**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_**

**Chapter 4 Guided Notes (Continued)**

**The Periodic Table**



**The Periodic Table**

* Purpose: allows us to have an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ way of viewing \_\_\_\_\_\_\_\_\_\_\_\_\_
* Knowing the \_\_\_\_\_\_\_\_\_\_\_\_\_ of the periodic table gives us insight to elements’ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Who?
	+ Dmitri \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, a Russian chemist. Created the periodic table where elements were arranged by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Predicted that elements that were not yet \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Henry G.J. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, English scientist. Fixed problems with old period table when he arranged elements by increasing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Periodic law states that when elements are arranged in this way, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in their properties will occur in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pattern
* Columns and rows
	+ A \_\_\_\_\_\_\_\_\_\_= a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the periodic table
	+ A \_\_\_\_\_\_\_\_\_\_=a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_on the periodic table
* Groups
	+ Vertical \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are called groups
	+ Each group contains elements have similar characteristics
	+ They also have the same number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Periods
	+ Horizontal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are called periods
	+ Each period contains elements which have the same number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ containing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



* Regions of the periodic table
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Metals
	+ There are \_\_\_\_\_\_\_\_\_\_\_\_ metals on the period table
	+ They are the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of element on the table
	+ Are usually \_\_\_\_\_\_\_\_\_\_\_\_\_\_, with the exception of Hg, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Are \_\_\_\_\_\_\_\_\_\_\_ and good \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of heat
	+ Metals are broken into 5 categories:
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Alkali Metals:
		- Are in Group \_\_\_\_\_\_\_\_\_\_\_\_
		- Very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Only have \_\_\_\_\_\_\_\_\_\_ valance electron
		- Occur as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in nature
	+ Alkali Earth Metals:
		- Are in group \_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Somewhat reactive
		- Have \_\_\_\_\_\_\_\_\_ valence electrons
		- Occur as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in nature
	+ Transition Elements
		- In groups \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Occur as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in nature
		- Most can be \_\_\_\_\_\_\_\_\_\_\_\_\_ and shaped into flat sheets or wires (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
		- Most are good conductors of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
			* Ex: wires
	+ Actinides
		- In period \_\_\_\_\_\_\_\_\_\_, consisting of elements of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Most are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(synthetic)
		- Produced to help scientists, even diagnose cancer
* Nonmetals
	+ Mostly on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ side of the periodic table
		- Exception:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Are \_\_\_\_\_\_\_\_\_ shiny and \_\_\_\_\_\_\_\_\_\_\_ good conductors of \_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ exist within the nonmetals
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Noble Gases
		- Group \_\_\_\_\_\_\_\_\_\_\_\_\_
		- Very \_\_\_\_\_\_\_\_\_, thus not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Has \_\_\_\_\_\_\_\_\_\_\_ valence electrons
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_at room temperature
		- Will \_\_\_\_\_\_\_\_\_\_\_\_ bond with other elements
	+ Halogens
		- Group \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Fairly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Have \_\_\_\_\_\_\_\_\_\_\_\_ valence electrons
		- Most are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Semiconductors (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
	+ The metals that border the line between metals and nonmetals
	+ Only 6-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ They are able to conduct \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ under certain conditions
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is most familiar semiconductor, makes up \_\_\_\_\_\_\_\_ of the Earth’s crust; component of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Periodic Table Trends***

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Increases to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Draw Arrows below:

* + Which atom has a larger radius
		- Be or Ba: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Ca or Br: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Valence Electrons**
	+ Group # (column)= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(Except \_\_\_\_)
		- Families have similar properties and reactivities
	+ Period # (row)= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Fill in # valence electrons and row number

**The Mole**

* An SI Unit
* A counting unit, like a dozen
* The amount of substance that contains as many particles as there are atoms in \_\_\_\_\_\_\_ of Carbon-12
* The number of particles (\_\_\_\_\_\_\_\_\_\_\_\_) in a mole=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The mole can also be said to be the amount of substance that contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of particles
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the mass of one \_\_\_\_\_\_\_\_\_\_\_\_\_ of a substance
	+ Written in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Molar mass is the same as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is used as a conversion factor



* Example #1: What is the mass in grams of 3.50 moles of Copper?
* Example #2: A chemist produces 11.9 g of Al, How many moles of Al are produced?
* Example #3: How many moles of Ag are in 3.01 x 1023 atoms of Ag?
* Example #4: What is the mass in grams of 1.20 x 108 atoms of Cu?