

Elements and the Periodic Table

Study Guide: Chapters 12 and 16, *Conceptual Physical Science*, 4th edition

Objectives: When you finish this unit you should be able to:

- Divide substances into pure and mixtures and further subdivide into elements, compounds, heterogeneous and homogeneous. Recognize physical and chemical properties and changes.
- Summarize the early history of chemistry.
- List and discuss Dalton's atomic theory.
- Define the term element.
- Summarize the history of the periodic table.
- Know elements by period and by group (family). Know the names of special groups such as alkali metals, alkaline earth metals, transition metals, chalcogen, halogens and noble gases. Know the names of special periods such as the lanthanide and actinide series.
- Name elements by symbol (those * on the handout sheet).
- Divide the periodic table into metals, nonmetals, and metalloids. Describe each group.
- Identify the element or ion from the number of protons and electrons and vice versa.
- List the four parts of an electron's "address" and tell what each means.
- List the maximum number of electrons in any energy level or sublevel. Explain what the terms "s,p,d,f" mean.
- Write the spectroscopic electron configuration for any atom or ion, using only the periodic table as your guide.
- List and summarize trends in size, ionization energy, electronegativity, and reactivity seen in the Periodic Table.

Activities:

- Reread chapter 12 and read chapter 16 p. 381-387. Focus on objectives above as we summarize the material in these chapters.
- Lecture
- Worksheets
- ChemWeb activity on the Periodic Table (optional)
- Flame Test Lab