

Name: Key _____ Period: _____ Date: _____

Chapter 5: Periodic Trends Test Review

Use the periodic table and your knowledge of periodic trends to answer the following questions.

- Which atom in each pair has the larger atomic radius?
a) Li or **K** b) **Ca** or Ni c) **Ga** or B d) O or **C** e) Cl or **Br**
f) Be or **Ba** g) **Si** or S h) Fe or **Au**
- What is the periodic trend for atomic size from top to bottom in a group? **increases**
from left to right in a period? **decreases**
- Why do atoms get smaller as you move left to right in a period? **Electrons experience increasing attraction to the nucleus due to successive adding of protons.**
- Which element in each pair has a larger ionization energy? (Which of the pair would require MORE energy to remove an electron?)
a) Na or **O** b) **Be** or Ba c) **Ar** or F d) **Cu** or Ra e) I or **Ne**
f) K or **V** g) **Ca** or Fr h) W or **Se**
- Explain the relationship between the relative size of an ion to its neutral atom and the charge on the ions. **Cations are smaller than their original atoms. Anions are larger than their original atoms.**
- Which particle has the larger radius in each atom/ion pair?
a) **Na**, Na⁺ b) S, **S²⁻** c) I, **I⁻** d) **Al**, Al³⁺
- What is ionization energy? What is first ionization energy? **Ionization energy is the energy required to remove an electron from an atom. First ionization energy is the energy required to remove the first electron from an atom.**
- What is the periodic trend for first ionization energy? **Ionization energy increases for successive electrons removed from an atom.**
- Arrange the following groups of elements in order of increasing ionization energy.
a) Be, Mg, Sr b) Bi, Cs, Ba c) Na, Al, S
Sr, Mg, Be **Cs, Bi, Ba** **Na, Al, S**
- Which element in each pair has a higher electronegativity value?
a) Cl, **F** b) C, **N** c) Mg, **Ca** d) **As**, Ca

11. What is the periodic trend for electronegativity? **Electronegativity increases from left to right and decreases from top to bottom.**
12. The principle that states that the physical and chemical properties of the elements are periodic functions of their atomic numbers is known as the periodic law.
13. Elements in the same (circle one-**period** or **group**) can be expected to have similar properties.
14. Mendeleev arranged the periodic table in order of increasing atomic mass.
15. Mendeleev predicted that blank spaces in his periodic table represented undiscovered elements.
16. Who arranged the periodic table according to increasing atomic number?
Moseley
17. Vertical columns on the periodic table are called groups or families.
18. Horizontal rows on the periodic table are called periods.
19. Group 17 is known as the halogens.
20. Elements on the periodic table with atomic numbers 58-71 are called the lanthanides.
21. An element whose noble gas configuration is $[\text{Ne}]3s^23p^1$ can be found in which period?
3 group? 13 Identify the element: aluminum.
22. Elements that border the stair-step or zigzag line on the periodic table are known as the metalloids.
23. The most characteristic property of noble gases is that they are (circle one- **mostly unreactive** or **mostly reactive**).
24. The energy required to remove an electron from an atom is the atom's ionization energy.

25. A measure of the ability of an atom in a compound to attract electrons is called
___**electronegativity**_____.
26. Group 1 metals are known as the _**alkali**_____ metals.
27. Group 2 metals are known as the _**alkaline**_____ _**earth**_____ metals.
28. Valence electrons are the electrons located in the (circle one-**lowest** or **highest**) energy level.