



Dinosaurs in the Desert Quest

Teacher Guide

Thank you!

Thank you for using this Phoenix Zoo field resource! We hope it helps make your visit engaging, meaningful and memorable for your students. After your field trip, you'll receive a follow-up email from our team with a short feedback survey. Your suggestions help us improve these resources and create even better experiences for future students and teachers.

Topics: Dinosaurs, adaptation, evolution, natural selection, fossil evidence, science and engineering practices

Dinosaurs are the hook for teaching students how scientists investigate evidence and build explanations about the natural world.

Audience: This activity is recommended for third through eighth grade. Younger students may require support with vocabulary. Portions of the activity align with high school standards.

Goals: By participating in the Dinosaurs in the Desert Quest, students will explore evidence scientists use to study prehistoric life while developing observation, critical thinking and scientific reasoning skills. Students will discover how adaptations helped dinosaurs survive, how fossils provide clues about extinct organisms and how scientific knowledge changes as new evidence is discovered.

Objectives: Students will be able to:

- Use evidence from dinosaurs, exhibit signs and fossil discoveries to answer scientific questions.
- Describe how adaptations helped dinosaurs survive in different environments.
- Explain how fossils provide evidence about ancient organisms and ecosystems.
- Recognize that scientists use observations and evidence to test explanations (hypotheses) and revise ideas (theories).
- Compare extinct organisms with modern animals to identify similarities, differences and evolutionary relationships.
- Construct explanations supported by evidence gathered during the exhibit experience

Arizona State Science Standards Alignment:

The Dinosaurs in the Desert Quest supports Arizona's three-dimensional science standards by engaging students in making observations, interpreting fossil evidence, constructing explanations and applying concepts related to adaptations, evolution, extinction and Earth's changing environments. The standards listed below are examples of where strong alignment exists and are not intended to be comprehensive.

Grade Band	Standards	Connection
3-5	3.L1U1.5 – Develop and use models to explain that plants and animals have internal and external structures that serve functions related to survival, growth, behavior and reproduction. 4.L4U1.11 – Analyze and interpret environmental data to demonstrate that species either adapt and survive or go extinct over time. 4.E1U1.7 – Develop and/or revise a model using various rock types, fossil location and landforms to show evidence that Earth's surface has changed over time.	Adaptations, fossils, structure and function, using evidence to explain phenomena.
6-8	6.L2U3.12 – Engage in argument from evidence to support a claim about the factors that cause species to change and how humans can impact those factors. 8.E1U1.6 – Analyze and interpret data about the Earth's geological column to communicate relative ages of rock layers and fossils. 8.L4U1.12 – Gather and communicate evidence on how the process of natural selection provides an explanation of how new species can evolve.	Evolution, natural selection, classification, interpreting fossil evidence, nature of science.
9-12	HS.L4U1.28 – Gather, evaluate, and communicate multiple lines of empirical evidence to explain the mechanisms of biological evolution.	Biological evolution, evolutionary relationships, scientific argumentation, evaluating evidence

Science & Engineering Practices	Crosscutting Concepts	Life Science Core Ideas
Throughout the Dinosaurs in the Desert Quest, students will: • Make observations • Gather information from exhibit signs • Use evidence to answer questions • Compare evidence to competing explanations • Construct explanations based on evidence • Communicate scientific ideas	Students explore the crosscutting concepts of patterns, cause and effect, structure and function and stability and change.	Students will investigate adaptations, predator-prey interactions, fossil evidence, evolutionary relationships, extinction, biodiversity and classification.

Description and Implementation

The Dinosaurs in the Desert Quest is a companion activity to the Dinosaurs in the Desert exhibit at the Phoenix Zoo. Full size, animatronic dinosaurs have been placed throughout the Zoo. Classrooms will have the option to choose from three different formats to complete the Dinosaur Quest.

Each dinosaur has an accompanying sign with a fact page and QR code that links to more information. [Dinosaur fact pages may also be accessed by clicking here](#). Depending on your school's technology policy, students, teachers or chaperones may scan the QR codes or use the link to learn more about each dinosaur.

There are 40 dinosaur species throughout the Zoo, mostly on the Desert Discovery Trail. Questions are broken into six missions containing seven to twelve questions each. Questions and accompanying dinosaurs are grouped by theme and location on the trails. Most of the dinosaurs can be found on the Desert Discovery Trail.

The missions are:

- Fossil Detective: Africa Trail, Tropics Trail and Harmony Farm
- Amazing Adaptations: Desert Discovery Trail
- Arizona's Ancient World: Desert Discovery Trail
- Ancient Families: Desert Discovery Trail
- Herbivore Heroes: Desert Discovery Trail
- Masters of the Hunt: Desert Discovery Trail

The questions in this resource are meant to reveal broader scientific ideas, not just dinosaur fact recall from the exhibit. That means students get to practice scientific thinking along with learning more dinosaur trivia.

For example:

- Allosaurus: Fossils provide evidence of behavior.
- Dimetrodon: Not everything that looks like a dinosaur is a dinosaur.
- Pachycephalosaurus: Scientists test competing hypotheses.
- Parasaurolophus: Scientists look for evidence to support ideas.
- Edmontosaurus: Adaptations solve survival challenges.
- Stegosaurus: Science is tentative.

An answer key is provided at the end of this document.

There are three formats to choose from.

Field Journal - [Field Trip Resources - Phoenix Zoo](#)

The field journal is a print version for teachers and students to use during field trips. The journal is divided into six missions. Each mission journal booklet is eight pages and begins with a cover page with the Dinosaurs in the Desert logo and ends with a crossword puzzle. The journal can be printed as a booklet. Some suggested methods for printing and using this resource are described here.

- Assign each student one mission. Print only the assigned mission for each student. Students share their findings after the trip.
- Organize students into groups. Assign each group a mission. Print only that mission for the group. Groups share their findings after the trip.
- Individual students or groups can be assigned more than one mission.

Print Option 1

The document can be printed as full-size double-sided pages, separated into missions and stapled together.

Print Option 2

1. To print each mission as a booklet, open the document using Adobe Acrobat or Acrobat Reader.
2. Select print and enter the pages to print.
 - Fossil Detective: 1-8
 - Amazing Adaptations: 9-16
 - Arizona's Ancient World: 17-24
 - Ancient Families: 25-32
 - Herbivore Heroes: 33-40
 - Masters of the Hunt: 41-48
3. Choose Booklet under the Page Sizing and Handling menu, Both sides under Booklet Subset, and Left for Binding.
4. Then print.

Wayground (formerly Quizizz)

This version is for school groups with access to technology. Wayground is an interactive instructional and gamified assessment platform that lets teachers create custom quizzes, lessons, flashcards, and interactive videos. Students engage with material at their own pace in or out of class. [Click here to access the quiz.](#)

Follow these simple steps to make the quiz your own:

- 1. Open the Quiz:** Click on the link to the quiz or search for it using the Explore tab in your Wayground account.
- 2. Duplicate the Quiz:** Select the Copy and Edit (or Duplicate) button on the quiz details page.
- 3. Save to Library:** The quiz is immediately copied to your account's library, usually dropping into your Drafts folder.
- 4. Customize and Publish:** You can now use the quiz as is, modify the questions, change answer options, delete irrelevant material or add new questions to fit your specific needs. Once you are done, click Publish to save it to your permanent library.
- 5. Share:** Share the link with chaperones and students prior to arriving at the Zoo.

Please note that the quiz is formatted so that questions are grouped into missions. The dinosaurs in each mission are grouped by theme and their locations in the Zoo. Turn off the shuffle question feature if you want to keep the questions grouped together.

Electronic Scavenger Hunt – Scan the QR code.

This electronic scavenger hunt version is best for school groups where there is access to technology. Note: it will not collect, save or send downloadable results.

1. Scan the QR code to start the quest. No app or sign-in is required, and no personal data is collected.
2. Navigate through the form to select a mission.
3. The mission description includes the number of questions, dinosaurs, location, and how long the mission should take.
4. When a mission is complete, students earn a digital badge and can select another mission from the menu.

A question bank and answer key are provided on the following pages.



Fossil Detective



Paleontologists are like detectives. Instead of solving crimes, they use clues preserved in fossils to uncover what happened millions of years ago. Fossils can reveal how dinosaurs lived, what they ate and how they interacted with one another. This mission includes eight dinosaurs and ten questions. Visit the dinosaurs in this mission and use the exhibit signs to gather evidence. Read carefully, think like a scientist and see if you can solve each fossil mystery. Good luck, fossil detective! Are you ready?

1. Find *Allosaurus*. What do fossils with bite marks and tail spike injuries suggest about *Allosaurus* and *Stegosaurus*?
 - A. They competed for the same plants.
 - B. They lived in different time periods.
 - C. They traveled together in herds.
 - D. They sometimes fought each other.**
2. Find *Pachycephalosaurus*. Scientists have proposed more than one way *Pachycephalosaurus* may have used its thick skull. What does this tell us?
 - A. Scientists sometimes compare fossil evidence with living animals to test different ideas.**
 - B. Scientists know exactly how every dinosaur behaved.
 - C. Fossils can never provide clues about behavior.
 - D. All dinosaurs used their skulls the same way.
3. Find *Velociraptor*. Which adaptations helped *Velociraptor* hunt successfully? Check all that apply.
 - ☒ **A large, retractable sickle-shaped claw**
 - ☐ A clubbed tail
 - ☒ **A relatively large brain**
 - ☒ **Strong senses of sight and smell**
 - ☐ A long neck for reaching leaves
 - ☐ A duck-like beak
4. Find *Mamenchisaurus*. If *Mamenchisaurus* had a much shorter neck, what would probably change? Check all that apply.
 - ☐ It would need to eat more meat.
 - ☒ **It would have to compete with more plant-eating dinosaurs for food closer to the ground.**
 - ☐ It would be able to fly.
 - ☒ **It would have more difficulty reaching leaves high in the trees.**
 - ☐ It would lose its tail.
 - ☒ **It would spend more time and energy walking to reach food.**
5. Find *Mamenchisaurus*. Why were air sacs important for *Mamenchisaurus*' neck?
 - A. They helped it breathe underwater.
 - B. They made its enormous neck lighter while keeping it strong.**
 - C. They helped support blood flow to its brain.
 - D. They stored extra water for dry seasons.
6. Find *Pterosaur*. What made *pterosaur* wings different from the wings of birds?
 - A. Their wings were made entirely of feathers.
 - B. Their wings were supported by an elongated fourth finger.**
 - C. They had two sets of wings.
 - D. Their wings were attached only to their tails.

7. Find *Pterosaur*. What evidence from the fact page suggests that *Pterosaurs* evolved over millions of years?
- A. They spread to many different habitats around the world.
 - B. Later species had different tails, teeth, beaks, wing designs, and flight styles.**
 - C. All pterosaurs had hollow bones.
 - D. They gradually became dinosaurs.
8. Find *Austroraptor*. Why do scientists compare *Austroraptor* to birds like ospreys and great blue herons? Check all that apply.
- ☐ They lived at the same time.
 - They used similar adaptations to catch aquatic prey.**
 - ☐ They built nests in trees.
 - ☐ They could both fly.
 - They had piercing talons to capture prey**
 - They used stealth and speed to surprise prey.**
9. Find *Mosasaurus*. *Mosasaurus* fossils have been found all over the world. What is the BEST explanation based on the fact page?
- A. *Mosasaurus* lived in oceans that stretched around much of the world.**
 - B. *Mosasaurus* could fly between continents.
 - C. Every continent was covered by forests.
 - D. *Mosasaurus* was an apex predator at the top of the food chain that ate whatever fit in its mouth.
10. Find *Stegosaurus*. Scientists once thought *Stegosaurus* used its plates mainly for defense. Today, new fossil evidence suggests that they were used mostly for display and helping regulate body temperature. What does this tell us about science?
- A. Scientists change their minds without evidence.
 - B. Scientific ideas can change when new evidence is discovered.**
 - C. Scientists can never know anything about dinosaurs.
 - D. Every scientific idea is equally likely to be correct.

Congratulations! You have achieved this mission and earned the Fossil Detective badge!



Amazing Adaptations



Every dinosaur had special adaptations that helped it survive. Discover how armor, claws, horns, long necks and other incredible features helped these prehistoric animals find food, stay safe and thrive in their ancient world. This mission includes seven dinosaurs and ten questions. Visit the dinosaurs in this mission and use the exhibit signs to gather evidence and become an adaptation expert! Are you ready?

1. Find *Edmontosaurus*. Why would constantly replacing its teeth have been helpful for *Edmontosaurus*?
 - A. It allowed worn or broken teeth to be replaced while eating tough plants.**
 - B. It made the dinosaur run faster.
 - C. It helped it scare away predators like *Tyrannosaurus rex*.
 - D. It helped it catch and eat prey animals.
2. Find *Dimorphodon*. Why do scientists think *Dimorphodon* probably flew more like a quail or woodpecker than an albatross?
 - A. It was probably a skilled climber and would watch for ground-dwelling prey while perched upon cliffs.
 - B. Its large head and relatively short wings suggest it was better suited for short flights.**
 - C. Its jaws were equipped with numerous variably sized, sharp teeth.
 - D. It had a large head that made long-distance soaring less efficient.
- Find *Apatosaurus*. Why did *Apatosaurus* swallow rocks called gastroliths?
 3.
 - A. To help it float while swimming.
 - B. To help grind up tough plants in its stomach.**
 - C. To scare away predators.
 - D. To make its bones stronger.
 - Find *Apatosaurus*. Which animals at the Phoenix Zoo do you think use gastroliths to help grind their food? Check all that apply.
 - ☒ **Flamingos use small stones to help crush hard-shelled invertebrates.**
 - ☒ **Alligators and crocodiles ingest stones to mechanically mash up hard parts of their prey (like bones or turtle shells).**
 - ☐ Rhinos use their teeth to grind their food.
 - ☒ **Greater Rhea lack teeth and swallow much of their food whole.**
 - ☐ Tigers have sharp, specialized teeth for tearing meat.
 - Find *Brachiosaurus*. How could *Brachiosaurus* grow so large without collapsing under its own weight?
 5.
 - A. It had hollow bones like a bird.
 - B. It had a shell to support its body.
 - C. It lived in water most of the time.
 - D. It had air sacs in its bones and body cavity.**
 - Find *Brachiosaurus*. What modern animals also have air sacs in their bodies to make their bodies lighter and stronger?
 6.
 - A. Mammals
 - B. Reptiles
 - C. Birds**
 - D. Insects

7. Find *Therizinosaurus*. *Therizinosaurus* had claws up to three feet long, but it mostly ate plants. What does this tell us?
- A. Only carnivores have giant claws.
 - B. Herbivores never defend themselves.
 - C. Every dinosaur with claws was a predator.
 - D. Large claws aren't always used mainly for hunting meat.**
8. Find *Carnotaurus*. *Carnotaurus* had tiny arms that probably served no useful purpose. Scientists call structures like these vestigial. What does "vestigial" mean?
- A. A body part that has become much smaller and no longer has an important function.**
 - B. A body part used only for defense
 - C. A body part that grows larger as an animal ages.
 - D. A body part found only in meat-eating dinosaurs and used for capturing prey.
9. Find *Ankylosaurus*. Why do you think *Ankylosaurus* had osteoderms on its eyelids?
- A. To help it see better when underwater.
 - B. To protect one of the few vulnerable parts of its body.**
 - C. To attract mates.
 - D. To keep its eyes warm.
10. Find *Ankylosaurus*. Why would a predator like *Tyrannosaurus rex* have been cautious when attacking *Ankylosaurus*?
- A. *Ankylosaurus* could run faster than *T. Rex*.
 - B. *Ankylosaurus* could fly away.
 - C. Its armored body and powerful tail club could seriously injure a predator.**
 - D. It could camouflage itself perfectly.

Congratulations! You have achieved this mission and earned the Adaptation Expert badge!



Arizona's Ancient World



Think Arizona has always been a hot, dry desert? Think again! Millions of years ago, dinosaurs roamed forests, rivers and floodplains across our state. Explore Arizona's ancient past and discover the incredible dinosaurs found right here at home. This mission includes five dinosaurs and seven questions. Visit the dinosaurs in this mission and use the exhibit signs to gather evidence. Good luck, Arizona time traveler. Are you ready?

1. Find *Sonorasaurus*. What does the story of *Sonorasaurus* show?
 - A. Only professional paleontologists discover dinosaurs.
 - B. Dinosaurs are found only by accident.
 - C. Students can make important contributions to science and their community.**
 - D. Scientists always work alone.
2. Find *Sarhsaurus*. Scientists found both *Sarhsaurus* and *Dilophosaurus* fossils at the same site. What additional evidence helped them infer the two animals interacted?
 - A. The fossils were the same color.
 - B. The two fossils were found in rock from the same time period.
 - C. Bite marks on the *Sarhsaurus* skeleton.**
 - D. Both dinosaurs were found in Arizona.
3. Find *Sarhsaurus*. *Sarhsaurus* was first discovered in Arizona. Why are fossil discoveries in different places important?
 - A. They reveal how ancient environments differed from place to place.
 - B. They allow scientists to compare fossils from different regions.
 - C. They help scientists understand what ancient environments were like in different parts of the world.
 - D. A, B, and C are correct.**
4. Find *Segisaurus*. *Segisaurus* is known from only one fossil specimen. What does this mean for scientists?
 - A. Scientists must draw conclusions from a limited amount of evidence.**
 - B. Scientists know exactly how every *Segisaurus* lived.
 - C. This *Segisaurus* was the only one that ever lived.
 - D. What we know about *Segisaurus* will never change.
5. Find *Chindesaurus*. Scientists have found very few *Chindesaurus* fossils. How can they still learn what it may have looked like and how it lived?
 - A. By making random guesses.
 - B. By comparing it with closely related dinosaur species.**
 - C. By studying the environment where the fossils were found.
 - D. By examining fossilized footprints.

6. Find *Dilophosaurus*. What can fossilized *Dilophosaurus* footprints tell scientists?
- A. Whether it was hunting in groups or traveling alone.
 - B. What sounds it made.
 - C. How it moved and where it walked millions of years ago.**
 - D. How old it was when it died.
7. Find *Dilophosaurus*. *Sarhsaurus* fossils contain bite marks that may have come from *Dilophosaurus*. What do those bite marks suggest? Select 2 choices.
- A. The two species probably interacted as predator and prey.**
 - B. Both dinosaurs ate the same kinds of plants.
 - C. *Sarhsaurus* hunted *Dilophosaurus*.
 - D. Scientists can learn about dinosaur behavior from fossil evidence.**

Congratulations! You have achieved this mission and earned the Arizona Time Traveler badge!



Ancient Families



Who's related to whom? Explore the prehistoric family tree and discover surprising connections between dinosaurs, birds, pterosaurs and even mammals! This mission includes six dinosaurs and seven questions. Visit the dinosaurs in this mission and use the exhibit signs to gather evidence. Good luck, Tree of Life explorer. Are you ready?

1. Find *Archaeopteryx*. Which evidence from *Archaeopteryx* fossils supports the idea that birds are the last surviving lineage of dinosaurs? Check all that apply.
 - ☒ **It had feathers.**
 - ☐ It lived during the Late Jurassic Period.
 - ☒ **It had tertiary flight feathers.**
 - ☐ All scientists agree it should be classified as a bird.
 - ☒ **Fossils suggest it might have been one of the first dinosaurs capable of powered flight.**
 - ☐ It was discovered in Germany.
2. Find *Quetzalcoatlus*. *Quetzalcoatlus* could fly like a bird. Why isn't it considered an ancestor of modern birds? Check all that apply.
 - ☒ **It belonged to a different group of flying reptiles called pterosaurs.**
 - ☐ It was too large.
 - ☒ **It evolved along a different path from the dinosaurs that gave rise to birds.**
 - ☐ It had hair instead of feathers.
 - ☒ **Modern birds evolved from dinosaurs, not pterosaurs.**
 - ☒ **Flying evolved separately in pterosaurs and the dinosaurs that became birds.**
3. Find *Pteranodon*. Why would pushing off with all four limbs be especially helpful for an animal with a wingspan of up to 23 feet?
 - A. It would help it climb trees.
 - B. It would make it easier to hide from predators.
 - C. It would help it dig burrows.
 - ☒ **D. A stronger launch would help such a large animal get into the air.**
4. Find *Pteranodon*. Scientists compare *Pteranodon* to modern albatrosses. Why do scientists compare extinct animals to living ones?
 - A. Living animals are direct descendants of every extinct animal.
 - B. Living animals always look exactly like extinct ones.
 - ☒ **C. Comparing living animals can help scientists understand how extinct animals may have behaved.**
 - D. Scientists compare them only because they lived at the same time.
5. Find *Tapejara*. Why do scientists think *Tapejara* probably ate mostly plants?
 - ☒ **A. Its toothless, downward-curving beak was adapted for crushing seeds, nuts, and fruits.**
 - B. It had a relatively small wingspan compared to other pterosaurs.
 - C. It was a pterosaur that lived in Brazil.
 - D. It lived in forests where fruit was available.

6. Find *Dimetrodon*. Why isn't *Dimetrodon* considered a dinosaur?
- A. It lived tens of millions of years before dinosaurs existed.
 - B. Scientists have found that it is more closely related to mammals.**
 - C. It was a carnivore that lived in swamps.
 - D. It had a large sail supported by long spines.
7. Find *Psittacosaurus*. The larger *Psittacosaurus* was probably not the parent of the younger dinosaurs. What does this suggest?
- A. Young dinosaurs always lived alone.
 - B. All dinosaurs cared for their young in the same way.
 - C. Some dinosaurs may have cared for young that were not their own.**
 - D. Young dinosaurs liked to hang out together and never stay with their parents.

Congratulations! You have achieved this mission and earned the Tree of Life Explorer badge!



Herbivore Heroes



Think being a plant-eater was easy? Think again! Herbivorous dinosaurs had amazing adaptations to help them find food, protect themselves from predators and care for their young. Explore these gentle giants and discover the clever ways they survived in a world full of hungry hunters. This mission includes seven dinosaurs and twelve questions. Visit each dinosaur, use the exhibit signs to gather evidence and become an herbivore hero! Are you ready?

1. Find *Sinoceratops*. Scientists think *Sinoceratops*' large frill may have served more than one purpose. Which of the following are possible functions of its frill? Check all that apply.
 - **Attracting mates.**
 - ☐ Helping it run faster.
 - **Releasing excess body heat**
 - ☐ Helping it fly
 - ☐ Digging for food
 - ☐ Protecting the head from predators
 - **Intimidating rivals**
2. Find *Sinoceratops*. What does *Sinoceratops*' frill teach us about animal adaptations?
 - A. Every horned dinosaur used its frill the same way.
 - B. Large frills were used only for fighting.
 - C. Scientists know exactly how every dinosaur used its frill.
 - D. A single body feature can have more than one function.**
3. Find *Maiasaurus*. Why was *Maiasaura* nicknamed "good mother lizard?"
 - A. It had the largest eggs of any dinosaur.
 - B. It protected other dinosaur species.
 - C. It built nests in trees.
 - D. Fossils suggest it cared for its young after they hatched.**
4. Find *Maiasaurus*. Suppose paleontologists discovered many adult dinosaurs living together. Would that alone prove they cared for their young?
 - A. Yes.
 - B. No. Scientists would also need evidence such as nests, eggs, or young dinosaurs.**
 - C. Yes, because all dinosaurs cared for their young.
 - D. No. Adult dinosaurs never lived together.
5. Find *Iguanodon*. Why was *Iguanodon* important in the early study of dinosaurs?
 - A. It was the first dinosaur discovered with feathers.
 - B. Its iguana-like teeth helped scientists realize dinosaurs were reptiles.**
 - C. It was the largest dinosaur ever found.
 - D. It was the first dinosaur discovered in North America.
6. Find *Iguanodon*. Why are fossilized teeth especially helpful to paleontologists when identifying dinosaur species?
 - A. Teeth are the largest bones in a dinosaur's body.
 - B. Teeth are often well preserved and have shapes that differ between species.**
 - C. Teeth are the only fossils dinosaurs leave behind.
 - D. All dinosaurs had the same kinds of teeth.

7. Find *Parasaurolophus*. Which observation would BEST support the idea that the crest was used for recognizing other *Parasaurolophus*?
- A. Every crest looked exactly the same.
 - B. *Parasaurolophus* lived alone.
 - C. The crest disappeared before adulthood.
 - D. Individuals had crests with different shapes or sizes.**
8. Find *Omeisaurus*. Besides helping *Omeisaurus* reach food, what is another idea scientists have proposed about its long neck?
- A. It stored water.
 - B. It may have helped cool the head and brain.**
 - C. It helped it breathe when underwater.
 - D. It could catch fish in rivers.
9. Find *Amargasaurus*. What do scientists think the tall spines on *Amargasaurus* may have been used for?
- A. Swimming underwater.
 - B. Defense or attracting mates.**
 - C. Digging for roots.
 - D. Flying short distances.
10. Find *Amargasaurus*. Which statement is best supported by the fossil evidence?
- A. The sails were definitely used to cool the body.
 - B. The sails were definitely used to attract mates.
 - C. *Amargasaurus* had tall spines, but scientists are still investigating their purpose.**
 - D. The sails helped it fly.
11. Find *Triceratops*. What evidence suggests *Triceratops* sometimes defended itself against *Tyrannosaurus Rex*?
- A. Scientists found *Triceratops* footprints next to *T. Rex* footprints.
 - B. Scientists found *Tyrannosaurus* bones with gouge marks matching *Triceratops* horns.**
 - C. Scientists found *Triceratops* teeth inside *Tyrannosaurus* stomach fossils.
 - D. Scientists found *Triceratops* horns that were longer than *Tyrannosaurus* teeth.
12. Find *Triceratops*. Why are fossils with bite marks, scratches and gouges especially valuable to scientists?
- A. They reveal the color of dinosaurs.
 - B. They help scientists estimate how old a fossil is.
 - C. They help scientists estimate the dinosaur's age when it died.
 - D. They preserve clues about how ancient animals interacted.**

Congratulations! You have achieved this mission and earned the Herbivore Hero badge!



Masters of the Hunt



Not all dinosaurs hunted the same way. Some relied on speed, others on powerful jaws, sharp claws or patience. Explore the adaptations that made these prehistoric predators successful hunters and discover the evidence scientists use to understand how they lived. This mission includes seven dinosaurs and seven questions. Visit each dinosaur, use the exhibit signs to gather evidence and become a predator professor! Are you ready?

1. Find *Compsognathus*. Which discovery would best support the idea that *Compsognathus* was built for speed?
 - A. Thick, heavy leg bones.
 - B. Hollow bones and long, slender legs.**
 - C. Large, flat teeth for crushing plants.
 - D. A wide, armored tail.
2. Find *Deinonychus*. Imagine you watched a *Deinonychus* chasing prey. Which adaptation would probably help it grab the animal first?
 - A. The sickle-shaped claw on its foot.**
 - B. Thick armor covering its body.
 - C. A long, flat beak.
 - D. A sail on its back.
3. Find *Tyrannosaurus*. Which statement is BEST supported by the fact page?
 - A. *Tyrannosaurus Rex* relied only on its size to survive.
 - B. *Tyrannosaurus Rex* hunted only one kind of prey.
 - C. *Tyrannosaurus Rex* combined powerful jaws with excellent senses to hunt effectively.**
 - D. *Tyrannosaurus Rex* could outrun every dinosaur.
4. Find *Irritator*. What does the story of *Irritator*'s fossil remind us about scientific research?
 - A. Fossils are always found exactly as the animal looked in life.
 - B. Every dinosaur fossil is complete.
 - C. Scientists must carefully examine fossils because they may have been altered.**
 - D. Fossil discoveries never change scientists' ideas.
5. Find *Pycnonemosaurus*. *Pycnonemosaurus* doesn't look much like a jaguar. Why do scientists compare it to one?
 - A. They had similar adaptations for hunting, so scientists think they probably hunted in similar ways.**
 - B. They had similar body shapes, even though they hunted differently.
 - C. They were close relatives that evolved from the same ancestor.
 - D. They lived in similar environments, but scientists don't compare their behavior.

6. Find *Spinosaurus*. Imagine you're watching *Spinosaurus* hunt. Where would you be most likely to find it?
- A. Running across a desert.
 - B. Climbing trees in a forest.
 - C. Standing patiently in shallow water waiting for prey.**
 - D. Digging in burrows underground.
7. Find *Carnotaurus*. *Carnotaurus* had armored scales much like those of modern crocodilians. Why would armored skin have been helpful for a predator?
- A. It helped *Carnotaurus* blend into its surroundings while stalking prey.
 - B. It helped protect its body from injuries while hunting prey or fighting other predators.**
 - C. It helped *Carnotaurus* stay warm during cool nights.
 - D. It helped reduce its body weight so it could run faster.

Congratulations! You have achieved this mission and earned the Predator Professor badge!



Answer Key

Question #	Species	Question Type	Format	Correct Answer(s)
1	Allosaurus	Evidence	MC	D
2	Pachycephalosaurus	Scientific Thinking	MC	A
3	Velociraptor	Adaptation	Checklist	A, C, D
4	Mamenchisaurus	Scientific Thinking	Checklist	B, D, F
5	Mamenchisaurus	Related Question	MC	B
6	Pterosaurs	Adaptation	MC	B
7	Pterosaurs	Evolution	MC	B
8	Austroraptor	Convergent Evolution	Checklist	B, E, F
9	Mosasaurus	Inference	MC	A
10	Stegosaurus	Nature of Science	MC	B
11	Edmontosaurus	Inference	MC	A
12	Dimorphodon	Inference	MC	B
13	Apatosaurus	Inference	MC	B
14	Apatosaurus	Zoo Connection	Checklist	A, B, D
15	Brachiosaurus	Adaptation	MC	D
16	Brachiosaurus	Related Question	MC	C
17	Therizinosaurus	Inference	MC	D
18	Carnotaurus	Science Vocabulary	MC	A
19	Ankylosaurus	Inference	MC	B
20	Ankylosaurus	Adaptation	MC	C
21	Sonorasaurus	Inspiration	MC	C
22	Sarhsaurus	Evidence	MC	C
23	Sarhsaurus (Related)	Arizona Connection	MC	D
24	Segisaurus	Scientific Thinking	MC	A
25	Chindesaurus	Comparison	MC	B
26	Dilophosaurus	Evidence	MC	C
27	Dilophosaurus	Related Question	Checklist	A, D
28	Archaeopteryx	Evidence	Checklist	A, C, E
29	Quetzalcoatlus	Classification / Evolution	Checklist	A, C, E, F
30	Pteranodon	Adaptation	MC	D
31	Pteranodon (Related)	Comparative Biology	MC	C
32	Tapejara	Evidence	MC	A

Answer Key

Question #	Species	Question Type	Format	Correct Answer(s)
33	Dimetrodon	Timeline / Classification	MC	B
34	Psittacosaurus	Scientific Thinking	MC	C
35	Sinoceratops	Adaptation	Checklist	A, C, H
36	Sinoceratops (Related)	Scientific Thinking	MC	D
37	Maiasaura	Recall	MC	D
38	Maiasaura (Related)	Evaluating Evidence	MC	B
39	Iguanodon	Historical Science	MC	B
40	Iguanodon (Related)	Evidence	MC	B
41	Parasaurolophus	Evidence / Hypothesis	MC	D
42	Omeisaurus	Recall / Hypothesis	MC	B
43	Amargasaurus	Adaptation	MC	B
44	Amargasaurus	Hypothesis	MC	C
45	Triceratops	Evidence	MC	B
46	Triceratops	Related Question	MC	D
47	Compsognathus	Evidence	MC	B
48	Deinonychus	Inference	MC	A
49	Tyrannosaurus	Scientific Thinking	MC	C
50	Irritator	Scientific Thinking	MC	C
51	Pycnonemosaurus	Comparative Biology	MC	A
52	Spinosaurus	Inference	MC	C
53	Carnotaurus	Predator Armor	MC	B