



DINOSAUR... OR NOT?

Activity Overview

BIG IDEA

Not all prehistoric or extinct animals are dinosaurs. Dinosaurs have specific characteristics that set them apart from other reptiles and marine animals. Modern birds have descended from dinosaurs.

OBJECTIVE

Students observe patterns in various prehistoric creatures and determine whether or not they can be classified as dinosaurs.

BACKGROUND

When scientists classify different species of animals they look at shared features such as skeletal structure and function. Dinosaurs are descended from a group of earlier reptiles. Early reptiles were like “modern” reptiles in that they lived on land and had a sprawling gait – that is, their legs stuck out to the sides of their bodies, like crocodiles and lizards. Dinosaurs shared many characteristics with these earlier reptiles, but dinosaurs’ legs supported their body weight by being directly under their bodies. In addition, dinosaurs were terrestrial. That is, they lived on the land, rather than through the air or in the water. In summary, all dinosaurs shared these four characteristics:

- All dinosaurs were vertebrates.
- All dinosaurs lived on land (not in the air or sea).*
- All dinosaurs were reptiles whose legs support their bodies from directly underneath, not sprawled out to the side.
- All dinosaurs lived during the Mesozoic Era, 230 to 66 million years ago. (However, not all animals that lived at this time were dinosaurs.)

If an animal doesn’t meet these characteristics, then they were not a dinosaur.

*Birds, however are a special case. Birds share characteristics with some dinosaurs: wishbone, hollow bones, extra-long digit (finger) on the hand, oblong hard-shelled eggs, wrist bone that allows the bird wing to fold to the side of the arm, three-toed foot, feathers. It is widely accepted by paleontologists that birds are the descendants of small, two-legged, feathered (theropod) dinosaurs with some new features like a beak instead of a toothed jaw and the “loss” of some fingers. By studying the similar structures and functions of dinosaur and bird fossils, scientists argue that birds are descended from dinosaurs.



DINOSAUR... OR NOT?

Activity Instructions Cont.

This is similar to how a person could consider themselves Irish if they are descended from Irish ancestors. Scientists have a special name for birds: avian dinosaurs!

EXTENSIONS

- Use the MOR Outreach Kit: Practices of Paleontology, to this process in more depth and facilitate a mock fossil preparation activity.
- Visit Museum of the Rockies on a field trip to see the real fossils described in this activity on display.



DINOSAUR... OR NOT? Museum Instructions

MATERIALS

Student activity sheets, clipboards, colored pencils (Pens, crayons, and markers are not allowed in exhibit spaces)

ACTIVITY TIME

30 Minutes

INSTRUCTIONS

Review the background information with your students, and work through the activity provided in this section. As you go through the museum, use the 4 dinosaur characteristics to decide if each animal you encounter is a dinosaur or not. Animals in the exhibit that are not dinosaurs:

Landforms and Lifeforms

None of these sea creatures were dinosaurs. Most of them were invertebrates, and they lived in the seas during the Paleozoic – the time before dinosaurs.

Plesiosaurs and Marine Crocodile

While these animals lived during the right time period in the Mesozoic, and have made fossils when they died, they were not dinosaurs. Ask your students if they can pick out why they were not really dinosaurs. Because they lived in the ocean, plesiosaurs were not dinosaurs. Crocodiles are also reptiles and distantly related to dinosaurs, but their legs sprawl off to the sides of their bodies, so are also not dinosaurs.

Small River Crocodile and Turtle

Since these animals are reptiles, with sprawling legs, they are also not dinosaurs, even though they may have spent time on land.



DINOSAUR... OR NOT?

Classroom Instructions

MATERIALS

MOR Outreach Kit: Dinosaur Basics including 20 Paleontology models
Plastic animals for dinosaur sorting activity
Guide to dinosaur sorting activity Signs: “Dinosaur” and “Not a Dinosaur”
Two bins for dinosaur sorting activity (optional for larger groups)

ACTIVITY TIME

20 Minutes

INSTRUCTIONS

Without providing any background information to your group on dinosaurs, show the participants the plastic animal toys (provided in the MOR Outreach Kit). Have the participants help you sort the animals according to if they are or are not a dinosaur.

For smaller groups, give every child a toy. Ask the participants to hold on to their animal and move to one side of the room or the other depending on if they are or are not a dinosaur. Show students which side is which by posting a sign, having an adult hold each sign, or write it on your whiteboard.

When the children have all sorted themselves, have everyone sit down. Have each child share their animal and why they thought it is or is not a dinosaur and why. While children share, confirm that they are in the correct group by using the provided four characteristics of dinosaurs listed earlier. Have participants move to the correct group if they guessed incorrectly.





NAME _____

Dinosaur... Or Not?

Study the images of the dinosaurs and the animals that are not dinosaurs.
Circle the dinosaurs.



How are the legs of the dinosaurs different than the animals that are not dinosaurs?

What class do dinosaurs belong to? (circle one): mammal reptile amphibian fish

Modern birds and dinosaurs share many characteristics. Describe three traits that dinosaurs and birds have in common.

1. _____
2. _____
3. _____



Dinosaur... Or Not? (Cont.)

Animals with bodies that are well-adapted to their environment can thrive for millions of years. Dinosaurs lived for 165 million years. While birds evolved from dinosaurs and are alive today, larger land-dwelling dinosaurs went extinct 66 million years ago

Scientists hypothesize that dinosaurs went extinct when a large meteor hit the Earth. Describe how this would have changed the Earth's environment.

Some animals, including small reptiles and mammals survived this environmental change. What characteristics did these animals have that helped them survive?

Build-A-Dino: You have discovered a new dinosaur with some unique characteristics. Circle one item from each box of traits on the left hand side. Then, draw your new dinosaur discovery that has each of those characteristics. Paleontologists never know what they are going to discover!

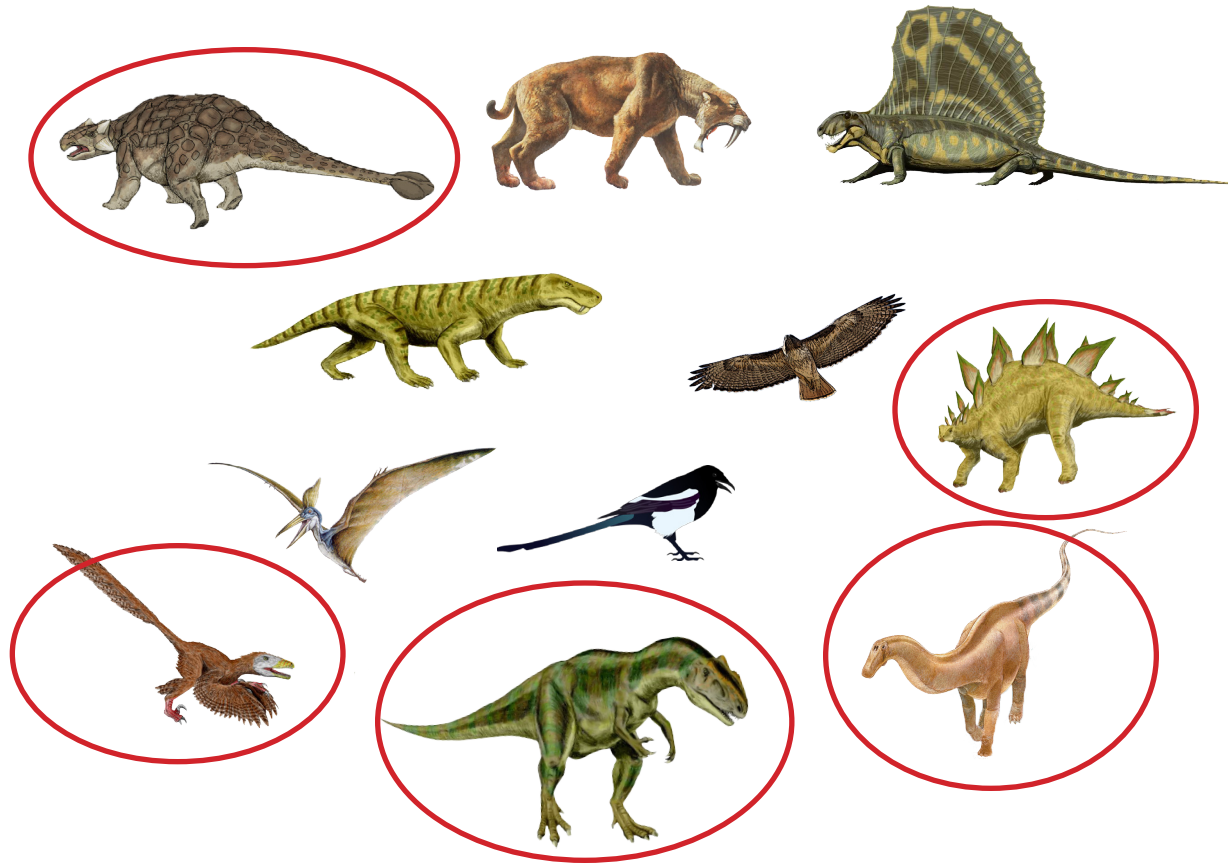
Traits	New Dinosaur Name:
<p>Two-Legged</p> <p>Four-Legged</p>	
<p>Very Large</p> <p>Large</p> <p>Medium</p> <p>Small</p> <p>Very Small</p>	
<p>Horns on Head</p> <p>Bony Armor</p>	
<p>Sharp Teeth and Claws</p> <p>Spikes on Back and Tail</p>	
<p>Feathers</p> <p>Scales</p>	



NAME _____ ANSWER KEY _____

Dinosaur... Or Not?

Study the images of the dinosaurs and the animals that are not dinosaurs.
Circle the dinosaurs.



How are the legs of the dinosaurs different than the animals that are not dinosaurs?

Dinosaurs had legs directly underneath their bodies

What class do dinosaurs belong to (circle one): mammal **reptile** amphibian fish

Modern birds and dinosaurs share many characteristics. Describe three traits that dinosaurs and birds have in common.

- 1. **Feathers**
- 2. **Wishbone**
- 3. **Hollow bones**
- 4. **Legs directly underneath body**
- 5. **3-toed foot**
- 6. **Hard-shelled eggs**



ANSWER KEY

Dinosaur... Or Not?

Animals with bodies that are well-adapted to their environment can thrive for millions of years. Dinosaurs lived for 165 million years. While birds evolved from dinosaurs and are alive today, larger land-dwelling dinosaurs went extinct 66 million years ago.

Scientists hypothesize that dinosaurs went extinct when a large meteor hit the Earth. Describe how this would have changed the Earth's environment.

A large meteor impact may have sent clouds of dust into the atmosphere, which locked sunlight, cooling the earth for many years

Some animals, including small reptiles and mammals survived this environmental change. What characteristics did these animals have that helped them survive?

These small animals are typically very adaptable. Small animals require less food and water, which can help survival in a catastrophe.

Build-A-Dino: You have discovered a new dinosaur with some unique characteristics. Circle one item from each box of traits on the left hand side. Then, draw your new dinosaur discovery that has each of those characteristics. Paleontologists never know what they are going to discover!

Traits	New Dinosaur Name:
Two-Legged Four-Legged	<p>Answers and drawings will vary</p>
Very Large Large Medium Small Very Small	
Horns on Head Bony Armor	
Sharp Teeth and Claws Spikes on Back and Tail	
Feathers Scales	