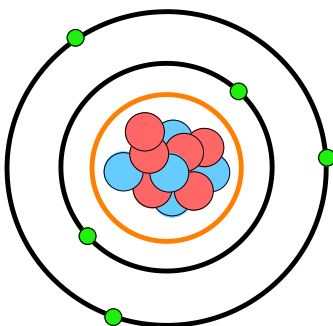


CONCEPT: THE ATOM (SIMPLIFIED)

- The **atom** represents the smallest part of an element and the basic functional unit in chemistry that consists of:
 - **Nucleus**: The center of an atom that possesses the 2 subatomic particles of **neutrons** and **protons**.
 - **Neutrons**: The subatomic particles that carry _____ charge and found within the **nucleus**.
 - **Protons**: The subatomic particles that carry _____ charge and found within the **nucleus**.
 - **Electrons**: The smallest subatomic particles that carry a _____ charge and spin around the **nucleus**.
- **Not to Scale**: The **Electron Cloud** is about _____ times larger than the **Nucleus**.



EXAMPLE: Which of the following statements is true?

- a) Protons and electrons have charges of the same magnitude but opposite signs.
- b) The number of protons must equal the number of neutrons within the atom.
- c) The atom is best described as a uniform sphere of matter in which electrons are embedded.
- d) The volume of the nucleus is a very large fraction of the total volume of the atom.

The Nucleus

- Within the **nucleus** there are two major forces that characterize the behavior between **protons** and **neutrons**.
 - **Nuclear Force**: The force within the nucleus that pulls _____ **protons** and **neutrons**.
 - **Electrostatic Force**: The force within the nucleus that pulls _____ **protons** and **neutrons**.
 - For a stable nucleus that is held together: Nuclear Force _____ Electrostatic Force.

EXAMPLE: Which of the following statements is false?

- a) The nucleus is composed of protons and neutrons.
- b) When the nuclear force is less than the electrostatic force then the nucleus will not remain intact.
- c) The nucleus has an overall neutral charge.
- d) When the nuclear force is greater than the electrostatic force then the nucleus will remain intact.