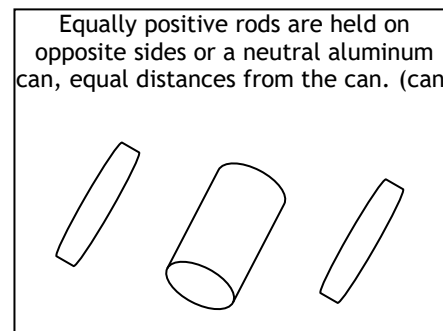
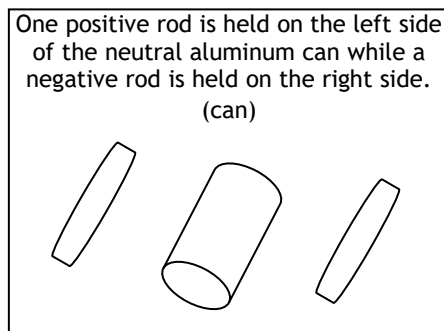
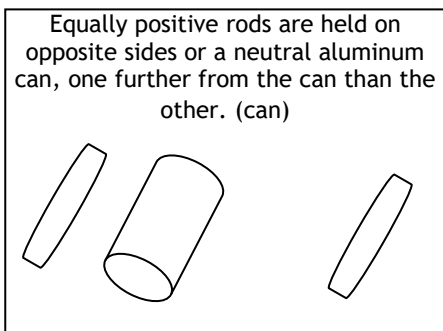
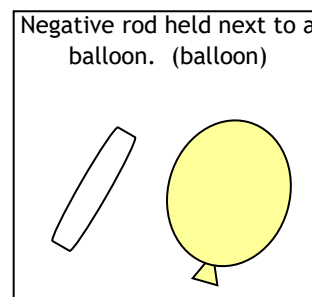
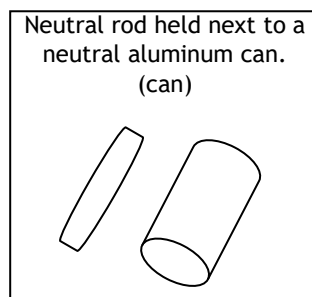
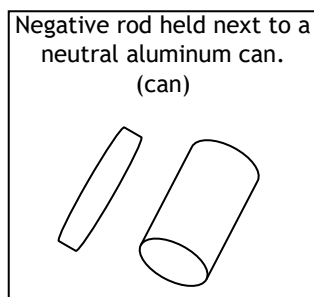
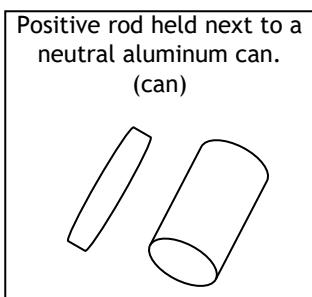
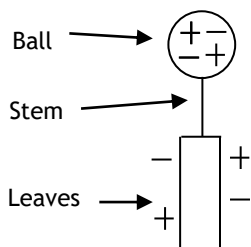


- 1) What causes the polarization of charge in a conductor?
- 2) What is the polarization of charge?
- 3) Why is water (H₂O) classified as a “polar” molecule? Draw a diagram to assist your explanation.
- 4) What is net charge of a polarized conductor? (positive negative neutral depends on the rod)
- 5) Explain why an insulator cannot be polarized.
- 6) Show the net charge distributions for following objects in parenthesis for the scenarios below.

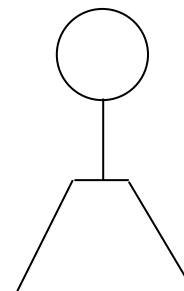


An electroscope is a device used to determine the presence of a charged object. The ball, stem and leaves are conductors that are all connected. Charge is free to roam. The leaves are made of a light weight material and will spread apart when electrons are pulled up to the ball or when electrons are pushed down to the leaves.

Neutral Electroscope

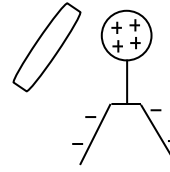


- 7) Show the distribution of charge on the electroscope if a positive rod is brought near, but does not touch the neutral electroscope.



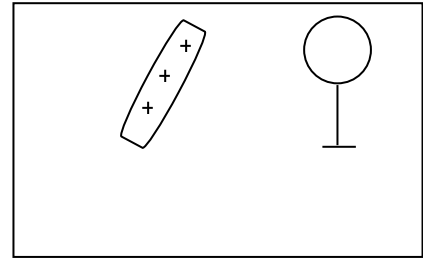
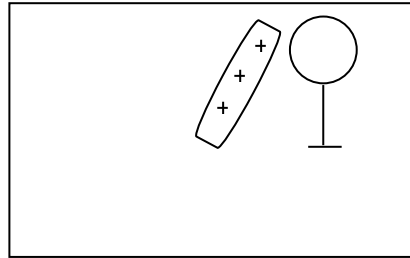
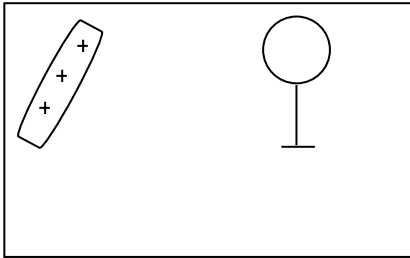
8) What is the charge of the rod? (positive negative neutral)

9) What is the charge of the electroscope? (positive negative neutral)

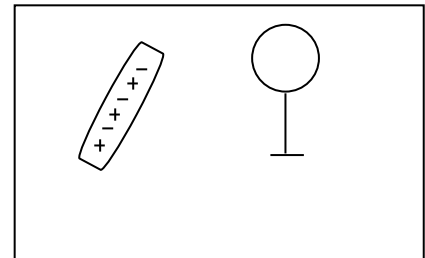
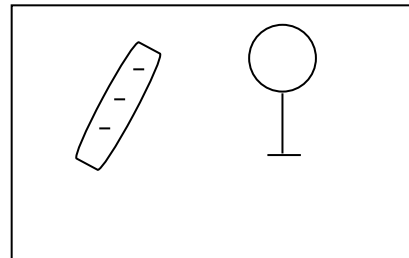
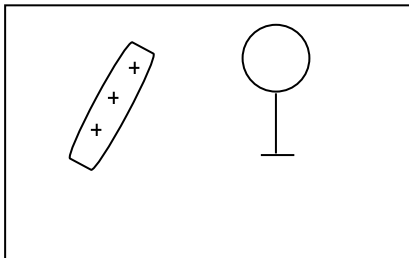


Not only can an electroscope be used to determine if an object is charged, it can also be used to measure how charged an object is compared to other charged objects by how far apart the leaves spread. The stronger the force from the charged object, the farther apart the leaves. Electroscopes cannot simply measure how much excess charge an object has nor can they tell us what charge (positive or negative) an object is.

10) A charged object is held at various distances from an electroscope; draw the separation of charge and leaf positions for the following pictures.



11) Draw the separation of charge and the leaves for the pictures below. Assume the two charged rods are equal and opposite in charge.



12) Could the leaves ever get above an angle of 180° of separation? Why or why not?

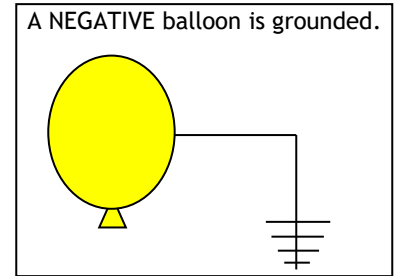
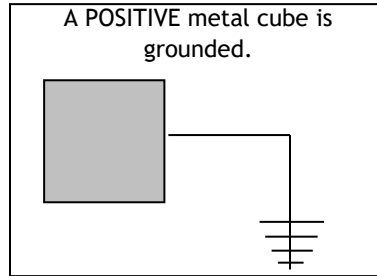
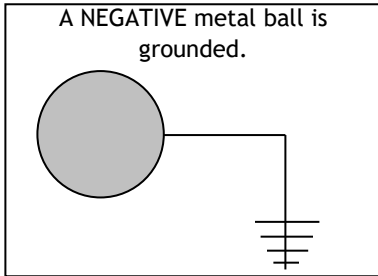
13) Could the leaves ever get exactly an angle of 180° of separation? Why or why not?

14) What does an electroscope do?

15) What does an electroscope not do?

- 1) When you rub a glass rod with silk, what charge does the rod become? (positive negative neutral)
- 2) When you rub a plastic rod with rabbits fur, what charge does the rod become? (positive negative neutral)
- 3) What is a ground?

Given the situations below an object will be grounded; show the flow of electrons either from the ground, to the ground, or no electron flow.



Intermixed below are the steps for charging an object by conduction and induction. 1) Cut them out and put them in the correct order. 2) On each picture draw in the correct net charge distribution and/or transfer of electrons with an arrow signifying the direction of the flow.

Conduction steps (list the correct order): _____

Induction steps (list the correct order): _____

