Half-Life

Name: _____

1) Suppose you start off at your birth with $2000. Every year you use half (half-life = 1 year)
a) How many years to have $31.25 remaining?   b) How much $ remaining after 12 half-lives?

2) Cobalt 60 has a half-life of 5 years. How much is *gone* from 1000 g original amount after 10 years?

3) You are 512 m from a phone booth. Every minute you cut the distance between you and the booth by 1/2 (half-life = 1 minute).

a) How long to reach the phone booth?   b) How many half-lives to get within 25 cm of the booth?

Directions: Using the table below answer the following questions.

Isotope	Half-life (years)	Type of Decay	Isotope	Half-life (years)	Type of Decay
uranium-238	4.5×10^{19}	alpha	carbon-14	5730	beta
uranium-235	7.1×10^{8}	alpha	plutonium-239	24000	alpha
thorium-232	1.4×10^{10}	alpha	cesium-137	30	beta
potassium-40	1.3×10^{9}	beta	iodine-131	.022 (8 days)	beta

4) Write the nuclear reaction for the decay of the plutonium-239 atom.

5) How many years will have elapsed for 1 gram of potassium-40 to remain from a 16 gram sample?

6) In a certain sample of rock containing uranium, 10% of the uranium is uranium-238. After how many years will the sample contain 1.25% uranium-238?