Name: _____ **Unit 3 Review – Periodic Table**

Metals vs. Nonmetals

Metalloids have properties of metals and nonmetals. They touch the zigzag line on the periodic table between metals and nonmetals. Metals are found to the left of the zigzag and nonmetals to the right of the zigzag.
Metals lose electrons when they form bonds and nonmetals gain electrons.
You should know the properties of metals and nonmetals.

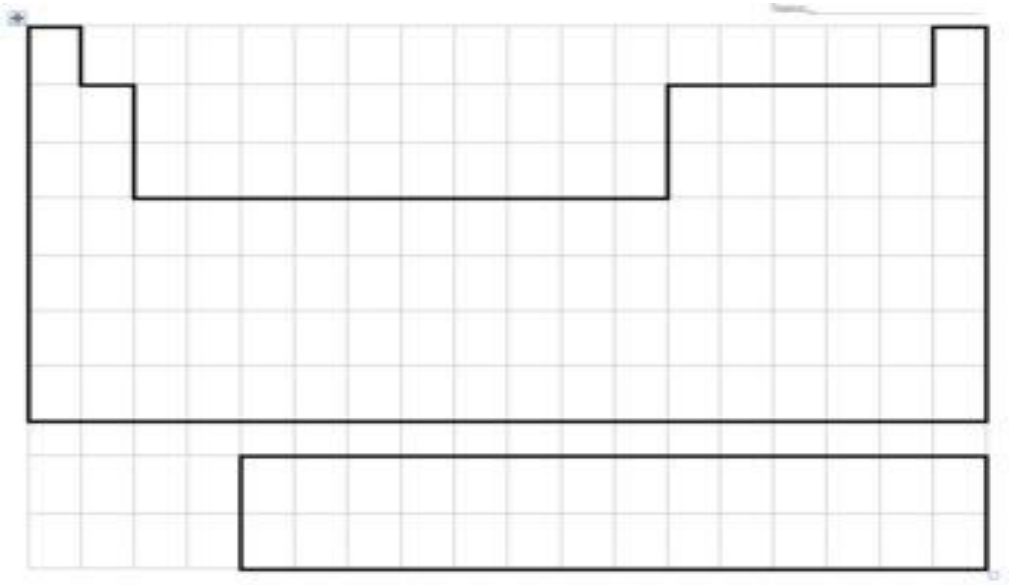
1. True or False: Calcium is a metal.
2. True or False: Chlorine is a metal.
3. True or False: Nonmetals tend to be brittle.
4. True or False: Silicon is an example of a metalloid.
5. True or False: Metals are good conductors of heat and electricity.
6. True or False: Metals tend to be malleable.

Rows/Periods

Periods are the horizontal rows on the periodic table. They indicate the number of energy levels an atom has.
Groups/Families are the vertical columns on the periodic table. Elements in the same group have similar properties. Their properties are similar because they have the same number of valence electrons.
Valence electrons are the electrons in the outermost energy level.
We can use the periodic table to predict the charge that an atom will take when it becomes a bond.
Recognize that electrons in an atom look like the electrons of the nearest noble gas when they become an ion.

7. Name the element in period 3, group 2. _____
8. Name the element in period 4 with the same properties as fluorine. _____
9. How many energy levels are in atom of phosphorus? _____
10. What will be the charge of magnesium when it becomes an ion? _____
11. What will be the charge of nitrogen when it becomes an ion? _____
12. What will be the charge of aluminum when it becomes an ion? _____

Some groups have special names. You should memorize these. Label the periodic table below with these areas!



13. Group 1 – Alkali Metals
14. Group 2 – Alkaline Earth Metals
15. Group 17 – Halogens
16. Group 18 – Noble Gases
17. D Block – Transition Metals
18. F Block – Inner Transition Metals
19. Stairstep – Metalloids
20. Left of Stairstep – Metals
21. Right of Stairstep – Nonmetals

Periodic Trends

Atomic Radius is the size of the atom. It increases going down and decreases going from left to right.
Electronegativity is the ability of an atom to pull electrons to itself in a bond. It decreases going down and increases from left to right. It does not include the noble gases.
Ionization Energy is the amount of energy required to remove an electron from an atom. It decreases going down and increases from left to right.
Cations (positive ions) are smaller than the original atom while anions (negative ions) are larger.

22. Circle the element with the higher ionization energy: boron carbon
23. Circle the element with the lower electronegativity: bromine chlorine
24. Circle the element with the larger atomic radius: sodium potassium
25. Circle the element with the higher electronegativity: lithium beryllium
26. Circle the element with the smallest atomic radius: nitrogen oxygen
27. Circle the larger particle: F F^{-1}
28. Circle the smaller particle: Na Na^{+1}
29. Circle the particle that would have the smallest IONIC radius: Na Rb S Br

Explain the trends present below. Why do these trends exist? Be concise and straightforward.