**The National Orthodox School /Shmaisani**

**Subject: Science/ Chemistry**

**Name: Title: Chapter 8 Activity Booklet**

**Date: Grade-Section: 8CS**

**Objective**: To be able to describe an element by its atomic structure.

To be able to draw the atomic structure of the first twenty elements.

To describe patterns in the atomic structure of the first twenty elements.

To compare between atoms and ions.

**(Activity 1) Fill in the table below.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Element** | **Symbol** | **Atomic number** | **Atomic mass** | **Number of electrons** | **Number of protons** | **Number of neutrons** |
| **Potassium** | **K** | **19** | **39** | **19** | **19** | **20** |
| **Neon** | **Ne** | **10** | **20** | **10** | **10** | **10** |
| **Magnesium** | **Mg** | **12** | **24** | **12** | **12** | **12** |
| **Fluorine** | **F** | **9** | **19** | **9** | **9** | **10** |

**(Activity 2) Fill in the table below to show the atomic configuration, group number and period number of each element.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Atomic number** | **Atomic configuration** | **Group number** | **Period number** |
| **Beryllium** | **4** | **2,2** | **2** | **2** |
| **Argon** | **18** | **2,8,2** | **2** | **3** |
| **Florine** | **9** | **2,7** | **7** | **2** |
| **Sulfur** | **16** | **2,8,6** | **6** | **3** |

* **Elements are more stable when they have full outer shells (orbits).**
* **When an element loses or gains electrons, then it is an ION.**
* **An element has a positive ion when it loses electrons.**

**K19 2,8,8,1 it will lose will electron K+1 2,8,8**

* **An element has a negative ion when it gains electrons.**

**Cl17 2,8,7 it will gain an electron Cl-1 2,8,8**

**(Activity 3) Complete the table below, then answer the following questions.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Element** | **Atom** | | | **Ion** | | | |
|  | ***Atomic number*** | ***Number of protons*** | ***Number of electrons*** | ***Does it gain or lose electrons?*** | ***Number of protons*** | ***Number of electrons*** | ***Atomic charge*** |
| ***Ca*** | **20** | **20** | **20** | **Lose 2e** | **20** | **18** | **+2** |
| ***N*** | **7** | **7** | **7** | **Gain 3e** | **7** | **10** | **-3** |
| ***Ne*** | **10** | **10** | **10** | **Noble gases will not form ions** | | | |
| ***Mg*** | **12** | **12** | **12** | **Lose 2e** | **12** | **10** | **+2** |
| ***P*** | **15** | **15** | **15** | **Gain 3e** | **15** | **18** | **-3** |