**2.3 The Periodic Table** **and Atomic Theory**

 (Refer to pp. 64 – 71 of BC Science 9) Name:

 Date:

 Block:

**ReVIEW: How Atoms Become Ions**

* + - * + Atoms try to get to the level of stability of noble gases by \_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons.
* Atoms of metals lose e- to form \_\_\_\_\_\_\_\_\_\_\_\_ ions.
* Atoms of non-metals gain e- to form \_\_\_\_\_\_\_\_\_ ions.
* Ion charge shown on the symbol by a superscript number followed by a \_\_\_\_ or \_\_\_\_ sign.

Equal to the \_\_\_\_\_\_\_\_ of charges of its protons and electrons.

**BOHR MODEL DIAGRAMS**

* a diagram that shows how many \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are in each region (aka **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_**) surrounding the nucleus.
* Each shell can only hold a \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ of electrons.
* 

|  |  |
| --- | --- |
| **Shell #** | **# of electrons**  |
| **1st Shell** | 2 |
| **2nd Shell** | 8 |
| **3rd Shell** | 8 |
| **4th Shell**  | 18 |

Three ways that the Bohr model for a potassium atom can be drawn:



**Bohr model diagrams usually include:**

1. The element \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. The number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the nucleus.
3. The number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the nucleus.
4. The number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and where they are located (on which \_\_\_\_\_\_\_\_\_\_\_\_ they are located) around the nucleus.

**YOUR TURN!**

**Draw the following Bohr Model Diagrams**

|  |  |
| --- | --- |
| **Sodium** | **Fluorine** |
|  |  |

**PATTERNS IN THE PERIODIC TABLE**

1. Atomic numbers increase by \_\_\_\_\_.
2. Atomic \_\_\_\_\_\_ tends to increase along with the atomic number, with some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



4. Elements on the right side generally form?

Except for?

3. Elements on the left side generally form?

5. Elements in the same family have the same?

Except for?

\*\*Patterns occur as a result of regular changes in the \_\_\_\_\_\_\_\_\_\_\_\_ of the atoms of elements.\*\*

* Elements with similar properties line up in columns due to **similarities in the arrangement of their electrons.**

**Valence Electrons Patterns**

* The first shell is filled with \_\_\_ e- before the second shell is filled.
* The second shell is filled with \_\_\_ e- before the third is filled, and so on….
* The electrons in the \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ have the strongest influence on the properties of an atom.

called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Most elements in the \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ have the \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, with some exceptions for the transition metals.



Halogens

7 valence electron

Noble Gas

8 valence electron

Alkaline Earth Metals

2 valence electron

Alkali Metals

1 valence electron

Why are Noble Gases considered unreactive?

1. Elements in the \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ have valence electrons in the \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_.
	* Ex. Carbon and oxygen are both in period 2, so they both have valence electrons in the \_\_\_\_\_ shell.
2. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ indicates the \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_ \_\_\_\_\_\_\_\_\_ that have electrons.
	* Ex. Elements in period 2 have \_\_\_\_ electron shells.