

What Dinosaur Did These Bones Come From?

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Research Assistant Notebook

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Student Name

SECTION 1
What types of bones are these Mystery Fossils?

- 1 On your own or with a partner, make detailed observations of **Mystery Fossil #1** using the 3D fossil viewer on **Step 2** of the investigation. Record your observations below.
(Hint: Be as detailed as possible- you will need to reference these notes later on in the investigation.)

Think about or discuss: What body part do you think Mystery Fossil #1 is? Why do you think this?

- 2 On your own or with a partner, make detailed observations of **Mystery Fossil #2** using the 3D fossil viewer on **Step 4** of the investigation. Record your observations below. *(Hint: Be as detailed as possible- you will need to reference these notes later on in the investigation.)*

- 3 List some of the types of bones you can rule out based on your observations.
(Hint: This is your disconfirming evidence.)

- 4 Based on your observations, what type of bone do you think Mystery Fossil #2 is? _____

Think about or discuss:

- What evidence do you have to support your explanation for what type of bone Mystery Fossil #2 is?
- What is your strong evidence?
- What is your weak evidence?

(Hint: Strong evidence supports only one explanation. Weak evidence supports more than one explanation.)

SECTION 1 (continued)
What types of bones are these Mystery Fossils?

5 On your own or with a partner, make detailed observations of **Mystery Fossil #3** using the 3D fossil viewer on **Step 5** of the investigation. Record your observations below. (*Hint: Be as detailed as possible- you will need to reference these notes later on in the investigation.*)

6 List some of the body parts you can rule out based on your observations. (*Hint: This is your disconfirming evidence.*)

7 Based on your observations, what body part do you think Mystery Fossil #3 is? _____

Think about or discuss:

- What evidence do you have to support your explanation for what type of bone Mystery Fossil #3 is?
- What is your strong evidence?
- What is your weak evidence?

(*Hint: Strong evidence supports only one explanation. Weak evidence supports more than one explanation.*)

SECTION 2

What type of dinosaur did these bones come from?

STEP 9

Here's a helpful hint to read before starting this activity.

What do we mean by "type" of dinosaur? In this investigation, we are using the word "type" as a way to identify which general group of dinosaurs the Mystery Fossils belong to. This will help narrow down our search from the thousands of dinosaur species that have been discovered to just the species that belong to a distinct branch of the dinosaur family tree. The three "types" of dinosaurs we are going to be working with in this investigation are Ornithischian, Sauropod, and Theropod.

1 **Start here.** In the column below, use your notes to list at least three key features of Mystery Fossil #1. (Hint: A "key feature" is something distinctive that you noticed in your previous observations of the Mystery Fossils.)

2 **Next,** on the website, click on a type of dinosaur to compare and contrast with the Mystery Fossil.



3 **Finally,** look for the key features that you identified in the Mystery Fossil--are they also present in fossils from each type of dinosaur? If yes, place a check mark in the box below the listed types of dinosaur. If no, place an X in the box.

Key features of MYSTERY FOSSIL #1



	ORNITHISCHIAN	SAUROPOD	THEROPOD
1. It is sharply pointed on one end.			
2.			
3.			
4.			
5.			

Repeat the process with Mystery Fossil #2 on the next page.

SECTION 2 (continued)
What type of dinosaur did these bones come from?

STEP 10

- 1 Key features of
MYSTERY FOSSIL #2 

	ORNITHISCHIAN	SAUROPOD	THEROPOD
1. <i>It has one knob on one end and two smaller knobs on the other end.</i>			
2.			
3.			
4.			
5.			

- 2 **Next**, analyze the data in the charts for Mystery Fossil #1 & 2 and discuss with your partner: *Which TYPE of dinosaur does your evidence point toward? (Place an X under your answer.)*

Ornithischian Sauropod Theropod

- 3 **Now**, on your own or with a partner discuss what strong evidence you have from your comparisons of Mystery Fossils #1 and #2 to support your idea for the TYPE of dinosaur these bones come from. Discuss what disconfirming evidence you found that helped you rule out the other two types. *Note: An X is disconfirming evidence while a check mark can be weak or strong evidence. To analyze the difference ask yourself if the key feature supports one or multiple ideas. For example, if you compared the long groove of your mystery claw with other claws and found they all had this same feature, the multiple check marks tells you it is weak evidence for a particular type of dinosaur. If only one type of dinosaur has this feature (so you only have one check mark in that row) that is strong evidence since it only supports one idea.*

SECTION 3
What species of dinosaur did these bones come from?

STEP 11

Here's another helpful hint to read before completing this step.

How is "species" different from "type"? "Type" is a broad term; in this investigation, when we refer to type, we are referring to either Ornithischian, Sauropod, or Theropod dinosaurs. Species is a very specific term; there are hundreds of species belonging to each type of dinosaur. For example, Tyrannosaurus rex and Velociraptor mongoliensis are both Theropods, but they are different species of Theropod.

1 **First**, in the column below, list the key features of Mystery Fossil #3.
(Hint: A "key feature" is something distinctive that you noticed in your previous observations of the Mystery Fossils.)

2 **Next**, on the website, click on a type of dinosaur you think the Mystery Fossils belong to.



3 **Then**, write down the species names for the fossils you are going to compare on the dotted lines below.
(Hint: Species names are the italicized part of the label)

4 **Now**, look for the key features that you identified in Mystery Fossil #3-- are they also present in fossils from each species you listed in the chart? If yes, place a check mark in the box for that species. If no, place an X in the box.

Key features of
MYSTERY FOSSIL #3

1.					
2.					
3.					
4.					
5.					

STEP 13

1 **Next**, analyze the data in your chart and discuss with your partner: *What SPECIES of dinosaur does your evidence point toward?*

SECTION 4
Explanation and Argument

STEP 14

Now that you have identified the TYPE and SPECIES of dinosaur you think the Mystery Fossils come from, it is time for your group to prepare an argument to share with NHMU or your research partner.

OUR EXPLANATION:

1 The TYPE of dinosaur is: _____

The SPECIES of dinosaur is: _____

OUR ARGUMENT:

2 DISCONFIRMING EVIDENCE (Why did you rule out the other two types of dinosaurs? And, rule out the other species?)	HOW THIS EVIDENCE SUPPORTS OUR EXPLANATION

3 STRONG EVIDENCE (For the type and species of dinosaur)	HOW THIS EVIDENCE SUPPORTS OUR EXPLANATION

4 WEAK EVIDENCE (For the type and species of dinosaur)	HOW THIS EVIDENCE SUPPORTS OUR EXPLANATION

STEP 16

1 Think about or discuss the questions below as you prepare to share your argument with your NHMU.

1. What could make you doubt your explanation?
2. What could make your explanation stronger?