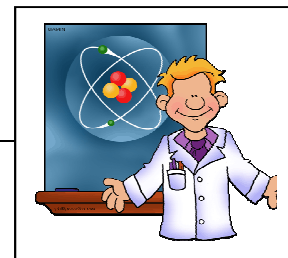


## Week 6 – SCIENCE NOTE PAGE

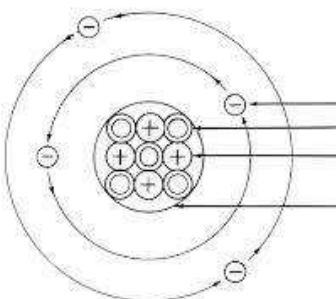
### Atoms



#### Atoms:

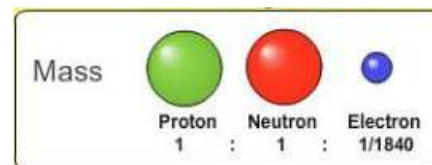
- **ATOMS:** Tiny particles that are the fundamental building block of all matter
- Atoms contain even smaller particles:
  - Atoms have a solid center, or \_\_\_\_\_.
  - INSIDE the nucleus are:
    - \_\_\_\_\_ which are positively charged (+)
    - \_\_\_\_\_ which have NO charge; we say they are “neutral” (Ø)
  - OUTSIDE the nucleus are:
    - \_\_\_\_\_ which are negatively charged particles (-)

#### LABEL the ATOM: Nucleus, Protons, Neutrons, and Electrons



**NOTE:** For an atom to have a “balanced” charge: the number of protons and electrons (+ and – charges) need to be the same!

#### LABEL the CHARGE of the Particle →

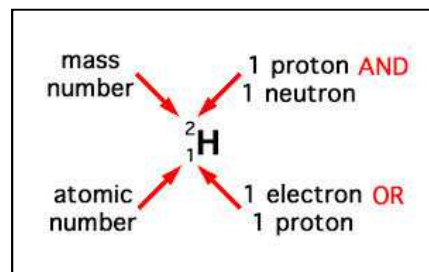


#### Atoms of ONE Kind

- When something is made up of only ONE TYPE OF ATOM, we call it an \_\_\_\_\_.

#### Atomic Number

- The **Atomic Number** is the number of \_\_\_\_\_ in an atom.
- All atoms of an element have the same number of protons
  - Therefore, protons identify the element.



#### Atomic Mass (or mass number)

- The **Atomic Mass** of an element is the \_\_\_\_\_ of the number of protons and neutrons (p+n) in an atom.
  - Neutrons do not impact chemical reactions
  - More neutrons in an atom create an isotope of the element and increase the atomic mass.
    - An **Isotope of an element** is an atom with a different number of neutrons but same number of protons (it’s the same element); it gains neutrons.
      - The “atomic mass” you will see listed in the Periodic Table reflects an **average** of all the known isotopes of an element – that’s why it’s not a whole number.

#### Electrons Determine an Element’s Properties

- Despite their small size (compared to protons and neutrons), **electrons** give an element its “personality.”
  - Electrons form **chemical bonds** with other atoms during chemical reactions.
  - Atoms can \_\_\_\_\_ or \_\_\_\_\_ electrons; this changes the charge of the atom.
    - The gain or loss of an electron makes the atom an **ion** (a positively or negatively charged atom).