Name: Date:

**Chemistry: Elements**

**Text pages**: *pgs 42 to 47 (Section 2.1)*

**Purpose:** To learn about elements and their chemical symbols.

* **Elements:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ about \_\_\_\_\_ occur naturally and are listed on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_

**Chemical symbol**s

* Names are based on different languages such as \_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* **Chemical symbol**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
	+ represented by one or two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- If only one letter, it is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
		- If two letters, the first is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and the second is \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_.

**A tour of some common elements**

* Elements have a variety of physical and chemical properties.
* **Physical properties**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ex. \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* **Chemical properties**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ ex**. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* Most elements are metals, some are non-metals, a few are metalloids.
	+ **Metals**: elements that are typically \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of heat and electricity.
		- Usually \_\_\_\_\_\_\_\_\_\_\_ at room temperature.
		- Examples: **iron, sodium, mercury, silver**
	+ **Non-metals**: elements that are typically not \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and that are \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of heat and electricity.
		- Usually \_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ at room temperature.
		- Examples: **hydrogen, oxygen, chlorine**
	+ **Metalloids**: elements that share some properties with **\_\_\_\_\_\_\_\_\_\_** and some properties with **\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_**
		- Example: **silicon**

Name: Date:

**Chemistry: The Periodic Table & Chemical Properties**

* **Text pages**: *pgs 52 to 59 (Section 2.2)*
* **Purpose:** To learn about elements and their chemical symbols.

# ORIGIN OF THE PERIODIC TABLE

Chemists in the 19th century wished to \_\_\_\_\_\_\_\_\_\_\_\_ elements. Attempts focused on grouping elements with similar \_\_\_\_\_\_\_\_\_\_\_\_\_. In 1867, \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, a Russian chemist, found \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the elements and organized them into a \_\_\_\_\_\_\_\_\_\_ according to their\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_. The resulting table had holes for elements not yet \_\_\_\_\_\_\_\_\_\_\_\_\_\_. In 1913, \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ reorganized the periodic table according to increasing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



* The Periodic Table gives the following 5 pieces of information for each element:
	1. **\_\_\_\_\_\_\_\_\_\_\_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* 1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
	2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **ion**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ - **negative ion**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
			* What group forms negative ions and how? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + - **positive ion**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
			* What group forms negative ions and how? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| Ex. OxygenATOM ION\_\_\_\_ p+ \_\_\_ p+\_\_\_\_ e- \_\_\_\_e- | Ex. SodiumATOM ION\_\_\_\_ p+ \_\_\_ p+\_\_\_\_ e- \_\_\_\_e- |

* **multiple ion charge**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

their most common ion charge is the \_\_\_\_\_ one on the periodic table.

Ex. Copper

**Metals, Non-metals and Metalloids**

* Elements form \_\_\_\_ groups on the periodic table:
	+ - * 1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (left side)
				2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (all on the right except H)
				3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (diagonal line like a stair case toward the right side)
				+ 8 elements: B, Si, Ge, As, Sb, Te, Po, At

**Periods and Families**

* **period**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

numbered from \_\_\_\_ to \_\_\_\_.

* **chemical family** or **group**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

elements in the same family have \_\_\_\_\_\_\_\_\_\_ physical and chemical properties.

numbered from \_\_\_\_ to \_\_\_\_\_.

Four well-known chemical families/groups:

1. **Alkali metals (Group 1):** (Li, Na, K, Rb, Cs, Fr)
* ion charge = \_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_ reactive metals
	+ - * + reactivity \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as you go down the column
* react with both \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_; can be cut with a knife

1. **Alkaline earth metals (Group 2):** (Be, Mg, Ca, Sr, Ba, Ra)
* ion charge = \_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_ reactive than alkali metals.
* will \_\_\_\_\_\_\_\_\_\_ in air if heated
* used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* react with \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Halogens (Group 17):** (F, Cl, Br, I, At)
* ion charge = \_\_\_\_\_\_\_
* \_\_\_\_\_\_-metals
* \_\_\_\_\_\_\_\_\_\_\_\_ reactive
	+ - * + reactivity \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as you go down the column
				+ F and Cl are \_\_\_\_\_\_\_\_\_\_\_ at room temperature, Br is \_\_\_\_\_\_\_\_\_\_ at room temperature and I is \_\_\_\_\_\_\_\_\_\_.

1. **Noble gases (Group 18):** (He, Ne, Ar, Kr, Xe, Rn)
* do not form ions, so ion charge = \_\_\_\_\_\_\_
* most \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ elements
* at room temperature, they are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gases.