Charging by Conduction
Lesson Notes

Focus Questions:

- What is charging by conduction and how does it occur?
- How can the results of charging by conduction be predicted and explained?

What is Charging by Conduction?

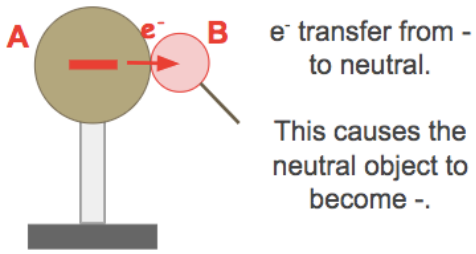
- A process of charging a neutral object.
- Involves touching a charged object (**A**) to a neutral object (**B**).
- The act of touching or making contact charges Object **B**.

The Result: the charge that Object **B** acquires is the same type of the charge that Object **A**. Object A keeps the same type of charge but is less charged than before.

How Does Charging by Conduction Work?

Example 1: Use a - conducting object (A) to charge a neutral conducting object (**B**).

Procedure: Touch a negatively-charged object (**A**) and a neutral object (**B**). Then pull the two objects apart.

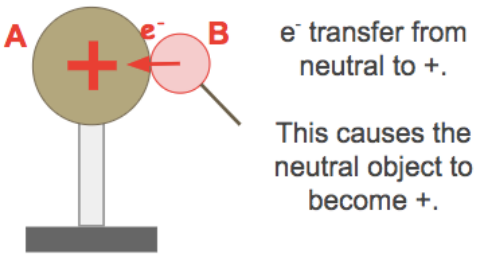


Result: The neutral object (**B**) acquires a - charge. The charged object (**A**) is still charged with - type of charge.

Explanation: During contact, there is an electron transfer from the - object (**A**) to the originally neutral object (**B**).

Example 2: Use a + conducting object (A) to charge a neutral conducting object (**B**).

Procedure: Touch a positively-charged object (**A**) and a neutral object (**B**). Then pull the two objects apart.



Result: The neutral sobject (**B**) acquires a + charge. The charged object (**A**) is still charged with + type of charge.

Explanation: During contact, there is an electron transfer from the originally neutral object (**B**) to the + object (**A**)

Law of Conservation of Charge

Objects become charged by the transfer of electrons from one object to another. But the total amount of charge possessed by the system of objects remains constant.

Object	Before	During	After
A	+300 nC	Electrons are transferred from B to A.	+200 nC
B	0 nC		+100 nC
System Total	+300 nC		+300 nC

Charging by Conduction Requires Conductors

Charging by conduction should be viewed as a *charge-sharing event*. At contact excess charge is shared by the two objects in order to distribute the charge over a larger area. Insulators can't be charged by conduction since electrons are unable to flow freely across their surface.