Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_ NOTES

**Chemistry Notes: The Periodic Table**

|  |  |
| --- | --- |
| **Every element has its own unique symbol.** | * For some elements the symbol is simply the \_\_\_\_\_\_\_ letter of the element’s \_\_\_\_\_\_\_\_.
	+ Examples: Hydrogen = \_\_\_\_\_\_, Sulfur = \_\_\_\_\_\_, Carbon = \_\_\_\_\_\_
* Symbols for other elements use the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plus one other \_\_\_\_\_\_\_\_\_\_\_\_ of the element’s name. The first letter is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ letter is not.
	+ Examples: Aluminum = \_\_\_\_\_\_, Platinum = \_\_\_\_\_\_, cadmium = \_\_\_\_\_\_
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of some symbols are not as obvious. Some elements have symbols that refer to the element’s name in \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ Examples: gold = \_\_\_\_\_\_, lead = \_\_\_\_\_\_, copper = \_\_\_\_\_\_
 |
| **Who is the “Father of the Periodic Table?”**  | * Mendeleev was the first scientist to notice the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Arranged his periodic table by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Said properties of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ elements could be predicted by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of elements around the missing element
	+ Predicted \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Al)
* It was later discovered that the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nature of the elements was associated with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, not atomic mass
	+ Periodic means \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| **What is the Periodic Table?** | * Column (up and down)= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_ columns on the Periodic Table
* Row (side to side)= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_ rows on the Periodic Table
 |
| **What does the information in the box tell me?** | Atomic Number = # of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Elemental \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Atomic \_\_\_\_\_\_\_\_\_ = ­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the atom 1H1.008\*if you \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, you get Atomic mass \_\_\_\_\_\_\_\_ (# of protons plus \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) |
| **Types of Elements: What are Metals?**  | * On the \_\_\_\_\_\_\_\_\_\_ side of the periodic table
* Properties:
	+ Good conductors of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in appearance (metallic!)
	+ Malleable: able to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or re-shaped
	+ Ductile: able to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into wire or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ very thin (think: Aluminum foil)
	+ These are general properties; individual properties of metals will \_\_\_\_\_ Some will be better \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than others!
 |
| **Types of Elements: What are Nonmetals?**  | * Elements on the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ side of the periodic table.
* Properties are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ those of metals.
	+ Usually \_\_\_\_\_\_\_\_\_\_\_ conductors of heat and electricity
	+ \_\_\_\_\_\_\_\_ shiny, malleable, or ductile
* Most are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| **Types of Elements: What are Metalloids?**  | * Found \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the “stair-step line” (see next slide)
* Have properties of both \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Most common metalloid is \_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ most common element in the Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
 |
| **Where are Metals, Non-Metals, and Metalloids on the Periodic Table?**  | * blank periodic table with metalloid line.bmpOnly \_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the left (metal) side
* Metals are to the \_\_\_\_\_\_\_\_\_\_ of the stair- step
 | * Nonmetals are on the \_\_\_\_\_\_\_\_\_\_\_ of the stair-step
* Metalloids \_\_\_\_\_\_\_\_\_ the stair-step
 |
| **What are Valence Electrons and Reactivity?** | * Valence electrons are the electrons \_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the nucleus. Atoms have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ numbers of valence electrons.
* Reactivity: how likely an atom is to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (react) with other atoms. Some elements are \_\_\_\_\_\_\_\_\_ reactive, while others almost \_\_\_\_\_\_\_\_\_\_\_\_ react.
 |
| **What are the groups/families on the Periodic Table?** | * Elements on the periodic table can be grouped into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (or groups) based on their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ properties.
	+ We call them “families” because the elements in each family are “\_\_\_\_\_\_\_\_\_\_\_\_.”
* Each family has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to differentiate it from the other families in the periodic table.
* Elements in each family\_\_\_\_\_\_\_\_\_\_\_\_ differently with other elements.
 |
| **Group 1: the Alkali Metals** | * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is NOT part of this family!!!
* Most \_\_\_\_\_\_\_\_\_\_\_\_\_ metals on the PT
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: how likely an atom is to interact with other atoms
* Rarely found \_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) in nature
* Form \_\_\_\_\_\_\_\_\_ with a charge of \_\_\_\_\_\_, have 1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Soft and \_\_\_\_\_\_\_\_\_\_\_\_\_\_, shiny
* *Very* reactive, esp. with \_\_\_\_\_\_\_\_\_\_\_\_\_
* Conduct\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| **Group 2: the Alkaline Earth Metals** | * Still quite \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Form ions with a charge of \_\_\_\_\_\_\_\_, have \_\_\_\_\_\_ valence electrons
* White, silvery, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Conduct \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| **Groups 3-12: Transition Metals** | * Found \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in nature
* Form ions with a charge of usually \_\_\_\_\_\_\_ but varies—usually \_\_\_\_\_\_\_ valence electrons
* Almost all are \_\_\_\_\_\_\_\_\_ at room temp (except \_\_\_\_\_\_\_\_\_\_\_\_\_, Hg, is a \_\_\_\_\_\_\_\_\_\_\_)
* Good \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of heat and electricity.
 |
| **Group 13: Boron Family** | * + Named after the \_\_\_\_\_\_\_\_\_\_\_\_ element in the group (at the \_\_\_\_\_\_\_\_ of the column), \_\_\_\_\_\_\_\_\_\_\_\_
	+ Form ions with a charge of \_\_\_\_\_\_, have \_\_\_\_\_\_ valence electrons
 |
| **Group 14: The Carbon Family** | * Contains elements that can form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonds (\_\_\_\_\_\_\_\_\_\_\_\_ and silicon)
* Form ions with a charge of \_\_\_\_\_\_ or \_\_\_\_\_\_, have \_\_\_\_\_\_ valence electrons
 |
| **Group 15: the Nitrogen Family** | * + Form ions with a charge of \_\_\_\_\_\_\_, have ­­­­\_\_\_\_\_\_\_ valence electrons
 |
| **Group 16: The Oxygen Family** | * Also known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Form ions with a charge of \_\_\_\_\_\_, have \_\_\_\_\_\_\_ valence electrons
 |
| **Group 17: the Halogens** | * Most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Form ions with a charge of \_\_\_\_\_\_, have \_\_\_\_\_\_\_ valence electrons
 |
| **Group 18: The Noble Gases (Inert Gases)** | * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Do not form \_\_\_\_\_\_\_\_\_\_\_! Charge is ­­­­­\_\_\_\_\_, have either \_\_\_\_ or \_\_\_\_valence electrons
* All are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| **Rare Earth Metals** | * Some are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The rare earths are silver, silvery-white, or gray \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Conduct \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Called: Lanthanides and Actinides
 |
| **What are some trends in the periodic table?**  | * Atomic size \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as you move from left to right across the table. Atomic size \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as you move from top to bottom of the table.
* The density of an element \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from top to bottom. The element \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ has the highest known density.
* The most reactive elements are groups \_\_\_\_\_\_ and \_\_\_\_\_\_\_. The least reactive elements are in group \_\_\_\_\_\_\_\_\_.
 |