

Name: _____

MOR DISCOVERY

Updated 5/1/13

Dinosaurs under the Big Sky Scavenger Hunt Level 4

1. What is the single most important component of science? _____
Why? _____

2. Explain the difference(s) between avian and non-avian dinosaurs.

3. Define bone histology.

4. Describe a fifth possible hypothesis based on the physical evidence presented in the “Muddy Grave” display. _____

5. What are three pieces of physical evidence that suggest dinosaurs were endotherms?
 1. _____
 2. _____
 3. _____
6. How did the Museum’s paleontologists determine what color to make the life-like dinosaurs?

7. Define sexual dimorphism. Name one animal that displays this today.

8. What physical evidence recorded the presence of the Western Interior Seaway which covered the middle of North America during the Cretaceous Period?

9. What physical evidence suggests some dinosaurs cared for their young?

10. List two ways the *Triceratops* changes as it grows.

1. _____
2. _____

11. What physical evidence did paleontologist Jack Horner use to hypothesize that *T-rex* adults were scavengers?

12. What is so extraordinary about the “Catherine/*B.rex*” fossil?

13. Based on plant and animal fossils found in microsites in the Hell Creek formation, describe what eastern Montana was like during the late Cretaceous Period. _____

14. What is the main difference between the extinction and non-extinction theories of dinosaurs?

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1. What is the single most important component of science? *_physical evidence_*
Why? *_Science without physical evidence is opinion, and opinion is not science – even if it’s the opinion of a scientist.*
2. Explain the difference(s) between avian and non-avian dinosaurs.
_Non-avian dinosaurs are extinct. These dinosaurs lived 230-65 million years ago and walked with their legs directly underneath their bodies. Avian dinosaurs include living birds and can be alive today. They share many of the same characteristics of non-avian dinosaurs.
3. Define bone histology.
_The study of the microscopic internal structure of bone.
4. Describe a fifth possible hypothesis based on the physical evidence presented in the “Muddy Grave” display. *_Answers will vary.*
5. What are three pieces of physical evidence that suggest dinosaurs were endotherms?
 1. Dinosaurs grew quickly, so they had a high metabolism – both typical of endothermic animals.
 2. Only endothermic birds are known to sit on (brood) their eggs to incubate them.
 3. Feathers on birds (and dinosaurs) are designed to insulate the body to retain heat produced by endothermy.
6. How did the Museum’s paleontologists determine what color to make the life-like dinosaurs?
_Paleontologists based colors on modern reptiles and birds, because they are related to dinosaurs.
7. Define sexual dimorphism. Name one animal that displays this today.
_The existence of physical difference between males and females of the same species (i.e. size, color, body parts used for courtship, etc.) Examples will vary.

8. What physical evidence recorded the presence of the Western Interior Seaway which covered the middle of North America during the Cretaceous Period?

__The rock layers. Within the seaway, blankets of silt and sand were laid down along the shorelines and in shallow water, eventually becoming the sandstone formations in Montana today. Deeper portions of the sea were carpeted in mud, found today in shale formations._____

9. What physical evidence suggests some dinosaurs cared for their young?

__Baby Maiasaura leg bones were too weak for walking or running._____

10. List two ways the *Triceratops* changes as it grows.

1. Young horns curved back. Older horns pointed forward. 2. Young skull has larger eyes. 3. Young skull has triangle shaped bones on top edge of frill. 4. Nasal bones are not fused on younger skulls. 5. The face grew longer as it got older. 6. Blood vessel grooves in the skull are more prominent in the older Triceratops.

11. What physical evidence did paleontologist Jack Horner use to hypothesize that *T-rex* adults were scavengers?

Changes in T-rex teeth. Juvenile T-rex had small, sharp, blade-shaped teeth to cut flesh. Adult T-rex had fewer teeth and developed large, blunt, rounded teeth for crushing bone._____

12. What is so extraordinary about the “Catherine/*B.rex*” fossil?

*Mary Schweitzer discovered the first soft tissue blood vessels and cells in a *T.rex* known as “*B.rex*” or Catherine.*

13. Based on plant and animal fossils found in microsites in the Hell Creek formation, describe what eastern Montana was like during the late Cretaceous Period. _____

Answers will vary. Eastern Montana was along the shoreline of the Western Interior Seaway, so terrestrial and marine fossils can be found from this environment._____

14. What is the main difference between the extinction and non-extinction theories of dinosaurs?

The extinction hypothesis suggests all dinosaurs went extinct 65 million years ago. The non-extinction hypothesis suggests a group of theropod dinosaurs did not experience extinction and are now the avian dinosaurs, better known as birds. _____