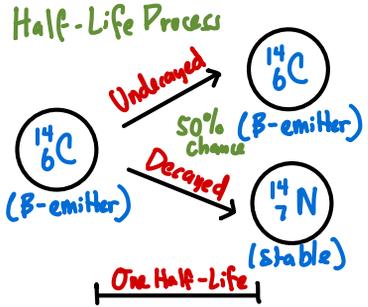


# Nuclear Decay Rate

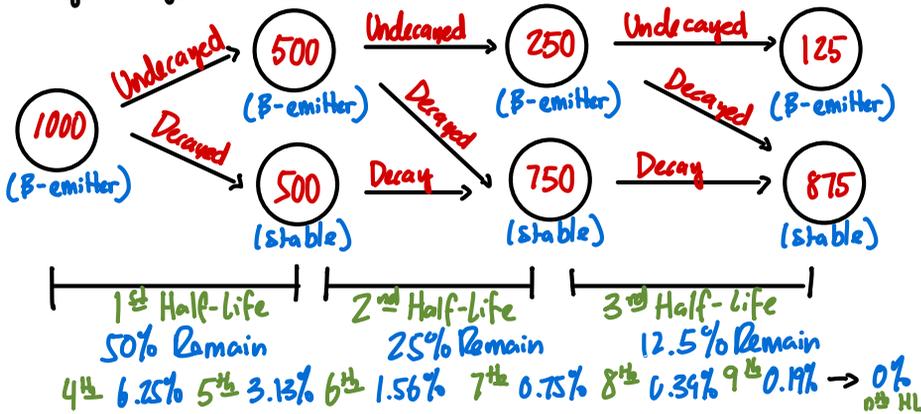
**Nuclear Decay Rate** is the average speed (rate) that an **unstable isotope** decays into a more **stable form**.

**Half-Life** is the time that passes for **half** ( $\frac{1}{2}$ ) the particles in a sample to decay to a **more stable form**.

# How a particle decays over time?



# Decay Progression over Time



Time	Start	1 <sup>st</sup> HL	2 <sup>nd</sup> HL	3 <sup>rd</sup> HL	4 <sup>th</sup> HL	5 <sup>th</sup> HL	6 <sup>th</sup> HL
# part.	1000	500	250	125	63 (round up)	32 (round up)	16 (round up)
	(All unstable)	7 <sup>th</sup> HL	8 <sup>th</sup> HL	9 <sup>th</sup> HL	10 <sup>th</sup> HL	11 <sup>th</sup> HL	(All stable)
		8	4	2	1	0	

# Isotope Stability and Half-Life

The **Half-Life** of an isotope is based on the stability of isotopes. Most Stable → Least Stable

