**2.1 Elements**

* Why are elements studied in chemistry?
	+ Chemistry is the study of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ Elements make up an incredible variety of different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ By studying elements, we can learn more about the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* An element is a pure substance that cannot be broken down or separated into simpler substances. Each element is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Chemical Symbols.**

* Element names and symbols
	+ Because elements have different names in different languages, chemists use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for them.
	+ Chemical symbols consist of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are used as the source of many of the symbols.
		- Example: Mercury - **Hg** - **H**ydra**g**yrum (*Latin for liquid silver)*
* All elements are represented by \_\_\_\_\_\_\_\_\_\_.



**Common Elements.**

* Hydrogen
	+ Colourless, odourless, tasteless, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gas.
	+ Makes up over \_\_\_\_ percent of the atoms in the universe
	+ Used in producing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ Lighter than \_\_\_\_\_\_\_.
	+ Can be separated from water or gasoline and be used as a source of \_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Mixed with carbon to make \_\_\_\_\_\_\_\_\_.
	+ Good structural material, but can \_\_\_\_\_\_\_\_\_ when mixed with water.
* \_\_\_\_\_\_\_\_\_\_\_\_
	+ Gaseous element we \_\_\_\_\_\_\_\_\_\_.
	+ \_\_\_\_\_ % of the atmosphere.
	+ Reacts with most other \_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_
	+ soft metal that reacts with water
* \_\_\_\_\_\_\_\_\_\_\_\_\_
	+ yellow-green gas that is highly toxic
* \_\_\_\_\_\_\_\_\_\_\_\_\_
	+ liquid at room temperature metal.
* \_\_\_\_\_\_\_\_\_\_\_\_\_
	+ precious metal mined in British Columbia
* \_\_\_\_\_\_\_\_\_\_\_\_\_
	+ brittle, grey, semiconductor that is second most common element in Earth’s crust.

**2.2 Periodic Table.**

* Origin of The Periodic Table
	+ Chemists in the 10th century wished to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ ****Attempts focused on grouping elements with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ In 1867, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ found patterns in the elements and organized them into a table.
	+ The resulting table had holes for elements not yet \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Periodic Table.**

* The Periodic Table provides information on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of elements.

**Atomic Mass** - mass of average atom

**Atomic Number** - number of protons

**Ion Charge** - electric charge that forms when an atom gains or loses electrons



**Metals, Non-metals, Metalloids.**

**Periods and Families.**

* Each horizontal row in the periodic table is a **\_\_\_\_\_\_\_\_\_\_.**
* Vertical columns form \_\_\_\_\_\_\_\_\_ or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**



* **Alkali metals** - highly reactive group 1
* **Alkaline earth metals** - group 2, burn in air if heated
* **Halogens** - group 17, highly reactive non-metals
* **Noble gases** - group 18, stable and unreactive

non-metals

**2.3 Periodic Table and Atomic Theory.**

**Bohr Model.**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ show electron

 arrangement in shells.

* Elements with similar properties have similar \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Chemical families on the periodic table have the same number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Bohr Model Patterns.**

* Elements in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ indicates the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



**Atom Stability.**

* Noble gases are very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because their

have filled \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* Filled shells make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Atoms with filled shells do not easily trade or share \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Other atoms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in order to achieve the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of noble gases. Gaining or losing electrons makes atoms into \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_lose electrons to form \_\_\_\_\_\_\_\_\_\_\_\_\_ ions.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gain electrons to form \_\_\_\_\_\_\_\_\_\_\_\_\_ ions.
* Ions have a similar electron arrangement to the nearest \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.