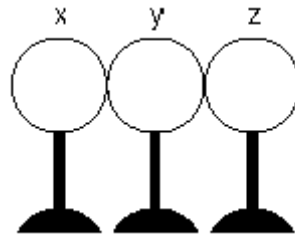
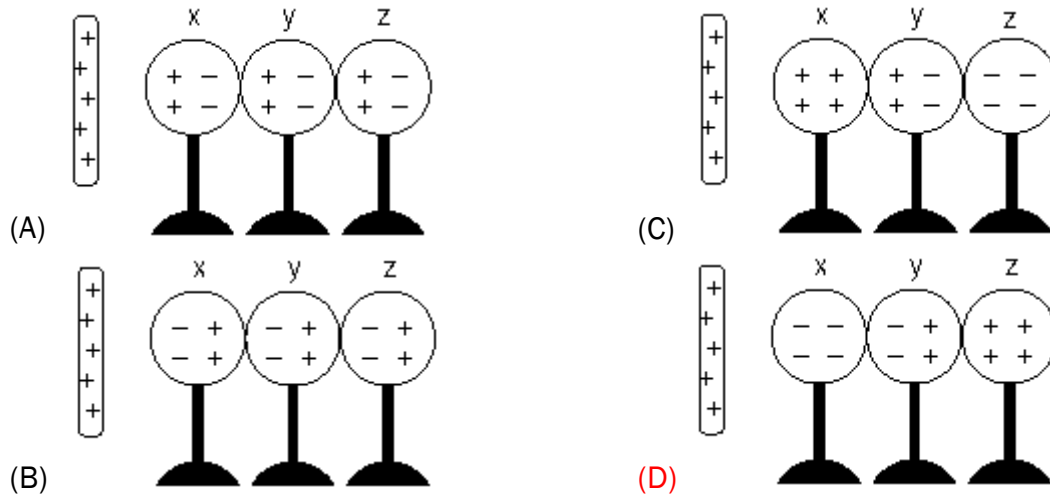




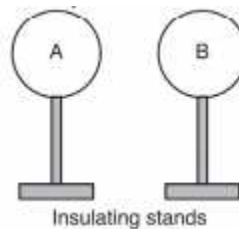
The diagram below shows three neutral metal spheres, x, y, and z, in contact and on insulating stands.



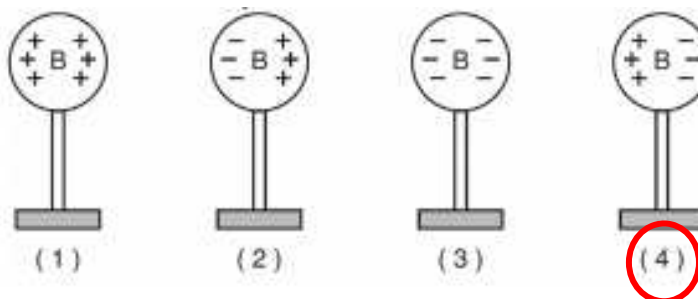
6. Which diagram best represents the charge distribution on the spheres when a positively charged rod is brought near sphere x, but does not touch it?



Two identically-sized metal spheres, A and B, are on insulating stands, as shown in the diagram below. Sphere A possesses an excess of  $6.3 \times 10^{10}$  electrons and sphere B is neutral.



7. Which diagram best represents the charge distribution on sphere B?



8. Make a general statement describing the behavior of a neutral electroscope when a charged object is brought near to, but **not** touching, it.

When a charged object is brought near an electroscope, the see-saw becomes charged and repel from the pole. When the charged object is removed the electroscope returns to normal.

9. Summarize how you can tell by using a test rod/strip whether an electroscope is positively or negatively charged.

If you bring an object with the same charge near a charged electroscope the leaves will spread out further. If you bring an object with a different charge near the charged electroscope, the leaves will drop back to their original, inert, position.

10. Describe the major difference between the methods of conduction and induction regarding the actual method of charging the electroscope.

Conduction charges with physical contact between the rod and electroscope.

Induction charges without any physical contact between the rod and electroscope.

11. Compare the charge on the electroscope and the charge on the rod/strip that touched it when the electroscope was charged by the method of conduction.

The charge is transferred from the rod/strip to the electroscope. Whatever charge they have, the electroscope will gain.

12. Compare the charge on the electroscope and the charge on the rod/strip that came near it when the electroscope was charged by the method of induction.

During induction, the electroscope is given the opposite charge of the rod/strip that is charging it.

13. A negatively charged rod is brought nearby a charged electroscope and the leaves of the electroscope return to their vertical position. What can you conclude about the electroscope?

Positive – The leaves drop for opposite charges.

14. If an electroscope is neutral and then when a rod is brought nearby the leaves separate, what can you conclude about the rod?

The rod is charged. We don't know whether it's positive or negative.