**NOTES 2.1: Elements**

**Pure Substances**

**Chemical Symbols**

There are at least 118 elements. Of these, around 92 occur naturally. The symbols for most elements are derived from Latin or Greek words. (See Table 2.1, p. 44 in Text)

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| **Rules For Writing Chemical Symbols** |
| * Learning Target: write chemical symbols for atoms and ions |

1. Symbols for all elements have only one or two letters.
2. ***First*** letter is ***ALWAYS***
3. ***Second*** letter is ***ALWAYS***
4. The symbols are derived from the Latin or Greek words

i.e. Tin in Latin is **S**ta**n**num – its symbol is **\_\_\_\_\_\_\_\_\_**

Hydrogen’s symbol is **H** – derived from **\_\_\_\_\_\_\_** genes = water forming

Calcium’s symbol is **\_\_\_\_**–**Ca**lx = latin for limestone

1. Ions are created from the atoms of an element when electrons are lost or gained.

Calcium as an atom is written \_\_\_\_\_\_\_ but as an ion it is written \_\_\_\_\_\_

Chlorine as an atom is written \_\_\_\_\_\_\_ but as an ion it is written\_\_\_\_\_\_

Ion charges are listed on the periodic table of elements! Page 54.

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| **Groups of Elements** |
| * Learning Target: distinguish between metals, non-metals and metalloids |

*Refer to the tables on pages 22, 54 & 55 to list the properties of* ***metals****,* ***non-metals*** *and* ***metalloids****.*

**a) Metals** -List the physical properties terms that match the descriptions below

(i) (describe appearance)

(ii) (can be stretched into wires)

(iii) (can be beaten into sheets)

(iv) ( ability to transfer heat / electricity)

(v) Exist as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (state: solid/liquid/gas at room temperature)

Examples of metals \_\_\_\_\_\_\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Metals are located on the \_\_\_\_\_\_\_\_\_\_\_\_side of the periodic table. They form only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ions.

**b) Non-metals** (if given a choice, circle the correct response)

(i) (describe appearance)

(ii) Are or Are not Malleable and ductile (circle one)

(iii) Good or poor Conductivity (circle one)

(iv) Exist as\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (State: solid/liquid/gas at room temperature)

Examples of non-metals\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Non-metals are located on the \_\_\_\_\_\_\_\_\_\_\_\_side of the periodic table. They form only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ions.

**c) Metalloids** possess properties of both and Examples of metalloids: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Pair up and select 3 elements to observe from the elements tray. Return when complete.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Element Name** | **Symbol** | **State**  **(solid/liquid/gas)** | **Colour** | **Shiny or Dull?**  **(shiny/dull)** | **Malleable?**  **(Y/N)** | **Ductile?**  **(Y/N)** | **Metal or Non-metal?**  **(m/nm)** |
| Platinum | Pt | solid | silver | shiny | Y | Y | m |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

**Scavenger Hunt (Read text pages 45-47)**

1. I am found in all computers and I am the second most common element in the Earth’s crust:
2. I am one of the most common elements in the universe. I am found in all stars, including the Sun:
3. Although I can be used to make large ships, I will rust when exposed to water and oxygen:
4. I am the only metal that is liquid at room temperature. Don’t play with me though as I am toxic:
5. I am found in swimming pools and tap water. In gas form, I can be used as a weapon:
6. I am so soft I can be cut with a knife. Don’t get me anywhere near water as I will explode:
7. I am produced by plants and can be found in water. Life wouldn’t be the same without me:

***To Do:*** *Complete text questions p. 51, # 2-10*