Lesson plan for *Radioactive Dating Game* :

http://phet.colorado.edu

Radioactive Dating Game Sim Description: Learn about different types of radiometric dating, such as carbon dating. Understand how decay and half-life work to enable radiometric dating to work. Play a game that tests your ability to match the percentage of the dating element that remains to the age of the object.

Learning Goals: Students will be able to:

- Identify isotopes that are commonly used to determine how old matter might be.
- Explain how radiometric dating works and why different elements are used for dating different objects.
- Use the percent of an isotope measured in an object to estimate its age.
- Identify types of nuclear reaction used for dating; include how elements change and balanced reaction.

Background: This sim does not show the underlying model for decay (use Alpha Decay or Beta Decay for learning goals about decay processes). My students are in chemistry and will have done Alpha Decay Activity and Beta Decay Activity.

Radioactive Dating Game **Introduction:**
Students should be able to explore the sim and use it without guidance provided they understand how to make sense of graphs. Tips for Teachers may be helpful for instructors in case some students are not as used to finding tools in interactive simulations.

Pre-Lesson: My students are in chemistry and will have done Alpha Decay Activity and Beta Decay Activity and clicker questions

Lesson: I will point to the section in the text that uses similar learning goals and includes a couple of pages about Radiometric Dating before they start to help them recognize why we are studying this in chemistry class; I have found that some students think this is a sim for Biology or Earth Science.

Post-Lesson: Since there is a game tab, I do not plan to write clicker questions.

Follow-up sims: I will use a Nuclear Fission Activity by Stephanie Chasteen