Static Electricity Investigation

Names: _____
Names: _____
Date: _____ Block: ___

Purpose: In pairs, you will be carrying out multiple experiments to discover which of the materials, shown below, produce static charge when they are rubbed together.

Materials:

-Two acetate strips
-Ring stand
-Paper towel
-Vinyl strips
-wool cloth
-watchglass
- Wooden metre stick

Procedure:

1. Tape the acetate plastic strip to the ring stand so that it hangs freely.
2. When acetate is rubbed with paper, the paper removes some electrons from the acetate. Charge the acetate strip by rubbing it with a paper towel. Record its charge in the table below.
3. Charge a second acetate strip following step 2. Bring this second acetate strip near the first.
    a. What happens (attract vs repel)?
4. Repeat the steps 1-3 using two vinyl strips, this time using wool instead of paper towel. When vinyl is rubbed with wool, some of the wool's electrons are transferred to the vinyl. Record the charge transferred to the vinyl.
    a. Are the two strips of vinyl attracted or repelled by one another? Record on table below
5. Bring a charged acetate strip near a suspended vinyl strip. Record what happens.
6. Neutralize a metre stick by running your hand along its entire length. Then balance the stick on a watch glass. Bring a charged acetate strip near one end of the metre stick but do not let it touch the stick.
    a. Is the metre stick attracted or repelled? Record below
7. Bring a charged vinyl strip near the end of the metre stick without touching the stick.
    a. Attracted or repelled? Record what happens below.

Data:

Suspended Object	Charge	Object brought Near	Charge	Result (attracts or repels)
Acetate		Acetate		
Vinyl		Vinyl		
Vinyl		Acetate		
Metre Stick		Acetate		
Metre Stick		Vinyl		

Discussion:

1. Why was it necessary for the suspended acetate or vinyl strips to be free to move in this experiment? Why was the metre stick balance on the watchglass?

2. What is the effect of:
    a. One positively-charged object on another positively charged object?

    b. One negatively-charged object on another negatively charged object?

    c. One negatively charged object on a positively charged object (opposites)?

    d. A charged object (positive or negative) on a neutral object?

3. Suppose, in similar steps as shown above, you place a piece of free hanging piece of aluminum foil on the ring stand and charge it by rubbing it with fur. You then charge a second piece of aluminum foil in the same way. What will happen when you bring these two pieces of aluminum foil together, will they attract of repel? Explain your answer.

4. Fur tends to transfer electrons TO aluminum foil when rubbed together. Would you expect the aluminum foil in question 3 to attract or repel acetate from this experiment? Would you expect it to attract or repel vinyl? How about the metre stick?

5. Explain why the metre stick behaves the way it does with the vinyl and acetate? Please include a drawing showing charges on each object.

Lab Report Rubric	**Name:** **Score: /25**	**Identifies a proper Question**	**Yes (1)** **No (0)**
	Good (3)	**Fair (2)**	**Needs Work (1)**
Hypothesis	If...then..." format is testable	If...then..." format	Improper format
Materials	Write "See attached Sheet" Or list them	"See attached sheet" Materials listed, but may be missing some or list unnecessary ones	Not listed
Procedure **Flow chart**	Good description of steps Could be repeated by another student	Description included; some steps are vague or unclear	Would be difficult to repeat, reader must guess at how the data was gathered or experiment conducted
Identified Groups **(not in this lab)**	Properly identified control & experimental groups.		Improperly identified or not identified
Observations **(Data table)**	Results and data are clearly recorded and organized	Results are given but could be better organized or clearer	Results are disorganized or poorly recorded, do not make sense ; not enough data was taken to justify results
Analysis **(Discussion Qs)**	Full sentences Or Copy question out in full with point form answers	No full sentences Or Has not copied out questions	Does not analyze results. Does not make connections between groups
Conclusion	Hypothesis is rejected or accepted and explained using data. Conclusions follow data (not wild guesses or leaps of logic)	Hypothesis is rejected or accepted; however data is not used to support conclusion.	Does not link conclusion to hypothesis.
Safety & Lab Rules **(Not in this lab)**	Directions were followed, stations were cleaned. All safety rules followed. If not applicable please state not in this lab	Most conditions were met; possible minor errors in procedures	Student did not follow directions, practiced unsafe procedures, horseplay, improper clean-up, equipment lost or broken.