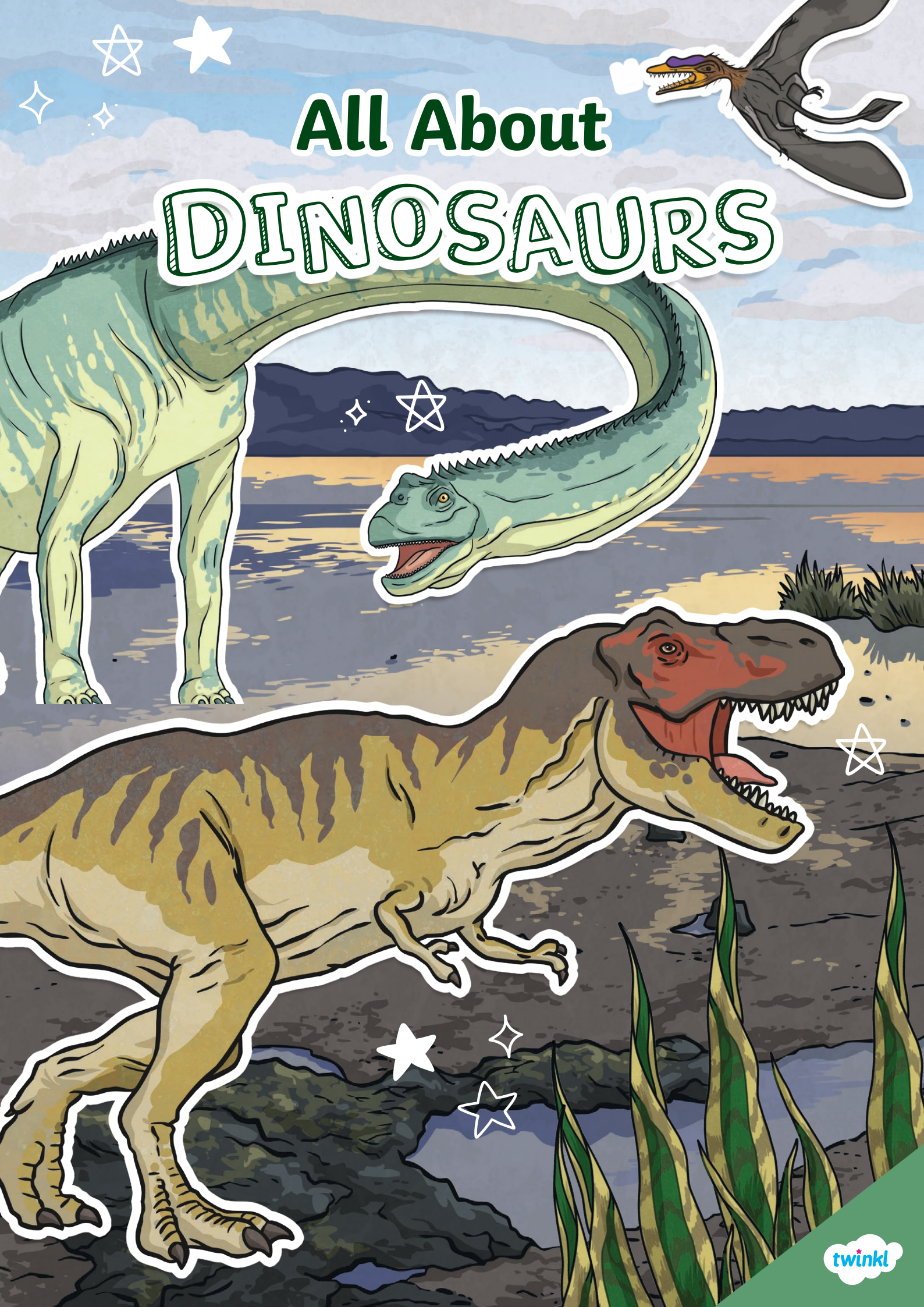


All About DINOSAURS



What Are Dinosaurs?

Dinosaurs are a group of prehistoric reptiles that lived during the Mesozoic era (245 million to 68 million years ago).

Throughout this era, dinosaurs of different shapes and sizes evolved, from ones the size of a chicken (e.g. Microraptor) to giants that were 30m long (e.g. Brachiosaurus).

Sir Richard Owen created the word 'dinosaur' in 1842. He used the Greek words 'deinos' (which means 'fearfully great') and 'sauros' (which means 'lizard'). They lived millions of years before humans existed.

How Did Dinosaurs Behave?

We can't be sure how the dinosaurs behaved, how they sounded or what colours and patterns they were.

We do know:

- that most dinosaurs were herbivores (plant-eaters);
- that some dinosaurs were carnivores (meat-eaters);
- where dinosaurs lived;
- what the climate and vegetation was like where they lived;
- when the dinosaurs lived.



When Did Dinosaurs Live?

Dinosaurs lived on earth for about 245 million years during the Mesozoic era. The Mesozoic era has three geological periods:



The Triassic Period

251 million to 199 million years ago

The Jurassic Period

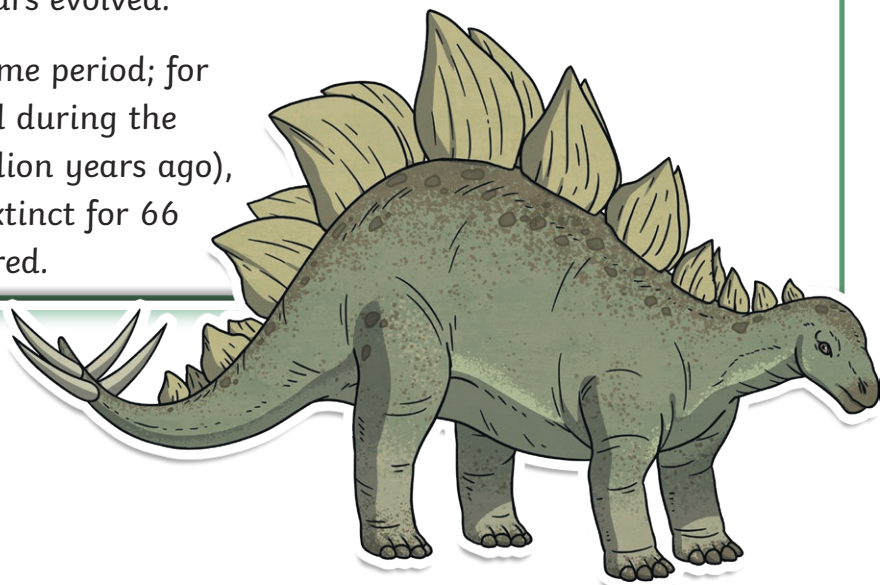
199 million to 145 million years ago

The Cretaceous Period

145 million to 66 million years ago

During the Mesozoic era, one huge supercontinent (Pangea) gradually split into smaller landmasses. As the landmasses moved to new locations, their climate and vegetation changed, which affected how dinosaurs evolved.

Not all dinosaurs lived during the same period; for example, the Tyrannosaurus rex lived during the late Cretaceous period (about 72 million years ago), whereas the Stegosaurus had been extinct for 66 million years before the T. rex appeared.



How Do We Know About Dinosaurs?

Hundreds of years ago, fossilised remains of dinosaurs were misunderstood. People believed that they were proof of ancient legends and mythical creatures. It was not until the early 1800s that a number of fossil discoveries in southern England led to the classification of this new group of animals that later became known as dinosaurs.

Palaeontologists are scientists. They look for clues preserved in ancient rocks to try to understand more about prehistoric animals, including dinosaurs. They examine fossilised bones, teeth, eggs, tracks and footprints, dung and vegetation to discover how dinosaurs lived.

What Are Fossils?

A fossil is the preserved remains, impression or trace of a once-living thing from a previous geological era. Examples include bones, footprints and DNA.

There are three types of fossils:



Chemical fossils

contain carbon, proof that they were formed from once-living things.

Body fossils

are the remains of an animal or plant, such as bones, shells or leaves. They include:

Trace fossils

record the activity of an animal. They include footprints, trackways and coprolites (faeces).

Mold fossils form when all the parts (including the bones) have decayed and all that is left is the mold of the animal.

Replacement fossils form when water dissolves the original hard matter of the bones and replaces them with mineral matter - this is what we think of when we discuss dinosaur fossils. They still look like the original bones but are not made up of the same matter.

Cast fossils form from mold fossils as the mold fossil is filled up with sediment - so it is not made up of the original matter of the animal or plant.

Whole-body fossils form when the original body has been preserved - for example, a woolly mammoth in ice or a mosquito in amber.

How Are Fossils Formed?

Fossilisation (the process by which a fossil is formed) only takes place in sedimentary rocks as the heat from the lava that creates igneous rocks and changes the structure of metamorphic rocks would be too high for fossils to survive.

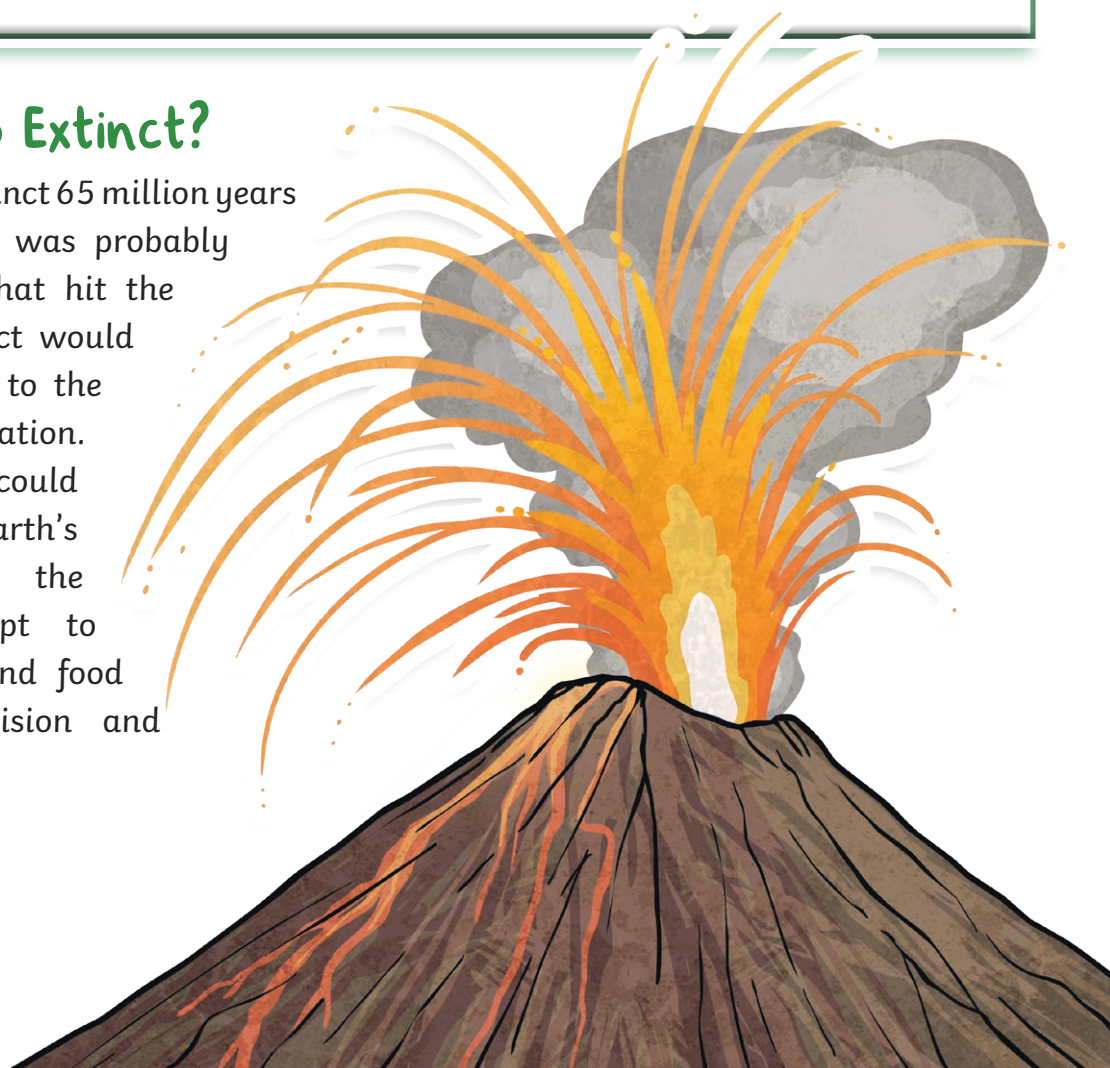
First, an animal or plant dies (on land or in the sea) and it gets covered by a layer of sediments (e.g. plant material and tiny parts of rock or soil). Over time, through compaction and cementation (solidifying), these eventually form a layer of rock. More layers of rock are formed which cover it. By this time, the only thing to remain of the organism would be the hard parts such as the bones, shells and teeth.

Over thousands of years, the mold fossil might become a cast fossil with sediment entering the mold. In the case of replacement fossils, the original bone matter changes to mineral matter but this does not affect the shape of the bones. Over a long period of time, the sea will recede in certain places. The sea level could also be changed quickly through earthquakes and volcanic eruptions. Over time, as erosion and weathering take place, the fossils become exposed.



Why Did They Go Extinct?

Most dinosaurs became extinct 65 million years ago. Scientists think this was probably because of an asteroid that hit the Earth. The asteroid impact would have made a big change to the Earth's climate and vegetation. Large volcanic eruptions could also have affected the Earth's climate. Unfortunately, the dinosaurs couldn't adapt to the change of climate and food available after the collision and became extinct.



What Were the Different Types of Dinosaurs?

There were many different dinosaurs that lived at different times during the Mesozoic era.

Dinosaurs can be grouped into the following categories:



Armoured Dinosaurs

These medium-sized, four-legged herbivores had body armour and some even had tail spikes. Examples of armoured dinosaurs include Gastonia, Stegosaurus and Nodosaurus.



Ceratopsians

These dinosaurs were herbivores and had parrot-like beaks, bony frills and, sometimes, horns. Examples of ceratopsians include Triceratops, Centrosaurus and Achelousaurus.



Euornithopods

These medium-sized herbivores usually walked on two legs. Examples of euornithopods include Iguanodon, Parasaurolophus and Edmontosaurus.



Sauropods

These very large herbivores mostly walked on four legs. Examples of sauropods include Brachiosaurus, Diplodocus and Pelorosaurus.



Large Theropods

These large carnivores walked on two legs. Examples of large theropods include Carnotaurus, Allosaurus and Tyrannosaurus rex.

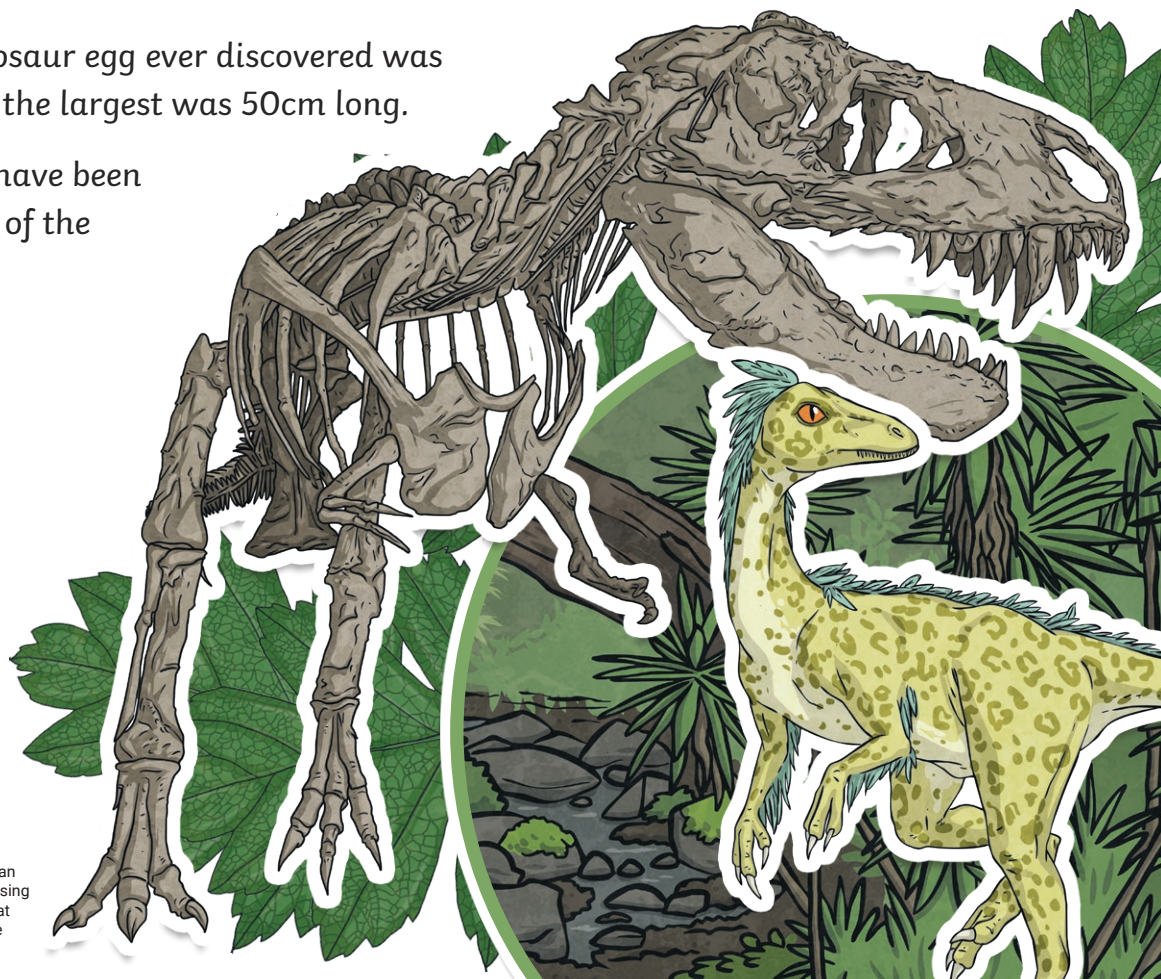


Small Theropods

These small carnivores, herbivores and omnivores walked on two legs and sometimes had feathers. Examples of small theropods include Oviraptor, Troodon and Velociraptor.

Top 10 Dinosaur and Fossil Facts

1. Marine fossils revealed that Mount Everest used to be part of the sea floor.
2. Modern birds have evolved from dinosaurs. We know this because birds share common skeletal traits with some dinosaurs.
3. Crocodiles existed 200 million years ago at the same time as dinosaurs. Crocodiles are reptiles, not dinosaurs.
4. It is thought that some dinosaurs (e.g. the Apatosaurus) may have been able to create a sound known as a sonic boom by banging its tail.
5. Fossilised remains of the largest dinosaur ever discovered were found by a shepherd in Argentina in 2013. The dinosaur is thought to have been over 40 metres long.
6. Mary Anning was one of the first palaeontologists. When she was 12, Mary and her family discovered the skull of an Ichthyosaurus in a cliff in Dorset.
7. Triceratopses had bird-like beaks that could eat through tough vegetation.
8. Pterodactyls were winged reptiles, not dinosaurs. They should actually be referred to as pterosaurs. Scientists believe that the largest pterosaurs could reach speeds of over 100km per hour.
9. The smallest dinosaur egg ever discovered was 3cm long, whilst the largest was 50cm long.
10. Dinosaur fossils have been discovered on all of the seven continents.



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