

1. Complete this table.

Symbol of Element	Atomic Number	Mass Number	Number of Protons	Number of Neutrons	Number of Electrons	Atom, Ion, or Isotope
	9			10	10	
			14	15	14	
		55	25		25	
Zn-64			30		30	
Sb ⁻³	51	122				
Hg		201	80			

2. Compare the relative size and relative density of an atom with its nucleus.

3. How many electrons are available for bonding in the following atoms?

- barium
- sodium
- aluminum
- oxygen
- germanium
- chlorine
- argon
- bismuth

4. Name the following groups: Group 1A, Group 2A, Group 7A, and Group 8A.

5. Where are the transition metals and inner transition metals?

7. What elements are considered semi-metals (metalloids)?

8. Write a general statement identifying the locations of metals, nonmetals, and metalloids?

9. Where on the periodic table would you find the elements with large atomic numbers and large atomic masses?

10. Explain why fluorine has a smaller atomic radius than oxygen and chlorine.

11. Indicate which element in each pair has the larger atomic radius.

- sodium, lithium
- strontium, magnesium
- carbon, germanium
- selenium, oxygen

12. Indicate which element in each pair has the greater first ionization energy.

- lithium, boron
- magnesium, strontium
- cesium, aluminum
- fluorine, chlorine

13. Explain why fluorine has the highest electronegativity of all the elements.

14. Indicate which element in each pair has the highest electronegativity.

- chlorine, bromine
- carbon, nitrogen
- magnesium, neon
- arsenic, calcium

15. Why don't we include noble gases in the trend for electronegativity?

16. Which atom/ion in each pair has the larger atomic radius?

- Na, Na⁺
- S, S⁻²
- I, I⁻
- Al, Al⁺³

17. Which of the following properties increases as you move from left to right across a period: electronegativity, ionization energy, atomic radius?