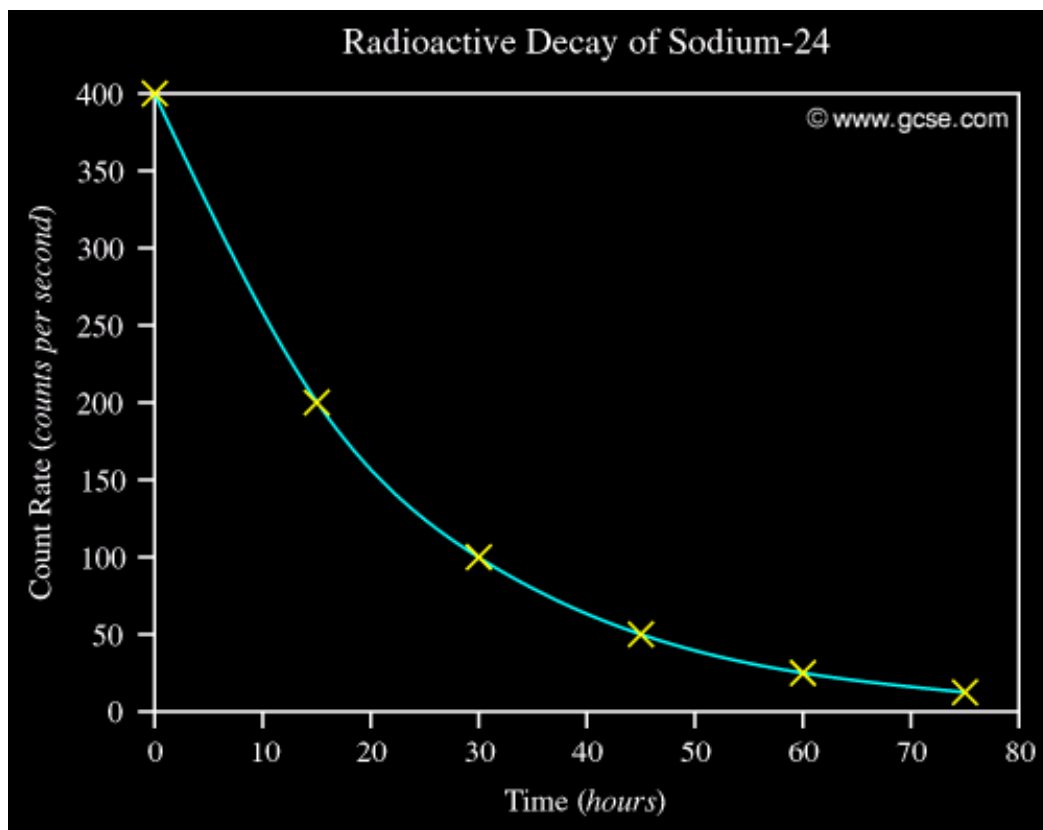


Half-Life

1.) What is the ratio of *carbon* – 14 to *Nitrogen* – 14 after two half-lives have occurred?

2.) *Sodium* – 24 decays to produce *magnesium* – 24. A laboratory sample contains 400 atoms of *sodium* – 24. The count rate is equal to the number of atoms. Use the decay curve below to answer the following questions:



a.) How many *sodium* – 24 atoms will be left after 30 hrs?

b.) How many *magnesium* – 24 (daughter atoms) will be present after 53 hrs?

c.) What is the half-life of *sodium* – 24?

d.) How many *sodium* – 24 atoms will be present after 75 hrs?

3.) A radioactive isotope has a mass of 120 g. If the isotope had a half-life of 20 s, what would be the mass of the isotope after 2.0 min?

4.) A granite rock is thought to be about 2 billion yrs old. Why can't we use carbon-14 (half-life of 5730 yrs) dating to find out if this is correct? Hint - how many half-lives is 2 billion yrs?

5.) An organic sample is 28650 yr old. What percentage of the original carbon - 14 is still present in the sample?