

Atom Summary

Atoms consist of three particles

Electrons = negative charge / *lighter weight* / orbits the nucleus / the arrangement of electrons around the nucleus **determine most of the physical and chemical properties** along with the behavior of the element.

Protons = positive charge / **heavy weight** / resides in the nucleus / the number of protons **determines the identity** of the element

Neutrons = neutral charge / heavy weight / reside in the nucleus

***All electrons, protons and neutrons are alike regardless of the material from which they come or in which they exist.**

The Atomic Theory

The arrangement of electrons around the nucleus determines most of the physical and chemical properties and the behavior of the element. Electrons are often pictured in distinct layers or shells around the nucleus.

*The innermost shell of the electrons contains no more than 2 electrons

*The second shell contains no more than 8 electrons

*The third no more than 18

*The fourth shell no more than 32.

The outermost shell is known as the **valence** shell and electrons occupying this orbit are known as valence electrons. When energy is applied to a valence electron, it may dislodge from the parent atom and is then known as a free electron. In this situation the free electron is relatively far from the positive nucleus and is screened from its attracting positive charge by the other electrons. This electron is not tightly held to the atom and is fairly free to travel.

