

Half Life

Definition:

The time it takes for half of a radioactive sample to decay.

Review:

What does “radioactive” mean?

What does “decay” mean?

Half Life Example

Half Life= 200 years

Starting Mass = 800 g

How much would be left after 1000 years?

- How many grams?
- What percent?
- What fraction?

Half Lives	Time (years)	Mass (grams)	Percent	Fraction
0				
1				
2				
3				
4				
5				

Half Life Example

Half Life= 200 years

Starting Mass = 800 g

How much would be left after 1000 years?

- How many grams?
- What percent?
- What fraction?

Half Lives	Time (years)	Mass (grams)	Percent	Fraction
0	0 yr	800 g	100%	1
1	200 yr	400 g	50%	1/2
2				
3				
4				
5				

Half Life Example

Half Life= 200 years

Starting Mass = 800 g

How much would be left after 1000 years?

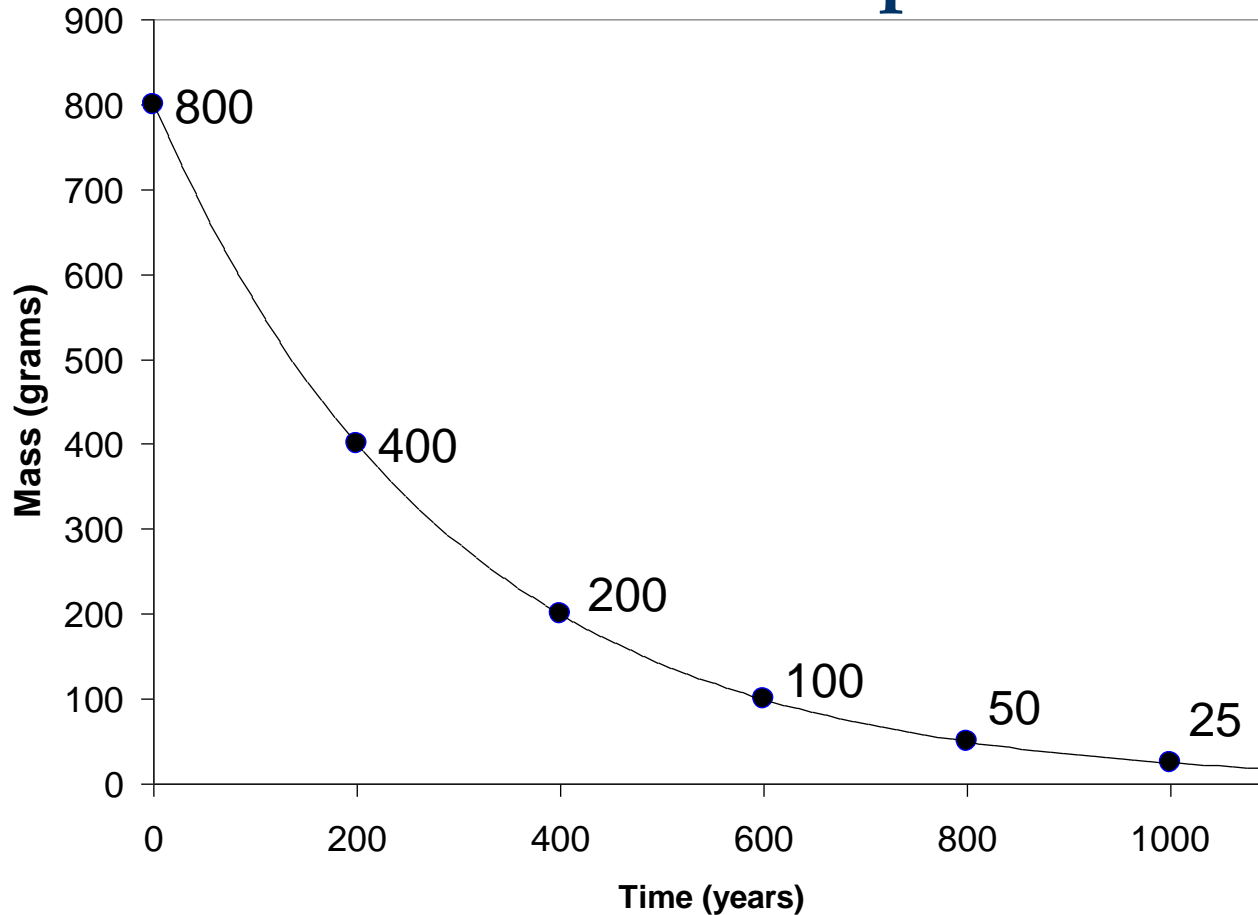
- How many grams?
- What percent?
- What fraction?

Half Lives	Time (years)	Mass (grams)	Percent	Fraction
0	0 yr	800 g	100%	1
1	200 yr	400 g	50%	1/2
2	400 yr	200 g	25%	1/4
3	600 yr	100 g	12.5%	1/8
4	800 yr	50 g	6.25%	1/16
5	1000 yr	25 g	3.125%	1/32

Half Life Problem Hints

- Make a table
- Keep dividing the starting amount by 2
- Starting amount is always 100%
(or fraction of “1”)
Write that down in percent / fraction problems!
- Start at zero half lives, NOT one.

Half Life Example



Half Lives	Years	Mass
0	0 yr	800 g
1	200 yr	400 g
2	400 yr	200 g
3	600 yr	100 g
4	800 yr	50 g
5	1000 yr	25 g

- Half life: $\lambda = 200$ years
- Starting amount: 800 grams (100%)