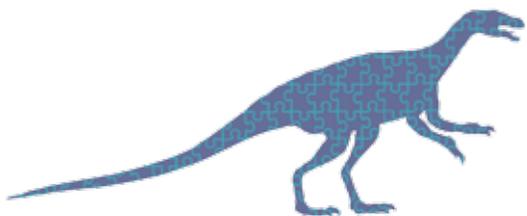


For Creative Minds

The For Creative Minds educational section may be photocopied or printed from our website by the owner of this book for educational, non-commercial uses. Cross-curricular teaching activities, interactive quizzes, and more are available online. Go to ArbordalePublishing.com and click on the book's cover to explore all the links.

Dinosaur Puzzles and Scientists



How do we really know that dinosaurs once roamed this earth? What did they look like? What kinds of dinosaurs were there and how many different kinds? When did they live? What did they eat—meat, plants, or both? How did they move? In what types of habitats did they live? How big or little were they? What kind of skin did they have? Did they care for and teach their young like humans do? Or did the

young survive on instinct as many animals do today? These are all dinosaur puzzles.

Can you imagine trying to put a puzzle together without knowing what the picture looks like? That's what scientists do when putting together bits of pieces of information about dinosaurs. Many different types of scientists use clues to learn about dinosaurs. They dig to find and study dinosaur remains and tracks. They are learning new things all the time. Sometimes new information is uncovered that causes scientists to reconsider things they had previously thought had been correct. Scientists don't always agree with one another's ideas. For example, some scientists might not agree with other scientists' explanations of the trackways in this book. Questioning one another helps scientists to learn and piece together pictures of these ancient animals and their behavior.

Paleontologists study the fossils of plants and animals. They find bits and pieces of skeletons (body fossils) that they put together—even if they don't have all the pieces.

Ichnologists study the behavior of living things based on things left behind: footprints, nests, eggs, and even poop.

Paleoichnologists study fossilized footprints, nests, eggs, and even fossilized poop (trace fossils).

Geologists study rock layers. They can tell when a dinosaur lived and what the environment was like at the time.

Biologists help “flesh out” the bones to understand what dinosaurs might have looked like and how they may have moved and behaved.

Chemists study fossilized skin and feathers to help us know what colors dinosaurs might have been.

Artists use all this information to make paintings and sculptures that bring the ancient creatures to life.

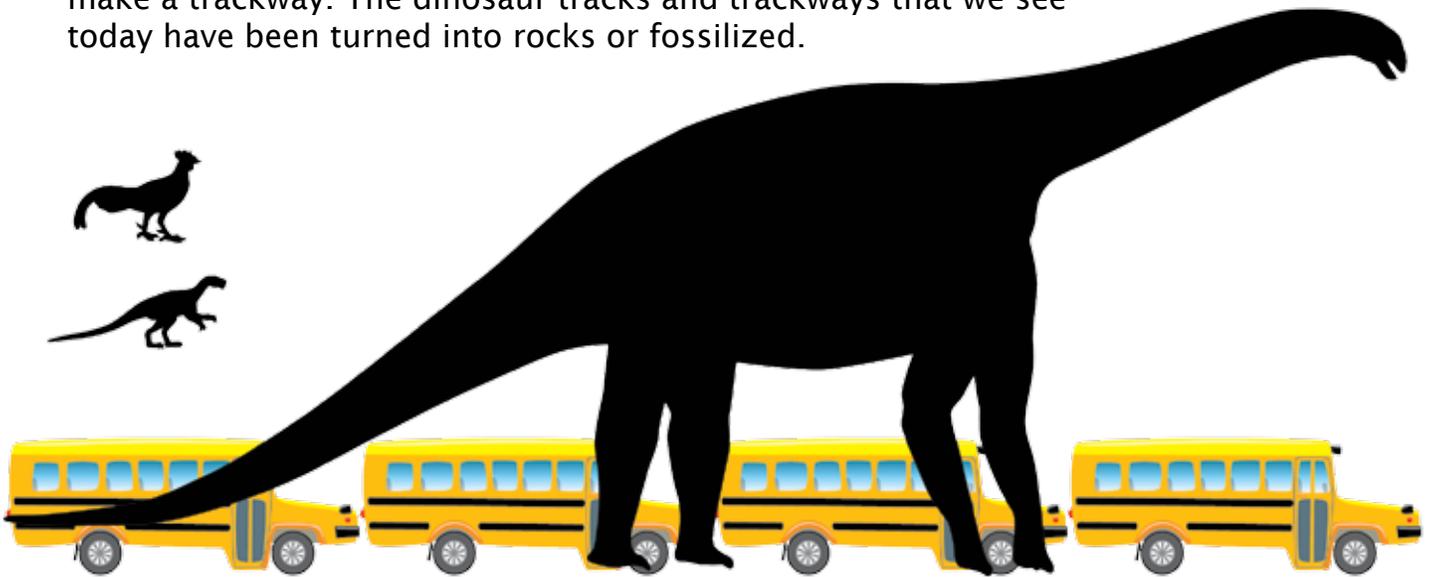
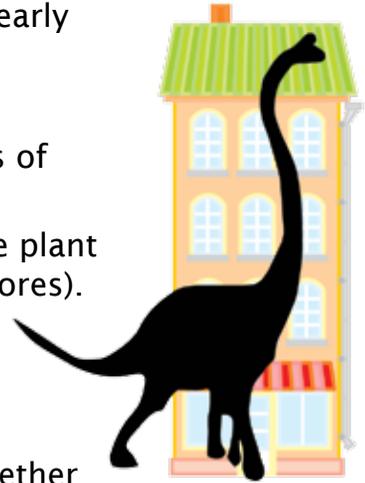
Maybe you'll be a dinosaur scientist when you grow up!



Dinosaurs: True or False

Are the following statements true or false?

1. The word dinosaur means “fearfully great lizard.” But dinosaurs weren’t lizards at all. They were a different kind of reptile.
2. All dinosaurs walked upright on two feet.
3. Dinosaurs only had scaly skin.
4. The largest dinosaurs were longer than four school buses and nearly as tall as a four-story building.
5. Some dinosaurs were about the size of chickens.
6. Like animals today, dinosaurs lived all over the world in all kinds of habitats from swamps to the cold poles.
7. Some dinosaurs were meat eaters (carnivores). Many others were plant eaters (herbivores). And others ate both meat and plants (omnivores).
8. The earliest known dinosaur lived about 250 million years ago. Most of the dinosaurs vanished 65 million years ago.
9. Today’s birds descended from dinosaurs.
10. A single footprint or handprint is called a track. Many tracks together make a trackway. The dinosaur tracks and trackways that we see today have been turned into rocks or fossilized.



Answers: 1) True. 2) False. Some walked upright on straight legs. Some walked on all fours the way dogs and cats do. And some walked on just their hind legs like an ostrich. 3) False: Some dinosaurs had scaly skin and others had feathers! 4) True. 5) True. 6) True. 7) True. 8) True. 9) True. 10) True—Millions of years ago, a dinosaur walked across a patch of soft ground. Its feet left impressions in the ground just as you do when you walk on a beach. If the footprints weren't washed away or trampled over, they would dry in the sun and harden. Next, a layer of mud, sand, or other sediment filled in the prints. Over many years, more sediment built up on top of the track layer. The weight and pressure from so many layers caused the mud around the tracks to turn to rock. Fossils were born!

Dinosaur Tracks

Many trackways are found along ancient streams, lakes, or beaches. They may contain the tracks of one animal or hundreds. Tracks can tell us about the animal that made them. They can tell us whether the animal was walking, running, resting, or slipping in the mud. They can tell us if an animal traveled alone or in a herd. They can even tell us what the animal ate!

There are three main dinosaur groups that left tracks.

- Theropods had sharp teeth, walked on two back feet, and had short front legs and feet. These meat eaters left narrow, three-toed tracks with signs of sharp claws.
- Sauropods had long necks, walked on all four feet, and were plant-eaters. They left two pairs of rounded tracks. The back feet were often much larger than the front feet, so the tracks are different sizes.
- Ornithopods walked on two bird-like feet and were plant eaters. They left three-toed, rounded tracks.

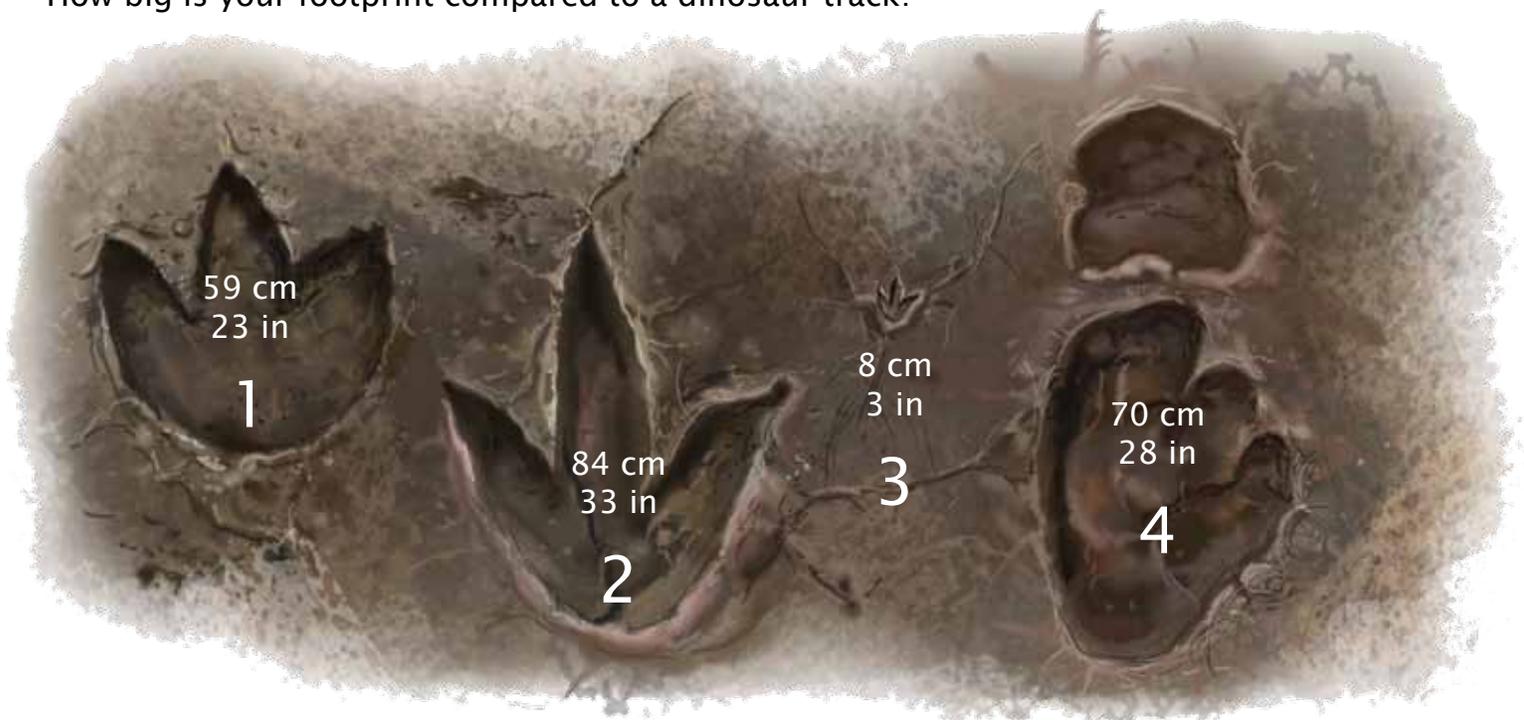
Identifying the tracks by dinosaur group is easy. It's like telling a cat's footprint from a dog's footprint. Knowing exactly which species made the track is hard. If scientists find a skeleton nearby and the foot bones match the tracks, they can make a match.

Can you identify to which dinosaur group these tracks belong?

Look through the book to identify any of the tracks in the art. By looking at the tracks, can you tell if the dinosaurs were meat-eaters or plant-eaters?

Were there many types of dinosaurs leaving tracks or just one? If you were a scientist, what could you infer from that observation?

How big is your footprint compared to a dinosaur track?



Answers: 1) Ornithopods. 2) Theropods. 3) Theropods. 4) Sauropods.

Tracks Around the World



Dinosaurs lived just about everywhere. Look at the map to see where tracks mentioned in this book were found. Are there any tracks near where you live?

Scientists have estimated how many million years ago the tracks were made.

Location	Million Years Ago
Glen Rose, Texas, USA	110
South Hadley, Massachusetts, USA	190
Morrison, Colorado, USA	150
Holy Cross Mountains, Poland	250
Crayssac, France	150
Victoria, Australia	115-100
Zion National Park, Utah, USA	190
Shandong Province, China	120
Lesotho, Africa	200
Lima, Montana, USA	95
Hell Creek Formation, Wyoming, USA	67

