

366854

Radioactive Decay Cube Lab Activity

Aligned With All Published National Standards



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* The Dimension I practices listed below are called out as **bold** words throughout the activity.

DIMENSION 1 Science and Engineering Practices	X	Asking questions (for science) and defining problems (for engineering)	X	Use mathematics and computational thinking
	X	Developing and using models	X	Constructing explanations (for science) and designing solutions (for engineering)
	X	Planning and carrying out investigations	X	Engaging in argument from evidence
	X	Analyzing and interpreting data	X	Obtaining, evaluating, and communicating information
DIMENSION 2 Cross Cutting Concepts	X	Patterns		Energy and matter: Flows, cycles, and conservation
	X	Cause and effect: Mechanism and explanation	X	Structure and function
		Scale, proportion, and quantity	X	Stability and change
	X	Systems and system models		
DIMENSION 3 Core Concepts	Discipline		Core Idea Focus	
	Physical Science		PS1: Matter and Its Interactions	

X Indicates standards covered in activity

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Middle School Standards Covered	High School Standards Covered
MS.PS1-5: Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	HS.PS1-7: Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.
	HS.PS1-8: Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.

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standards/learning objectives

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Content Standards (K-12)			
X	Systems, order, and organization	X	Evolution and equilibrium
X	Evidence, models, and explanation	X	Form and Function
X	Constancy, change, and measurement		
Physical Science Standards Middle School		Physical Science Standards High School	
X	Properties and Changes of Properties in Matter	X	Structure of Atoms
		X	Structure and Properties of Matter

x Indicates standards covered in activity

benchmarks for science literacy (AAAS, © 1993)

1. The Nature of Science	1B: Scientific Inquiry
4. The Physical Setting	4D: Structure of Matter
	4E: Energy Transformations
11. Common Themes	11B. Models
	11C. Constancy and Change

activity objectives:

- Activity 1: Simulate the rate of decay of a sample of radioactive nuclei, and in particular, understand the term half-life.
- Activity 2: Determine rate of decay of radioactive nuclei.
- Activity 3: Simulate the decay of radioactive nuclei in a series.

time requirement:

This lab activity requires approximately one 45-60 minute lab period.