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NOTE-TAKING GUIDE: Unit 11, SEGMENT B

Name:

Date:

Main Ideas, Key Points, Questions:

After watching the video segment, write down key points, main ideas and big questions.

Objective(s):

- *To use isotope notation to explain the decay of radioactive nuclei.*
- *To explain the production of products of radioactive decay: alpha particles, beta particles and gamma ray emission.*

Notes:

During the video segment, use words, phrases or drawings to take notes.

Summary:

After watching the video segment, write at least three sentences explaining what you learned.
You can ask yourself: "If I was going to explain this to someone else, what would I say?"

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QUESTIONS TO CONSIDER:
Unit 11, SEGMENT B

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After watching the video and performing any associated labs and/or experiments, you should be able to answer the following:

1. Nuclear decay of radioactive nuclei like uranium-238 produces three products: alpha particles, beta particles and gamma ray energy. Use isotope notation to symbolize nuclei, starting with a sodium atom (Na), labeling the element symbol, the mass number and the atomic number.

2. Write the isotope notation for an alpha particle. Describe what an alpha particle is made of.

3. Write the isotope notation for an americium-241 nucleus.

4. Show the americium-241 nucleus undergoing nuclear decay to Neptunium 237 and an alpha particle.

5. Draw the isotope notation for a Beta particle.

6. Describe the strange process of beta particle formation.

7. The radioactive isotope carbon-14 decays to form nitrogen-14 and a beta particle. Draw the isotope notation for this equation.

8. Draw the isotope notation for a gamma ray emission.

9. Explain why the mass number and atomic number are both “zero” for a gamma emission.

10. Draw the isotope notation for thorium 230 to form radium 226, one alpha particle and one gamma emission.

11. What nuclear decay product is the least powerful, able to penetrate very little?

12. What nuclear decay product is the most powerful, able to penetrate several layers of materials?

You are now expected to write out the nuclear decay equations for two decay events:

1) The nitrogen-15 nucleus goes through beta decay

2) The uranium-235 nucleus goes through alpha and then beta decay

After you have tried to write these equations, they may continue to the Unit 11C video.