

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

Period: \_\_\_\_\_

Date: \_\_\_\_\_

**Do Now:** What is the difference between fusion and fission?

**Explore:** Take notes while you watch the video or read the article on Half Lives:

**What is half-life?**

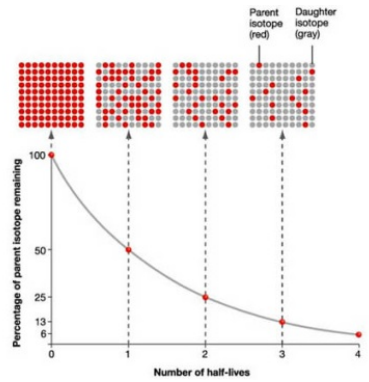
- The amount of **time** it takes for the mass of a radioactive sample to **spontaneously decay** by half.
- Half-life is **AMOUNT OF TIME**
- Table N provides information about half-lives

So...how can we use this information?

**1) We can determine the fraction remaining.**

**Example 1:** If we start with 16 grams of Radon-222 and over a period of time we have 4 grams left over. What is the fraction remaining of this sample? \_\_\_\_\_

Table Method:



| Half lives | Time (from table N or problem) | Mass (from problem in grams) | Fraction |
|------------|--------------------------------|------------------------------|----------|
| 0          | 0                              |                              | 1        |
| 1          |                                |                              |          |
| 2          |                                |                              |          |
| 3          |                                |                              |          |

**2) We can figure out the number of half-lives.**

**Example 2:** If 2.00 gram of a 16.00 gram sample of sodium-25 remains unchanged after 237 seconds, how many half lives have passed?

| Half lives | Time (from table N or problem) | Mass (from problem in grams) | Fraction |
|------------|--------------------------------|------------------------------|----------|
| 0          | 0                              |                              | 1/1      |
| 1          |                                |                              |          |
| 2          |                                |                              |          |
| 3          |                                |                              |          |

**3) We can figure out the total time.**

**Example 3:** A sample of wood is found to contain 1/8 as much C-14 as is present in the wood of a living tree. How old is the tree?

| Half lives | Time (from table N or problem) | Mass (from problem in grams) | Fraction |
|------------|--------------------------------|------------------------------|----------|
| 0          | 0                              |                              | 1/1      |
| 1          |                                |                              |          |
| 2          |                                |                              |          |
| 3          |                                |                              |          |



