BLM – Radioactive Half-Life: The Whole Story

Name: _____ Date: _____ Class: _____

Radioactive Half-Life Application Questions

1. If 100 nuclei remain from a sample of 3,200 nuclei, how many half-lives have passed?

2. Starting with 50 grams of radium-226, how many grams of radium-226 are left after 3,200 years?

3. Starting with 200 grams of bismuth-210 on the first of September, how many grams of bismuth-210 would remain on the first of October?

Radioactive Isotope	Half-Life
Uranium-238	4.5 billion years
Thorium-234	24 days
Protactinium-234	1.2 minutes
Uranium-234	240 000 years
Thorium-230	75 000 years
Radium-226	1 600 years
Radon-222	3.8 days
Polonium-218	3.1 minutes
Lead-214	27 minutes
Bismuth-214	20 minutes
Polonium-214	160 microseconds (10^{-6} seconds)
Lead-210	22 years
Bismuth-210	5 days
Polonium-210	138 days

4. After four half-lives, a sample of polonium-218 weighs 12 g. What was the original weight of the sample?

5. Write your own half-life question for someone else using the chart above. Make sure you answer it yourself and check the other person's answer.