

# Unit 3 - Electricity

Chapter 7: Static electricity is produced by electron transfer.

- Static electricity
- Laws of electrical charges
- Activity
- Static discharge
- Activity2
- Challenge
- Homework

Sep 8-9:31 AM

## Static electricity

**Static electricity:** electric charges that can be collected and held in one place.

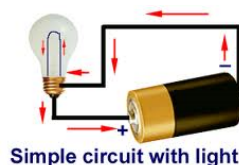
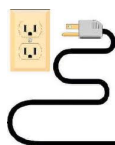
- It is the temporary transfer of electrons.

Examples: clothes from the dryer that stick together getting a shock after walking on a carpet and then touching something.



**Current electricity:** is when the electrons are controlled by moving along a path together.

Example: A copper wire can move electricity from a power plant to a house.



Feb 17-12:42 PM

## Movement of charge

What types of charges exist?

*Remember.*

1. Protons have a **positive** charge
2. Electrons have a **negative** charge

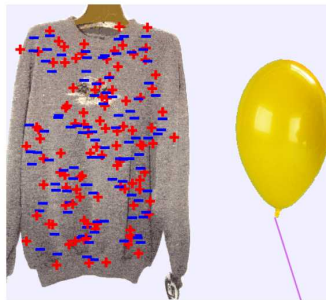
When the number of protons **equals** the number of electrons, the atom is **neutral**.

## Activity

<http://phet.colorado.edu/en/simulation/balloons>

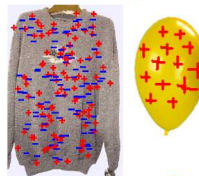
Mar 11-6:47 PM

1. When the balloon is rubbed on the sweater, what might happen?

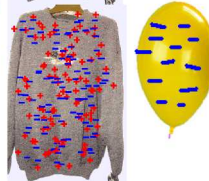


1. When the balloon is rubbed on the sweater, what might happen?

A. Some positive charges in the sweater will move onto the balloon

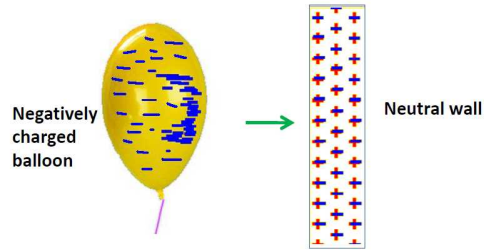


B. Some negative charges in the sweater will move onto the balloon



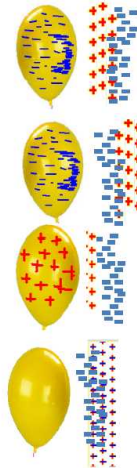
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2. What do you think will happen when the balloon is moved closer to the wall?



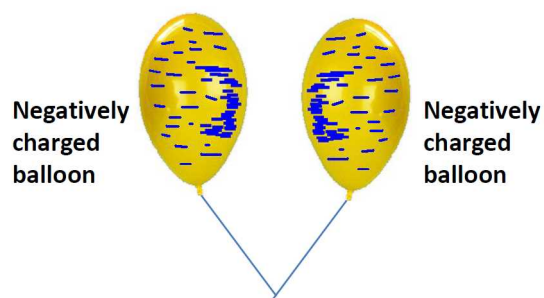
2. What do you think will happen when the balloon is moved closer to the wall?

- A. Some positive charges in the wall will move towards the balloon
- B. Some negative charges in the wall will move towards the balloon
- C. Some positive charges in the wall will go onto the balloon
- D. Some negative charges on the balloon will go to the wall



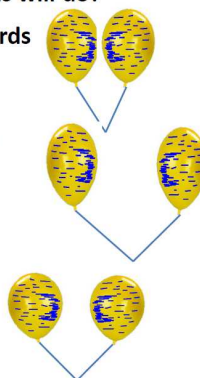
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3. What do you think the balloons will do?



3. What do you think the balloons will do?

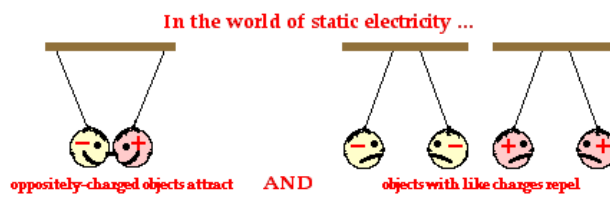
- A. The balloons will move towards each other
- B. The balloons will move away from each other
- C. The balloons will not move.



Mar 12-7:09 AM

# Laws of Electric Charges

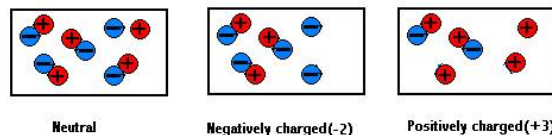
1. Like charges repel
2. Unlike charges attract
3. Charged objects attract some neutral ones.



Mar 12-7:33 AM

## charges on objects can change

- neutral objects can become positively charge
- neutral objects become negatively charge
- positive objects can become neutral
- negative objects can become neutral



Mar 11-6:46 PM

## charges on objects can change

Only **negative** charges transfer from one object to another

- because electrons are less massive and sometimes

**Positive** charges do not transfer from one object to another

- because they are much more massive



Mar 11-6:48 PM

## charges on objects can change

- If electrons are **removed** from a neutral object the object will become **positively** charged.
  
- If electrons are **added** to a neutral object, the object will become **negatively** charged.

Mar 12-7:30 AM

# Electric Discharge

**Electric discharge**: as the removal of electric charge from an object.

Example: lightning, 'shocks'



Mar 12-7:28 AM

## Activity 2

<http://phet.colorado.edu/en/simulation/travoltage>

4. What might happen to the charge on the man when he touches the door knob?



4. What might happen to the charge on the man when he touches the door knob?

A. Most electrons will go into the knob and down to the earth.



B. Some electrons will go from the earth through the knob and into the man.



Mar 12-7:25 AM

# Technologies and Static Electricity

## Example 1: Lightening rods

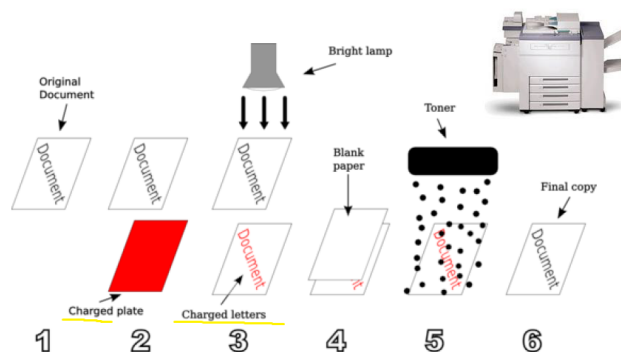


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# Technologies and Static Electricity

## Example 2: Photocopier

**Charged** plates allow toner to be applied in the image wanted



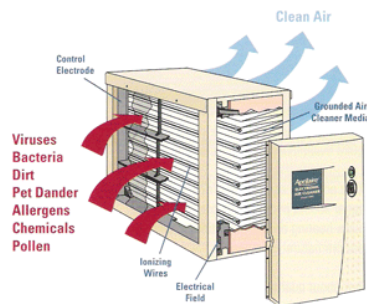
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# Technologies and Static Electricity

Example 3:

Electrostatic air cleaner

**Charged** electrodes and wires **attract** dirt and bacteria into the machine and out of the air



Mar 12-7:40 AM

# Challenge!

Fill out the following table:

Charges	Property
+ +	
+ -	
- +	
- -	
+ neutral	
- neutral	

Sep 8-9:31 AM



## Attachments

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1206Attendance.xlsx