1.1

* Atoms are the smallest form of elements
  + All matter is made of atoms
  + Each element is made of a different atom
    - **Proton** – positively charged particle
    - **Neutron** – uncharged particle
    - **Nucleus** – the center of an atom, made of protons and neutrons
    - **Electrons** – negatively charged particles that move around outside the nucleus
  + **Atomic number** – the number of protons in the nucleus of an atom
  + **Atomic mass number** – total number of protons and neutrons in an atom’s nucleus
  + **Isotopes** – atoms of the same element that have a different number of neutrons
* Atoms form ions
  + **Ion** – formed when an atom gains or loses one or more electrons
    - **Positive ion** – loses an electron
    - **Negative ion** – gains an electron

1.2

* Elements make up the periodic table
  + Elements can be organized by similarities
    - **Atomic mass** – the average mass of all the element’s isotopes
    - **Periodic table** – shows a periodic, or repeating, pattern of properties of the elements
* The periodic table organizes the atoms of the elements by properties and atomic number
  + **Group** – elements in a column
  + **Period** – elements in a horizontal row

1.3

* The periodic table is a map of the elements
  + The periodic table has distinct regions
    - **Reactive** – indicates how likely an element is to undergo a chemical change
  + Most elements are metals
    - **Metal** – elements that conduct electricity and heat well and have a shiny appearance
      * Reactive metals
      * Transition metals
      * Rare earth elements
  + Nonmetals and metalloids have a wide range of properties
    - **Nonmetals** – properties opposite of metals
      * **Halogens** – group 17
      * **Noble Gases** – group 18
    - **Metalloids** – elements that have properties of both metals and nonmetals
  + Some atoms can change their identity
    - **Radioactivity** – the process by which atoms produce energy and particles
      * **Half-life** – the amount of time that it takes for one-half of the atoms in a particular sample to decay