HALF-LIFE ACTIVITY

Objective: Students will model radioactive decay.

Procedure:

1. Put 50 puzzle pieces into a zip lock bag.
2. Shake the bag and spill out the puzzle pieces onto a flat surface.
3. Pick up only the puzzle pieces that show the front (picture) side-these are still radioactive. Count the radioactive pieces and return them to the bag.
4. Record the number of puzzle pieces you returned to the bag and record under next trial.
5. Move the puzzle pieces that do not have the front (picture) side up to the side-these have now decayed to a stable state.
6. Repeat steps 2-5 until all puzzle pieces have decayed or until you have completed trial 9.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Beginning amount | 1st Half-life | 2nd Half-life | 3rdHalf-life | 4thHalf-life | 5thHalf-ife | 6th Half-life | 7thHalf-life | 8th Half-life | 9th Half-life |
| 50 |  |  |  |  |  |  |  |  |  |
| % decayed |  |  |  |  |  |  |  |  |  |

1. Plot the results on a graph with the number of puzzle pieces on the vertical axis and the trial number on the horizontal axis.

Discussion questions:

1. Define the term half-life.
2. What does it mean when we say an atom has decayed?
3. Examine your graph; is the result a straight line or a curved line?
4. What does the graph indicate about the nature of the decay of a nucleotide?
5. How do scientists use radioactive decay to date fossils?