

## Earth Science: Ch. 3 Review – Atoms to Minerals

atom	atomic number	compound
covalent bond	crystal	crystalline
electron	energy levels (shells)	element
ion	ionic bond	isotope
mass number (atomic mass)	matter	metal
mineral	molecule	native mineral
neutron	nonmetal	proton
silica tetrahedron	silicate	nucleus (of the atom)

- What is matter? (Why do we use mass, rather than weight?)
- What is the structure of an atom?
- What are some differences between the particles that make up an atom -- their location in the atom, relative size, and charges (+/-)
- Given atomic number and atomic mass, be able to determine the number of protons, neutrons, and electrons for a given element
- What are the electron “energy levels”?
- What are the differences between elements, atoms, compounds, molecules, and mixtures?
- What are some examples of compounds mentioned in the book?
- What are isotopes?
- What are the isotopes of hydrogen (“heavy hydrogen”)?
- What are the five characteristics of minerals?
- What is a crystal? How can minerals be crystalline, but not crystals?
- Be prepared to identify some common examples and non-examples (pearl, glass, coal, ...) of minerals?
- What is a native mineral? What are some examples?
- How do the common minerals usually occur? (Are they usually elements or compounds?)
- What are ions?
- What’s the difference between metals and non-metals?
- What are noble gases? How do they differ from other elements?
- What are ionic and covalent bonds?
- What are silicate minerals? What is the chemical makeup of a silicon tetrahedron?
- What is the chemical makeup of salt? How does it form? What crystal shape does it have? What is its mineral name?
- What is the chemical composition of water? What happens to salt when it is put into water? What happens to the elements in a solution when the water evaporates?
- What are the two most common elements in earth’s crust?
- How does a mineral’s crystalline nature (the orderly arrangement of atoms) explain its physical properties (solid, hardness, cleavage, density)?
- How are diamond and graphite similar? How do they differ?
- What are four ways that minerals form?