

ONPAR Paper Task

Fossil Record

Scoring Rubric

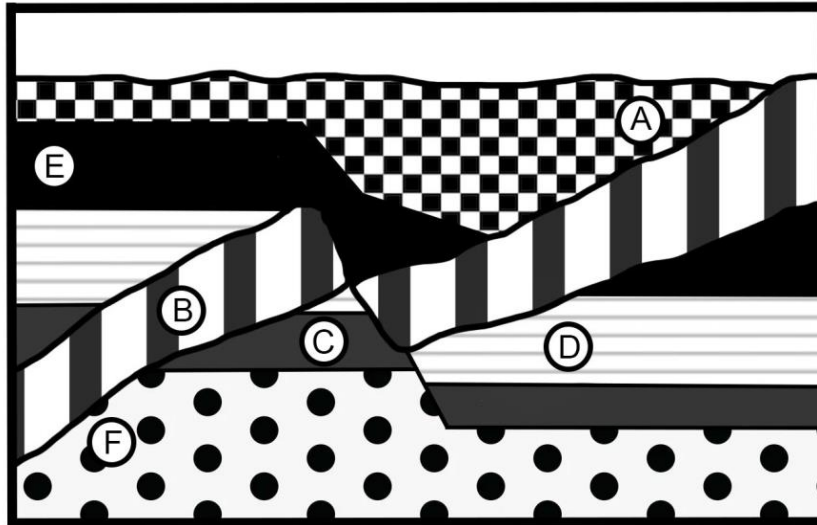
Item	Task Description	0 points	1 point	2 points	3 points
1	<i>Identify the relative age of rocks based on location.</i>	Student does not demonstrate an understanding of superposition and layers do not get younger as they move towards the surface.	Horizontal layers are correctly layered from oldest at the bottom to youngest on top, but the diagonal layer is not youngest. OR Identify B as youngest but make one mistake in the other layers.	A correct response, from oldest to youngest: F C D E A B	
2	<i>Write an explanation for the relative age of rocks based on location.</i>	The oldest and youngest layers are not correctly identified OR no explanations are attempted.	Student correctly identifies oldest and youngest layers, but both explanations lack clarity or are missing appropriate vocabulary. OR student incorrectly identifies and explains either the oldest or youngest layer.	Student correctly identifies oldest and youngest layers, but one explanation lacks clarity or is missing appropriate vocabulary.	Student identifies F as oldest and B as youngest. F is explained using ideas from superposition that the layer was laid down first. B is explained as a type of rock that cut through the other layers after they were laid down using appropriate vocabulary from the word bank.
3	<i>Write an argument supporting or refuting the age of fossils based on patterns in evidence.</i>	Inaccurate argument Inaccurate or incomplete evidence (or repeated evidence) Reasoning is not logical	Makes an argument supported by Accurate evidence OR Logical reasoning (1 out of 3)	Inaccurate argument: Agree AND Accurate evidence AND Reasoning is logical but misses one-two bullets from the right. (2 out of 3)	Accurate argument: Disagree AND Accurate evidence, e.g.: Horseshoe crab fossil is younger than therapod (layer D), ichthyosaur (layer C) and/or trilobite (layer F). AND Reasoning is logical, and includes: - an understanding that fossils can be dated relative to one another using relative ages of rock layers. - Recognizes that horseshoe crab fossils are found in multiple time periods. - Uncertainty about fossil age (3 out of 3)

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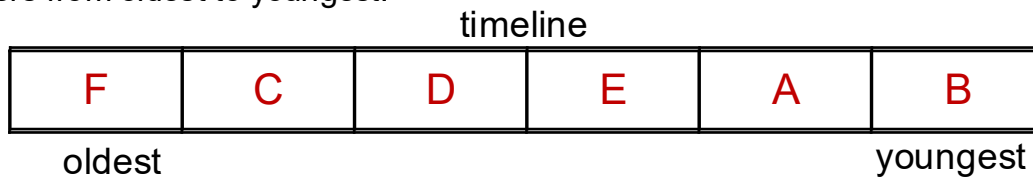
Answer Key

Students study the fossil record to understand the history of Earth's living things.

Rock Layer Diagram



- Examine the Rock Layer Diagram above. Place letters along the timeline below to order the rock layers from oldest to youngest.



word bank (some words may not be used)

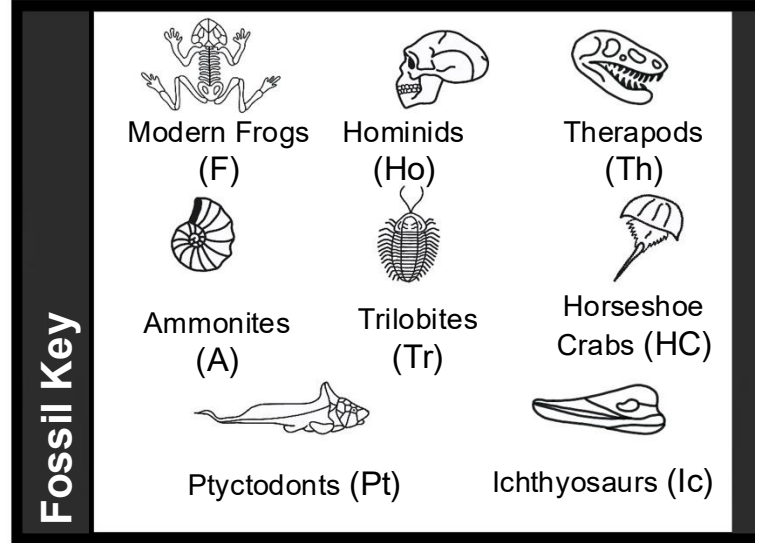
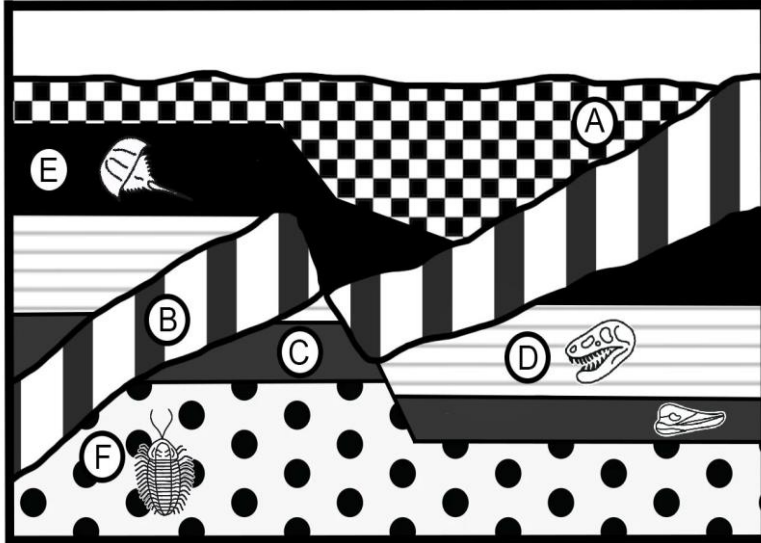
rock type layer fault cut cross deposit erosion weathering magma lava sediments

- Explain your reasoning for the youngest and oldest rock layers.

Additional “because” statements are possible.

- The *youngest* rock layer is B because the intrusion of rock from magma cuts across layers of rock that were already present.
- The *oldest* rock layer is F because The lowest layer of rock was deposited first and other layers made from sediments or other materials were laid on top of it.

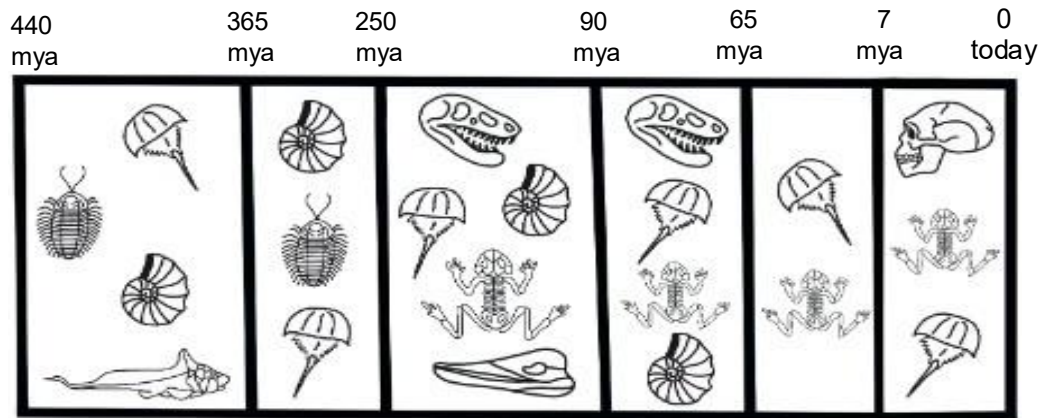
3. Xavier was hiking and discovered a horseshoe crab fossil in layer E. Based on the location, Xavier claimed the fossil was 300 million years old. Use the evidence provided to explain why you agree or disagree with the claim.



Focus on CCCs: Patterns

Students should look for visual patterns in the rock layers and the table for presence/ absence of different types of evidence in the layers.

Timeline of Fossils Using Radiometric Dating



Assume fossils shown in each box represent organisms that lived on Earth during that entire time.

mya = million years ago

Note: not to scale

Below is one possible response. Accept any logical answer supported by the evidence.

Focus on SEPs: Engaging in Argument from Evidence:

Students support or refute a claim based on evidence from the table and diagram. Look for types of reasoning students bring in from the unit about relative dating of fossils and rock layers.

Argument: I disagree with Xavier's claim.
agree / disagree

Evidence: The horseshoe crab fossil is younger than the
younger than / older than / the same age as

theropod in layer D.
fossil type A / B / C / D / E / F

Reasoning: Therefore, the horseshoe crab fossil could be 0-65 million years old because the

fossil is in a more recent layer than the theropod. Horseshoe crabs lived throughout that whole time so

we don't know the exact age.