

## ATOMS & SUBATOMIC PARTICLES

- **Atoms** – Are the smallest particle of an \_\_\_\_\_ that still behaves like that element.
  - Atoms are arranged to have the \_\_\_\_\_ at the center.
  - Three key subatomic particles are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
- **Protons**
  - **Location:**
  - **Charge:**
  - **Mass:**
  - **Symbol:**
- **Neutrons**
  - **Location:**
  - **Charge:**
  - **Mass:**
  - **Symbol:**
- **Electrons**
  - **Location:**
  - **Charge:**
  - **Mass:**
  - **Symbol:**

## USING THE PERIODIC TABLE

- **Blocks**
  - *Label the arrows to the left!*
- **Atomic Number**
  - The number of \_\_\_\_\_ in the nucleus of each atom of that element.
  - Is the \_\_\_\_\_ of the element.
  - Also \_\_\_\_\_ the number of \_\_\_\_\_ in a **NEUTRAL atom**.
  - **Example**

→ 6	
	C ←
→ Carbon	
	12.01 ←

Element	Atomic #	# protons	# electrons
Carbon			
Phosphorus			
Gold			

- **Mass Number**
  - The total number of \_\_\_\_\_ and \_\_\_\_\_ in the \_\_\_\_\_ of an isotope.
  - When looking at the periodic table, always round the mass number to the highest/lowest \_\_\_\_\_ number.
  - When looking at a problem, the number of protons & neutrons will help you to identify the mass number!
  - Can be written as \_\_\_\_\_ or \_\_\_\_\_.

- **Example**

Element	# protons	# neutrons	# electrons	mass #
Oxygen -		8		
	33	42		
Phosphorus -	15			

- **Changing Subatomic Particles**

- **Changing Protons**

- Changes the \_\_\_\_\_.

- **Changing Neutrons**

- Changes the \_\_\_\_\_, creating a new \_\_\_\_\_.

- **Changing Electrons**

- Changes the \_\_\_\_\_, creating an \_\_\_\_\_.

- If an atom \_\_\_\_\_ it becomes \_\_\_\_\_ and is called a \_\_\_\_\_.

- If an atom \_\_\_\_\_ it becomes \_\_\_\_\_ and is called an \_\_\_\_\_.

## ISOTOPES

- Are atoms of the \_\_\_\_\_ element that have \_\_\_\_\_ masses due to varying numbers of \_\_\_\_\_.

- **Atomic Mass**

- Is the \_\_\_\_\_ average of all the naturally occurring \_\_\_\_\_ of that element.

- **Calculating Atomic Mass (Example Below)**

Isotope	Symbol	Composition of the nucleus	% in nature
Copper-63.00	$^{63}\text{Cu}$	29 protons 34 neutrons	69.20%
Copper-65.00	$^{65}\text{Cu}$	29 protons 36 neutrons	30.80%

- **Step 1:**

- **Step 2:**

- **Practice**

- Calculate the atomic mass of bromine. The two isotopes of bromine have atomic masses and relative abundances of 78.92 amu (50.69%) and 80.92 amu (49.31%).