

Name: \_\_\_\_\_ Block: \_\_\_\_\_

## Half-Life

For this worksheet, you will need to use your supplemental half-life data.

1. If a lab had 128 g of  $^3\text{H}$  waste 49 years ago, how much of it would be left today?

8.02 g

2. Suppose one of Mr. Bigler's students stole a 20. g sample of  $^{42}\text{K}$  at 8:30am on Friday. When the student was called in to the vice principal's office on Monday at the convenient time of 10:54am, how much of the  $^{42}\text{K}$  was left?

0.31 g

3. If a school wants to dispose of small amounts of radioactive waste, they can store the materials for ten half-lives, and then dispose of the materials as regular trash.

(a) If we had a sample of  $^{32}\text{P}$ , how long would we need to store it before disposing of it?

143 d

(b) If we had started with 64 g of  $^{32}\text{P}$ , how much  $^{32}\text{P}$  would be left after ten half-lives? Approximately what fraction of the original amount would be left?

0.063 g

$\sim 1/1000$

4. If the carbon in a sample of human bone contained only one-fourth of the expected amount of  $^{14}\text{C}$ , how old is the sample? (*Hint: pretend you started with 1 g of  $^{14}\text{C}$  and you have 0.25 g remaining.*)

11 460 y