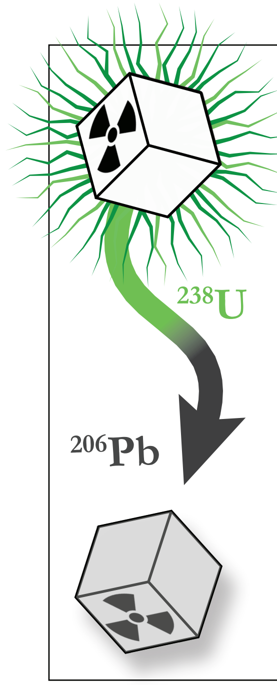
Radioactive Dice

Experiment Data Sheet

Name:____________________________

Date:______________

Roll #	Age	☢	^{238}U	^{206}Pb
0	0	-	50	0
1	1.18 Ga			
2	2.36 Ga			
3	3.54 Ga			
4	4.72 Ga			
5	5.9 Ga			
6	7.08 Ga			
7	8.26 Ga			
8	9.44 Ga			
9	10.62 Ga			
10	11.80 Ga			
11	12.98 Ga			
12	14.16 Ga			
13	15.34 Ga			
14	16.52 Ga			
15	17.7 Ga			



This 6-sided die represents an atom of the radioactive isotope **uranium-238** (^{238}U).

Each time you roll it, it has a ⅙ 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 1.18 billion years (1.18 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	1.18 Ga	10	40	10
2	2.36 Ga	8	32	18