

F-LE Carbon 14 dating in practice II

Task

In order to use Carbon 14 for dating, scientists measure the *ratio* of Carbon 14 to Carbon 12 in the artifact or remains to be dated. When an organism dies, it ceases to absorb Carbon 14 from the atmosphere and the Carbon 14 within the organism decays exponentially, becoming Nitrogen 14, with a half-life of approximately 5730 years. Carbon 12, however, is stable and so does not decay over time.

Scientists estimate that the ratio of Carbon 14 to Carbon 12 today is approximately 1 to 1,000,000,000,000.

- Assuming that this ratio has remained constant over time, write an equation for a function which models the ratio of Carbon 14 to Carbon 12 in a preserved plant t years after plant has died.
- In a particular preserved plant, the ratio of Carbon 14 to Carbon 12 is estimated to be about 1 to 13,000,000,000. What can you conclude about when plant lived? Explain.
- Dinosaurs are estimated to have lived from about 230,000,000 years ago until about 65,000,000 years ago. Using this information and the given half-life of Carbon 14, explain why this method of dating is not used for dinosaur remains.



