

Dinosaurs

Hundreds of millions of years ago, in what is known as the Mesozoic Era, dinosaurs walked the earth. Some were gentle giants; others, ferocious beasts. The Mesozoic Era is divided into three periods: the Triassic period, Jurassic period, and Cretaceous period.

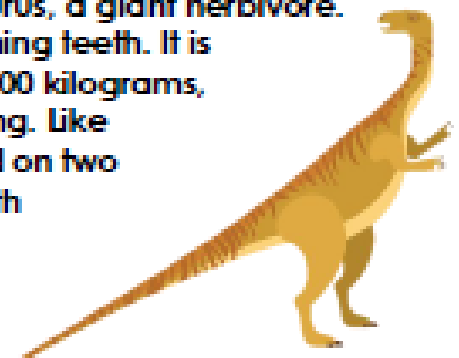
Triassic Period (248 – 205 million years ago)

245 million years ago, the global temperature is believed to have averaged around 10 – 15 °C (50 – 60 °F). Towards the end of the Triassic period, evidence suggests that planet Earth became drier and hotter. Deserts covered most of the land, while forests of tree ferns flourished in the Northern hemisphere and conifers near the equator.



One of the earliest known dinosaurs was the Coelophysis, a carnivorous, bipedal predator who emerged around 200 million years ago. The first specimen was found in 1881 in New Mexico, USA. The Coelophysis is estimated to have weighed about 15 – 20kg, and measured approximately 3 metres in length. It was a fast and agile dinosaur with exceptional depth perception, and probably hunted small, lizard-like prey.

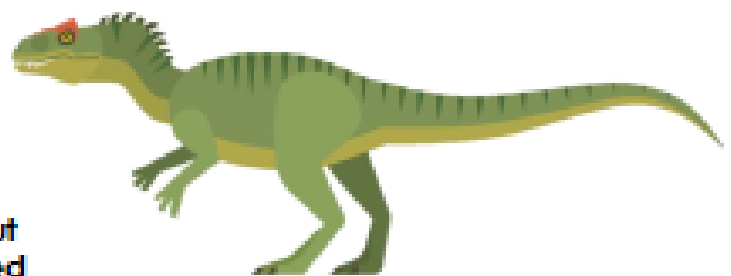
Towards the end of the Triassic period lived the Plateosaurus, a giant herbivore. It had a long, flexible neck, and flat but sharp plant crushing teeth. It is believed the Plateosaurus weighed between 600 and 4,000 kilograms, and grew to be anywhere between 4.8 and 10 metres long. Like the Coelophysis, the Plateosaurus was bipedal and stood on two legs; unlike the Coelophysis, it was strong and stocky, with powerful arms and hind legs.



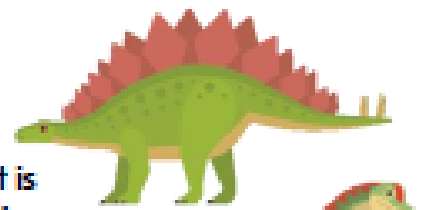
Jurassic Period (205 – 142 million years ago)

During the Jurassic period, rainfall increased and the oceans rose. Vegetation became lush and plentiful, and giant forests and ferns replaced most of the desert areas that covered Earth's surface.

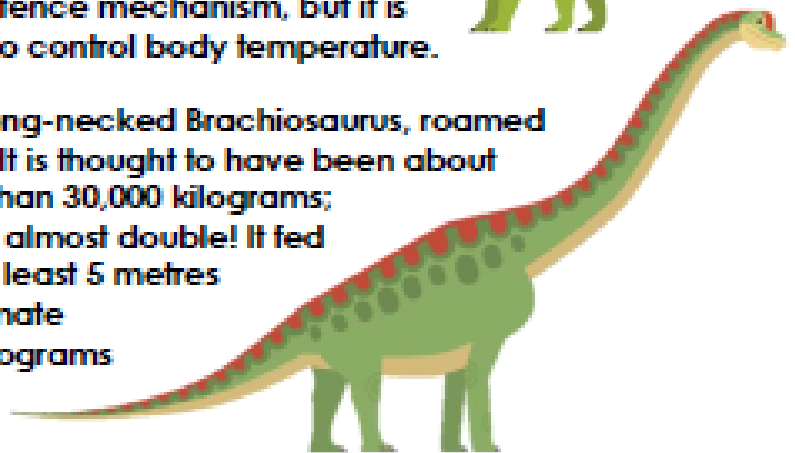
The Allosaurus reigned at the top of the food chain during the Jurassic period. It was a large bipedal predator; its massive jaw armed with dozens of saw-like serrated teeth. Averaging about 9 metres long and weighing an estimated 2300 kilograms, the Allosaurus had large, muscular hind legs, small arms, and a long, powerful tail. Some palaeontologists believe it was a social creature who hunted in packs; others believe it was extremely aggressive and kept to itself. Nevertheless, the Allosaurus was ferocious, and likely hunted large herbivores or even other carnivores.



About the size of a modern day bus, the Stegosaurus was a herbivore with short forelimbs which kept its small head close to the ground and its spiked tail high in the air. The Stegosaurus' trademark plates which ran along their back might have been used as a defence mechanism, but it is believed their primary function was to control body temperature.



Another well known herbivore, the long-necked Brachiosaurus, roamed the earth during the Jurassic period. It is thought to have been about 26 metres long, and weighed more than 30,000 kilograms; some specimens suggest it weighed almost double! It fed mostly on foliage, or plant matter, at least 5 metres off the ground. Palaeontologists estimate the Brachiosaurus ate around 250 kilograms of plant matter daily.



Cretaceous Period (142 – 65 million years ago)

Around the middle of the Cretaceous period, the Earth began to cool. The giant forests of the Jurassic period started to decline and different vegetation, including flowering plants, began to develop.

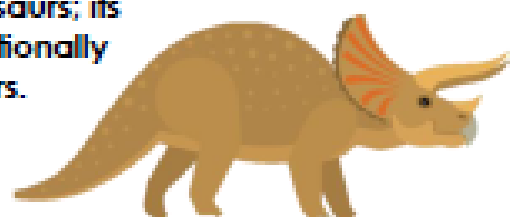


The Cretaceous period was ruled by none other than the 'Tyrant Lizard King': the Tyrannosaurus rex. Its skull measured 1.5 metres, and was balanced by a long, heavy tail. Its jaw was filled with massive serrated teeth that delivered a devastatingly strong bite. Likely an apex predator, the Tyrannosaurus rex preyed on herbivores and other carnivores alike.



Another well known carnivore from the Cretaceous period is the Velociraptor. Weighing about 15 kilograms and averaging about 1.8m long (not much bigger than a domestic turkey), the Velociraptor were bipedal, feathered dinosaurs with a large sickle shaped claw on each hind foot, which they used to take down prey.

Looking something like a prehistoric tank, the herbivore Ankylosaurus was covered in armoured plates and had a large club on the end of its tail to protect it from predators. While it was only about 1.7 metres high, it weighed about 6000 kilograms – it had short, strong legs to carry all that weight. Fellow herbivore, the Triceratops, had armour which makes it one of the most recognisable of all the dinosaurs; its trademark bony frill and three facial horns have traditionally been viewed as defensive weapons against predators.



Extinction

66 million years ago, after approximately 163 million years of existence, dinosaurs disappeared. Most experts believe a giant asteroid crashed into the Earth and wiped them all out. So how do we know so much about them?

Dinosaur Remains

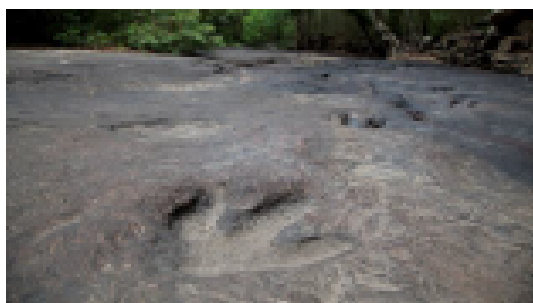
Palaeontologists from all over the world study fossils to learn about these great creatures. Fossils are preserved remains or traces of animals and plants, usually found in rock. There are many different methods of fossilisation. One type of fossil is formed if a dinosaur died near water. Its body was eventually covered in layers of sediment like ash, mud or sand. The soft parts of the body would rot away, leaving the hard bones of the skeleton behind. Over time, layers of sediment would continue to build up and become extremely heavy. The layers around the skeleton were under so much pressure that they are compacted and become rock. Eventually, minerals found in the groundwater seeped in to dissolve and replace the bones in the skeleton, and these minerals hardened to form a fossil.

Palaeontologists excavate a fossil by removing the rock and earth carefully from around the specimen. During the excavation, the fossil is repeatedly photographed and labelled. For small or fragile fossils, special hand tools are used, including trowels, brushes, and tiny picks (somewhat like dental tools). Bigger fossils might require larger tools, such as shovels or jack-hammers.

However a fossil is excavated, once it has been dug out of the ground, it is carefully packed up and moved to the lab. There, it will be cleaned, documented, and studied carefully by specialised scientists.



Some fossils formed in amber give us clues about insects, spiders, and plants from millions of years ago. Amber is formed when lumps of a sticky syrup-like resin seeps out of trees and traps small creatures. Eventually, this hardened resin is buried in sediment and fossilised. Amber is popular for its beautiful colouring, and is often used in jewellery.



Palaeontologists also study trace fossils, which show the marks left behind by a dinosaur while it was alive, including tracks, burrows, and droppings. These fossils give insight into the behaviour of dinosaurs. Studying fossils allows us to walk in the footsteps of dinosaurs millions of years after they died.

Dinosaurs – Comprehension

Section A

Which is not a period of the Mesozoic Era?

Jurassic	
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Cretaceous	
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Triassic	
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Prehistoric	
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Which is considered to be one of the earliest known dinosaurs?

Stegosaurus	
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Coelophysis	
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Allosaurus	
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Ankylosaurus	
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Which dinosaur appeared in the Jurassic period?

Triceratops	
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Allosaurus	
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Plateosaurus	
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T-Rex	
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According to their diets, which dinosaur does not belong in this group?

Ankylosaurus	
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Velociraptor	
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Allosaurus	
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Coelophysis	
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Which of these dinosaurs had the biggest skull?

Coelophysis	
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Stegosaurus	
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T-Rex	
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Velociraptor	
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Number the dinosaurs in the order they appeared in history.

Stegosaurus	
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Coelophysis	
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Plateosaurus	
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T-Rex	
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Section B

Use the information in the text to decide whether these statements are true or false.

	True	False
The Tyrannosaurus rex and the Brachiosaurus roamed the Earth at the same time.		
An apex predator, like the Tyrannosaurus rex, is a predator at the top of its food chain.		
The Jurassic period of the Mesozoic Era was more than 250 million years ago.		
By the end of the Triassic period, rainfall increased and the oceans rose.		
The Triceratops is renowned for its trademark frill and three facial horns.		
Experts believe a giant asteroid caused the extinction of the dinosaurs.		

Section C

Choose one dinosaur from each period to complete this fact chart.

Name	Period	Length	Weight	Diet	Notable feature

Section D

Use a dictionary to find the meaning of the following words from the text.

apex predator	
bipedal	
conifer	
excavate	
foliage	
forelimbs	
palaeontology	
serrated	