**Radioactive Isotopes**

1. Have too many or too few neutrons
2. Nucleus attempts to attain a lower energy state by releasing extra energy as radiation.
	1. Common forms of radiation include
		1. Alpha
		2. Gamma
		3. Beta
3. Half-life - the time needed for 1/2 of a radioactive sample to decay into stable matter
	1. The stable matter may have a higher or lower atomic number
	2. Useful in dating objects
	3. **Example**: Say that a 120g sample of C-14 is found today. How much will be remaining after 22,920?
4. Writing Radiation equations



1. The Nuclear Symbols for the different types of radiation are:
	1. Alpha – helium nucleus – radiation can be stopped by sheet of paper
		1. 
	2. Beta – neutron becomes proton – radiation can be stopped by aluminum plate
		1. 
	3. Gamma – consists of photons – absorbed by dense materials but goes through most items
		1. 
2. When writing the equation, start with the radioactive isotope on the left followed by a yield sign. The right side of the equation will consist of the radiation and the more stable isotope.
	1. Example 1: Thorium-232 decays by emitting an alpha and a gamma.
	2. Example 2: Uranium-239 decays by emitting a beta and a gamma.