

- **Positively charged:** electrons are removed making the object electron **deficient**.
- **Negatively charged:** electrons are added giving the object an **excess** of electrons.

So in practise what happens is that the number of positive charges (protons) remains the same and the number of electrons changes:

There are:

6 positive charges and
6 negative charges

$$6 + (-6) = 0$$



There is zero net charge:
The object is neutral

6 positive charges and
4 negative charges

$$6 + (-4) = +2$$



The net charge is $+2$
The object is positively charged

6 positive charges and
9 negative charges

$$6 + (-9) = -3$$



The net charge is -3
The object is negatively charged

Tribo-electric charging



Tip

Charge, like energy, cannot be created or destroyed. We say that charge is **conserved**.

Objects may become charged in many ways, including by contact with or being rubbed by other objects. This means that they can gain or lose negative charge. For example, charging happens when you rub your feet against the carpet. When you then touch something metallic or another person, you feel a shock as the excess charge that you have collected is discharged.

When you rub your feet against the carpet, negative charge is transferred to you from the carpet. The carpet will then become positively charged by the same amount.

📺 See video: VPfns at www.everythingscience.co.za

Another example is to take two *neutral* objects such as a plastic ruler and a cotton cloth (handkerchief). To begin, the two objects are neutral (i.e. have the same amounts of positive and negative charge).

Note: We represent the positive charge with a $+$ and the negative charge with a $-$. This is just to **illustrate the balance and changes that occur, not the actual location** of the positive and negative charges. The charges are spread throughout the material and the real change happens by increasing or decreasing electrons on the surface of the materials.

Physical Science Grade11 Term3 Electrostatics

IM Harris



Physical Science Grade11 Term3 Electrostatics:

The book delves into Physical Science Grade11 Term3 Electrostatics. Physical Science Grade11 Term3 Electrostatics is an essential topic that must be grasped by everyone, ranging from students and scholars to the general public. The book will furnish comprehensive and in-depth insights into Physical Science Grade11 Term3 Electrostatics, encompassing both the fundamentals and more intricate discussions.

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