Electric Tape Lab

PSI Physics

Name_____ Date_____ Period_____

Objectives:

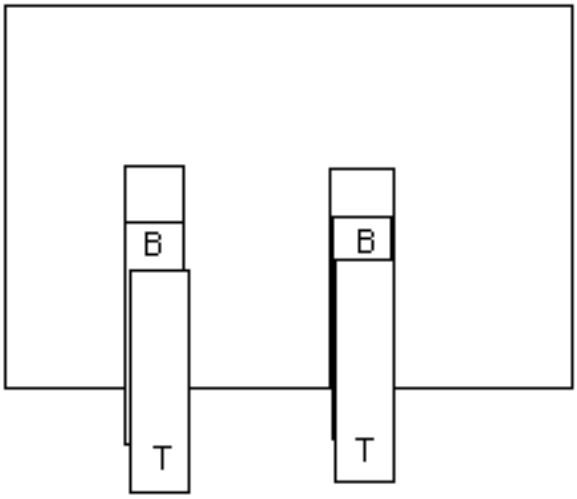
- Observe how static electricity is generated
- Determine the properties of electric charge and electric force

Materials:

- Cellophane or scotch tape
- Pen or permanent marker

Procedure:

1) Take two 10 cm pieces of tape, and make a handle on them by folding the end of the tape onto the sticky side. Smooth them down onto the table, or another firm surface. Call these Base types by labeling them with a B.
2) Take two more 10 cm pieces of tape and smooth them down onto the base tape. Again, fold the end of the tape back so that you can make a handle. Label these pieces of tape with a T for Top tape. (*Note*: Make sure you are able to pull off the pieces of tape easily and without much hassle).



3) For all the next steps:
    a. hold tapes so that they hang down
    b. make sure the sticky sides of the tapes face away from each other
    c. if one piece of tape sticks to your hand shake it free
    d. as you bring the pieces of tape close to one another, DO NOT let them TOUCH.

4) Situation 1: Quickly pull off the top tapes. As you bring the two tapes near each other, what happens? Do the interactions between the pieces of tape depend on distance?

5) Situation 2: Carefully pull of one of the bottom pieces of tape and bring it close to one of the top pieces of tape. As you bring the two tapes near each other, what happens? Do the interactions between the pieces of tape depend on distance?

6) Situation 3: Carefully pull the second bottom piece of tape and bring it close to the first bottom piece of tape. As you bring the two tapes near each other, what happens? Do the interactions between the pieces of tape depend on distance?

Analysis and Conclusions:

1) Is there a force between the pieces of tape? How can you tell?

2) How is the force different among Situations 1-3?

3) Do you think the two top tapes have the same or different charges? Why?

4) Do you think the top and bottom tapes have the same or different charges? Why?

5) Based on your answers to 3) and 4), how do like charges interact (attract repel, do nothing)?

6) Based on your answers to 3) and 4), how do different charges interact (attract repel, do nothing)?

7) In general, do the interactions between the pieces of tape depend on distance?

8) How is what you observe same as and different from that of gravity (think about what kind of force gravity is)?