All that Glitters is not Gold

The universe is full of matter and the attractive force of gravity pulls all matter together. Noticeably atoms are the basic units of matter and the defining structure of substances called elements. For example, a gold coin is simply a very large number of gold atoms **molded** into the shape of a coin. Each individual atom consists of smaller particles—namely, **electrons** and **nuclei.** These particles are electrically **charged**, and the **electric** forces on the charge are responsible for holding the atom together.

The nucleus **is positively charged particle.** It is the centre or the core of an atom and contains most of its mass. It is composed of protons which are massive, **positively** charged particles, **whereas** the neutrons have no charge .The lightest nucleus, that of hydrogen, is 1,836 times more massive than an electron .

Electrons are negatively-charged sub-atomic particles. They are usually to be found **orbiting** the nucleus of an atom. Commonly,electrons exists in the same quantity as the number of **protons** in the **nucleus** , so the overall electric charge is **zero** . Interactions between the electrons of different atoms play an essential role in chemical **bonding** and **phenomena** such as electricity, **magnetism** and **thermal** conductivity. Electrons are attracted to any positive charge by their electric force . The discovery of electrons is credited to the British physicist J. J. Thomson in 1897.

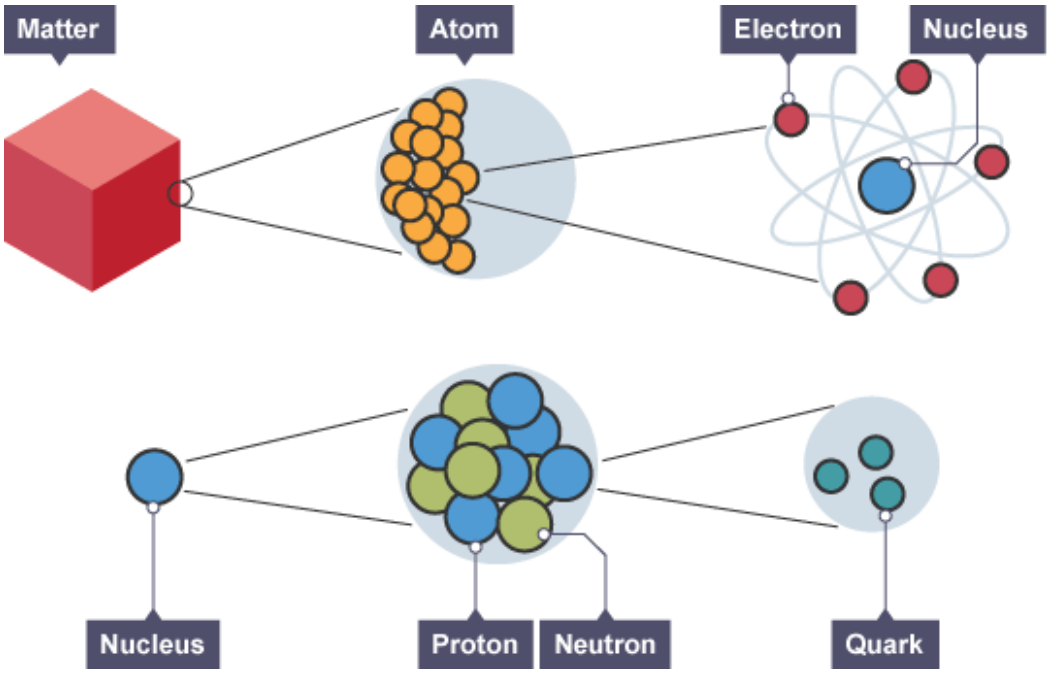
The most important characteristics of an atom is its atomic number and **mass number.The atomic number** (usually denoted by the letter *Z*), is defined as the number of units of positive charge (protons) in the **nucleus**. For example, if an atom has a *Z* of 6, it is carbon, As for The **mass number** (usually denoted by the letter *A*, is the sum of the number of protons and neutrons in the nucleus . In the above example, it would be called carbon-12 or ^{12}C (because it has six protons and six neutrons).

Over time **physicists** have **developed successively** more refined models of what atom is made up of. Most of the atom is **empty** space. The rest consists

of a positively charged nucleus of protons and neutrons surrounded by a cloud of negatively charged electrons. These particles are electrically charged, and the **electric forces** on the charge are responsible for **holding** the atom together.

"All that glitters is not gold ; it must be atoms …"

The standard model of what matter is made of



The questions:

1- Read the text slowly and silently.

– After reading: Answer the following questions according to the text:

1-What is the atom ?

2-The interractions between electrons of different atoms may result of what?

3-To which kind of charge are electrons attracted to?

4- Are these statements: true, false, or not mentioned?

a) . Protons are negatively charged particles

b) . The atomic number refers to the number of units of protons in the nucleus.

c) The electric force of the particles is responsible for gluing the atom together

d) The Protons and neutrons are held together within the nucleus of an atom by the **strong force.**

e) The electrons are constrained to occupy certain orbital positions or “shells” around the nucleus

Homework:

1- Using your dictionary, find the defenitions of words you have extracted in addition to the words that are underlined in each paragraph . Besides, what is meant by the **stronge force**?

- Provide a simple definition for the words: *Proton* and *Neutron. Electron*
- Practice the pronunciation of the words that are in bold character in the text.
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