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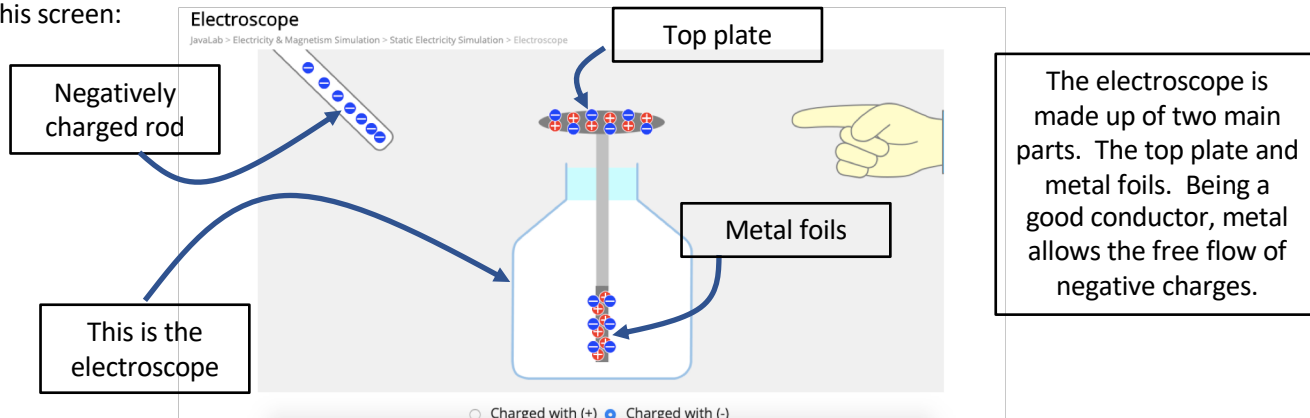
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### Regents Physics Lab #28: The Electroscope

**Objective:** Investigating the electroscope.

**Instructions:**

Click this link: [https://javalab.org/en/electroscope\\_en/](https://javalab.org/en/electroscope_en/) You can refresh the browser to reset the sim. You should see this screen:



(1) Begin by counting the number of negative  and positive charges  on the electroscope (metals foils and top plate).

There are \_\_\_\_\_ negative charges and \_\_\_\_\_ positive charges on the entire electroscope.

The net charge (sum of all charges) on the entire electroscope is therefore zero coulombs. We say that the electroscope has a neutral charge.

(2) Click and drag the negatively charged rod near the top plate. Use the words in the box below one time each.

When the rod is brought close to the top plate, the entire electroscope still has a \_\_\_\_\_ charge. However, since like charges repel one another, most of the \_\_\_\_\_ charges on the electroscope move down toward the \_\_\_\_\_. The metal foils now have the same charge as one another and as a result the two metal foils \_\_\_\_\_. In this configuration the electroscope is known as being polarized. The top plate of the electroscope has a net \_\_\_\_\_ charge and the metal foils have a net \_\_\_\_\_ charge.

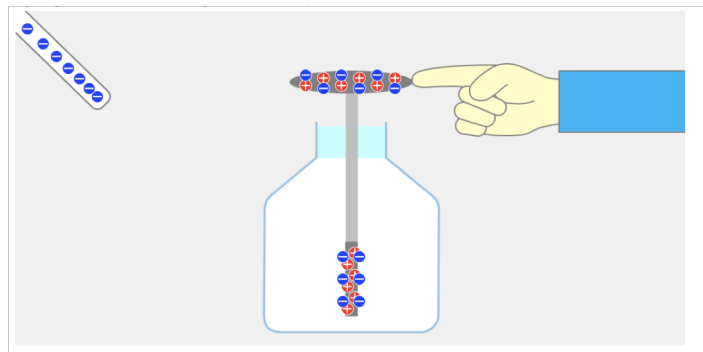
metal foils	spread	neutral	negative	positive	negative
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(3) Move the negatively charged rod away from the electroscope. Use the words in the box below one time each.

\_\_\_\_\_ charges attract so when the rod is pulled away from the top plate, the excess negatives on the metal foil are pulled up to the excess positive charges on the top plate. The electroscope is no longer \_\_\_\_\_ and it still has a \_\_\_\_\_ charge

polarized	neutral	Opposite
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(4) Next, click and drag the hand so that it is touching the electroscope as shown here. The person (not shown) attached to this hand is in contact with the earth and the electroscope is now said to be grounded.



(5) Move the negatively charged rod toward and away from the electroscope again. Use the words in the box below one time each.

When the rod is brought close to the top plate of a grounded electroscope, most of the \_\_\_\_\_ charges on the electroscope are transferred 'to ground' leaving a net \_\_\_\_\_ charge on the electroscope. Once the rod is pulled away, negative charges come up from \_\_\_\_\_ and repopulate the electroscope bringing it back to a \_\_\_\_\_ charge.

negative	neutral	positive	ground
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(6) Keep the hand touching the electroscope. Bring the negatively charged rod close to the grounded electroscope. Next remove the ground (hand) and then pull the rod away. Use the words in the box below one time each.

When the ground is removed the \_\_\_\_\_ charges cannot return from ground to repopulate the electroscope.

Once the rod is pulled away the charges on the electroscope redistribute themselves but the electroscope is left with a net \_\_\_\_\_ charge. This process of charging is known as *induction*. Once the hand is returned to the

charged electroscope, negative charges will continue coming up from \_\_\_\_\_ until the electroscope once again

has a \_\_\_\_\_ charge.

negative	neutral	positive	ground
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