

SI Geology - Full Discipline Demo

Stratigraphy

Final Report - Answer Guide

Institution	Science Interactive University
Session	SI Geology - Full Discipline Demo
Course	SI Geology - Full Discipline Demo
Instructor	Sales SI Demo

Test Your Knowledge

Match each term to the correct counterpart.

⌵ Era

⌵ Period

⌵ Epoch

⌵ Eon

▶

Geologic Time Unit	Time-Stratigraphic Unit
1	Eonothem
2	Erathem
3	System
4	Series

Correct answers:

1 Eon 2 Era 3 Period 4 Epoch

Match the stratigraphic terms with their corresponding descriptions:

Formation	A distinct layer of sedimentary rock with recognizable characteristics.	1
Bed	A collection of related rock formations.	2
Member	A subdivision of a formation, often characterized by specific lithological features.	3
Group	The largest lithostratigraphic subdivision, consisting of several formations.	4
Rock Unit	A sequence of rock layers that shares a common set of characteristics and can be mapped over a significant geographic area.	5

Correct answers:

1 Bed 2 Rock Unit 3 Member 4 Group 5 Formation

Exploration

Geologists create stratigraphic columns to depict the vertical order of rock layers.

- ☒ True
- ☐ False



A ____ is a body of rock which can be identified by its lithological characteristics and stratigraphic position.

- ☐ group
- ☐ bed
- ☒ formation ✓
- ☐ member

Which of the following options represents the appropriate time-stratigraphic unit for a Period?

- ☐ Eonothem
- ☐ Series
- ☐ Erathem
- ☒ System ✓

The Principle of ____ Succession is a geologic law that states that fossils contained in sedimentary rock strata succeed each other in time in a predictable and reliable manner.

- ☒ Faunal ✓
- ☐ Biostratigraphic
- ☐ Vertical
- ☐ Chronostratigraphic

A river is considered a ____ depositional environment.

- ☐ Marine
- ☒ Continental ✓
- ☐ Transitional

Exercise 1

Would you have been able to complete the chronostratigraphic cross-section without the ash layers? Why or why not?

Do your chronostratigraphic correlations (timelines) cut across lithology or follow it? Why is this the case?

What type of depositional environment do you think this stratigraphic cross-section represents?

Photo 1: Completed Columns
(SAMPLE ANSWER BELOW)

No sample answer provided

Photo 2: Lithostratigraphic Cross-Section
(SAMPLE ANSWER BELOW)

No sample answer provided

Photo 3: Chronostratigraphic Cross-Section
(SAMPLE ANSWER BELOW)

No sample answer provided

Competency Review

Which of the following methods is commonly used for stratigraphic correlation, helping geologists match and correlate rock layers across different locations?

- ☒ Radiometric dating of fossils found within the layers. ✓
 - ☐ Measuring the thickness of sedimentary layers.
 - ☐ Analyzing the color variations of rocks.
 - ☐ Identifying the mineral composition of rock layers.
-

Which principle is reflected by the statement that a vertical change in facies within a stratigraphic column corresponds to a lateral change in environments over time?

- ☐ Stratigraphy
 - ☒ Walther's law ✓
 - ☐ Transgression
 - ☐ Regression
-

True or False?

Time units are divisions of geologic time, while rock units are subdivisions of rock layers based on lithological and fossil content.

- ☒ True ✓
 - ☐ False
-

True or False?

Correlating stratigraphic layers allows us to infer the ancient geography of an area in Earth's past.

- ☒ True ✓
 - ☐ False
-

Which of the following tasks is associated with constructing stratigraphic columns?

- ☐ Determining the absolute ages of rock layers.
- ☒ Depicting the vertical succession of rock layers in a graphical representation. ✓
- ☐ Identifying the shifts in lithologies caused by tectonic activity.
- ☐ Analyzing the mineral composition of sedimentary rocks.

Geologists often ____ rock layers in various places and then analyze the information to learn about Earth's history and past environments.

- ☐ predict
- ☐ invent
- ☒ measure ✓
- ☐ None of the above

Which geological principle states that fossils contained in sedimentary rock strata follow a predictable and reliable pattern, allowing for the identification and dating of rock layers based on their fossil content?

- ☐ Law of Superposition
- ☒ Principle of Faunal Succession ✓
- ☐ Law of Original Horizontality
- ☐ Principle of Cross-Cutting Relationships

Extension Questions

Explain how geologists correlate rock layers from different locations. Provide three examples of methods they use for this purpose, and briefly describe each method's principle. (SAMPLE ANSWER BELOW)

Answers will vary.

Geologists correlate rock layers from different places using methods like fossil correlation, lithostratigraphy, and chronostratigraphy.

Fossil Correlation: Geologists match the same fossils in different rock layers to determine their relative ages. Fossils unique to specific times help identify when rocks were formed.

Lithostratigraphy: Similar rock types in separate areas suggest they were deposited around the same time. Comparing rock characteristics helps establish connections between different locations.

Chronostratigraphy: Geologists use dating techniques to find the absolute ages of rocks. If rocks with the same age are found in different places, it implies they were formed during the same time.

