# HALF-LIFE Problems #2

1 How long in days does it take a 100.00g sample of Au-l 98 to decay to 6.25g?

2. How long in days does it take a sample of Au-198 to decay to 12.5% of its original mass?

3. How many half-lives will pass by the time a 60.0g sample of Co-60 decays to 7.59?

4.What percent of a sample of N-16 remains undecayed after 43.2 seconds?

5.What is the half-life of a radioactive isotope if a 500.0g sample decays to 62.5g in 24.3 hours?

6. How old is a bone if it presently contains 0.3125g of C-14, but it was estimated to have originally contained 80.000g of C-14?

7. What is the half-live of a radioactive isotope if it takes 6.2 days for a 72g sample to decay to 18g?

8. Cs-137 is produced as a waste product in nuclear fission reactors. What percent remains undecayed after 241.84 years?

9. How many half-lives of K-37 will pass after 6.15 seconds?

**½ Life Time Name**

2.69 d – gold-198 7.2 s – nitrogen-16

5730 y – carbon-14 1.23 s + potassium-37

5.26 y – cobalt-60 12.26 y – hydrogen-3

30.23 y – cesium-137

s = seconds; d = days; y = years

# HALF-LIFE WORKSHEET #3

1.If a 700.00g sample of I-131 decays to 43.75g, how much time has passed?

2. How long will it take a 3.5g sample of Fr-220 to decay so that only 25% of the original amount of Fr-220 remains?

3. What is the half-life of a radioisotope if 3.125% of it remains undecayed after 26.4 days?

4. H-3 (tritium) is an artificially produce radioisotope used in some nuclear reactions. How much of a 100 kg sample of H-3 remains undecayed after 85.82 years?

5. If a radioactive sample of a pure material decays from 600g to 75g in 42.9 days, what radioisotope could be in the sample?

6. Co-60 is used in some cancer radiation therapies. What percent of a sample of Co-60 will remain undecayed after 5.26 years? Co-60 half-life is 5.26 years

7. Sr-90 is a common waste product of nuclear fission reactors. How many half-lives of Sr-90 will pass after 140.5 years? Sr-90 half-life is 28.1 years

8. A wooden coffin was found that was estimated to be 22,920 years old. What percent C-14 was left in the wood?

9. How many years does it take for a 1200g sample of carbon-14 to decay to 37.5g?

**Half-life times**

 5730 years – carbon-14 10.76 years – krypton-85

 5.26 years – cobalt-60 28.1 years – strontium-90

 30.23 years – cesium-137 8.07 days – iodine-131

 27.5 secondsfrancium-220 14.3 days for Phosphorus-32

12.26 years – hydrogen-3