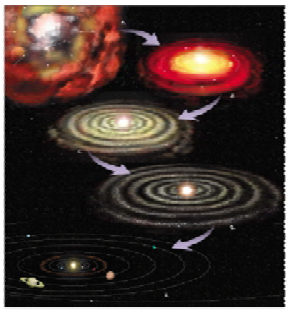
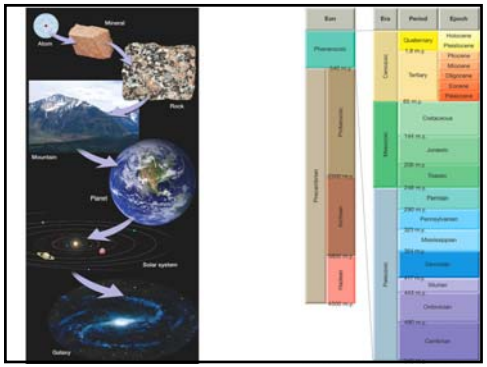
Earth Structure, Matter, Atoms, Chemistry

Solar system formed from nebular cloud



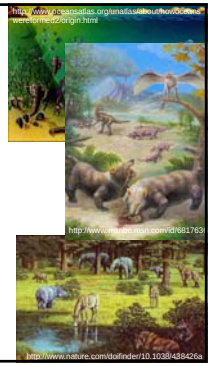


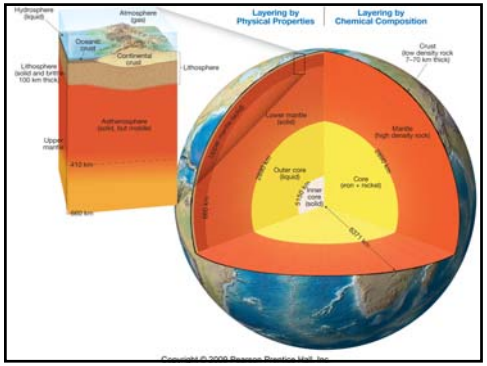
Three Eras of Life

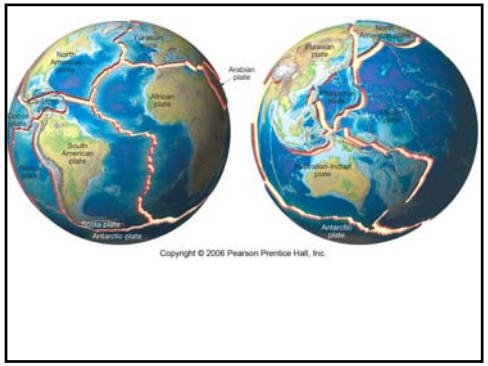
Paleozoic
- 540 to 248 million years ago
- Old life: trilobites, horn corals

Mesozoic
- 248 to 65 million years ago
- Middle life: dinosaurs

Cenozoic
- 65 million years ago to now
- New life: age of mammals







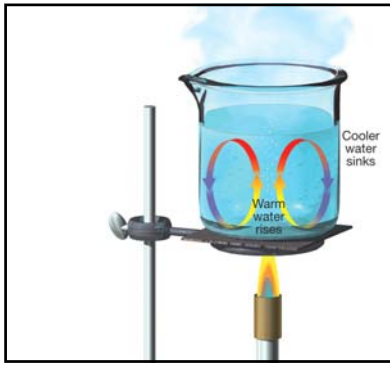
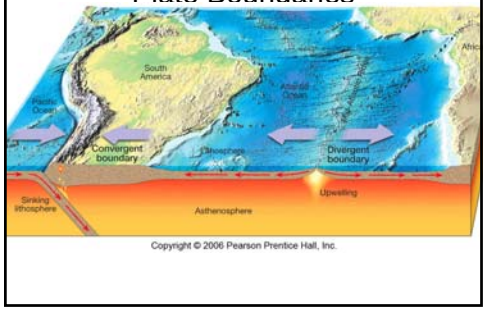
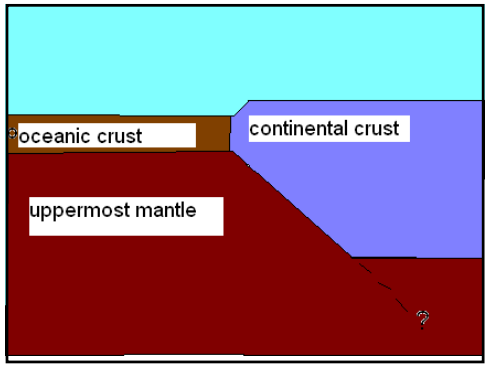
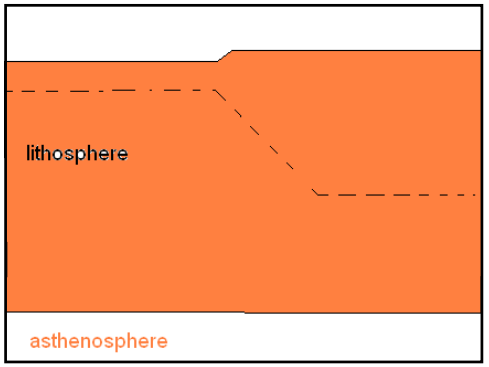
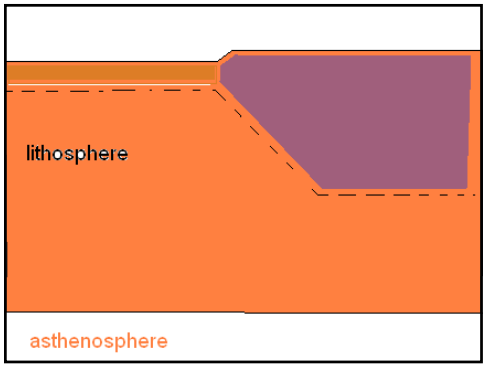


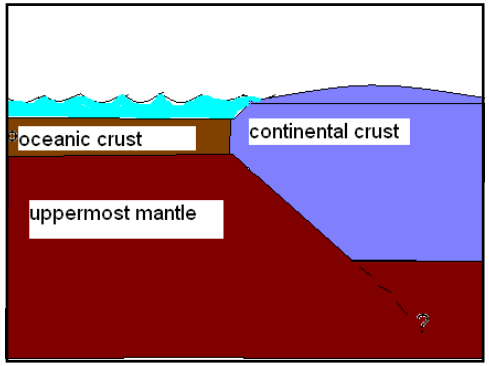
Plate Boundaries





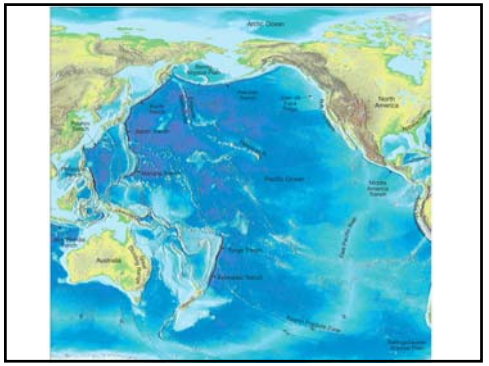


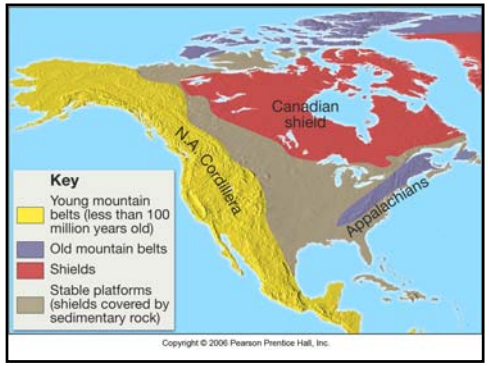


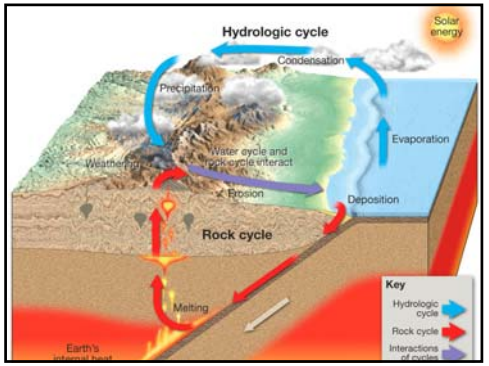


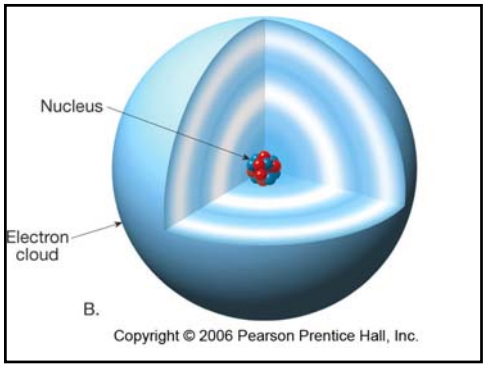
Continent-Ocean Division

- 71% of surface covered with ocean
- 40% of surface is 'continental' crust
- Not all of the continental surface is dry





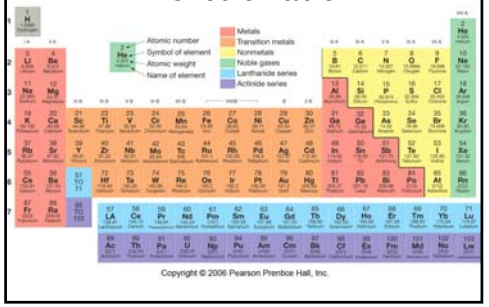




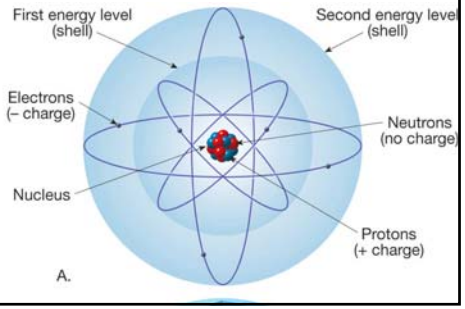
Atom components

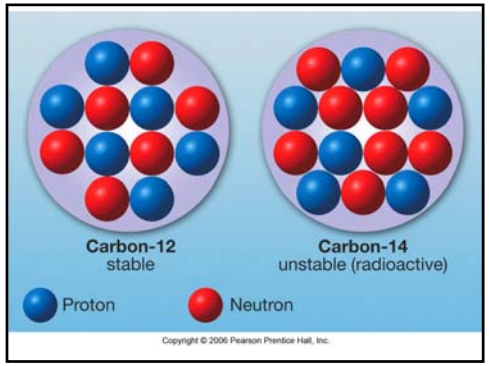
- New Cle Us
  - Too many people in important positions say it incorrectly—do not show your ignorance by doing the same!!
  - Contains protons (positive) and neutrons (neutral)
  - The mass of the atom
- Electron cloud
  - Arranged in energy levels
  - Electrons have negative charge

Periodic Table



Atom





Elements of the Crust

- Oxygen O 47%-
- Silicon Si 28%-
- Aluminum Al 8%+
- Iron Fe 5%
- Calcium Ca 4%-
- Sodium Na 3%-
- Potassium K 3%-
- Magnesium Mg 2%+

Chemical Symbols

- First letter is capitalized
- Second letter (if present) is **not** capitalized
- SN is a compound of sulfur and nitrogen
- Sn is the element Tin

- Far right: noble gases nonreactive
- 2nd on right: halogens extremely reactive
- 3rd on right: oxygen group—very reactive
- 2nd on left: alkaline earth metals—very reactive
- Far left: alkali metals extremely reactive

Electron Dot Diagrams for Some Representative Elements

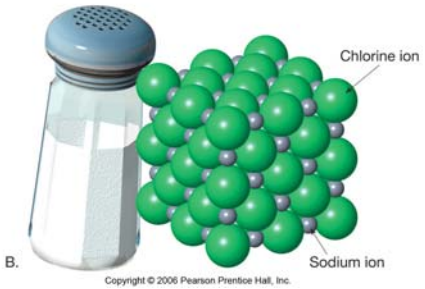
I	II	III	IV	V	VI	VII	VIII
H·							He:
Li·	·Be·	·B·	·C·	·N·	:O·	:F·	:Ne:
Na·	·Mg·	·Al·	·Si·	·P·	:S·	:Cl·	:Ar:
K·	·Ca·	·Ga·	·Ge·	·As·	:Se·	:Br·	:Kr:

- Valence Electrons for groups on periodic table

Ionic Bonds with Dot Diagram

A. $Na\cdot + \cdot\ddot{Cl}: \longrightarrow Na^+ : \ddot{Cl}:^-$

- Ions are not electrically neutral
- Ions are not like the atoms they are derived from

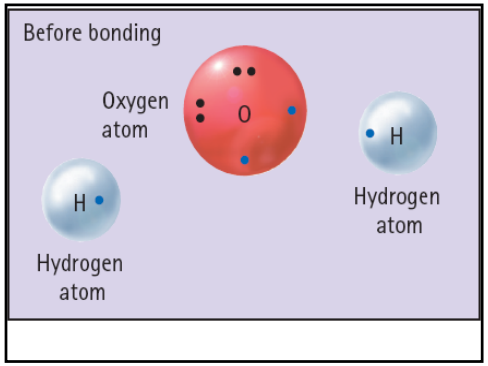


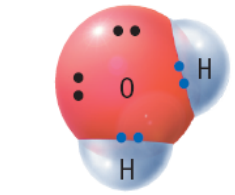
Covalent Bonds

- **Electrons are shared,**
  - **not donated as ions have done**
- **Unlike nonmetals form polar covalent molecules**
- Polar molecules have charged character

Water Molecule

- Two Hydrogen
- One Oxygen
- Share electrons—covalent bonds





Polar Water Molecule