Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**PERIODIC TABLE** PowerPoint NOTES

Organizing the Elements

* + In the late 1800s, Dmitri \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, a Russian chemist, searched for a way to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the elements.
  + He arranged the elements into \_\_\_\_\_\_\_\_\_\_\_\_\_in order of increasing \_\_\_\_\_\_\_\_\_\_\_\_\_so that elements with similar \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-were in the same column.

Mendeleev’s Predictions

* + From this information, he was able to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the properties and the mass numbers of \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that had not yet been discovered.

Improvements to the Periodic Table

* + Mendeleev’s table 🡪 mass gradually \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from left to right.
  + Modern Periodic Table 🡪 you see that the mass decreases in some places, such as cobalt and nickel.

The Modern Periodic Table

* + In the modern periodic table, elements are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ arranged by increasing atomic number (or the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_).

**Periods**

* Each \_\_\_\_\_\_\_\_\_\_\_\_\_ in the table of elements is considered a **Period**.

**Groups**

* Each \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (vertical) on the periodic table is called a **group.**
* Elements in each group have similar \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Elements in a group have similar \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ configurations which determines an elements chemical properties
  + This pattern of repeating properties is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_.

Atomic Mass

* Atomic mass is a value that depends on the distributions of an element’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in nature and the masses of those isotopes.
  + unit of measurement used for atomic particles is the atomic mass unit (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_).
  + mass of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is almost equal to 1 amu.

Classes of Elements

* There are three different ways to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_elements on the periodic table.
  + Metals, Metalloids and Nonmetals

**Metals**

* Majority of elements on the periodic table are classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Metals are elements that are good \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of electric current and heat.
* Some metals are extremely \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_while others are not.
  + **Transition Metals** (# 3-12)– elements that form a bridge between elements on the left and right sides of the table.

**Nonmetals**

* Properties \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to those of metals
* Nonmetals are elements that are \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of heat and electric current.
* Usually have \_\_\_\_\_\_\_\_\_\_\_\_\_\_boiling points and are usually \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at room temperature.

**Metalloids**

* Metalloids are elements with properties \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ those of metals and nonmetals.
* A metalloids ability to conduct electricity and heat varies based upon the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Moving across a Period

* As you move across a period, from left to right, the elements become \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_metallic and more\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with their properties.
* They also become less \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as we move across a period (group 8A being the least reactive group on the periodic table)

**Representative Groups**

* Groups are determined based upon each element’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ configuration.
* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electron – electrons in the highest occupied energy level of an atom
* Elements in a group have similar properties because they have the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**The Alkali Metals**

* Group\_\_\_\_\_\_\_\_\_\_\_ are called Alkali Metals.
  + Lithium, Sodium, Potassium, Rubidium, Cesium, Francium
* The reactivity of alkali metals increases from the top of Group 1A to the bottom

**The Alkaline Earth Metals**

* The elements in group \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are called alkaline earth metals.
  + Beryllium, Magnesium, Calcium, Strontium, Barium, Radium
* Differences in reactivity among the alkaline earth metals are shown by the ways they react with water.

**BCNO Families**

* The Boron Family – boron, aluminum, gallium, indium, thallium
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the most abundant metal in Earth’s crust
* The Carbon Family – carbon, silicon, germanium, tin, lead
  + Except for water, most of the compounds in your body contain \_\_\_\_\_\_\_\_\_. Ex: Carbon Dioxide
* The Nitrogen Family – nitrogen, phosphorous, arsenic, antimony, bismuth
  + Besides nitrogen, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ often contain phosphorous.
* The Oxygen Family- oxygen, sulfur, selenium, tellurium, polonium.
  + Oxygen is the most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ element in Earth’s crust.

**Halogens**

* The group \_\_\_\_\_\_\_\_\_\_\_\_ are called Halogens.
  + Fluorine, Chlorine, Bromine, Iodine, Astatine
* Despite their physical differences, halogens share similar chemical properties.

**The Noble Gases**

* The elements in Group \_\_\_\_\_\_\_\_\_\_\_are called noble gases.
  + Helium, Neon, Argon, Krypton, Xenon, Radon
* The noble gases are colorless, odorless and extremely \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.