

# Radioactive dating – Computer based activity

date: ..... , class: ..... , student: .....

- **Activity 1: “Half life”** Explore the functions of this part of the applet: try changing isotope, number of atoms, and the various controls available. Then answer the following questions.

A) How is the half life of an isotope defined?

Now choose the custom isotope, and use the slider at the top of the page to fix a value for its half life.

B) What do you observe on the graph at the top of the page if you let 10 atoms decay? Does the scenario change if you repeat the experiment a few times?

C) Try again the same experiment but this time use 100 atoms: what do you observe?

- **Activity 2: “Decay rates”**

A) Describe the decay rate graphs for  $^{14}\text{C}$  and  $^{238}\text{U}$ .

B) What are the half-lives of the two isotopes?

- **Activity 3: “Measurement”**

A) Plant a tree and wait until it dies. Describe the behavior of the percentage of  $^{14}\text{C}$  during the life of the tree and after the tree dies.

B) Can you measure the age of the rock using  $^{14}\text{C}$ ? Motivate your answer.

- **Activity 4: “Dating game”** Play the “dating game” and fill the following table with the name of the object, the isotope used, and your estimate for the age. In case the chosen isotope is the Custom isotope, add a note after the table specifying the half-life chosen, motivating the choice.

<b>Object</b>	<b>Isotope</b>	<b>Estimated age</b>
House	<sup>14</sup> C	73 y