

Name _____

Radiation Unveiled: The Mystery of Radioactive Decay

Short Answer Key

1. The two fundamental forces in radioactive decay are the strong nuclear force, which binds protons and neutrons together in the nucleus, and the electromagnetic force, which causes repulsion between protons in the nucleus.
2. A half-life is the time it takes for half of the radioactive atoms in a sample to decay. It is significant because it allows us to measure the rate of radioactive decay and determine the stability of radioactive isotopes over time.
3. Everyday applications of radioactive isotopes include their use in medicine for diagnostic imaging and cancer treatment, in industry for testing materials and detecting leaks, and in scientific research for dating ancient artifacts and studying geological processes.
4. Gamma decay involves the emission of high-energy gamma rays, which are electromagnetic radiation. It differs from alpha and beta decay, which involve the emission of particles (alpha particles and beta particles) from the nucleus.
5. The strong nuclear force overcomes electromagnetic repulsion between protons in the nucleus by binding protons and neutrons together at very short distances, creating a strong attractive force that holds the nucleus together.

