

Name _____
 Physics _____
 Period _____

Date _____
 Lab #28 (55 pts)
 Mrs. Nadworny

Partners: _____

Due Date: _____

Static Electricity

NO Lab Write-Up Required

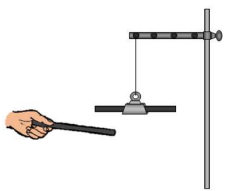
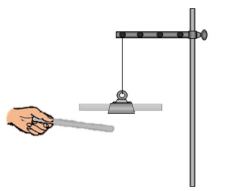
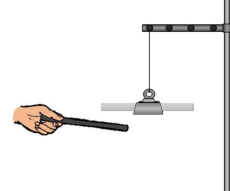
Purpose To investigate different properties of static electricity


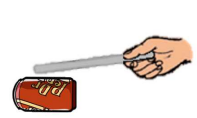




Materials

- o Bag of supplies:
 - 2 black rubber strips
 - 2 red plastic strips
 - Fur
 - Silk
 - Pie pan
 - Paper bits
 - Soda can
 - Cup
- o Separate supplies:
 - Ring stand
 - Binder clip on string
 - Pink insulation
 - Tape

Part 1 – Testing Neutral Objects

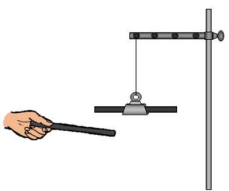
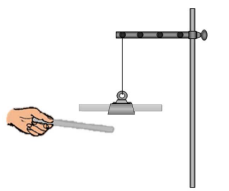
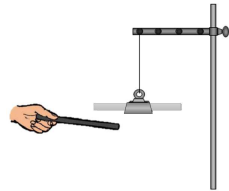
- Record your predictions & observations for the following scenarios. (1 pt each)

Scenario 1	Scenario 2	Scenario 3
Bring the black rod near the hanging black rod (do not touch)	Bring the clear strip / rod near the hanging clear strip / rod (do not touch)	Bring the black rod near the hanging clear strip / rod (do not touch)
		
Prediction:	Prediction:	Prediction:
Observations:	Observations:	Observations:

Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	Scenario 9
Bring the black rod near the side of the soda can.	Bring the clear strip / rod near the side of the soda can.	Bring the black rod near paper bits.	Bring the clear strip / rod near paper bits.	Bring the black rod near a thin stream of water.	Bring the clear strip / rod near a thin stream of water.
					
Prediction:	Prediction:	Prediction:	Prediction:	Prediction:	Prediction:
Observations:	Observations:	Observations:	Observations:	Observations:	Observations:

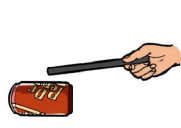
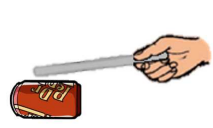




Part 2 – Testing Charged Objects

- Rub both black rods with fur. This will result in the **rods being negatively charged**.
- Rub both clear strips / rods with silk. This will result in the **strips being positively charged**.
- Record your predictions & observations for the following scenarios. (2 pts each)

Scenario 1	Scenario 2	Scenario 3
Bring the black rod near the hanging black rod (do not touch)	Bring the clear strip / rod near the hanging clear strip / rod (do not touch)	Bring the black rod near the hanging clear strip / rod (do not touch)
		
Prediction:	Prediction:	Prediction:
Observations:	Observations:	Observations:
What conclusions can my make regarding the behavior of objects with like charges?		What conclusions can my make regarding the behavior of objects with opposite charges?

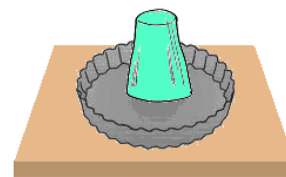
Part 3 – Testing the Effect of Charged Objects on Neutral Objects

- Rub the black rod with fur. This will result in the **rod being negatively charged**.
- Rub the clear strip / rod with silk. This will result in the **strip being positively charged**.
- Record your predictions & observations for the following scenarios. (2 pts each)

Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	Scenario 9
Bring the black rod near the side of the soda can.	Bring the clear strip / rod near the side of the soda can.	Bring the black rod near paper bits.	Bring the clear strip / rod near paper bits.	Bring the black rod near a very thin stream of water.	Bring the clear strip / rod near a very thin stream of water.
					
Prediction:	Prediction:	Prediction:	Prediction:	Prediction:	Prediction:
Observations:	Observations:	Observations:	Observations:	Observations:	Observations:
What conclusions can my make regarding the effect of charged objects on neutral objects?					

Part 4 – Separation of Charge (The Electrophorus)

- Tape a cup upside down to the center of the pie pan, as shown.
- Rub the fur over the pink foam base of the electrophorus then remove the fur.
- Pick up the pie pan by the handle (paper cup) and place it on the pink foam base.
- Touch the edge of the plate with your finger and then remove your finger.
- Record your observations.



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- Pick the plate up from the pink foam base using the handle. While it is still in the air, touch the plate with your finger.
 - Record your observations.

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- Repeat the above steps 10 times by setting it down, touching the edge, then picking it up and touching the edge repeatedly.
 - Record your observations.
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Questions

1. Draw the charges on the plastic strip & silk before rubbing AND after rubbing. (2 pts)

Before	After

2. Provide evidence from your experiments to support each claim above. (2 pts)

Before - _____

After - _____

3. What was the **total** charge of the silk-strip system before rubbing AND after rubbing? (2 pts)

Before - _____

After - _____

4. Was charge conserved in this system? Explain. (2 pts)

Continued on next page

5. What effect would rubbing the black rod or clear strip for a longer time have on the outcomes of your experiments? (1 pt)

6. Think about the different materials used during this lab. Why did the charges remain on the black **rubber** rods and **plastic** strips for a long time? Why didn't the charges ground (travel) through your hand? (2 pts)

7. Would the electrophorus remain charged indefinitely (forever)? Explain. (2 pts)
