# Physical Science Unit 7 Practice - Nuclear Chemistry

1. Define Half-Life

2. How much of a 10.0g sample of a radioactive substance would remain after 4 half-lives?

3. If 25g of a sample of radioactive substance is remaining after 1000 years, and the half-life of the substance is 250 years, how much of the substance was originally present?

4. Define fission. How could you recognize if a fission reaction was illustrated?

5. Define fusion. How could you recognize if a fusion reaction was illustrated?
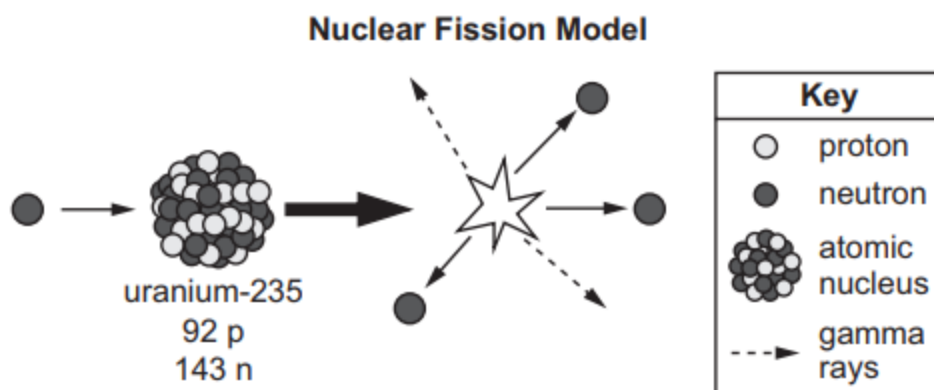
Multiple Choice Practice

1. The half-life of cadmium-109 is 464 days. A scientist measures out a 256.0 gram (g) sample. Approximately how many grams of cadmium-109 would remain after 1,392 days?
   a. 32.0 g   b. 64.0 g   c. 2,048.0 g   d. 1,024.0 g

2. A group of students proposed four different models to show the fusion of hydrogen to form helium. The key to the models is shown.

Key	
◯	proton
⬤	neutron

   Which model shows the process of nuclear fusion?

A.

B.

C.

D.
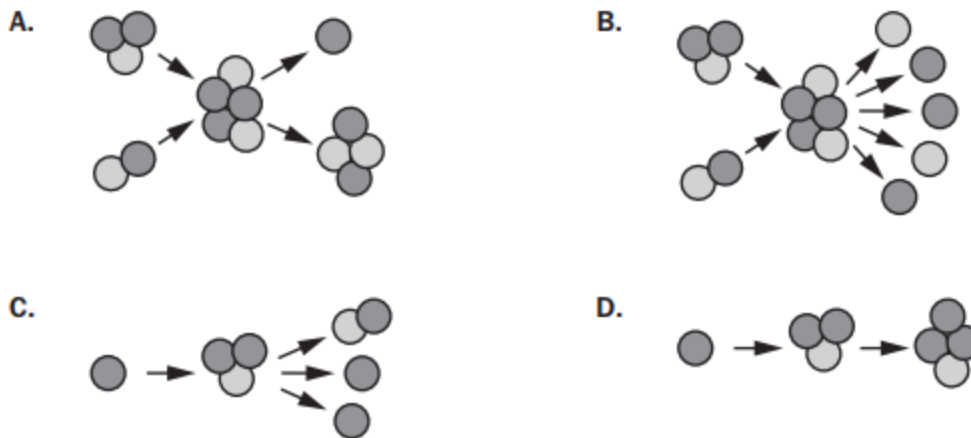
3. A student is modeling the fission of uranium nuclei. The student started the model as shown in the diagram.

Nuclear Fission Model

uranium-235
92 p
143 n

Key	
○	proton
●	neutron
(atomic nucleus)	atomic nucleus
- - -➤	gamma rays

Which TWO particles should the student add to the right-hand side of the model to complete the fission reaction?

A.

	krypton 36 p⁺ 53 n⁰

D.

	barium 56 p⁺ 88 n⁰

B.

	strontium 38 p⁺ 56 n⁰

E.

	plutonium 94 p⁺ 150 n⁰

C.

	helium 2 p⁺ 2 n⁰

F.

	electrons (2 e⁻)