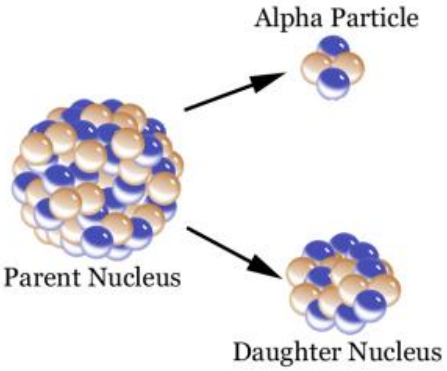
Radioactive Decay as a Measure of Age

How It Works

- Unstable, **radioactive isotopes** decay into more stable, lighter atoms.
- **Alpha** decay emits 2 protons and 2 neutrons, while **Beta** decay emits 1 electron.
- The bigger, less stable isotope is called the **parent isotope**. It emits either alpha particles or beta particles to form smaller, more stable isotopes called **daughter isotopes**.
- Scientists measure the time it takes for parent isotopes to decay into daughter isotopes by **half-lives**. The half-life of a radioactive substance is the amount of time it takes for half of the parent atoms to decay.
- Scientists examine the composition of parent and daughter isotopes in a radioactive substance in order to determine how many half-lives have passed. This can help scientists figure out the age of the particle.

Study Tip

You may have studied exponential and logarithmic functions in your algebra class. Scientists use these functions in order to calculate the duration of a half-life and the age of a material.



A parent isotope emits an alpha particle to become a daughter isotope.

Concept Check

- What are the products of alpha decay? Beta decay?
- What is the difference between the parent isotopes and its daughter isotopes?
- What is a half-life?

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