

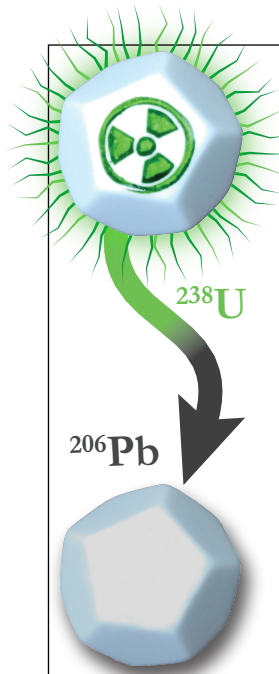


Radioactive Dice Experiment Data Sheet

Name: _____

Date: _____

Roll #	Age		^{238}U	^{206}Pb
0	0	-	50	0
1	0.56 Ga			
2	1.12 Ga			
3	1.68 Ga			
4	2.24 Ga			
5	2.81 Ga			
6	3.37 Ga			
7	3.93 Ga			
8	4.49 Ga			
9	5.05 Ga			
10	5.61 Ga			
11	6.17 Ga			
12	6.73 Ga			
13	7.29 Ga			
14	7.85 Ga			
15	8.42 Ga			
16	8.98 Ga			
17	9.54 Ga			
18	10.10 Ga			
19	10.66 Ga			
20	11.22 Ga			
21	11.78 Ga			
22	12.34 Ga			
23	12.90 Ga			
24	13.46 Ga			
25	14.03 Ga			
26	14.59 Ga			
27	15.15 Ga			
28	15.71 Ga			
29	16.27 Ga			
30	16.83 Ga			



This 12-sided die represents an atom of the radioactive isotope **uranium-238** (^{238}U).

Each time you roll it, it has a $\frac{1}{12}$ chance of undergoing **radioactive decay** and becoming an atom of the stable isotope **lead-206** (^{206}Pb).

Real ^{238}U decays very slowly. It has a **half-life** of 4.47 *billion* years (4.47 Ga, “Giga-annum”).

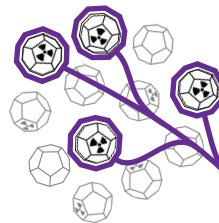
We can **simulate** this decay by rolling a *lot* of dice and pretending that each roll represents the passing of 560 million years (0.56 Ga).

Data Collection Instructions

After each roll...

count the number of decayed dice...

subtract that number from the number of ^{238}U atoms remaining...



and **add** it to the growing number of ^{206}Pb atoms.

Roll #	Age		^{238}U	^{206}Pb
0	0	-	50	0
1	0.56 Ga	5	45	5
2	1.12 Ga	4	41	9
3	1.68 Ga			