

## Science 9 – Ch 9 Static Electricity Note 2: Charge by Friction, Conduction, and Induction

• Three methods of charging:

1. **Friction:** occurs when two objects are rubbed together

- the objects will have \_\_\_\_\_ charges at the end

2. **Conduction (contact):** occurs when objects touch and an electric charge is \_\_\_\_\_ from one object to the other

- both objects will have the \_\_\_\_\_ charge at the end

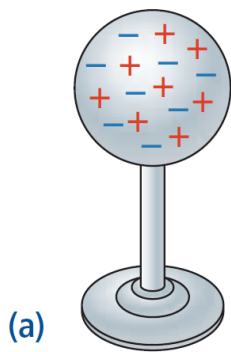
3. **Induction:** results from charging without touching or making any direct contact

- creates areas of \_\_\_\_\_ charge on the objects

### **Charging by Conduction**

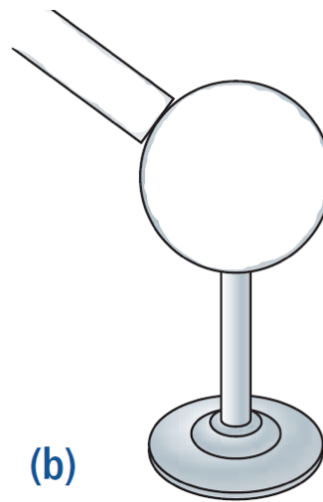
○ Occurs when objects touch and an electric charge is transferred from one object to the other.

- Ex. When you walk across a carpet and get a \_\_\_\_\_ by touching a metal doorknob, you are transferring some of your \_\_\_\_\_ to the doorknob.



(a)

- A neutral metal sphere



(b)

When a \_\_\_\_\_ charged bar contacts the sphere, some of the extra \_\_\_\_\_ move to the sphere, giving it a \_\_\_\_\_ charge.

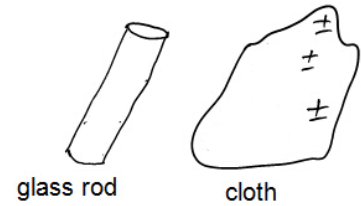
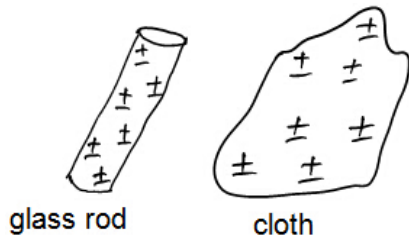
### **Charging by Friction**

- This method of charging objects involves \_\_\_\_\_ two neutral objects together. The contact allows \_\_\_\_\_ to be transferred from one substance to the other substance.
- One substance will \_\_\_\_\_ negative electrons (and become \_\_\_\_\_ charged) while the other will \_\_\_\_\_ electrons (and become \_\_\_\_\_ charged).
- Since the two objects have attract opposite charges, they will \_\_\_\_\_ each other.



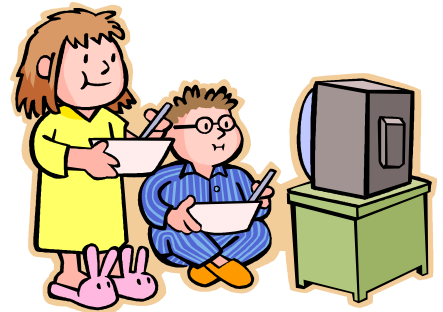
### Charging by Friction Cont.

- Use the \_\_\_\_\_ table (p. 256) to find out which material are more likely to lose electrons  
Ex. Electric charge built up on clothes as they tumble against each other in a dryer.  
Ex) a glass rod become \_\_\_\_\_ charged when rubbed with a silk cloth

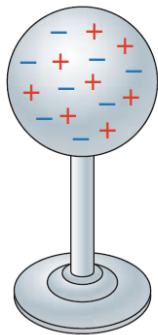


### Charging by Induction

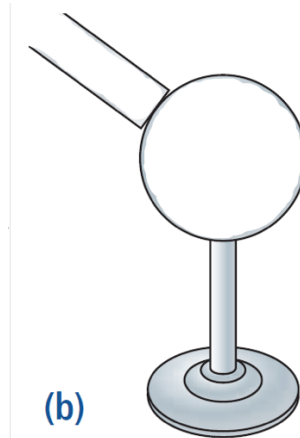
- When objects are charged \_\_\_\_\_ touching or making any direct contact
- IF we bring a charged object near to a neutral object, we can \_\_\_\_\_ a charge in the neutral object because electrons move to get farther \_\_\_\_\_ from other electrons or \_\_\_\_\_ to protons.
  - Ex. Build-up of dust on a TV screen



Ex) What happens when a negatively charged bar comes near the sphere?



(a) A neutral metal sphere



the charge on the bar causes, or induces, the electrons on the sphere to change their position.