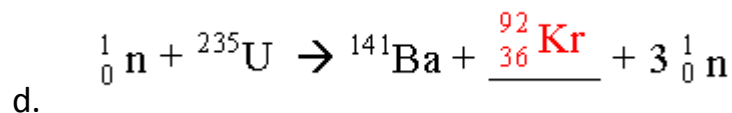
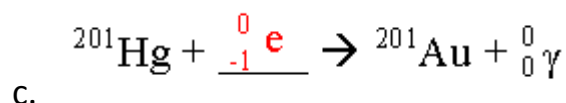
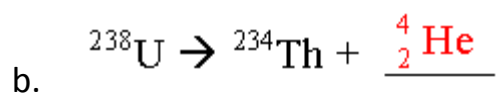
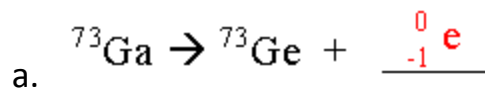


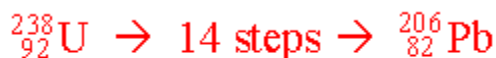
Balancing Reactions

1. Balance the following reactions:



2. What is a decay series?

this is when an unstable nucleus has to go through a number of decays in order to reach a stable configuration. For example:



The 14 steps include 8 alpha and 6 beta emissions.

3. The isotope ${}^{247}\text{Bk}$ decays by a series of α particle and β particle emissions, eventually ending up as ${}^{207}\text{Pb}$. In the complete decay series, how many α and β particles are produced?

The mass indicates the number of α particles needed:
 $247 - 207 = 40 / 4 = 10$ α particles required.

The charge indicates the number of β particles needed:
 $97 = 10(2) + x(-1) + 82 \rightarrow x = 5$ β particles required

