

Grade 8				
Ch. 10 Lesson 2				
Earth and Space Science				
Page #	Question	Answer(s)	Links/Sources	Student Resources
378	Why are there different estimates of Earth's age among scientists?	*Sample answer: Some scientists reference radiometric dating, but other scientists question its accuracy. Some scientists use the Bible and other literature to explain their observation.		
378	How old do you think the Earth is?	Sample answer: Several thousand years old. Note: It is important when discussing this topic to make sure students respect one another's views regardless of their own personal views.		
378	What kind of evidence do you think is used to reach that conclusion?	Sample answer: Many scientists base their estimates on the data that comes from radiometric dating and their observations of Earth's geology.		
378	Is the origin of Earth part of empirical science or historical science?	Earth's age is part of historical science.		
378	How might a scientist's worldview affect his or her interpretation of scientific data related to the history of the Earth?	Sample answer: A person's worldview often creates a bias in how he or she interprets scientific data.		
378	What do all isotopes of an element have in common?	They all have the same number of protons.		
379	How many shakes will it take to remove all the pennies from the box?	Sample answer: I think it will take about 10 shakes.		
379	How can water be used to measure time?	Sample answer: I can set up a drip bottle and determine how much water is collected in 10 minutes and divide this amount by 10 and determine the drip rate per minute. I can then measure different amounts of water collected from this drip bottle during different time periods, and assuming that the drip rate is consistent I can calculate how much time has passed in order to collect the specific amount of water.		
380	Do the graphs look the same? How are they different?	Sample answer: No, the paper that is taken out every 15 seconds has a much faster drop in the graph I constructed.		

380	How does this compare with other estimates for the age of the Earth that you may have heard?	<p>Answers will vary depending on the background of students. For some students this estimate be what they have heard, for other students the estimates of Earth's age may be much shorter.</p> <p>Note: Continue to encourage students to respect one another's views.</p>		
381	How does the Geologic Column help you to understand the geologic time scale?	*Sample answer: It shows the order of the time periods and the years scientists believe those time periods occurred. The illustrations also help explain what plants and animals may have lived during each period or the order in which they were buried during the Flood.		
381	How accurate do you think the chart is?	*Sample answer: It is difficult to know as radiometric dating is not always accurate.		
381	How can the diagram be interpreted in terms of relative age?	*Sample answer: The Mesozoic age is younger than the Paleozoic age, but older than the Cenozoic age.		
382	How accurate do you think this system is? Explain.	*Answers will vary.		
382	How is radiometric dating useful for comparing rock layers in different locations?	*Sample answer: Rock layers are consistent throughout Earth, which supports the theory that it is a reliable method of relative dating.		
382	Why might it be important to take many measurements over time to estimate the rate of sedimentation or erosion?	*Sample answer: The more data collected over time, the more accurate the conclusions that can be made are.		
383	How will the land in picture 2 look like in 100 years?	Answers will vary. Make sure students use logic and reason in their predictions.		
384	What can be found in the layers of bedding?	Sample answer: Clay, micas, heavy metals, pebbles, and fossils.		
384	How can you model bioturbation?	Sample answer: You can make a reef of egg shells and then pour vinegar over the egg shells to dissolve them. Let them slump and deform.		
384	How do the obvious layers contradict the geologic time scale?	Sample answer: The layers show distinct boundaries that do not blend. Over the years there have been gradual changes in climates and environments so we should see a blending of layers.		
384	What factors can slow down this process?	Sample answer: Changes in the environment, rates of sedimentation, and changes in the plants and animals present.		
385	How do widespread sedimentary deposits contradict the geologic time scale?	*Sample answer: There are many rock layers that are spread across large regions.		

385	Have you ever seen a dead animal on the road for longer than a day?	*Have students describe what the animal looks like as days pass. Make the point that when dead animals lay exposed, they are quickly disposed of by scavengers. Relate this to the fossils in the Pico formation. Point out that the fossils could not have remained in such good shape if they have <u>not been buried quickly</u> .		
385	How many layers are missing? How many years are represented?	*Sample answer: One layer is missing, which represents millions of years.		
385	Why do rocks from a volcanic blast travel a short distance while ash can travel far distances?	*Sample answer: Small particles, such as ash, can be carried by the wind, while large fragments of rock can only be carried a short distance.		
385	Why might fossils from the same period appear at different depths in two different lakes?	*Fossils may collect in the same order but at different rates and be subjected to different environmental conditions.		
385	In what ways might catastrophes and uniformitarianism agree on the use of relative dating?	*They both agree that it is possible to describe the age of the Earth using geologic phenomena. Relative dating is compatible with both theories because it does not state an exact age.		
386	How likely is it that an animal would be preserved at all, let alone be preserved exquisitely?	*Improbable.		
	* Means the answer is found in the TE.			