Name: Date: Blk:

**Science 9:**

**Chapter 2 Study Guide**

**2.1: Elements**

1. Definitions:

*Physical Properties:*

*Chemical Properties:*

2. True or False Most elements are metals.

3. Fill in the chart below by either naming and/or describing the 7 properties/characteristics that **metals** have.

|  |  |
| --- | --- |
| **Property** | **Characteristics** |
| Lustre |  |
|  | Can be formed or shaped |
|  | Can be stretched into wire |
| Conductivity |  |
| State |  |
|  | Usually denser than non-metals |
| Reactivity |  |

4. Name at least 3 common metals and describe them using the chart above to help you.

(Iron, Sodium, Mercury, Silver)

1,

2.

3.

5. Using the chart above, explain how are **non-metals** different.

6. Pick three of the following non-metals and describe them using the properties and characteristics from above.

Hydrogen, Oxygen, Chlorine, Silicon

1,

2.

3.

**2.2: The Periodic Table**

1. Using the word bank below, label the diagram.

22 4+  
 3+

**Ti**

Titanium

47.9

**Word Bank**

Name

Symbol

Atomic Number

Atomic Mass

Common Ion Charge

2. Define **and** provide an example.

*Atomic Mass:*

*Atomic Number:*

*Ion Charge:*

*Period:*

*Chemical Family:*

*Alkali Earth Metals:*

*Alkaline Earth Metals:*

*Halogens:*

*Nobel Gases:*

3. Fill in the table below with the **either** the chemical symbol or the element name.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NAME** | **SYMBOL** |  | **NAME** | **SYMBOL** |
| Hydrogen |  |  | He |
|  | Ne | Oxygen |  |
| Nitrogen |  | Chlorine |  |
|  | F |  | Br |
|  | Hg | Lithium |  |
| Sodium |  |  | K |
| Rubidium |  | Beryllium |  |
|  | Cs |  | Mg |
| Strontium |  |  | Ca |
|  | Ba | Titanium |  |
|  | Mn | Chromium |  |
| Iron |  |  | Co |
| Copper |  |  | Ni |
|  | Zn | Silver |  |
| Tin |  | Gold |  |
|  | Pb |  | C |
|  | S |  | P |
| Iodine |  | ////////////////////////////// | |

4. On the periodic table attached, label, colour, outline the following; be sure to include a legend.

a) Alkali Earth Metals c) Halogens d) Metals

b) Alkaline Earth Metals d) Nobel Gases e) Non-metals

4. Fill in the chart below using the word bank and descriptions.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Properties of Metals, Non-Metals, and Metalloids** | | | | | |
|  | State at Room Temp. | Appearance | Conductivity | Malleability and ductility | Location on the Periodic Table |
| Metals |  |  |  |  |  |
| Metalloids |  |  |  |  |  |
| Non-Metals |  |  |  |  |  |

Put all of the characteristics in the appropriate box.

1. Solid (except mercury – liquid)
2. Solid
3. Gas or Liquid Gas (Bromine)
4. Shiny
5. Not very shiny
6. Can be either shiny or dull
7. Good conductors
8. Poor conductors
9. May conduct electricity, but not very good at conducting heat
10. Ductile and Malleable
11. Brittle, Not Ductile
12. Brittle, Not Ductile
13. Left
14. Right
15. Diagonal line between metals and non-metals

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

* Patterns in the periodic table occur as a result of regular changes in the structure of the atoms of elements.
* Elements line up in columns because they are similar in the arrangement of their electrons.

1. Who created the Atom Model Diagram that shows electrons orbiting the nucleus?

a) Rutherford  
 b) Bohr  
 c) Thompson  
 d) Dalton

2. How many electrons are allowed in each of the shells:

a) first shell:   
 b) second shell:   
 c) third shell:   
 d) fourth shell (or greater):

3. Draw the Bohr Model diagrams for the following elements:

|  |  |  |  |
| --- | --- | --- | --- |
| Li | O | Na | Ar |

4. How many electrons are there in the outer shell of a Sulphur (S) atom?

5. What is a valence electron:

6. What is the difference between an atom and an ion?

7. Draw the Bohr Model for **both** the atom **and** the ion:

*Lithium*

*Fluorine*

*Boron*

*Magnesium*

*Chlorine*

*Phosphorus*