

Part I:

Objective: To perform various demonstrations involving static electric charge.

Apparatus: The electroscope consists of two metal leaves in a box which shields them from air currents. The leaves connect to a metal rod which protrudes through the box's top. If they are charged via this rod, the leaves repel each other; the larger the charge, the farther apart they move.

Procedure & Results:

A. We rubbed the plastic rod with the fake fur, then held it near the metal ball on top of the electroscope without touching it. (Sometimes charge will jump through the air – If the leaves suddenly get farther apart, touch the top of the electroscope to remove the charge then repeat without getting the rod quite as close.) We observed

When the rod is taken away again, (What does the electroscope do?)

We repeated this, except this time the rod was touched to the ball. After the rod is removed,

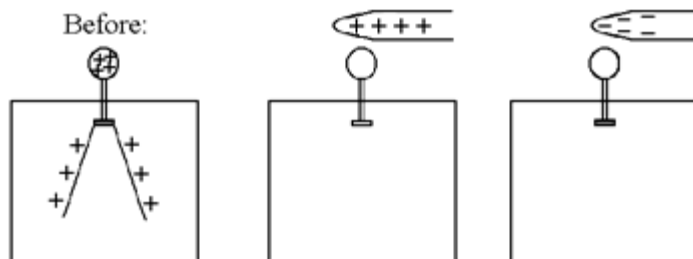
We charged the rod by rubbing it on the fake fur again. When brought near the charged electroscope without touching it,

We repeated this, except after rubbing it with the blue cloth instead. (What does the electroscope do?)

Since the rod doesn't touch it, assume the total charge on the electroscope stays the same. Represent this amount of charge with ten + signs.

Draw the leaves on the middle picture. To show why they do that, draw ten + signs, distributed differently than in the first picture. Hint: The + rod pushes + charges away from it.

Draw the leaves on the third picture. To show why they do that, draw ten + signs, distributed differently than in the first pictures. Hint: The - rod pulls + charges toward it.



So, why did the leaves do what you showed in the middle picture?

Why did the leaves do what you showed on the right?

We turned on a faucet just enough for a stream of water that breaks up into drops after a few inches. A charged rod was held near the stream of water, without touching it. (Sketch what you see. Charges in the water are attracted or repelled by the rod. Indicate on your sketch which side of the stream is + and which side is -. Then, explain why the stream does what you saw.)

B. Some copper and aluminum foil were placed in vinegar. The digital meter showed

\_\_\_\_\_ V between them, with \_\_\_\_\_ (which metal?) positive.

PART II:

r (cm)	Force (Dial reading)
15.0	
12.5	
11.0	
10.0	
9.0	
8.0	
7.0	
6.0	

Attach log F vs. log r graph.

Calculate n:

So, your result is that the force is proportional to r to the \_\_\_\_\_ power. (Round to nearest integer.)

Log – log graph paper

