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

Charge Interactions Investigation

Part 1: Interactions of 2 pieces of charged tape

1. Take two pieces of tape and fold over about 1 cm of one end for each strip to serve as a handle. Label the strips “1” and “2” with a ballpoint pen.
2. Place strip 1 on the desk so that it is securely attached to the surface. Place strip 2 on the desk so that it is also securely attached to the surface. Pull both strips off the desk.
3. Slowly bring the ends of each strip of tape towards each other.
   1. Do they attract or repel each other?
   2. Are these pieces of tape similarly charged or oppositely charged? How do you know?
4. Now, place each strip 1 on the desk so that it is securely attached to the surface. Place strip 2 directly on top of strip 1. Pull both strips off the table together and then pull the two strips apart.
5. Slowly bring the ends of each strip of tape towards each other.
   1. Do they attract or repel each other?
   2. Are these pieces of tape similarly charged or oppositely charged? How do you know?

Part 2: Interactions of 4 pieces of charged tape.

1. Place strip 1 and strip 2 on opposite ends of the straw/cup apparatus that is at your desk. (You might need to re-charge these pieces of tape by repeating STEP 4 from above.)
2. Charge two more pieces of tape by repeating **step 4** from above. Label these strips “3” and “4”.
3. Hold the end of strip 3 and bring it towards strip 1. Record observations of their interactions (attract/repel) in the table below.
4. Hold the end of strip 3 and bring it towards strip 2. Record observations in the table below.
5. Hold the end of strip 4 and bring it towards strip 1. Record observations in the table below.
6. Hold the end of strip 4 and bring it towards strip 2. Record observations in the table below.

Part 3: Charged Rods & Tape

1. Charge the PVC pipe by rubbing it with the fur. The PVC pipe will acquire a negative charge.
   1. Bring the PVC Pipe toward strip 1. Record observation in the table below.
   2. Bring the PVC Pipe toward strip 2. Record observation in the table below.
2. Charge the glass rod by rubbing it with the plastic bag. The glass rod will acquire a positive charge.
   1. Bring the glass rod toward strip 1. Record observations in the table below.
   2. Bring the glass rod toward strip 2. Record observations in the table below.

Part 4: Charged Balloon & Tape

1. Rub a balloon against your hair to give it charge.
   1. Bring the balloon toward strip 1. Record observations in the table below.
   2. Bring the glass rod toward strip 2. Record observations in the table below.

|  |  |  |
| --- | --- | --- |
|  | Strip 1 | Strip 2 |
| Strip 3 |  |  |
| Strip 4 |  |  |
| PVC Pipe |  |  |
| Glass Rod |  |  |
| Balloon |  |  |

Part 5: Charge Rods and Paper Bits

1. Charge the PVC pipe by rubbing it with the fur. The PVC pipe will acquire a negative charge. Bring the PVC pipe towards some bits of paper on the table. How does the rod interact with the paper bits (attract or repel)?
2. Charge the glass rod by rubbing it with the plastic bag. The glass rod will acquire a positive charge. Bring the glass rod towards some bits of paper on the table. How does the rod interact with the paper bits (attract or repel)?

Analysis

Based on your observations determine the type of charge (positive/negative/neutral) on the following objects. Explain in detail how you arrived at your answer.

|  |  |  |
| --- | --- | --- |
|  | Type of Charge | How do you know??? |
| Strip 1 |  |  |
| Strip 2 |  |  |
| Strip 3 |  |  |
| Strip 4 |  |  |
| Balloon |  |  |
| Paper Bits |  |  |