Science Grade 5
Scoring Guide for
Released Item #31
Ankylosaurus
Fall 2005
Ankylosaurus was a large armored dinosaur that lived between 65 and 70 million years ago. They had many unique features, including rows of spikes along their entire bodies, large horns on the sides of their heads, and club-like tails. They were approximately 10 m long, with an average body mass of 2,700 kg (as much as a small truck). The top parts of their bodies were covered with thick plates fused into their leathery skin, and they had bony plates around their eyes. The undersides of their bellies were not plated. Scientists believe Ankylosaurus was a plant-eater. Partial skeletons of Ankylosaurus have been found in Montana, USA, and Alberta, Canada. Fossilized tracks that scientists believe were made by Ankylosaurus have also been found in Bolivia, South America.

**ANSWER THE FOLLOWING CONSTRUCTED-RESPONSE ITEM IN YOUR ANSWER FOLDER.**

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**Constructed-Response**

(3 points)

The Ankylosaurus had many defense adaptations for survival.

- Identify and record two *different* adaptations that the Ankylosaurus used to protect/defend itself from predators.

- Choose one of these adaptations and explain how it *probably* helped to protect the Ankylosaurus.

**NOTHING WRITTEN IN THIS TEST BOOKLET WILL BE SCORED.**
Acceptable Responses:

- Spikes (spines) – to prevent predators from grabbing it
- Spikes (spines) – because they cause injury, discomfort or visual deterrent to the predator
- Horns on their heads – to prevent predators from attacking their heads
- Tails – for swinging at attacking predators
- Body plates/leathery skin/armor – to prevent predators from tearing (biting) into their flesh
- Eye plates – to protect their eyes from poking and/or injury
- Massive size – to discourage attacks from smaller animals/predators
- Other acceptable responses (e.g., short legs – to keep their unprotected bellies close to the ground where predators couldn’t reach them)

Scoring Guide:

3 points  The student correctly identifies two protective adaptations and explains what one of these adaptations was probably used for.

2 points  The student correctly identifies two protective adaptations but fails to explain or incorrectly explains one of the adaptations.

OR

The student correctly identifies one protective adaptation and explains how an adaptation was probably used.

1 point  The student correctly identifies one protective adaptation only.

OR

The student explains how a body part protects.

0 points  The student fails to provide any correct information.

Condition codes for unratable papers (zeroes):
A – Off Topic
B – Written in a Language other than English or Illegible
C – Blank or Refusal to Respond
The student correctly identifies two protective adaptations (rows of spikes along its entire body, and large horns on the sides of their head) and explains what one of these adaptations was probably used for (The horns will help them defend themselves because if they got in a fight they could just shove the horns into the other animals).
Anchor Paper 2 – Score Point 3

The student correctly identifies three protective adaptations (spikes and a club like tail, the leathery skin) and explains what one of these adaptations was probably used for (the leathery skin because it would be hard for a predator to bite them). The word “bite” specifically indicates that the leathery skin would keep a predator from tearing into the flesh. Since all predators try to eat their prey in some way, the word “bite” is more specific than “eat.”
Two of the adaptations the Ankylosaurus had to defend and protect itself was the club-like tail and its rows of spikes along its body. The club-like tail would have probably been one of its best defenses because if a predator came and tried to attack it then it would probably swing its tail around and injured the predator for it to have time to get away.
The student correctly identifies two protective adaptations (spikes on its back, and its club-like tail) and explains what one of these adaptations was probably used for (If an animal tried to eat it its spikes would hurt the animal’s mouth). Since all predators try to eat their prey in some way, the student must and does explain specifically how the spikes would deter predation by causing injury or discomfort to the predator.
The student correctly identifies two protective adaptations (*the club tail and the armor plates*) and mentions another (*spikes*). The student fails to explain how the tail, the armor or the spikes would deter the predator from trying to eat the ankylosaurus. Since all predators try to eat their prey in some way, the word “eat” is not specific enough to explain that the spikes would cause injury or discomfort to the predator.
The student correctly identifies two protective adaptations (thick plates on its bodies, bony plates around the eyes). Although both of the identified adaptations are plates, the student specifies two different locations on the dinosaur’s body, making it clear that these are two separate body parts. The student fails to explain why “the T-rex could not eat them.” Since all predators try to eat their prey in some way, the word “eat” is not specific enough to explain that the defense would be against biting, clawing, or tearing into the flesh.
The student correctly identifies two protective adaptations (thir tails and thir spikes) but fails to explain how either of these adaptations was used for defense against predators. Although a tail is not an adaptation for defense on most animals, it is acceptable for the student to state only “thir tails” rather than “club-like tail,” because information in the prompt makes it clear that the tail is specially adapted on the ankylosaurus.
The student correctly identifies one protective adaptation (his club-like tail) but does not explain how this adaptation was probably used. The student attempts to give another adaptation (his scaly back) that is not acceptable because scales are not the same structure as the thick plates of the ankylosaurus.
The student correctly identifies one protective adaptation (spikes) but fails to explain how the spikes would be used for protection. The two locations of spikes (on his back and... on his tail) are not two separate adaptations, because there is a continuous row of spikes along the ankylosaurus' body.
Anchor Paper 10 – Score Point 1

The student correctly identifies one protective adaptation (the plated back) but fails to explain how this adaptation was used to protect the ankylosaurus.
The student fails to provide any correct information. The student attempts to identify an adaptation (thick plates of scales) but this is a major misunderstanding, because scales are not the same structure as the thick plates.
The student fails to provide any correct information. The student attempts to explain how the ankylosaurus would protect itself, but does not identify any protective adaptation.