



**GIRL SCOUTS OF
GREATER ATLANTA
BADGE PROGRAM GRADES 3-5**



Welcome to Dino Safari

Introduction to the Exhibition

Imagine yourself in a time when dinosaurs roamed the Earth, and all seven continents were joined together to form one huge super landmass called Pangea. Then imagine you are on a 172-million-year journey to witness the breakup of Pangea, the evolution of hundreds of species of dinosaurs, and the eventual downfall of the Age of Reptiles. This is Dino Safari.

How to Earn your Badge!










To earn your Dino badge, take this packet with you through your journey into the world of Pangea and beyond. There are two parts of the packet for you to fill out. First is the scavenger hunt, which will be discussed about next. At the end of the adventure, there are a few questions to answer below about your favorite parts of the exhibit.

After you finish answering the questions, bring the packet to our team at the retail store, who will check to see that everything is filled out. Once they approve it, you have earned your Dino Badge. Congratulations!!!!

Don't forget to bring your packet home with you, as there are coloring and activity sheets for you to complete on your own or with your friends. All of us at Dino Safari hope you have a T-Rexcellent time!

Scavenger Hunt

Before beginning your adventure, look at the pictures on the next page. They showcase the places you will visit and some of the cool features that make dinosaurs so unique. For the first hunt, each time you enter a new gallery, check off that you visited that area of Pangea. For the second hunt, when you see a dinosaur with a listed feature, mark down that you saw it. Good luck!

EUROPE  <input type="checkbox"/>	ASIA  <input type="checkbox"/>	AUSTRALIA  <input type="checkbox"/>	ANTARCTICA  <input type="checkbox"/>
S AMERICA  <input type="checkbox"/>	AFRICA  <input type="checkbox"/>	N AMERICA  <input type="checkbox"/>	 <input type="checkbox"/>
DINO SAFARI A WALK THRU ADVENTURE!	CONTINENTS VISITED	TRAVEL DOCUMENTS PASSPORT TO PANGEA	

CAN YOU FIND... FEATHERS  <input type="checkbox"/>	EGGS  <input type="checkbox"/>	HORNS  <input type="checkbox"/>	THUMB SPIKE  <input type="checkbox"/>
FERNS  <input type="checkbox"/>	FLOWERS (ARCHEOFRUCTIS)  <input type="checkbox"/>	SHARP TEETH  <input type="checkbox"/>	PALM TREES  <input type="checkbox"/>
DINO SAFARI A WALK THRU ADVENTURE!	ITEMS FOUND	TRAVEL DOCUMENTS PASSPORT TO PANGEA	



PANGEA: The Original Super Continent

Overview

270 million years ago, our planet looked very different than it does today. It was more like an alien landscape with a different climate, plants, and animals. At that time, all seven of Earth's continents as we know them today (North America, South America, Asia, Europe, Africa, Australia, and Antarctica) were part of a single giant landmass—a supercontinent called Pangea. On Pangea, everything was interconnected. If it happened on Pangea, it really stayed on Pangea.

238 million years ago, a new type of creature emerged on Pangea, one that would forever change the makeup of animal communities on the planet – the dinosaurs! Although initially few in number and small by dinosaur standards (no more than 15 feet in length), these early carnivores and herbivores possessed a unique set of attributes that would aid in their domination of nearly all terrestrial ecosystems for more than 170 million!

Dinosaur Spotlight

One of the earliest dinosaurs, *Herrerasaurus* was a bipedal predator with a long, stiff tail, three main fingers, and sharp, serrated teeth. Its flexible lower jaw helped to grasp its prey. Its long legs and hollow bones suggest it was a fast runner. Bite marks on the skulls of these animals show that they often battled one another, presumably over food or mates. The earliest forms were small, about 10-feet long, later growing up to 20-feet in length. The rare *Herrerasaurus* was discovered in 1991 in the Ischigualasto Formation of Argentina.

Question:

Which dinosaur are you most looking forward to learning about?



Gallery 2

South America: The Birthplace of the Fearfully- Great reptiles and Land of the Super-Giants

Overview

During the late Triassic Period, South America was part of the supercontinent of Pangea. Near the lush tropical shores of the supercontinent, a new form of life appeared – dinosaurs! The first dinosaurs were small by dinosaur standards. They were between 3 and 15 feet in length and included bipedal carnivores such as *Herrerasaurus*, bipedal omnivores such as *Eoraptor* and *Pisanosaurus*, and long-necked, bipedal (two-legged) herbivores such as *Saturnalia*. These relatively small dinosaurs, born in what would later become South America, gave rise to all other dinosaurs, many of which grew to tremendous sizes.

Dinosaur Spotlight

Amargasaurus was one of the smallest sauropod dinosaurs at just 33 feet (its relatives could reach 140 feet!). It had a quadrupedal (four-legged) stance. Using its neck, it could feed on plants low to the ground and high in trees. Its most notable features were tall spines along its neck. These spines were most likely for display to fellow *Amargasaurus*, much like crests seen on the backs of reptiles today. It is unclear if there was skin between the spines; this remains a topic of debate among paleontologists. Like most dinosaurs, *Amargasaurus* is known from a single specimen discovered in Argentina.

Question:

How small was the smallest *Amargasaurus* and how large was the biggest one?



European Islands: Home of Laurasia's Miniature Dinosaurs

Overview

When dinosaurs first appeared 238 million years ago, the world was much warmer and lacked extensive mountain ranges such as the Rockies and the Himalayas. There were no ice caps at the poles, which resulted in higher seas levels that often spread for miles inland, inundating lower lying continents.

Throughout the breakup of Pangea and Laurasia, Europe was a series of islands surrounded by warm shallow seas. Sea level fluctuations and continental collision meant that the European Islands also connected with, and separated from, one another and the adjacent continents of North America and Asia during the Jurassic and Cretaceous Periods. Given this ever changing – and often forgotten – landscape, the dinosaurs that evolved in Europe are related to North American and Asian forms, but also include many that are unique to Europe.

Dinosaur Spotlight

Neovenator was a very large, predatory dinosaur. Each hand and foot had three very sharp claws. Its teeth were thin, blade-like, and serrated like steak knives for cutting flesh. Short, horn like projections above its eyes helped *Neovenator* to recognize others of the same species.

Neovenator was first discovered in 1978 on the Isle of Wight in the United Kingdom. The first and bestknown specimen (70% complete) bears numerous injuries showing that these animals had violent lives. It is possible that such injuries occurred while hunting *Iguanodon* and other dinosaurs.

Iguanodon could either move all four limbs or stand up on its hind legs to reach higher plants. Its middle toes and fingers were hooved similar to horse hooves. *Iguanodon*'s hands had opposable small digits there were used like our thumbs to grasp branches. Its "thumbs" also had a horn-covered spike used for fighting other *Iguanodon* as well as for general defense. *Iguanodon*'s teeth came together in a way that allowed it to effectively chew plants, which is very rare among reptiles today. Trackways, and discoveries of dozens of individuals together, suggest they traveled in vast herds. *Iguanodon* was one of the first dinosaurs to be discovered and was originally thought to be a giant lizard.

Question:

Can you name one interesting fact about the *Iguanodon*?



Antarctica: A Temperate Dinosaur Vacation Spot

Overview

During the time of the dinosaurs, Antarctica was not a frozen continent like it is today. Along with the other landmasses at the time, Antarctica benefitted from Earth's warmer temperatures. It was a lush environment characterized by conifer forests with ginkgoes and ferns spotting the landscape. Long-necked herbivores sauropods feasted on the continent's greenery.

Discovered in 1991, *Cryolophosaurus* was one of the most spectacular dinosaurs to live in Antarctica and was found only there. It certainly benefited from hunting the well-fed herbivores that enjoy the lush forest buffet. Antarctica at this time was a much different place than the ice-covered plains that modern scientists and penguins experience now.

Dinosaur Spotlight

Hadrosaurs had up to 1,400 teeth that were continually replaced with wear. The file-like chewing surfaces of their teeth allowed for the grinding and slicing of tough and abrasive plant matter, similar to the way modern horse teeth work. Findings of hundreds of specimens and vast trackways show that they were herd animals. *Hadrosaurs* also appear to have cared for their young in the nest.

Hadrosaurs made their way to South America and then Antarctica via land bridges just before the demise of the dinosaurs.

Question:

What is one difference between Antarctica during the days of the dinosaurs and today?



Australia: Way, Way, Way Down Under

Overview

Approximately 150 million years ago, Antarctica and Australia split from South America and Africa and drifted south. Because of the continents' latitude (the two connected continents were both close to the South Pole), they endured long stretches of darkness during the winter months—similar to the months of darkness that occur at the North and South Poles today.

The separation of Australia and Antarctica from Pangea led to the evolution of many unique dinosaurs. A land bridge that formed between 105 and 90 million years ago also allowed dinosaurs from South America to arrive on Australian soil.

These new arrivals evolved over time into dinosaurs such as the small, herbivorous, bipedal dinosaur *Leaellynasaura*, and the armored *Minmi*. Both of these adapted for survival in the low light and cooler temperatures.

Dinosaur Spotlight

Minmi was a small, quadrupedal, armored, herbivorous dinosaur from Australia. Its head, neck, and body were covered by bony armor, very much like today's armadillos. Although it was slow and small-brained, its armor protected it from predators. Only one specimen has been found, but it had stomach contents that suggest that it ate leaves, fruits, and seeds, and that it chewed the plants before it swallowed them.

Leaellynasaura was a small, bipedal, herbivorous dinosaur from Australia. Its teeth came together in a way that allowed it to chew plants well. It had a remarkably long tail, which contained over 70 vertebrae and made up as much as 75% of its total body length! It was once believed that *Leaellynasaura*'s large eyes were used to see during the months of darkness in prehistoric Australia. Recent studies, however, show that all *Leaellynasaura* specimens discovered are juveniles. Much like puppies and kittens, juvenile *Leaellynasaura* had large eyes regardless of where they were found in the world because all found specimens were young at the time of their death.

Question:

What dinosaur has often been compared to an armadillo?



Africa: Home of the World's Meanest Dinosaurs

Overview

When the continent of Africa was still a part of Pangea, its dinosaurs were similar to those in the other parts of the world. Dinosaurs such as the predatory

Coelophysis, found in Early Jurassic sediments in Zimbabwe, have been found in other parts of the world as well.

When Pangea broke up about 150 million years ago, Africa began to drift southward as part of a grouping of continents including Australia, South America, and Antarctica. This landmass, known as Gondwana, or Gondwanaland, began to develop its own distinct dinosaurs. African dinosaurs that developed during this period were some of the largest to ever walk the Earth. These giants included the monstrous sauropod *Giraffatitan*, one of the tallest dinosaurs, which stood at a height of more than 40 feet! The finned and spiketailed stegosaurus *Kentrosaurus* also dominated Africa; skeletons of this massive dinosaur have been discovered in great numbers in the country known today as Tanzania.

Dinosaur Spotlight

Spinosaurus was the world's largest carnivorous dinosaur, even larger than the mighty *Tyrannosaurus rex*! It is named for the giant fin on its back. The fin was probably a display feature, rather than a heating and cooling device as was once believed. *Spinosaurus* stalked fish at the water's edge as well as small prey, such as infant dinosaurs.

Spinosaurus skeleton was found in Egypt by German researchers in 1912. It was destroyed during World War II when the museum in which it was housed was accidentally hit during a night bombing raid. Fortunately, scientists have recently found new specimens near where the original was found.

Question:

What carnivorous dinosaur was bigger than the *T-rex*?



Asia: Home of the First Dinosaur Fashion Show

Overview

In the time of the dinosaurs, Asia was warm and lush with marine environments, like the modern Liaoning, China. It was here paleontologists in the 1990s found remarkably well-preserved remains of small predatory dinosaurs such as the *Sinosauropteryx* from the early Cretaceous Period. Amazingly, scientists believe that this dinosaur had feathers, making it the first discovery of a dinosaur not entirely covered with scales! This discovery helped scientists to understand that birds are not only close relatives to dinosaurs, but are in fact, living dinosaurs! It is now understood that these feathers were initially for display, and were later used for insulation, camouflage, gliding, and ultimately, flight in birds.

Dinosaur Spotlight

Therizinosaurus was a peculiar dinosaur, with a small head, tiny teeth, a fat body, and a short tail. Its most notable feature was its hand claws there were scythe-like – flattened side to side and up to three feet long. These represent the longest claws known for any animal. When first discovered it was thought that the claws belonged to a turtle-like animal and were used to harvest seaweed. Later it was discovered that it is a theropod dinosaur. Theropods are typically carnivorous but the teeth of the *Therizinosaurus* show it ate plants. What it used its claws for is a mystery.

Velociraptor was a small, carnivorous dinosaur from Mongolia. It had sharp, serrated teeth, clawed hands and feet, and a stiff, bony tail. It stood on just two of its toes, making it quite agile while its remaining toe sported a very large, retractable cat-like claw. Marks on the arm bones of fossils show that they also had feathered wing-like features.

Protoceratops was a very common, small, herbivorous dinosaur from Mongolia. It had a parrot-like beak and a bony frill over its neck that likely for displaying to others of the same species, much like the crests of chameleon lizards today. Various fossils provide evidence of two forms of the frill, suggesting that there were differences between males and females. Unlike most reptiles, the teeth of *Protoceratops* contacted one another during feeding; this allowed it to easily slice through tough plant matter. Recently, a nest of *Protoceratops* was found containing hatched-out individuals, suggesting that *Protoceratops* cared for their young.

Question: What feature was first discovered in Asia that dinosaurs possessed?



North America: Home of the Dinosaur Melting Pot

Overview

At the beginning of the Age of Reptiles, North America remained part of the Pangean supercontinent. In the North American regions near the modern states of Arizona and New Mexico, paleontologists have discovered hundreds of skeletons of some of the earliest dinosaurs such as the 10-foot long, long-necked predatory dinosaur, *Coelophysis*.

North America remained connected to the Gondwanan continents (South America, Africa, Australia and Antarctica) and Europe via island chains until the Late Jurassic Period. At that time, about 150 million years ago, North America temporarily separated from all other continents. During this period, North America was dry and savannah-like, with most plants growing near water sources. These plants included ginkgoes, cycads, tree ferns, and horsetails. Common dinosaurs found at this time in North America were closely related to those found elsewhere in the world at the time, including the plated herbivore, *Stegosaurus*, giant long-necked sauropods like *Brachiosaurus*, *Apatosaurus*, *Sauroposeidon* (the tallest dinosaur at 56 feet) and *Supersaurus* (the longest dinosaur at 140 feet!) Large predators such as *Allosaurus*, also roamed the land.

Dinosaur Spotlight

Triceratops was one of the last dinosaurs to walk the Earth. It is known for its large skull and neck frill with three horns. Evidence shows that its head could grow to be over 8 feet long – almost a third of its body length. It was an extremely common dinosaur, and hundreds of specimens have been recovered.

When first discovered, *Triceratops* was mistaken for a giant extinct bison! Wounds on the heads of these animals indicate that they commonly engaged in head-to-head fighting. Bite marks also indicate that *Tyrannosaurus rex* often ate them.

Tyrannosaurus rex is the most famous of all dinosaurs and was among the largest carnivorous animals ever to walk the planet. These dinosaurs had enormous skulls lined with up to 60, 7-inch-long, serrated teeth, and they could generate bite forces as great as 35,000 pounds! This allowed the *Tyrannosaurus rex* to easily bite through both flesh and bone. They ate duck-billed dinosaurs, horned dinosaurs, and even one another! Discoveries of multiple individual fossils in the same location suggest they formed herds and a recent study suggest that they lived to just thirty years.

Question: Which two dinosaurs were known to fight one another often?



End of the Dinosaurs

Overview

65.6 million years ago, the remarkable 172-million-year reign of the dinosaurs came to an end. The end of many other life forms, including the sea monsters of the shallow seas, the pterosaurs of the air, many types of marine plants, some mammals and other reptiles accompanied their disappearance. In fact, nearly 75% of all life forms on the planet perished. This type of event is known as a mass extinction. There have been five mass extinctions during Earth's 4.54-billion-year history.

Most scientists believe that this mass extinction occurred when a six-mile-wide asteroid crashed into the Gulf of Mexico. Following the impact, the vaporized asteroid's wake blocked the sun's rays and caused major environmental changes, leading to a rapid cooling of the planet. As the heat from the sun diminished, many land plants died, as did the algae and plankton in the seas. The death of the most basic elements at the bottom of the food chain led to a major collapse, leading all the way up to the mighty dinosaurs.

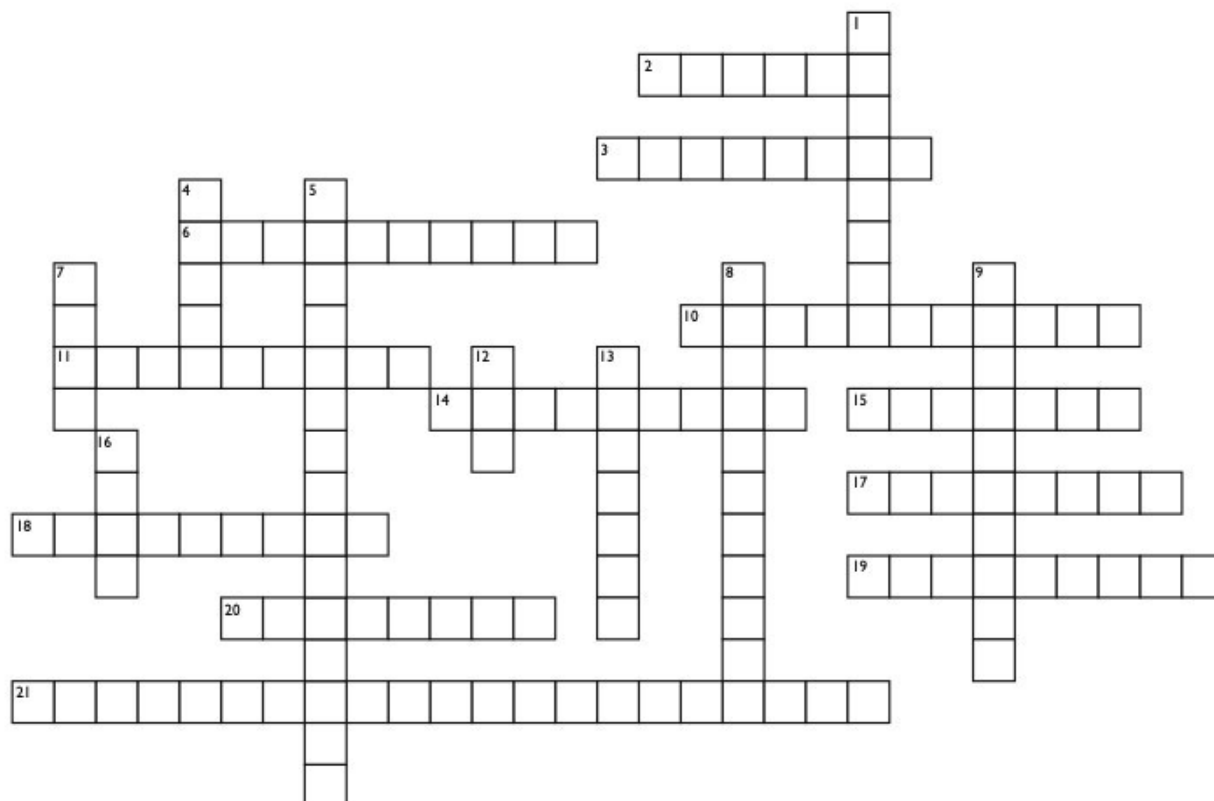
Questions:

Would you want to see dinosaurs roaming the Earth today?

What was your favorite dinosaur you learned about today? Name one fact about it that you thought was interesting.



Dino Crossword Puzzle



Across

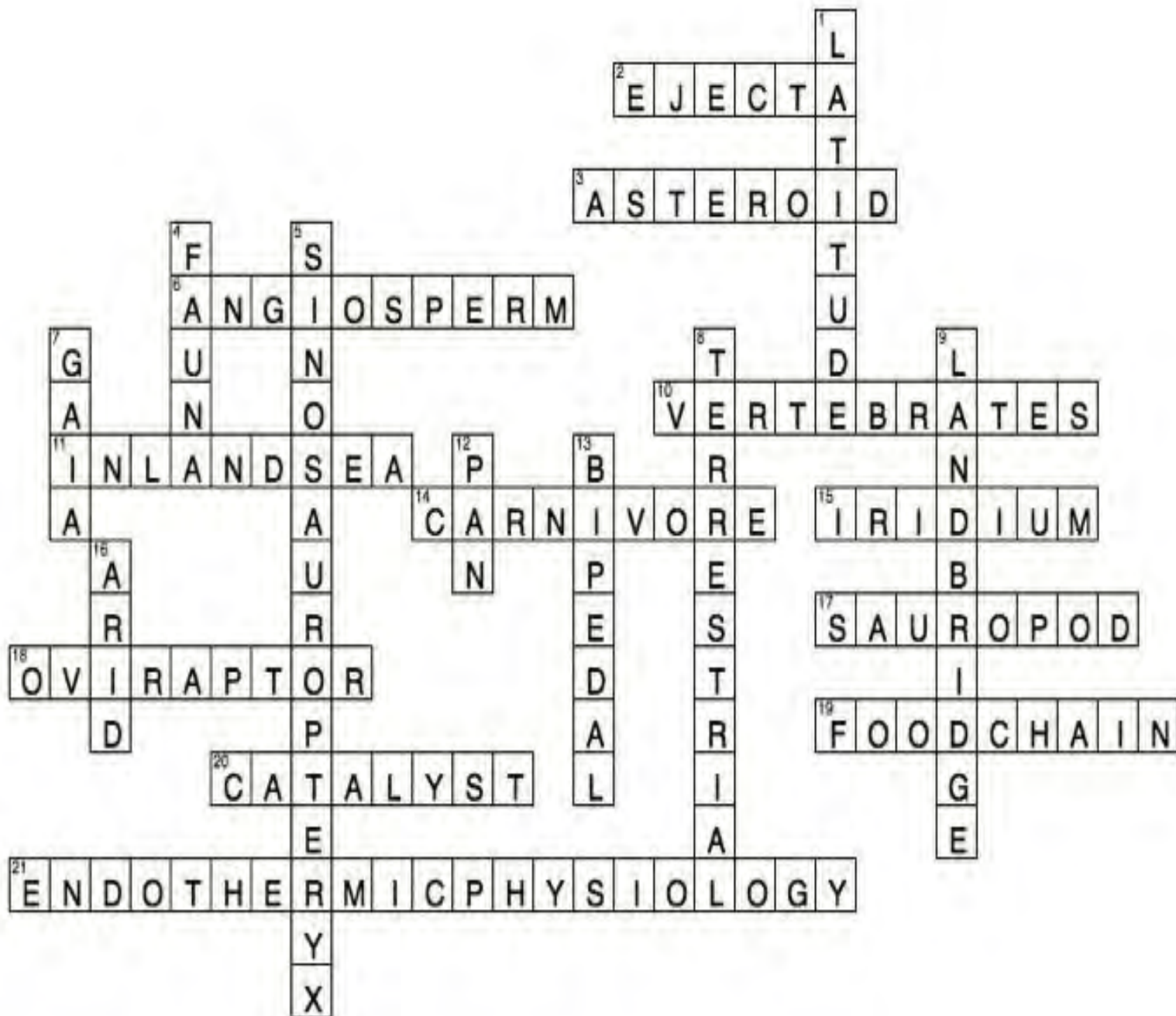
2. The material shot upward into the sky from an explosion or impact
3. A rock from space
6. Flowering plants
10. An animal with backbones
11. Much of modern-day Australia's eastern regions were covered by a massive inland sea. A large amount of amount of marine animal fossils can still be found in a region called the Great Artesian _____.
14. Meat-eating animal
15. A rare mineral from space
18. Egg stealer
19. A hierarchy of organisms each dependent on the next as a source of food
20. Catalyst
21. (warm blooded) Generating one's own internal heat from food rather than relying on the sun

Down

1. A geographic coordinate that specifies the north south position of a point on Earth's surface
4. Animal Life
5. Chinese Dinosaur Wing
7. Greek for "Mother Earth"
8. On land
9. A connecting tract of land between two continents, enabling animals to pass from one continent to another
12. Greek for "entire"
13. Walking on hind legs only
16. Dry, having little rain



Crossword Answer Key





Dino Word Search

The Search for the Missing Dinosaurs

H	S	R	N	I	M	N	I	M	R	S	H	M	S
E	M	R	R	O	T	H	T	R	E	X	A	A	P
R	E	I	R	A	D	P	R	A	N	E	D	R	I
R	R	O	T	A	N	E	V	O	E	N	R	I	N
E	V	E	L	O	C	I	R	A	P	T	O	R	O
R	R	C	R	N	U	S	E	H	T	I	S	A	S
A	S	A	T	U	R	N	A	L	I	A	A	E	A
S	K	E	N	T	R	O	S	A	U	R	U	S	U
A	E	S	R	S	A	U	A	U	L	T	R	R	R
U	E	O	R	A	P	T	O	R	S	X	S	R	U
R	G	E	T	R	I	C	E	R	A	T	O	P	S
U	O	G	I	R	A	F	F	A	T	I	T	A	N
S	S	A	M	A	R	G	A	S	A	U	R	U	S
R	S	U	R	U	A	S	O	N	A	S	I	P	S

VELOCIRAPTOR
GIRAFFATITAN
PISANOSAURUS
SPINOSAURUS
HERRERASAURUS
HADROSAURS
AMARGASAURUS
EORAPTOR
TRICERATOPS
KENTROSAURUS
NEOVENATOR
SATURNALIA
TREX
MINMI

Play this puzzle online at : <https://thewordsearch.com/puzzle/5698539/>

The Colorful Creatures

Let's Color!



Tyrannosaurus

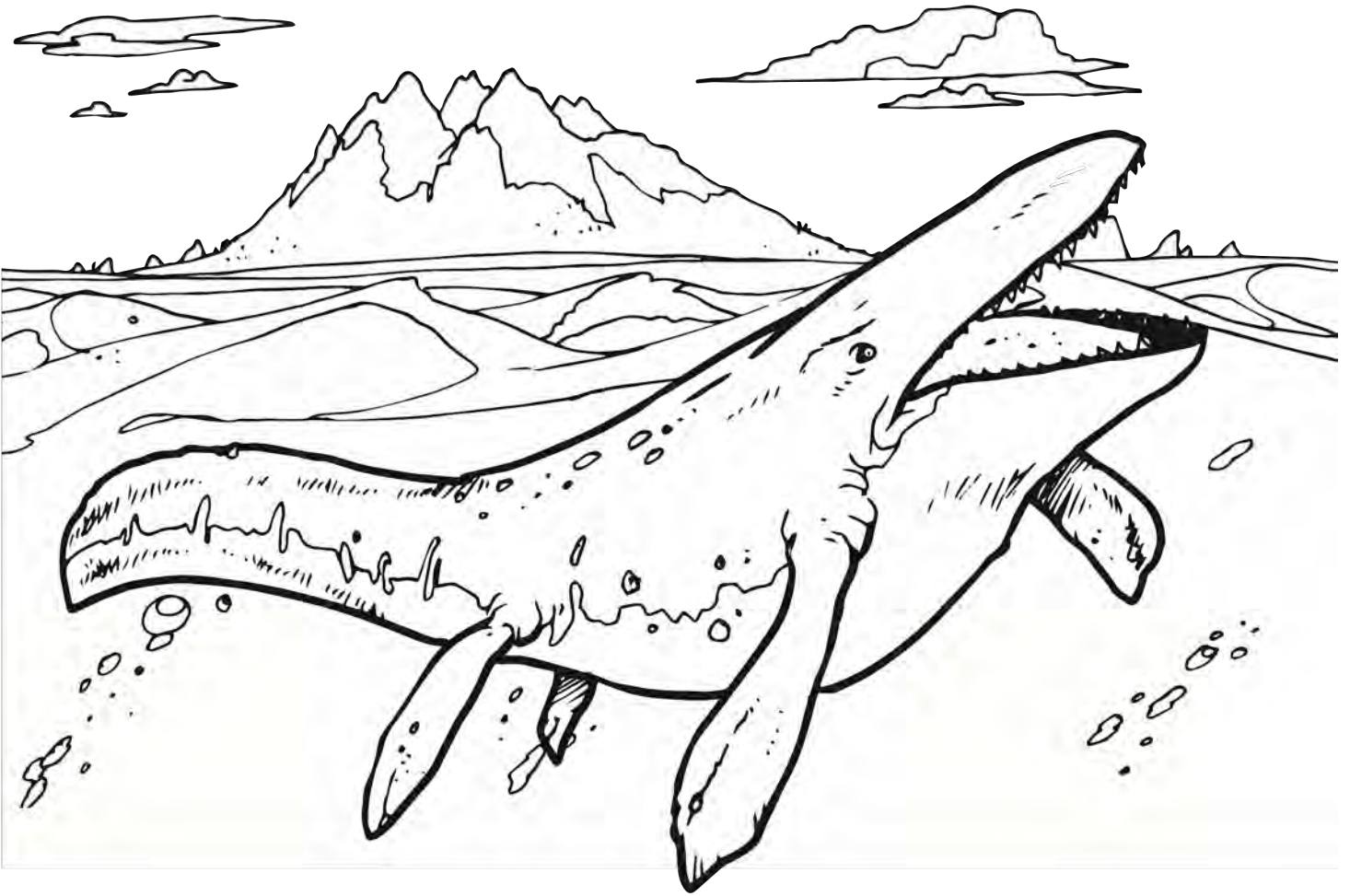


Brachiosaurus

Horned Dinosaur

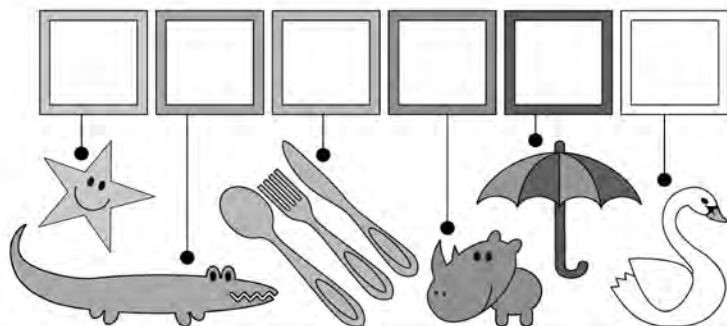
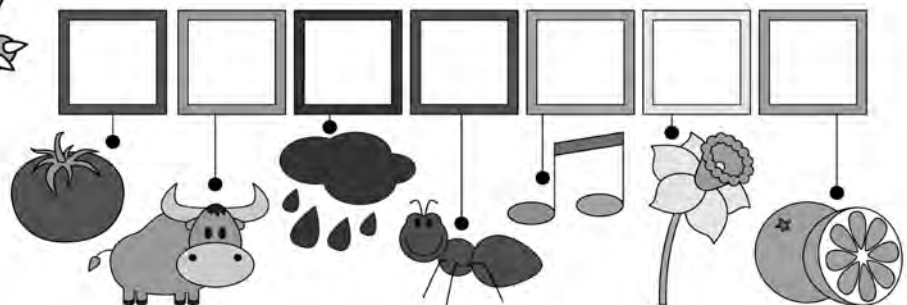
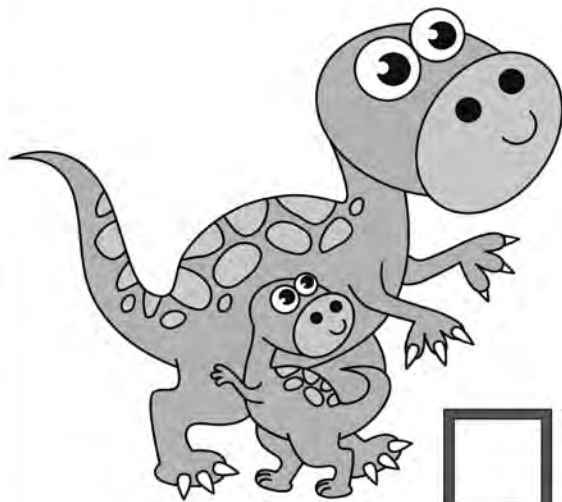


Triceratops



Mosasaurus

TASK: Search the word
and solve the rebus



ANSWER: Tyrannosaurus