CHEMISTRY MATTERS
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NOTE-TAKING GUIDE: Unit 11, SEGMENT C

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 use the Law of Conservation of Mass to help construct explanations for the conversion of mass into energy.*
- *To construct models such as graphs to explain the half-life of a radioisotope.*
- *To use physical models to investigate and demonstrate half life.*
- *To calculate the amount of parent material remaining after specified amounts of time.*

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 C

Name:

Date:

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

1. Scientists Otto Hahn, Lise Meitner, and Fritz Strassman discovered nuclear fission. They also found that some of their nuclear equations were unbalanced. Explain why the mass of their products was less than the mass of their reactants. Use the term "Law of Conservation of Mass."

2. Albert Einstein discovered the mathematical equation $E=mc^2$, which helped scientists determine what?

3. Write two descriptions of how radiation is important to us in our everyday life.

4. What is a radioactive half-life?

5. Sketch a graph of a half-life of a nucleus like sodium-24, labeling the x and y axis.

You should now conduct an investigation of half-life using a box with 100 face up pennies, all showing "heads." Instructions are in the Chemistry Matters Toolkit. You should then collect the data from the experiment and draw a half-life graph. Then you may continue the Unit 11C video.

6. How many half-lives would it take to get rid of almost all the original sample of parent atoms on our graph?

7. If you start with 120 grams of radioactive radium-223, and it undergoes alpha decay with a half-life of 11 days, how much would you have left after 44 days? Be sure to show your work.

Note that half-life equations can also be solved using logarithms.