Decay Lab

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April 2016

1 Introduction

Decay constant is the constant ratio for the number of atoms of a radionuclide that decay in a given period of time compared with the total number of atoms of the same kind present at the beginning of that period. The half life is the time for half the radioactive nuclei in any sample to undergo radioactive decay.The purpose of this lab is to explore the relationship between the decay constant and the number of steps.

2 Data

The initial number of atoms are 100.

	A to B	B to C	The number of steps
A	0.1	0.2	69
B	0.1	0.3	48
C	0.1	0.4	52
D	0.1	0.5	49
E	0.1	0.6	40

3 Analysis

In the table, the decay constant of A to B remains the same, while the decay constant of B to C increases. As we can see, as the decay constant of B to C increases, the number of steps are overall decreasing. Thus, we can say that when the decay constant of A to B remains the same, the number of steps decreases as the decay constant of B to C increases.

However, due to the computer error, data B doesn't seem good.

4 Data

The initial number of atoms are 100.

	A to B	B to C	The number of steps
A	0.2	0.1	64
B	0.3	0.1	76
C	0.4	0.1	53
D	0.5	0.1	40
E	0.6	0.1	40

In the table, the decay constant of B to c remains the same, while the decay constant of A to B increases. As we can see, as the decay constant of B to C increases, the number of steps are overall decreasing. Thus, we can say that when the decay constant of B to C remains the same, the number of steps decreases as the decay constant of A to B increases.

However, due to the computer error, data B and E doesn't seem so good.

5 Conclusion

$$A = A0e^{-kt}$$

As we can see from the formula, A0 is the initial number of atoms, and k is the decay constant. The relationship between them is inversely proportional.