

Half-life Activity Using M&M's

Your group will be given 80 M&M candy pieces. (Do not eat them!) You will also be given a cardboard box lid.

Place all of the pieces of candy with the printing upward. This will represent the starting composition of Candium, our radioisotope. Each flip of the box lid will represent one half-life period. Take care not to flip the candy out of the container. During the half-life period, a certain number of printed side Candium nuclei will decay to give Planium. (that is some of the candies will flip over.)

1. Place all the 80 candies in the box, with the printing upward.
2. Flip the box lid one time.
3. Remove from the container all atoms of decayed Candium (Pieces that have turned over.) Record the number of decayed Candium and undecayed Candium in the table.
4. Repeat steps 2 and 3, three more times. At this point you will have simulated four half-lives. You should have 5 numbers for Candium in your data summary, representing the number of undecayed Candium. (Ones that have not turned over.)
5. Pool the class data by adding the total number of decayed atoms after each half life.
6. Using the class data, prepare a graph by plotting the number of undecayed atoms remaining as a function of number of half-lives.
7. On the same graph, plot the data from your group's information.
8. Answer the questions below:

Data Table

Number of Half-lives	Number of Plonium-decayed atoms	Number of Cadium-undecayed atoms	Class Data Decayed atoms	Class Data Undecayed atoms
0	0	80	0	
1				
2				
3				
4				

CONCLUSION:

Include as part of your lab report.

1. Explain the concept of "half-life" in your own words.
3. If we had started with 500,000 M n' M's, approximately how many tosses would it take until we had only 1000 left?
4. The half-life of cobalt-55 is 18.2 hours. If you start with a 500 g sample of cobalt-55, how much will be left after 36.4 hours?