

Unit 5 • What Do Atoms Look Like?

STUDY LIST

Parts of an Atom

I can...

- describe the nuclear model of the atom
- list the three parts of the atom, their masses, their charges, their locations, and whether they contribute to the mass or the volume of the atom
- describe the relative sizes of the electron, proton, neutron, atom, and nucleus (the 6-mile atom)
- identify an element's atomic mass, atomic number, and probable mass number of the most abundant isotope from the periodic table

Where the Electrons Live

I can...

- draw the atomic orbital diagram (up to level 7)
- place electrons correctly into the orbital diagram
- state the electron configuration for any atom.
- state the number of electrons an atom has available for bonding. (valence electrons)
- explain the difference between the energy and location of an electron.

The Periodic Table—Families

I can...

- identify metals, non-metals, and semi-metals on the periodic table and state properties of each group including conductivity (of heat and electricity), malleability, and ductility
- identify groups or families of the periodic table including hydrogen, alkali metals, alkaline earth metals, halogens, noble gases, and transition metals
- give examples of how elements gain or lose electrons to have the same number of electrons as a noble gas.
- give examples of how members of a family act similarly chemically including ions formed, compounds formed, and tendency to lose, gain, or maintain electrons (ideas from video)

The Periodic Table—Trends

I can...

- discuss the size of an atom in terms of the size of the electron cloud. Discuss the role played by electron-electron repulsions and electron-proton attractions on the size of the electron cloud.
- define and give an example of ionization energy. Relate atomic size to ionization energy
- define electronegativity and realize that it is a calculated value based on ionization energy and electron affinity
- state horizontal and vertical trends in atomic size and give a rationale for each trend
- describe and explain the change in size of an atom as it becomes a negative or positive ion