

Self-Check: Understanding Geologic History

Directions: Write an answer to each of the questions below.

Questions

1. Describe how both relative and absolute dating were used to develop the geologic time scale.
2. Explain why chunks of time on the geologic time scale are not all of the same duration or length in years.
3. As supercontinents of the past broke up and land masses later came back together, the shifting of tectonic plates caused huge mountain ranges to be built up all over the globe. Today, some of those ranges, like the Appalachians, are much smaller than they were then. Why are they smaller today?
4. What role did changes in Earth's early atmosphere play in the development of life on Earth?
5. Most of the coal deposits we use today began as sediments during the Paleozoic. Why do we consider coal a nonrenewable resource?

Answers

1. Relative dating was used to place events in chronological order; for example, we could see from the fossil record and the principle of faunal succession that bacteria developed before fish and that fish developed before reptiles, etc. Then, with the advent of absolute dating, we could assign numerical ages to each chunk of time and say that the Cambrian Explosion began 542 million years ago, etc.
2. They are divided out according to the major life forms and geologic events of each time.
3. The ancient mountains have been worn down by weathering and erosion.
4. Earth had to develop an oxygen-rich atmosphere before complex life forms could emerge. By the end of the Archean, oxygen was building up in the atmosphere and by the end of the Proterozoic, life was complex and diversified.
5. Those deposits began formation during the Paleozoic, which was 252 million years ago. It takes millions of years to make coal, and we cannot renew it in human lifetimes.