Honors Physical Science Name:

Periodic Trends WS 2021 Period:

**Objective 2:** Classify elements as metals, nonmetals, and metalloids based on their properties and position on the periodic table.  
**Objective 3**: Identify periods and families on the periodic table by name, common properties, and valence electrons.

**Multiple Choice**

*Identify the letter of the choice that best completes the statement or answers the question.*

\_\_\_\_ 1. Each row in the periodic table ends with a \_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | metal | c. | metalloid |
| b. | nonmetal | d. | noble gas |

\_\_\_\_ 2. In going from left to right in any given row in the periodic table, the size of atoms generally \_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | increases | c. | stays the same |
| b. | decreases | d. | changes randomly |

\_\_\_\_ 3. Compared to the neutral atom from which it is derived, a negative ion is \_\_\_\_\_.

|  |  |
| --- | --- |
| a. | always larger |
| b. | always smaller |
| c. | larger in some cases and smaller in others |
| d. | the same size |

\_\_\_\_ 4. A metallic ion is \_\_\_\_\_ its corresponding atom.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | larger than | c. | the same size as |
| b. | smaller than | d. | impossible to compare with |

\_\_\_\_ 5. Bromine is a typical nonmetal. A bromide ion is \_\_\_\_\_ a bromine atom.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | larger than | c. | the same size as |
| b. | smaller than | d. | impossible to compare with |

\_\_\_\_ 6. The most unreactive group of elements is the \_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | halogens | c. | alkali metals |
| b. | noble gases | d. | transition elements |

**Matching**

*Match each item with the correct statement below.*

|  |  |
| --- | --- |
| a. | alkali metal |
| b. | alkaline earth metal |
| c. | halogen |

\_\_\_\_ 7. Fluorine, bromine, or iodine

\_\_\_\_ 8. An element found in Group 1 of the periodic table

\_\_\_\_ 9. In compounds, has an oxidation number of 2+

\_\_\_\_ 10. Sodium or cesium

\_\_\_\_ 11. In compounds, has an oxidation number of 1-

\_\_\_\_ 12. An element found in Group 17

\_\_\_\_ 13. Magnesium or barium

\_\_\_\_ 14. In compounds, has an oxidation number of 1+

\_\_\_\_ 15. An element found in Group 2

\_\_\_\_ 16. Strontium, which is identified by the red color of fireworks

\_\_\_\_ 17. Astatine is the largest of this family

**Short Answer**

18. What property did Mendeleev use to put elements in the same column on his periodic table?

19. What do elements in the same period of the periodic table have in common?

20. What do elements in the same groups of the periodic table have in common?

21. Tell if each of the following elements in a metal, metalloid, or nonmetal.

Calcium Silicon Sulfur Bromine Chromium Arsenic Aluminum

22. List 3 properties of metals

23. List 3 properties of nonmetals

24. Complete the table below

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Element name | Group number | Metal, metalloid or nonmetal | Number of outer electrons | Charge of ion  (oxidation #) |
| Sodium |  |  |  |  |
| Calcium |  |  |  |  |
| Aluminum |  |  |  |  |
| Nitrogen |  |  |  |  |
| Sulfur |  |  |  |  |
| Fluorine |  |  |  |  |
| Neon |  |  |  |  |

25. Why do metals have less attraction for their outer electrons than nonmetals?

26. Tell which element atom is larger and why.

Magnesium and Phosphorus

Chlorine and Iodine

27. Why are positive ions smaller than the atoms they were created from?

28. Why are negative ions larger than the atoms they were created from?

COMPLETE THE FOLLOWING CHART

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Name | Symbol | # Protons | # Neutrons | # Electrons | Atomic Number | Mass Number |
| Carbon |  |  |  |  |  |  |
|  |  |  |  |  | 30 |  |
|  |  | 17 |  |  |  |  |
|  | Au |  |  |  |  |  |
|  |  |  |  |  |  | 4 |