



COMPLETE INTRODUCTION TO PHYSICS
(GRADES 9+)

KT-PHYSHSC

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Science Foundations Series

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ELECTRICITY

Electricity is the flow of electrical power or charge. Electric charge is determined by the movement of electrons within and among atoms. There are two types of electricity – current electricity and static electricity.

Current electricity is the movement of electrons through a negatively charged object or space. **Static electricity** is an imbalance of positively and negatively charged objects.

Everything is made of atoms. Atoms are the smallest piece of a chemical element that is still that element. Atoms are made of three types of smaller parts, called **subatomic particles**.

The three subatomic particles atoms consist of are protons, neutrons, and electrons. **Protons** are found in the nucleus of an atom and have a positive charge. **Neutrons** are also found in the nucleus of an atom and have a neutral charge.

Electrons are found outside an atom's nucleus and have a negative charge.

When electrons build up in an object, it has a net negative charge. When there is a loss of electrons from a material, it has a net positive charge. The charging of materials is called **frictional electricity** as it is brought about by the friction of two materials rubbing together.

The **law of charges** states that unlike charges attract and like charges repel. Therefore, positive repels positive but attracts negative. Negative repels negative but attracts positive. Negatively charged static electricity will try to flow to a positively charged or even neutral material. Materials with static electric charges, if left alone, will lose their charge over time and become neutral.

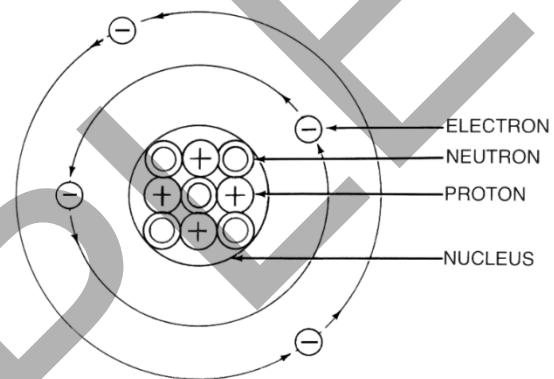


Figure 12. Diagram of an atom.



FROM THE KIT: Electroscope, fur, and balloon.

1. Insert the metal hook into the stand, making the hook stand straight.
2. Hang the pith balls on the hook by the middle of the string.
3. Bring the deflated balloon towards the pith balls, but do not let it touch the pith balls.
4. Pull the balloon away from the pith balls. Record observations in the table.
5. Bring the fur towards the pith balls, but do not let it touch the pith balls.
6. Pull the fur away from the pith balls. Record observations in the table.
7. Blow up the balloon and tie it off.
8. Rub the balloon against the fur.
9. Bring the balloon close to the pith balls, but do not let it touch the pith balls.
10. Pull the balloon away from the pith balls. Record observations in the table.
11. Bring fur close to the pith balls, but do not let it touch the pith balls.
12. Pull the fur away from the pith balls. Record observations in the table.

	Observations
Deflated Balloon Towards Pith Balls	
Deflated Balloon Away from Pith Balls	
Fur Towards Pith Balls	
Fur Away from Pith Balls	
Inflated and Rubbed Balloon Towards Pith Balls	
Inflated and Rubbed Balloon Away from Pith Balls	
Rubbed Fur Towards Pith Balls	
Rubbed Fur Away from Pith Balls	