

Name _____ Date _____ Hour _____

Periodicity Worksheet

1. The modern Periodic Law states that the physical and chemical properties of the elements are periodic functions of their atomic number. This arrangement is attributed to Henry Moseley.

2. Each horizontal row of the periodic table is called a(n) period and each vertical column is called a(n) group or family.

3. Each period of the periodic table begins with a(n) Alkali Metal and ends with a(n) Noble Gas.

4. What is the major factor responsible for the chemical properties of an element?

of Valence electrons

5. Why do elements in a vertical column have similar chemical properties?

Same # of valence electrons

6. Why does the reactivity of the alkali metals increase with increasing atomic number?

↓ Radius ↑, so easier to lose valence e⁻

7. Why does the reactivity of the halogens decrease with increasing atomic number?

↓ Radius ↑, so harder to gain electron

8. As the atomic number increases across a period, the atomic radius decreases.

9. As the atomic number increases down a column in the periodic table, the atomic radius increases.

10. As sodium, a metal, becomes a positive ion, its radius decreases.

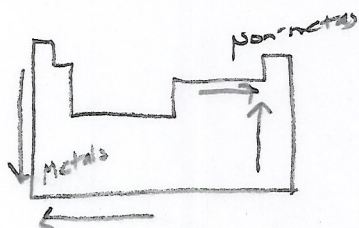
Na⁺

11. As a non-metal, such as fluorine, becomes an ion, its radius increases.

F⁻

12. What factor has the greater influence on atomic radius – nuclear charge OR the number of occupied energy levels?

13. In terms of chemical reactivity, differentiate among metals, non-metals and metalloids.



* Metals more reactive the bigger they are cuz easier to lose e⁻

* Non-metals more reactive the smaller they are cuz easier to gain e⁻

14. In each of the following pairs, select the one that would have the larger radius.

- a) O or S b) O or F c) O^{-2} or Cl^{-1}
d) Cl or Cl^{-} e) Na^{+} or F^{-}

15. Indicate the column numbers for the following:

- a) What family of elements reacts with O_2 to produce compounds with the general formula $\overset{+3}{M}_2\overset{-2}{O}_3$? III A
b) What family of elements reacts with Cl_2 to produce compounds with the general formula $\overset{+1}{M}Cl$? IA
c) What family of elements is given the name halogens? VII A
d) What family of elements is given the name alkali metals? IA
e) What family of elements reacts with H_2O to produce compounds with the general formula $\overset{+2}{M}(OH)_2$? IIA

16. Circle the most reactive in each group of three:

- a) Ca Al Si b) B Be Li c) Be Mg Ca
d) F Cl Br e) Li Na K f) K Ca Ga