HONORS CHEMISTRY
WORKSHEET 13b. Name: _____

**1. Write a balanced nuclear equation for each of the following:**

a. Alpha decay of $_{84}{}^{210}Po$

b. Beta decay of tellurium-129

**2.** The isotope $^{14}C$ has a half-life of 5730 years. A carbon sample from an old skeleton has 1/8 of the present-day level of $^{14}C$. How old is the skeleton?

**3.** A fossil shark's tooth is embedded in a sedimentary rock judged by geologists to be close in age to a nearby lava flow. The lava flow contains some potassium minerals, and one sample of this lava contains $4.58452 * 10^{-4}$ moles of $^{40}K$ and $1.05658 * 10^{-4}$ moles of $^{40}Ar$, derived from the radioactive decay of the $^{40}K$ (half-life = $1.27 * 10^{9}$ years). Assuming that all the Ar trapped in the rock accumulated since the lava was molten, and that none has escaped, find the age of the shark's tooth.