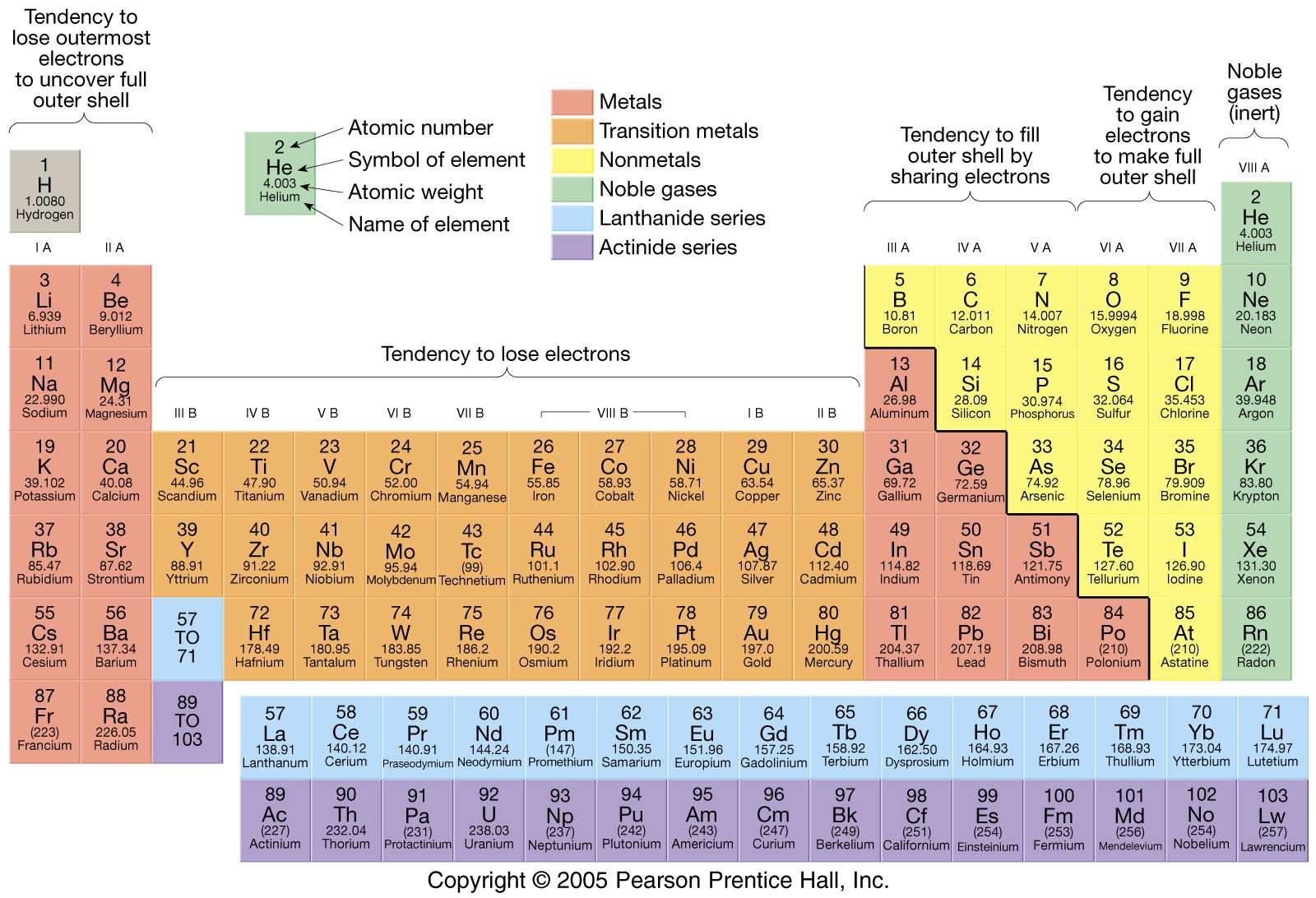
**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_**

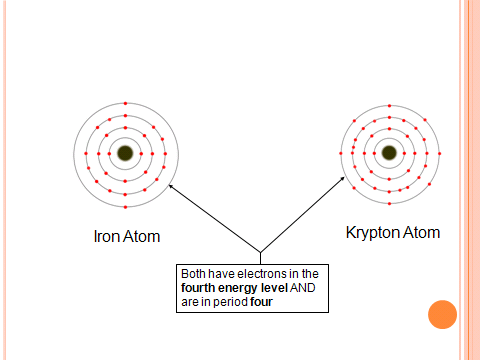
**Chapter 4 Guided Notes (Continued)**

**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?