

Ohio Grade 5 Achievement Test for Science – May 2007
Annotated Item 6

Standard and Benchmark Assessed:

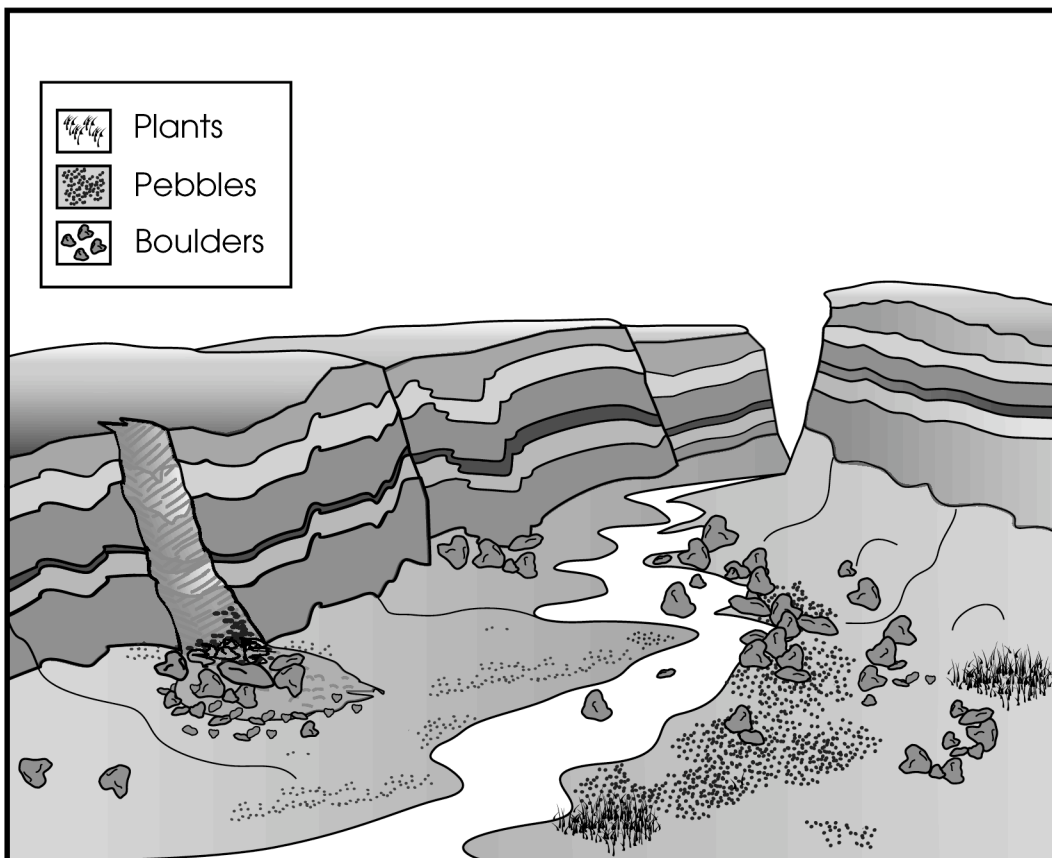
Standard: Earth and Space Sciences

Benchmark: B. Summarize the processes that shape Earth's surface and describe evidence of those processes.

Extended Response Question:

Use the information below to answer question 6.

Desert Canyon



6. The picture shows a stream flowing through a desert canyon. The canyon was shaped by natural processes.

In your **Answer Document**, identify a slow process that could have helped shape the canyon. Describe evidence of this process shown in the picture.

Then, identify a rapid process that could have helped shape the canyon. Describe evidence of this process shown in the picture. (4 points)

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Commentary:

This extended response question asks students to examine a diagram of a desert canyon and identify one slow process and one rapid process that could have helped shape the canyon and provided evidence of both of these processes from the diagram. Students must recall how the processes that shape Earth are both slow (e.g., erosion, weathering, deposition) and fast (e.g., earthquakes, landslides) and know what would provide evidence of these processes. Students should study the diagram to observe evidence of slow processes that may have helped to form the canyon such as erosion, wind and weathering. Students should recognize that evidence of erosion shown in the diagram includes the exposed face of the canyon wall and sand that is deposited along the river. Evidence of wind erosion can be seen in the rounded edges of the canyon. Students might note that evidence of weathering is illustrated by pebbles and sand and the bottom of slopes. Students should also observe evidence of rapid processes that may have helped to shape the canyon including landslides, earthquakes, volcanic eruptions, and seasonal floods. Evidence of landslides and earthquakes is illustrated by large rocks at the bottom of the cliff. Students might suggest that volcanic eruptions may be evidenced by dark layers in the exposed rock that could indicate an eruption at some point in history or that evidence of seasonal floods can be seen in the deposition or large rocks found at the base of the cliffs. The response that earns full credit correctly identifies one slow process that helped shape the canyon and describes evidence of the process and also correctly identifies one rapid process that helped shape the canyon and describes evidence of this process.

This question is classified as Communicating Understanding / Analyzing Science Information because the task requires students' to combine accurate observations with valid inferences about evidence presented in a diagram of a desert canyon. Students must apply their understanding of Earth processes to suggest natural processes by which the canyon was changed over time.

Performance Data:

The percent of public school students earning each score point for question 6 on the May 2007 Ohio Grade 5 Achievement Test for Science:

Percent at Each Score Point				
0	1	2	3	4
40%	33%	16%	9%	2%

Sample Response for Item 6 (Extended Response):

Exemplar Response:

One slow natural process is the constant erosion of the canyon by water and wind. Evidence of this process is the exposed face of the canyon wall. One rapid process is the landslide. The evidence for the landslide is the large rocks along the bottom of the cliffs.

Other Correct Response(s):

Acceptable slow processes include:

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- Erosion, exposed rock layers on cliff faces or canyon walls.
- Erosion, evidenced by sand deposited along the river.
- Weathering of rocks (by wind or water), evidenced by rocks breaking down to smaller rocks. This could be interpreted from the pebbles and sand at the bottom of the slopes.
- Wind, evidenced by rounded off edges of canyon surface.

Acceptable fast processes include:

- Landslides (mudslides, rockslides) evidenced by large rocks at the bottom of the cliff.
- Volcanic eruptions evidenced by the dark layers which could indicate a volcanic ash.
- Earthquake could have caused the rocks to fall off the cliffs.
- Seasonal floods, which may have altered the river as evidenced by deposition or large rocks at the base of the cliffs.

Scoring Guidelines:

Points	Student Response
4 point	The response provides the correct identification of one slow process AND one rapid process that have shaped the canyon AND a correct description of evidence from the picture of the action of both processes.
3 point	The response provides the correct identification of one slow process AND one rapid process that have shaped the canyon AND a correct description of evidence from the picture of the action of one of the processes. 3 point sample answer: There was a landslide, which was a fast process. The large rocks at the bottom of the cliffs are evidence that a landslide occurred. Erosion caused by the river was a slow process.
2 point	The response provides the correct identification of one slow process and one rapid process that have shaped the canyon OR a correct identification of one process and a correct description of evidence from the picture of the action of this process. 2 point sample answer: The landslide was a fast process. You can tell a landslide occurred because of the pile of boulders at the base of the cliff.
1 point	The response provides the correct identification of one slow process OR one rapid process that have shaped the canyon. 1 point sample answer: A slow process is erosion as evidenced by the canyon walls.
0 point	The response fails to demonstrate any understanding of the processes that formed the canyon. The response does not meet the criteria required to earn one point. The response indicates inadequate or no understanding of the task and/or the

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	idea or concept needed to answer the item. It may only repeat information given in the test item. The response may provide an incorrect solution/response and the provided supportive information may be very irrelevant to the item, or possibly, no other information is shown. The student may have written on a different topic or written, "I don't know."
	0 point sample answer: The canyon with its many layers was shaped by natural processes.

Keywords: erosion, weathering, land slide, mass wasting, canyon, deposition