



Dinosaur Details: Follow the Fossil Clues

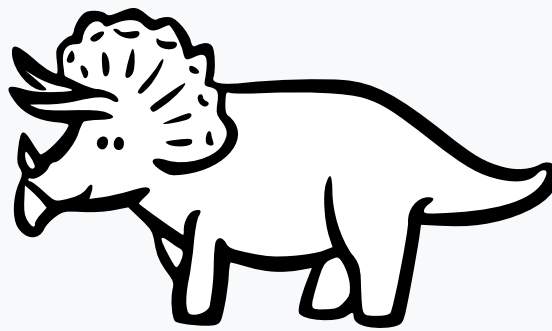
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Name: _____

Date: _____

Lesson:

Read the passages and examples below to learn about how details reveal a key idea. Notice how each important detail adds a clue about the same idea.



A topic names the general subject, but a key idea tells what the author wants readers to understand about that subject. Imagine shining a spotlight on each detail. Keep details that illuminate the same important idea, and explain how their clues connect.

Maiasaura Nesting Clues — Fossils cannot show dinosaur behavior as it happened. However, the locations and conditions of fossils provide clues. At sites in Montana, paleontologists uncovered *Maiasaura* nests, eggs, and remains of young dinosaurs.

Many nests were located near one another. Scientists also found nesting areas in rock layers formed at different times. These details suggest that Maiasaura gathered in groups and used the same general area during more than one nesting season.

Some young Maiasaura found inside nests had grown beyond the size of newly hatched babies. This detail suggests that the young remained in their nests as they grew. Together, the fossils reveal important information about how Maiasaura nested and cared for its young.

Worked Example 1 — Full model: Topic label: “Maiasaura.” This only names the subject. Key idea: “Maiasaura fossils reveal that these dinosaurs nested in groups and that their young remained in nests while growing.” This complete sentence tells what the details reveal about Maiasaura.

Worked Example 2 — Supported model: One detail says that many nests were located near one another. Another says that nesting areas appeared in rock layers from different times. The first detail suggests group nesting, while the second suggests repeated use of the area. Their connected clue is that Maiasaura had organized nesting behavior.

Worked Example 3 — Faded model: Weak version: “Nests, eggs, rock layers, and young dinosaurs.” This list names details but does not connect them. Strong version: “Nearby nests and young dinosaurs found inside them reveal that Maiasaura gathered to nest and that its young stayed there while growing.” The strong version explains how the details lead to a key idea.

Instructions:

Answer each question in 1–3 sentences. A topic only names the subject. A key idea explains what connected details help readers understand. Think of details as footprints leading toward one destination.

Read this passage:

Tyrannosaurus rex had a massive skull, but scientists can learn more than its size from fossil bones. Openings and marks inside the skull show where parts of its brain once rested.

Brain casts made from T. rex skulls show large olfactory bulbs, which process smells. These structures were especially large compared with those of many related dinosaurs.

The eye sockets of T. rex pointed partly forward. This position created overlapping views from both eyes, which helped the dinosaur judge distance.

Scoring: 16 points total. Items 1, 3, 5 and 6 are worth 3 points each; items 2 and 4 are worth 2 points each. Key points are evidence to look for, not one point each.

1. A reader writes “Tyrannosaurus rex” as the key idea of the passage. Explain why this is only a topic, and state a key idea that connects the smell and vision details.

2. Consider these two details from the passage: Detail 1 says T. rex had large olfactory bulbs that processed smells. Detail 2 says its forward-pointing eye sockets created overlapping views. Which detail more directly supports the idea that T. rex had a strong sense of smell, and why?

3. A Borealopelta fossil had thick armor and preserved color patterns. Its back was darker than its underside, a pattern that can make an animal harder to notice. Complete this key idea and explain how both details support it: “The Borealopelta fossil suggests that this dinosaur protected itself by ____.”

4. Evaluate these details about Borealopelta. Detail 1: It had thick armor. Detail 2: Its darker back and lighter underside may have helped it hide. Detail 3: A mine worker discovered the fossil in Alberta. Which detail should be left out of a key idea about protection from predators, and why?

5. Archaeopteryx fossils show feathered wings like those of birds. They also show teeth, clawed fingers, and a long bony tail like features found in other dinosaurs. What key idea do these details support, and how do the details connect?

6. One fossil preserves a Velociraptor and a Protoceratops locked together. The Protoceratops has its beak around the Velociraptor's arm, while the Velociraptor has a curved foot claw near the Protoceratops's neck. What key idea do these details reveal? Explain how the details work together.



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(Answer Key)

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1. A reader writes “Tyrannosaurus rex” as the key idea of the passage. Explain why this is only a topic, and state a key idea that connects the smell and vision details.

Hint: Ask what the large olfactory bulbs and forward-pointing eye sockets reveal together.

Expected Key Points:

- Explains that “Tyrannosaurus rex” names the topic but does not tell what readers should understand
- States that T. rex had well-developed senses of smell and vision
- Connects these senses to locating, following, or judging the distance of other animals

Evaluation Criteria: Award 3 points for distinguishing the topic from the key idea and connecting both senses to a likely use. Award 2 points for a correct key idea using both senses without a clear use, or for a clear explanation using only one sense. Award 1 point for a relevant but incomplete statement.

Explanation: The dinosaur’s name only identifies the subject. The two skull details suggest that T. rex had strong smell and useful depth vision, which could help it locate and follow other animals.

2. Consider these two details from the passage: Detail 1 says T. rex had large olfactory bulbs that processed smells. Detail 2 says its forward-pointing eye sockets created overlapping views. Which detail more directly supports the idea that T. rex had a strong sense of smell, and why?

Hint: Look for the detail that names the body part connected to smell.

Expected Key Points:

- Identifies Detail 1 about the large olfactory bulbs
- Explains that olfactory bulbs process smells

Evaluation Criteria: Award 2 points for identifying Detail 1 and explaining its connection to smell. Award 1 point for identifying the correct detail without explaining the connection.

Explanation: Detail 1 directly supports the idea because olfactory bulbs process smells. Detail 2 concerns vision and judging distance, not smelling.

3. A Borealopelta fossil had thick armor and preserved color patterns. Its back was darker than its underside, a pattern that can make an animal harder to notice. Complete this key idea and explain how both details support it: “The Borealopelta fossil suggests that this dinosaur protected itself by _____.”

Hint: Connect the armor to physical defense and the color pattern to hiding.

Expected Key Points:

- Completes the idea with armor and camouflage or hiding
- Explains how armor provided physical defense
- Explains how the color pattern could make the dinosaur harder to notice

Evaluation Criteria: Award 3 points for naming both protections and explaining each detail.

Award 2 points for naming both protections with only one clear explanation. Award 1 point for correctly explaining either the armor or color pattern.

Explanation: The armor could defend the dinosaur during an attack, while the color pattern could make it harder for predators to see. Together, the details suggest two forms of protection.

4. Evaluate these details about Borealopelta. Detail 1: It had thick armor. Detail 2: Its darker back and lighter underside may have helped it hide. Detail 3: A mine worker discovered the fossil in Alberta. Which detail should be left out of a key idea about protection from predators, and why?

Hint: Test whether each detail explains how the dinosaur could avoid or survive an attack.

Expected Key Points:

- Identifies Detail 3
- Explains that the discovery place does not support the idea about protection

Evaluation Criteria: Award 2 points for identifying Detail 3 and explaining why it does not support the stated key idea. Award 1 point for identifying Detail 3 without a clear explanation.

Explanation: Detail 3 should be left out because the discovery location does not explain how Borealopelta defended or hid itself. The armor and color pattern both relate directly to protection.

5. Archaeopteryx fossils show feathered wings like those of birds. They also show teeth, clawed fingers, and a long bony tail like features found in other dinosaurs. What key idea do these details support, and how do the details connect?

Hint: Explain what readers learn when one animal has features from both groups.

Expected Key Points:

- States that Archaeopteryx combined birdlike and other dinosaur features
- Connects feathered wings to birdlike features
- Connects the teeth, clawed fingers, or bony tail to other dinosaur features

Evaluation Criteria: Award 3 points for a key idea that combines both groups of features and explains the connection. Award 2 points for the combined key idea with limited explanation.

Award 1 point for listing accurate features without stating how they connect.

Explanation: The details show that Archaeopteryx combined birdlike features with features seen in other dinosaurs. The contrast between its wings and its teeth, claws, and tail supports that key idea.

6. One fossil preserves a Velociraptor and a Protoceratops locked together. The Protoceratops has its beak around the Velociraptor's arm, while the Velociraptor has a curved foot claw near the Protoceratops's neck. What key idea do these details reveal? Explain how the details work together.

Hint: Consider what both dinosaurs' positions suggest they were doing.

Expected Key Points:

- States that the dinosaurs were fighting or struggling
- Uses the Protoceratops's gripping beak as support
- Uses the Velociraptor's curved foot claw as support
- Explains that the two details connect as actions in the same struggle

Evaluation Criteria: Award 3 points for stating the key idea and connecting both fossil details to the struggle. Award 2 points for the correct key idea with support from only one detail. Award 1 point for a relevant detail or topic without a complete key idea.

Explanation: Each dinosaur appears to be using a body part against the other. Their locked positions provide evidence that they were struggling when they were buried.