Alpha Decay Systematics
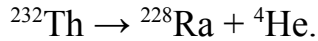
1)
Use the Nuclear Data Center for the even thorium nuclei from ^{232}Th to ^{218}Th to make a table showing the Q value and half life in seconds for the alpha decay to the corresponding radium nuclei, for example,

^{232}Th → ^{228}Ra + ^{4}He.

Make a log – log plot of the half life versus the Q value. This is called a Geiger-Nutall plot.

2)
Look up the half lives and the isotopic abundances of the uranium isotopes, ^{235}U and ^{238}U.

In a supernova these isotopes are formed by the rapid neutron capture process. The ratio at time t = 0 is, $R_0 = 1.65 = (N_{235}/N_{238})$.

How long, t, will it take to get the current measured ratio assuming only alpha decay?