

**ES202 Video Exercise – Geologic Time Video (~22 minutes)**  
**I:\Earth Science\geo\_videos\GeologicTime.mpeg**

Watch the video and answer the following review questions:

1. What is the estimated age of the Earth based on current geologic analysis.
2. How is the age of the Earth recorded? What is the basis for knowing geologic time.
3. True or False: the geologic record of the Earth is discontinuous.
4. Explain the difference between “relative age dating” and “radiometric age dating”.
5. True or False: sedimentary rock materials form from a multitude of surface environments from mountains to the sea.
6. Who was James Hutton? What is his claim to fame as one of the grandfathers of geology?
7. True or False – the rate of deposition in sedimentary layers is constant and of known time increments?
8. Who was William Smith? What is his claim to fame as one of the grandfathers of geology?
9. The study of rock layering is referred to as \_\_\_\_\_.
10. True or False: tectonic uplift of the land surface encourages erosion and stripping of rock record.
11. True or False: sinking and lowering of land encourages sediment deposition and recording of geologic time.
12. List the four broad Eras of geologic time, from oldest to youngest.
13. What are index fossils? How are they used? Provide an example.
14. What is an isotope? Define and provide examples
15. What is radioactivity and how does it related to the concept of “half-life”?
16. True or False: all radioactive isotopes decay at the same rate or half life.
17. As an example, what is the daughter product of radioactive Uranium?
18. What element is common in rock forming minerals, and commonly used as a radioisotope?
19. What is the half-life of carbon 14? How is it formed at the Earth’s surface?

**MORE QUESTIONS ON BACK...**

20. When is the estimated age boundary between the Cretaceous and Tertiary periods?
21. Provide a brief summary, with examples, of how relative age dating and numeric age dating are used in combination to yield insights into the history of planet Earth.

**ES202 Video Exercise – Radioactive Dating Video (~13 minutes)**  
**I:\Earth Science\geo\_videos\ RadioactiveDating.mpeg**

Watch the video and answer the following review questions:

1. How is time measured? Provide some examples.
2. What is carbon-14 and how does it differ from carbon-12?
3. How is carbon-14 formed? Where is it formed on planet Earth? What element is C-14 derived from?
4. What is the ratio of C-14 to C-12 atoms in the recent, natural world.
5. True or False: C-14 is stable and does not decay to a daughter isotope?
6. What is the half-life of C-14? How is this information used to measure the age of Earth materials.
7. What type of materials are amenable to C-14 dating?
8. True or False: geologists must be knowledgeable in chemistry to be able to understand and measure the age of the earth?
9. True or False: C-14 dating is useful for old geologic materials, up to and greater than 40,000 years ago.
10. What are the daughter products of potassium-40 (K-40). What is the half-life of K-40? What are the most common rocks used with K-40 dating?
11. What is the half-life of Uranium-238?
12. True or False: U-238 isotopes are useful for dating very young materials less than 100,000 years old.
13. True or False: this video was creepy. Please explain your answer.