

Radioactive Decay

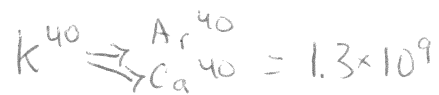
Used to determine the exact, absolute age of geologic events, structures and fossils.

Radioactive decay - process when particles/energy are given off by atoms and a new element is formed.

1. Rate of decay is predictable.
2. Rate of decay is NOT affected by anything, temp., pressure, etc.
3. The amount of parent isotope decreases while the stable decay product increases.

Half-life - Length of time it takes for half the parent isotope to decay. Different isotopes have different half-lives.

Ex. ESRT p.1



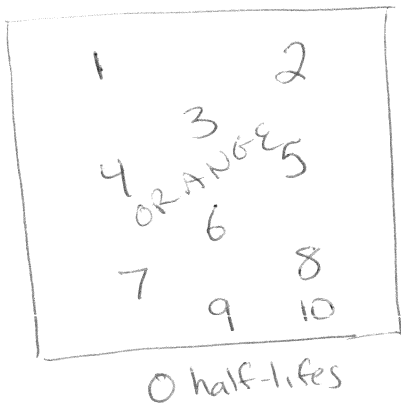
Carbon¹⁴ is used to date 'young' fossils, recent organic remains ~ 40,000 years old or less.

Uranium²³⁸ & Rubidium⁸⁷ are used to date extremely old rocks.

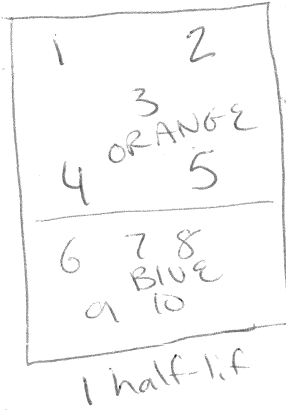
Demo

colored paper

orange = C^{14}
blue = N^{14}



Remove half to decay



Amount C^{14}	Amount N^{14}	# half-lives	# yrs
10	0	0	0
5	5	1	5.7×10^4
2.5	7.5	2	11,400
1.25	8.75	3	17,100
0.625	9.375	4	22,800
0.3125	9.6875	5	28,500
0.156	9.844	6	34,200
0.078	9.922	7	39,900

↳ Becomes too small to use. That's why C^{14} only good for up to 40,000 years.

