

True-False

Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

- _____ 1. In his periodic table, Mendeleev arranged the elements in ascending order of atomic number.
- _____ 2. The representative elements are the Group A elements.
- _____ 3. The outermost s or p sublevels are only partially filled for the representative elements
- _____ 4. The transition metals are the Group B elements.
- _____ 5. Chlorine has the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^7$.
- _____ 6. The element in Group 4A, period 3, is gallium.
- _____ 7. The radius of an atom cannot be measured directly.
- _____ 8. Removing one electron from an atom results in the formation of a positive ion with a 1 + charge.
9. For the following pairs of atoms, circle the one of each pair has the largest atomic radius.
- a. Al, B b. S, O c. Br, Cl d. Na, Al e. O, F
10. Circle the element in the following pairs has the greater ionization energy
- a. boron, carbon b. magnesium, calcium c. sulfur, oxygen d. sodium, silicon
11. Circle the element with the greatest electronegativity.
- a. sodium or magnesium b. carbon or aluminum
- c. calcium or strontium d. helium or lithium
12. Which element has:
- a. the lowest ionization energy b. the highest second ionization energy
- c. the highest electronegativity d. the highest ionization energy
13. Arrange the following elements in order of increasing electronegativity.
- a. gallium, aluminum, indium c. oxygen, fluorine, sulfur
- b- calcium, selenium, arsenic d. phosphorus, oxygen, germanium
14. Explain why a magnesium atom is smaller than atoms of both sodium and calcium.
15. Predict the size of the astatine atom compared with that of tellurium and explain why one is bigger.

16. Explain why the sulfide ion (S^{2-}) is larger than the chloride ion (Cl^-).
17. Name the element which matches the following description
- one which has 5 outer electrons on the third row of the periodic table
 - one with a $4s^2 4p^5$ electron configuration
 - the noble gas on the 5th row
 - the 4th period Group 6A element
18. Write the shorthand electron configuration for the following
- K
 - Cd
 - Po
19. List three ways that the modern periodic table is different from Mendeleev's .
20. What is the electron configuration like for each of these groups
- Alkali metals
 - Noble gases
 - Transition metals