

Do the following problems and be prepared to discuss them in class.

1. After 6 half-lives, what percentage of a radioactive sample remains?
2. A rock sample contains ^{40}Ar and ^{40}K in the ratio of $^{40}\text{Ar}/^{40}\text{K} = 3$.
 - a) How old is the rock?
 - b) What assumptions do you have to make in order to calculate an age?
3. Why do planetary scientists preferentially look for meteorites in Antarctica and deserts?
4. You are captain of the USS Enterprise and capture a spherical asteroid that has a diameter of 6 meters. Approximately what fraction of its volume has been exposed to cosmic rays?