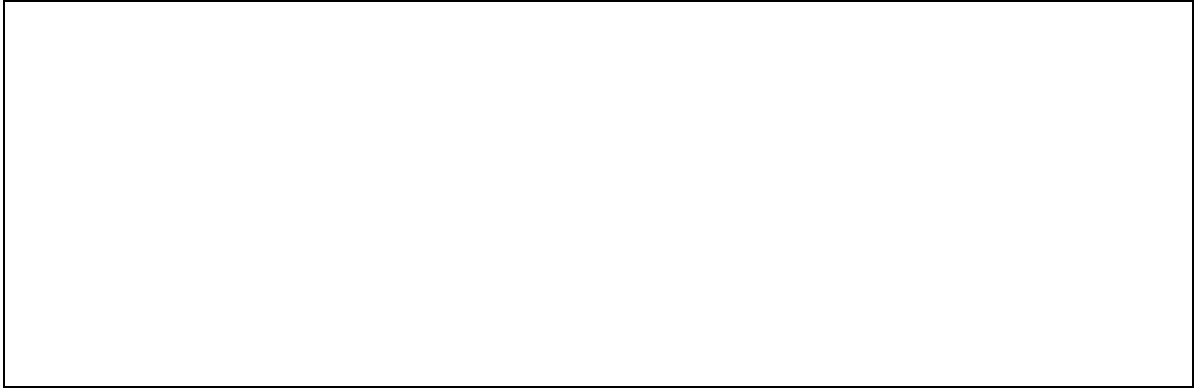
Click the button, “Remove Wall.”

Remove  
Wall

What happens?

The balloon is no longer attracted to the wall (as it is no longer there) and is therefore attracted to the sweater.

10. How do our observations show that like charges repel and unlike charges attract?



11. Explain why charged objects are attracted to neutral objects.

