

Name: _____

Static Stations!

In groups of 5, groups will go around the room to 5 different learning stations. Each station has a static electricity-based experiment. Instructions for the 5 stations can be found at the station as well as included in this worksheet. Record your findings. I will be collecting these next week so if you don't finish answering the questions in class that is okay. Italicized questions in the instructions indicate observations to record, each of these is worth 1 point.

Station 1: Balloons

1. Rub the balloon on your hair or your clothes.
2. Put the rubbed part of the balloon up to the wall.
 - *Does the balloon stick?*
3. Rub the balloon on your hair or your clothes again.
4. This time turn the balloon around so the part that wasn't rubbed is against the wall.
 - *Does the balloon stick?*
5. Turn the water on in the sink (slowly so it doesn't splash) until there is a slow steady stream pouring into the sink.
6. Rub the balloon on your hair or your clothes again.
7. Hold the balloon near the stream of water.
 - *What happens to the stream of water?*

Questions:

Why do you think the rubbed part of the balloon stuck to the wall, but not the rest (1pt)? What if it was a foil balloon (1pt)?

What causes the balloon to stick to the wall and how does the balloon bend the water (2pts)?

Station 2: Salt & Pepper

1. Pour pepper and salt on a paper plate together (not in separate spots but together in one)
2. Take the plastic ruler at the station and vigorously rub it with the cloth.
3. Hold the ruler slightly above the salt and pepper.
 - *What happens to the salt? What happens to the pepper?*

4. Pour salt and pepper into the garbage can, wipe off the ruler.

Questions:

What happened to the salt and the pepper when you put the ruler near it (1pt)?

Why do you think this happened (1pt)? What causes the ruler to pick up some things but not everything (3pt)?

Station 3: Charged Rods

1. There is an ebonite rod hanging from a lab stand on the desk.
Vigorously rub the ebonite rod with the fur.
2. With the fur, vigorously rub the other ebonite rod at the station.
3. Hold this rod near the end of the hanging ebonite rod.
 - *What happens?*

4. Using the silky fabric, vigorously rub the glass rod.
5. Repeat step 1.
6. Hold the glass rod near the end of the hanging ebonite rod.
 - *What happens?*

7. Rub the balloon on your head or clothes.
8. Repeat step 1.
9. Hold the balloon near the end of the hanging ebonite rod.
 - *What happens?*

Questions:

Some things repelled the hanging rod, and some things attracted it, why do you think that is (2pts)?

If the balloon receives electrons (negative charges) when rubbed, then what can we say about the glass rod (3pts)? What about the ebonite rods (3pts)?

Station 4: Paper Shreds

1. Scatter the paper shreds over the table.
2. Rub the balloon against your hair or your clothes.
3. Hold the balloon near the paper shreds.
 - *What happens to the paper shreds?*

4. Repeat step 1.
5. Vigorously rub the ebonite rod with the fur.
6. Hold the rod near the paper shreds
 - *What happens to the paper shreds?*

7. Repeat step 1.
8. Vigorously rub the glass rod with the silk
9. Hold the rod near the paper shreds.
 - *What happens to the paper shreds?*

Questions:

Paper is neutral in this scenario, why is the paper attracted to these charged objects (1pt)?

If the balloon receives electrons (negative charges) when rubbed, then what happens to the electrons in the paper when the charged balloon is brought near (3pts)?

Station 5: Electroscope

1. Ensure that your electroscope is in the neutral position (leaves hanging straight down)

2. Rub the balloon on your head or your clothes.
3. Hold the balloon near the sphere of the electroscope (without touching the electroscope)
 - *What happens to the leaves?*
4. Pull the balloon away from the electroscope.
 - *What happens to the leaves now?*
5. Touch the charged balloon to the sphere of the electroscope and then remove the balloon.
 - *What happens to the leaves now?*
6. Touch your finger to the sphere of the electroscope.
 - *What happens to the leaves now?*

Questions:

After step 3, what happens to the leaves? How does the balloon cause this (2pts)? After pulling the balloon away, do the leaves reverse (1pt)?

After touching the balloon to the sphere, what happens to the leaves? After removing the balloon, does it reverse (1pt)? How does the balloon cause this (2pts)?

After touching your finger to the sphere, what happens to the leaves then? What is this an example of (2pts)?

Final Activity: BALLOON CAN RACE

- Instructions will be given in class

Questions:

Why does the balloon make the can roll (2pts)?

***BONUS QUESTION (1pt):**

When doing some of these experiments, the experiment may not have given you the result that was expected or supposed to happen. What are some possible explanations for why this is?