

## Chemistry: The Periodic Table and Periodicity

Name: \_\_\_\_\_ Date: \_\_\_\_\_  
per: \_\_\_\_\_

- By what property did Mendeleev arrange the elements?
- By what property did Moseley suggest that the periodic table be arranged?
- What is the periodic law?
- What is a period? How many are there in the periodic table?
- What is a group (also called a family)? How many are there in the periodic table?
- State the number of valence electrons in an atom of:
  - sulfur
  - calcium
  - chlorine
  - arsenic
- Give the names and chemical symbols for the elements that correspond to these atomic numbers:
  - 10
  - 18
  - 36
  - 90
- List, by number, both the period and group of each of these elements.

Symbol	Period	Group
a. beryllium	Be	
b. iron	Fe	
c. lead	Pb	

  - Na and Cl
  - Na and Li
  - Na and Cu
  - Na and Ne
- Which of the following pairs of elements belong to the same period?
  - H and He
  - Li and Be
  - C and Pb
  - Ga and Ge
- Which of the following pairs of elements belong to the same group?
  - H and He
  - Li and Be
  - C and Pb
  - Ga and Ge
- What are the transition elements?
- In what type of orbitals are the actinide and lanthanide electrons found?
- Would you expect strontium to be, chemically, more similar to calcium or rubidium and why?
- What is the heaviest noble gas? What is the heaviest alkaline earth metal?
- What are the Group 1 elements called?
- What are the Group 2 elements called?
- What are the Group 17 elements called?
- What are the Group 18 elements called?
- What is the name given to the group of elements that have the following valence shell electron configurations?
  - $s^2$
  - $s^2p^6$
  - $s^2p^3$
  - $s^1$
- Why do all the members of a group have similar properties?
- What do we mean by the "atomic radius"?
- Within a group, what happens to the atomic radius as you go down the column?
- Explain your answer to Question 22: Why does the atomic radius change?
- Within a period, what happens to the atomic radius as the atomic number increases?
- Explain your answer to Question 24: Why does the atomic radius change?
- How are neutral atoms converted into cations? How are neutral atoms converted into anions?
- Metals usually form what type of ions? Nonmetals usually form what type of ions?
- What is ionization energy?
- What do we mean by the first, second, and third ionization energies for a particular atom?
- What is the general trend of ionization energy as you go from left to right across the periodic table?

31. What is the general trend of ionization energy as you go down a group on the periodic table?
32. When an atom becomes an anion, what happens to its radius?
33. When an atom becomes a cation, what happens to its radius?
34. Where, generally, are the metals located on the periodic table?
35. Where, generally, are the nonmetals located on the periodic table?
36. What is electronegativity?
37. List the following atoms in order of increasing electronegativity: O, Al, Ca
38. List the following atoms in order of decreasing electronegativity: Cl, K, Cu
39. What is the general trend of electronegativity as you go down the periodic table?
40. What is the general trend of electronegativity as you go left to right across the periodic table?

List properties of metals

List properties of nonmetals