

G202 Lab 3 – Sedimentary Rock Video Exercise
(Earth Revealed: Sedimentary Rocks)

Name Ryan Johnson

Watch the video in the lab and answer the questions below.

1. Who first explored the geology of the Grand Canyon? How did the Grand Canyon form?

John Wesley Powell. Deposition and down cutting by river.

2. How many years of Earth history are contained in the sedimentary rocks of the Grand Canyon?

2 Billion

3. What is the general goal of sedimentary geology?

Interpret clues in the rock to determine how they formed

4. What is sediment? How is it formed?

Particles of rocks. Erosion from wind, ice, and water.

5. List and describe 3 examples of loose sediment at the Earth's surface.

Beach sand

River silt

Sand dunes

6. How is loose sediment transformed into hard sedimentary rock?

Compaction and cementation

7. True or False: sedimentary rocks most commonly occur inside the Earth, while igneous rocks are common at the Earth's surface. Explain your answer.

False. Sedimentary rocks form from sediment on the surface.

8. Define the term "clastic".

Broken. Grains of sediment

9. What is the smallest size of sediment particle called? What is the largest size of sediment particle called?

Clay, Boulder.

10. List and briefly describe 2 examples of how sediment may be transported at the Earth's surface.

Slide down a hillside; blown by the wind.

11. List and describe 3 places at the Earth's where you would likely find sediment deposits. Why do you find deposits in these places?

Slowing of river water. At the foot of a mountain, mouth of the river.

More on Back....

12. Define the term "lithification". What are 2 processes that result in lithification of sediment?

Amalgamation of sediments into a single rock.

13. List and describe 2 environments where chemical sediments may form.

Lagoons, evaporites.

Ocean: organism hardparts.

14. What is the name of a sedimentary rock that forms from the skeletons and hard parts of dead sea animals?

Limestone

15. Where does coal form? What is coal composed of?

Swamps, Remains of foliage.

16. What is the motto for the "principle of uniformitarianism"? What is the principle of uniformity and how is it used to interpret Earth history?

what will happen in the future can be determined by what happened in the past.

End Video at Uniformitarianism.

ES202 Video Exercise – Part 2 of the Earth Revealed “Sedimentary Rocks” Video
Focus on Stratigraphy and Sedimentary Structures
(Start Video at Time Mark 10:30)

1. Describe the “principle of uniformity” or “law of uniformitarianism”? How is it applied to sedimentary rocks and interpreting Earth history?

Sediments formed in geologic time form the same way as today.

The present is the key to the past.

2. True or False: Earth surface systems today have existed in the past, their processes producing sedimentary rock products.

True

3. Define the term “sedimentary structure”; how does this term differ from the concept of a “sedimentary rock”?

Groups of sediment with the same depositional environment.

4. Define bedding? What is a bedding plane? Draw and label a sketch of several sedimentary beds to illustrate your answer.

Layer cake pattern of strata.



5. True or False: A stack of sedimentary beds represent a continuous recording of geologic time and events in geologic history.

False

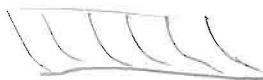
6. Describe the law of original horizontality, as applied to sedimentary beds. Draw a sketch to illustrate your answer.

Bedding forms in a horizontal orientation.



7. Draw a sketch of “cross-bedding”. List some example environments in which cross-bedded sand will develop.

A stream, delta, sand dunes.



8. True or False: The angle and direction of tilt in cross beds can give clues as to which way fluids (liquid air or water) were flowing in the geologic past?

True

9. Draw a sketch to support your answer in the previous question. Show cross-bedding and the direction of transport that formed the structure.



10. Define the term “ripple marks”. Draw a sketch of asymmetric ripple marks, show the direction of wave motion.

Ripples caused by shallow water flow.



11. What are mud cracks? Draw a sketch. Explain the sedimentary conditions in which mud cracks are formed.

Cracks in a mud layer where a water feature dried up



12. From the example of the "Ridge Basin" in southern California; list the FOUR sedimentary features that are indicative of deposition in a lake basin.

Fine-grained size and thinness, laterally continuous, limestone with micro fossils, and mudcracks and wave ripples.

13. What is a "delta"; how is it formed, and what are some of the sedimentary features that indicate such an environment of deposition.

A depositional site for sediments of a river at the mouth to a lake or low energy environment. A change in thickness and grain size of sediment layers

14. Draw a sketch of a "scour-and-fill" structure. What does scour and fill indicate about ancient sedimentary environments.

A change in discharge of the stream.



15. True or False: Scour and fill structures would be highly likely in a deep lake or deep ocean environment.

False

16. What does the occurrence of angular and poorly sorted gravel fragments indicate about the sedimentary history along the margins of the Ridge Basin California.

Most likely there was a landslide that probably occurred.

17. True or False: sedimentary rocks are commonly the source of fossils fuels such as oil, natural gas, and coal?

True

18. True or False: sedimentary rocks are commonly used as building and construction materials.

False

19. True or False: I love geology.

True