Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Homeroom: \_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_

**Periodic Table Study Guide (SPI.9.9)**

**Part I: Periodic Table Basics (Groups, Periods, Atomic Number)**

1. The periodic table is arranged in order of increasing \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_.
2. What is an element’s atomic number equal to?
3. Why are elements put together in the same group or family?
4. What is a horizontal row on the periodic table called?

5. For the following elements, fill in the chart with their atomic number, group number, and period number.

|  |  |  |  |
| --- | --- | --- | --- |
| **Element** | **Atomic Number** | **Group #** | **Period #** |
| Calcium (Ca) |  |  |  |
| Silicon (Si) |  |  |  |
| Chromium (Cr) |  |  |  |
| Bromine (Br) |  |  |  |

**Part II: Comparing # of Protons, Neutrons, and Electrons of Elements**

1. How do you calculate the number of neutrons in an element?

2. Why is the number of electrons equal to the number of protons in a stable atom?

*Using the table to the left, answer questions 3-4*.

3. What is the atomic number of atom X?

4. What is the atomic mass of atom Z?

5. Fill in the table below with the appropriate missing information:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Atomic Number** | **# of protons** | **# of electrons** | **# of neutrons** |
|  | 29 |  |  |  |
| Boron |  |  |  |  |
|  |  | 13 |  |  |
|  |  |  | 9 |  |

**Part III: Metals, Non-Metals, and Metalloids**

1. Classify each of the following as a metal or nonmetal:

a) aluminum (Al)

b) iron (Fe)

c) oxygen (O)

d) carbon (C)

e) mercury (Hg)

2. Fill in the table with characteristics to describe metals and non-metals.

|  |  |  |
| --- | --- | --- |
|  | **METALS** | **NON-METALS** |
| Good conductors of heat and electricity? | No |  |
| Malleable? |  |  |
| Ductile? |  |  |
| Brittle? |  | Yes |
| Can they be a gas at room temperature? |  |  |
| Location in periodic table | Left |  |

3. What kinds of properties do metalloids have?

4. Fill in the table below with the appropriate missing information:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Chemical Symbol** | **# of protons** | **Metal, Non-metal, or metalloid?** | **# of neutrons** |
| Hydrogen | H |  |  |  |
| Carbon |  |  |  |  |
| Nitrogen |  |  |  |  |
| Iron | Fe |  |  |  |
|  | Cu |  |  |  |
|  | Ge |  |  |  |

5. Aluminum (Al) is used to make aluminum foil. What *property* of aluminum allows the aluminum foil to change its shape?

6. If the price of aluminum (Al) increased dramatically, or there was a worldwide shortage of aluminum, would it be possible to substitute magnesium (Mg) in the household objects like aluminum foil? Use evidence from the periodic table to help support your answer.

**Part IV: Trends in the Periodic Table**

1. The **atomic number** of elements in the periodic table (increases/decreases) as you move from right to left across a period and (increases/decreases) as you move from top to bottom down a group.
2. The **atomic mass** of elements in the periodic table (increases/decreases) as you move from right to left across a period and (increases/decreases) as you move from top to bottom down a group.
3. Place the following elements in order of decreasing atomic number.

Mg, Sr, Ca

4. Place the following elements in order of increasing atomic mass.

O, B, C

*For questions 6-9 below, circle the letter of the correct answer in the following multiple-choice questions.* ***Only use the periodic table above!***

6. Which of the following correctly places elements in order of decreasing atomic mass?

 a. He, O, F, C

 b. Xe, Ar, Ne, He

 c. Li, H, Na, K

 d. Co, Ni, Cu, Zn

7. Which of the following correctly places elements in order of increasing atomic number?

 a. He, Li, C, N

 b. O, N, C, B

 c. F, I, Br, Cl

 d. Al, Si, As, B

8. Which of the following elements has the most electrons?

 a. Mg

 b. Ca

 c. Be

 d. Sr

9. Which of the following elements has the most protons?

 a. H

 b. N

 c. Br

 d. He

**GOOD LUCK! STUDY TONIGHT! USE YOUR STUDY GUIDE TO YOUR ADVANTAGE!**