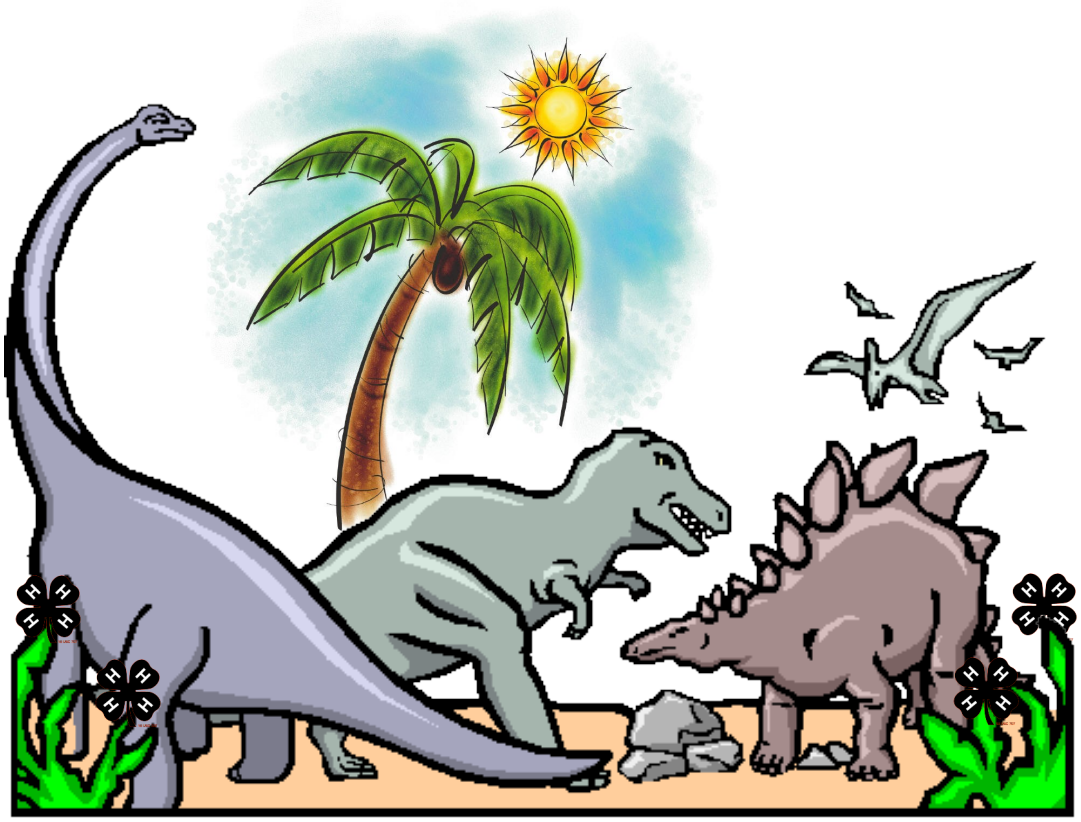
DINOSAURS

Mini 4-H



Draft Developed by:

Purdue University Cooperative Extension Service
Area 7 4-H Youth Development Educators from
Blackford, Delaware, Fayette, Franklin, Henry, Jay,
Madison, Randolph, Rush, Union, & Wayne counties

Indiana Academic Standards

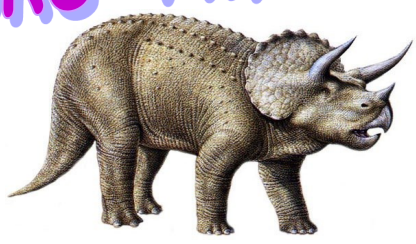
The Nature of Science and Technology

1.1 Students are actively engaged in exploring how the world works. They explore, observe, count, collect, measure, compare observations and use tools to seek answers and solve problems. They share their findings.
1.2 Students begin to find answers to their questions about the world by using measurements, estimation, and observations as well as working with materials. They communicate with others through numbers, words, and drawings.
1.6 Students begin to understand how things are similar and how they are different. They look for what changes and what does not change and make comparisons.

Fine Arts: Visual Arts

1.6 Students create artwork based on family and personal experiences, demonstrating perceptual skills and using symbols to express ideas. They demonstrate thoughtfulness, care, and respect in their art, sharing work with others.
1.7 Students apply the elements and principles and discriminate various lines, shapes, textures, colors, and space. They identify two- and three-dimensional works of art, visual characteristics of media, and utilize appropriate media and processes in artwork, demonstrating safe and proper use of materials.

Joke Time!



What do you call a triceratops that fell down the stairs?

A dino-sore!

Mini 4-H Parent's Page

Welcome to the Mini 4-H Program! Mini 4-H is designed for youth and allows them to explore a variety of project areas.

Your child received this project manual when enrolling in Mini 4-H. This manual will provide fun, age-appropriate learning activities throughout their year(s) in Mini 4-H and their interest in this project.

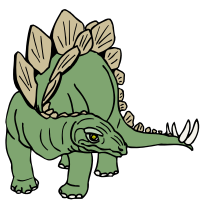
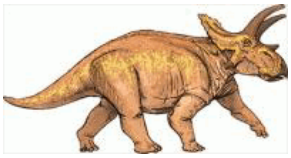
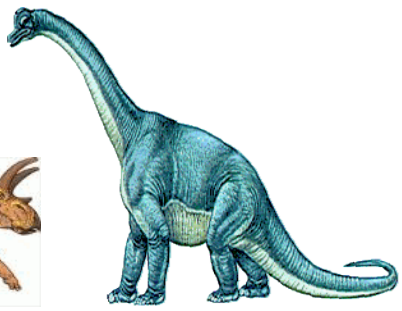
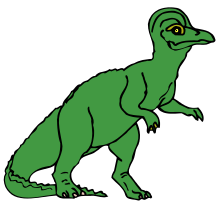
As a Mini 4-H parent, your job will be guide and encourage your child through the activity. It is strongly suggested that you do not complete the activities for them. Instead, help them, guide them, work with them, and let them do all they possibly can. The 4-H motto is "learn by doing" and is the best educational tool we can provide for youth.

Additionally, the Mini 4-H program is set up to allow your child to exhibit a project at the 4-H Fair. This project is based on information in this manual.

The 4-H Fair is an exciting time for 4-H members and families. It is a week that allows community youth to showcase their talents, interests, and enthusiasm for learning.

Mini 4-H is fun! Your child will certainly enjoy it. You can have fun too, by guiding and helping as your child participates in the program. Encourage and praise your child as he/she has fun learning and sharing with you.

If you have any questions regarding Mini 4-H or other 4-H programs, please feel free to contact your local Extension Office.


Mini 4-Her's Page

Welcome to Mini 4-H! You are now a member of the 4-H family. You are a special person.

Mini 4-Hers have lots of fun! There are lots of activities for you to explore. You can try new things. You can share it with your friends and family.

Mom, Dad, or another adult can help you with your project. Bring your project to the 4-H Fair and lots of people will be able to see what you have done. You also get a ribbon made just for Mini 4-Hers.

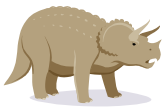
Things to Know About 4-H

The 4-H Symbol: A four-leaf clover with an "H" in each leaf.

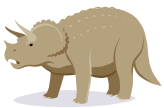
The 4-H Colors: Green and white

The 4-H Motto: To make the best, better.

The 4-H Pledge: I pledge my HEAD to clearer thinking,
my HEART to greater loyalty,
my HANDS to larger service, and
my HEALTH to better living, for my club,
my community, my country, and my world.



What Are Dinosaurs?



Dinosaurs were very large animals that lived on Earth more than 200 million years ago. We don't know for sure what they looked like. Scientists can guess from bones and fossils what shapes and sizes they may have been. Most scientists think they looked like giant lizards.

The word *dinosaur* means "terrible lizard." Lizards are reptiles. Can you name four types of reptiles? *(Answers on page 22.)*

1. _____ 2. _____

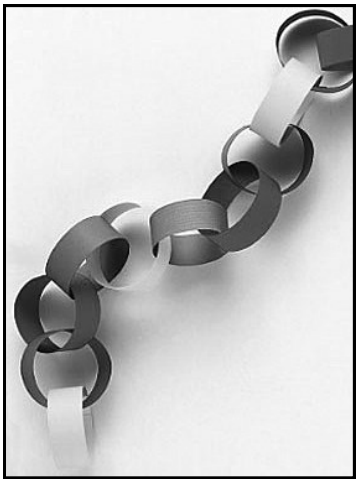
3. _____ 4. _____

Activity 1 — Measure a Dinosaur

Dinosaurs were not like the lizards or reptiles on Earth today. They were very big. How big? Here is an activity that will help you understand how big dinosaurs were.

You will need:

- 50 feet of string
- Ruler
- Scrap paper
- Tape or glue
- Scissors



Here is what to do:

1. Cut the scrap paper in rectangles, about 5 inches long and about 1 inch wide.
2. Make a paper chain. To do this, bend the piece of paper into a circle and tape (or glue) the ends.

Activity 1, continued

3. Take another piece of paper, put it through the middle of the first circle, bend the paper to make a second circle, and tape the ends. You will now have two circles and it will look like a chain.
4. Keep going until your chain is 50 feet long. You can use your piece of string to measure your chain. When finished, this will be your dinosaur chain.
5. Make another paper chain as long as you are tall.
6. If you have time, make more chains. Make them as long as your mom and dad are tall.
7. When you are finished with your chains, take them outside. You will need a lot of room. Put the chains next to each other.

Activity 1 Questions:

1. Which was bigger, your chain or the dinosaur chain? _____

_____

2. If you put together your chain and your mom and dad's chain(s), which one is bigger, your family's or the dinosaur's?

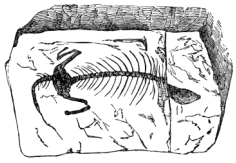
_____

3. What things do you see around you that are as tall as your dinosaur chain? _____

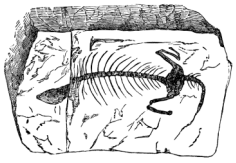
_____

_____

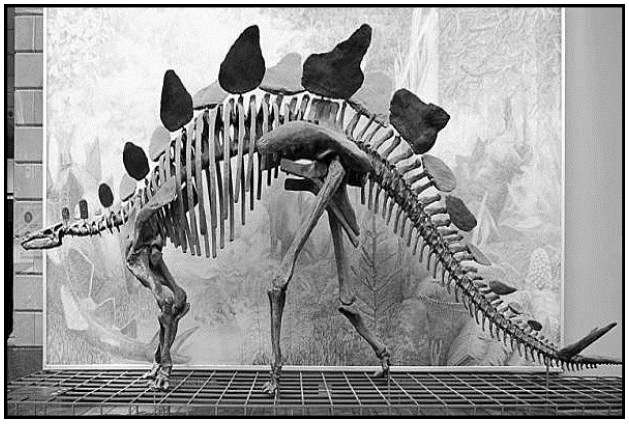
_____



Fossils



No one has ever seen a dinosaur, but parts of dinosaurs called fossils have been found all over the world. People who study dinosaurs are scientists called paleontologists.



Stegosaurus skeleton at Senckenberg Museum, Frankfurt, Germany. Photo credit: EvaK; The Tech Herald

Fossils are bones, eggs, or dirt that turned into stone or made a picture in the stone. The special thing about fossils is that they keep their shape. They look like they did millions of years ago.

Scientists are able to make casts from fossils. A *cast* is made of clay or plaster. The clay is put around a fossil. The fossil makes prints or spaces in the clay. After the clay hardens, people can study the cast. This helps keep the fossil from breaking.

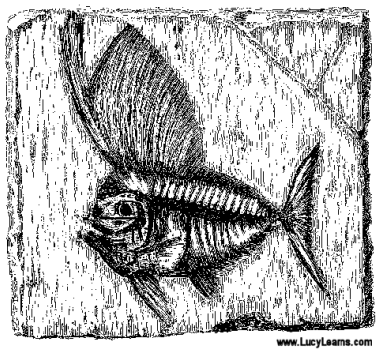
Some fossils did not turn into stone, but instead left an imprint in the mud, like a leaf or a footprint. The leaf may have fallen in mud millions of years ago. This mud turned to stone with the print of the leaf on it. The leaf died away, but left a picture for us to see today.

Activity 2 — Fossil Prints

You will need:

- 1 cup of used coffee grounds
- 1/2 cup of cold coffee
- 1 cup of flour
- 1/2 cup of salt
- Wax paper
- Mixing bowl
- Some small objects to make impressions in the dough
- Empty can or a butter knife
- Toothpicks, optional
- String to hang your fossil (optional)

Activity 2, continued



Here is what to do:

1. Stir the together the coffee grounds, cold coffee, flour, and salt until well mixed.
2. Knead the dough together and then flatten it out onto the waxed paper.
3. Use the can to cut out circles of the dough or use the dull knife to cut slabs large enough to fit your "fossil" objects.
4. Press your objects firmly into the dough. When you take the object out, you have your "fossils." If you want to hang the fossil, poke holes into the edge to hold the string.
5. Let the fossil dry overnight and then hang it if you wish.

Activity 2 Questions:

1.What kinds of fossils do we find from the time of dinosaurs?

_____

_____

2. Where can we visit and see fossils? _____

3.What are things in your house or yard that might be a fossil 200 million years in the future? _____

_____

Fossil of a dinosaur footprint, found in Utah. Photo by Fred & Diane Adams, www.backyardnature.net

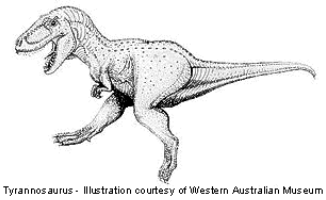
Types of Dinosaurs

There were many dinosaurs of all different sizes. Some were as small as a turtle and some were taller than a five-story building.

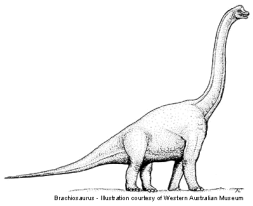
People have found bones and fossils of different shapes and sizes. The shape and size of fossils can tell people many things. If a bone was very large, then the dinosaur was large. If footprints were small, then the dinosaur was small.

There were two groups of dinosaurs. One is called "bird-hipped" and the other is called "reptile-hipped." The shape of the hip bone puts a dinosaur in a group.

The bird-hipped dinosaurs ate mostly meat. These dinosaurs stood on two feet. The front two feet were very small and looked like hands. They had very long tails, which helped them balance. They also had big heads with large mouths and very sharp teeth.



Tyrannosaurus - Illustration courtesy of Western Australian Museum



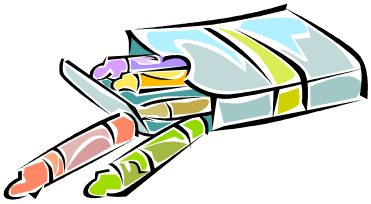
Brachiosaurus - Illustration courtesy of Western Australian Museum

The reptile-hipped dinosaurs ate plants. These dinosaurs stood on four feet. They had long necks, which helped them reach the tops of trees. Because they ate plants, they had weak teeth.

Activity 3 — Types of Dinosaurs

You will need:

- Crayons, colored pencils, or markers



Here is what to do:

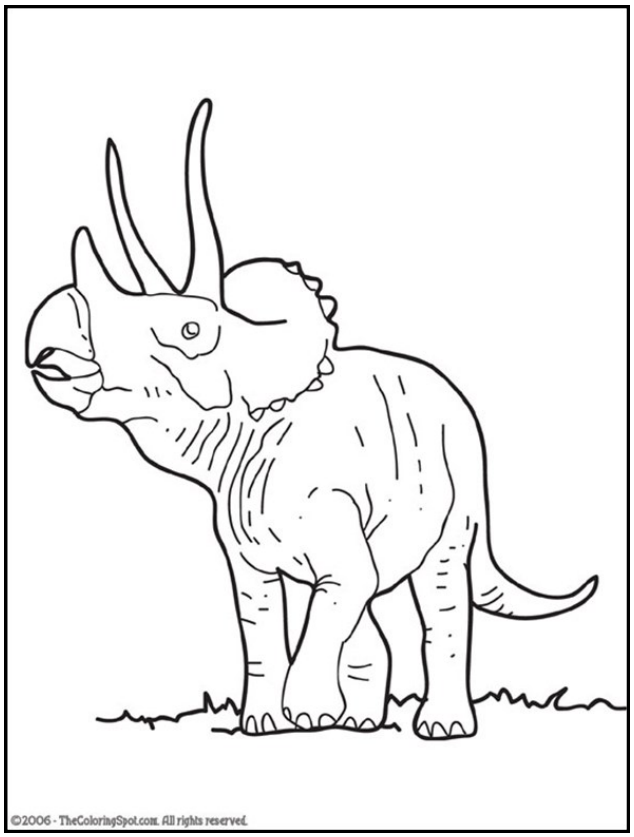
- Match the dinosaur with the description.
- Write the name of each dinosaur under the picture.
- Color the pictures.

Answers on page 22

Activity 3 continued

Dinosaur Descriptions

- **Ankylosaurus** (means "stiff lizard") — This was a wide, heavy plant-eater, which was about 30 feet long. It had a club-like tail, bony plates embedded in its skin, and rows of spikes running along its body.
- **Apatosaurus** (means "deceptive lizard") — This used to be called the Brontosaurus, until the two were proven to be identical. This plant-eater did not chew its food; it swallowed stones to help grind up its food. It weighed more than 30 tons and measured up to 70 feet long, and its nostrils were on the top of its head.
- **Parasaurolophus** (means "crested lizard") — This was a duck-billed dinosaur with a large curved head crest that allowed it to make loud bellowing sounds. It was 30 feet long and weighed up to 5 tons. It had pebbly-textured skin, a spoon-shaped beak, and a pointy tail. Its sight and hearing were keen, but it had no natural defenses. This plant-eater had a toothless, horny beak and numerous cheek teeth.
- **Stegosaurus** (means "roofed lizard") — This dinosaur was about 30 feet long and 9 feet tall, with short legs and a brain the size of a golf ball. It was a plant-eater and is known for the 20 tough plates sticking out of its back and the 2-foot-long spikes at the end of its tail.
- **Triceratops** (means "three-horned face") — It had one short horn over its snout, and two long horns above the eye sockets. Triceratops was about 30 feet long, 10 feet tall, and weighed up to 6-12 tons. It had a short, pointed tail, a bulky body, column-like legs with hoof-like claws, and a bony neck frill rimmed with bony bumps. It had a parrot-like beak, many cheek teeth, and powerful jaws.
- **Tyrannosaurus Rex** (means "king of the tyrant lizards") — This meat-eater grew to be 46 feet long, 18 feet tall, and weighed 6 tons. It had a huge head that was 4 feet long and teeth that were 6 inches long. It walked on two powerful legs, had tiny arms, and a slim, stiff, pointed tail.
- **Velociraptor** (means "speedy predator") — It was a fast-running, two-legged dinosaur. This meat-eater had about 80 very sharp, curved teeth, a long, flat snout, an s-shaped neck, arms with three-fingered clawed hands, long thin legs, and four-toed clawed feet. It was about 6 feet long, 3 feet tall, and may have been able to run up to 50 mph.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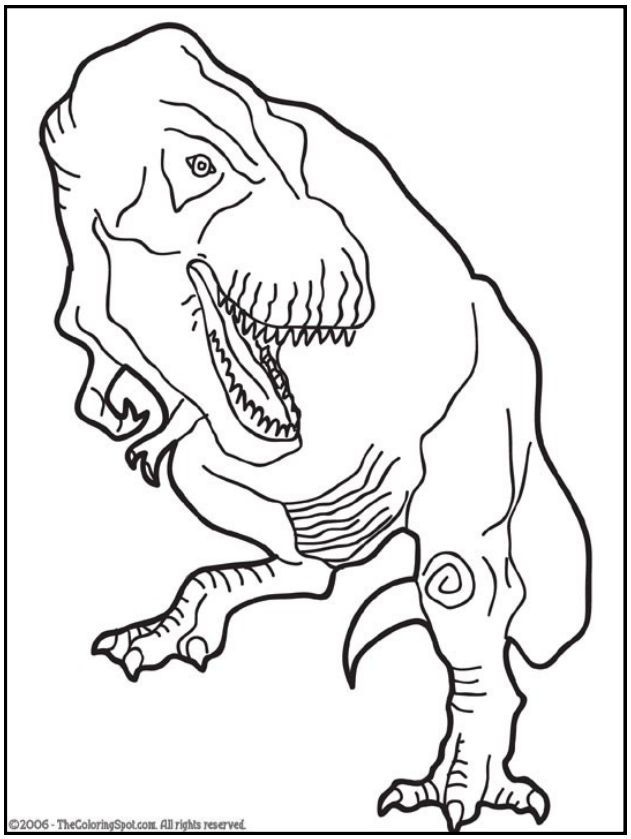
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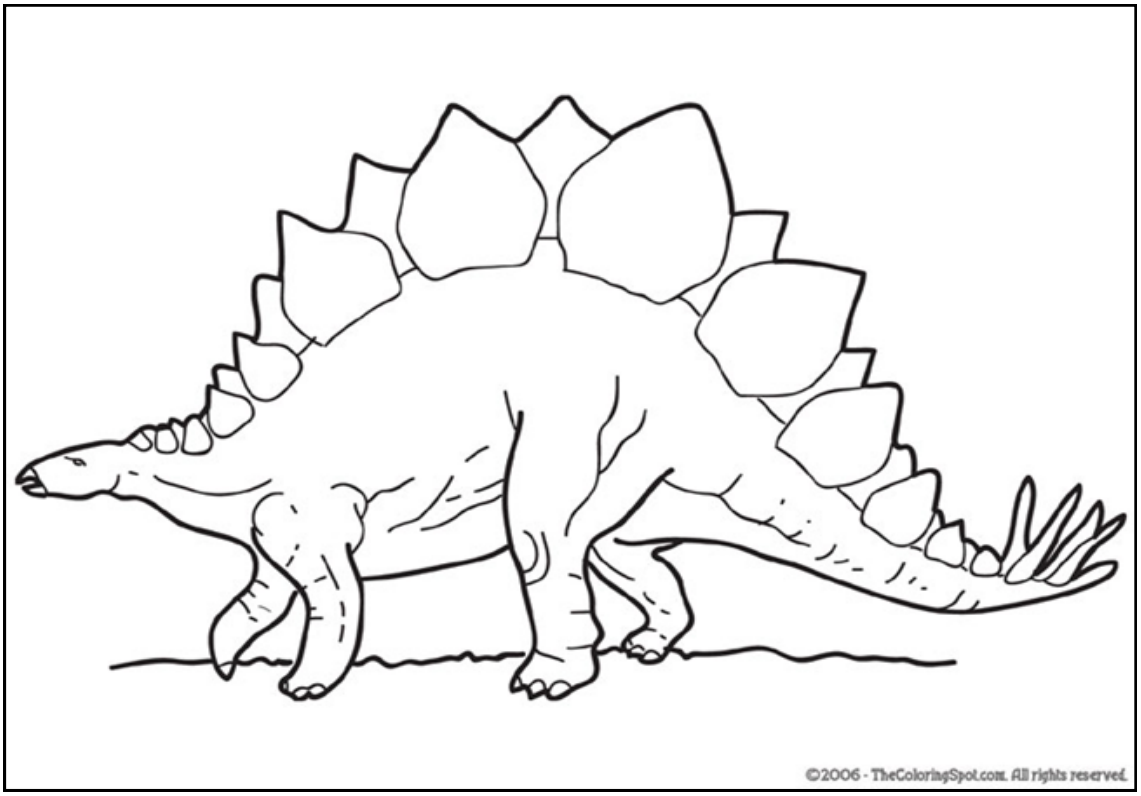
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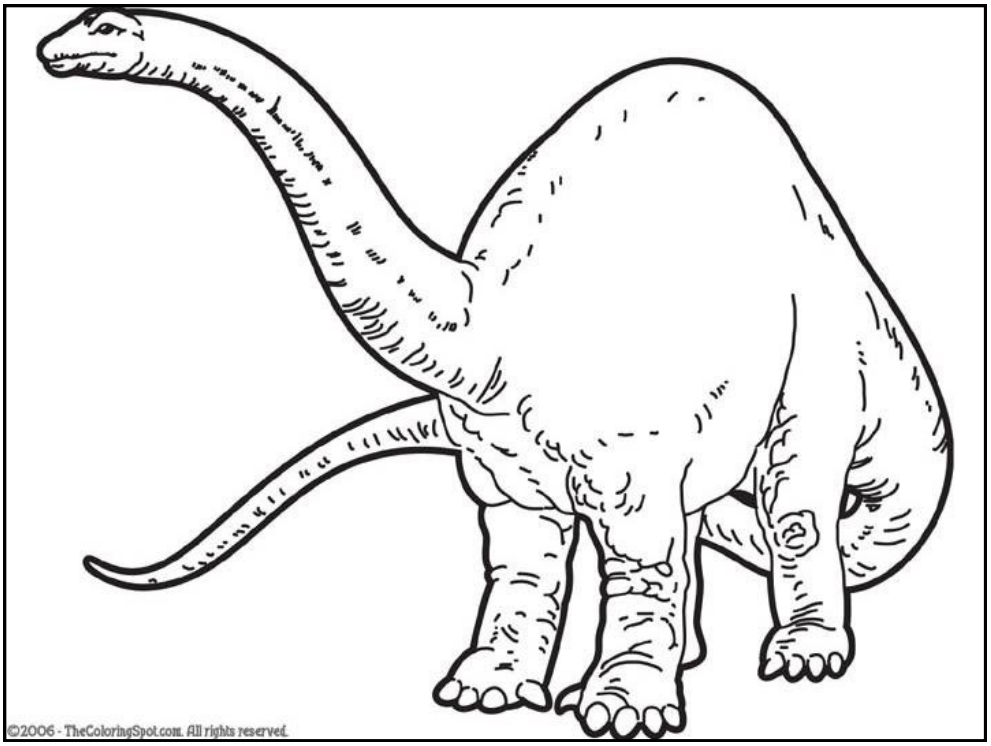
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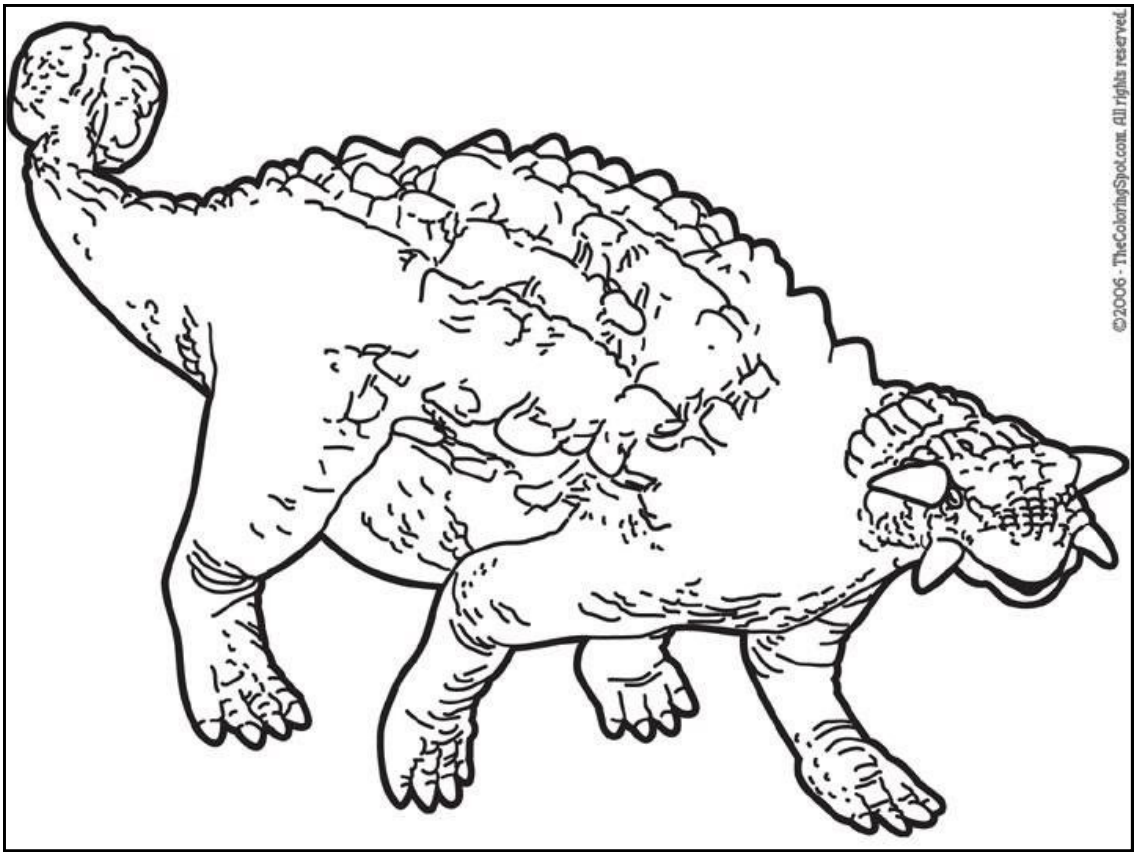
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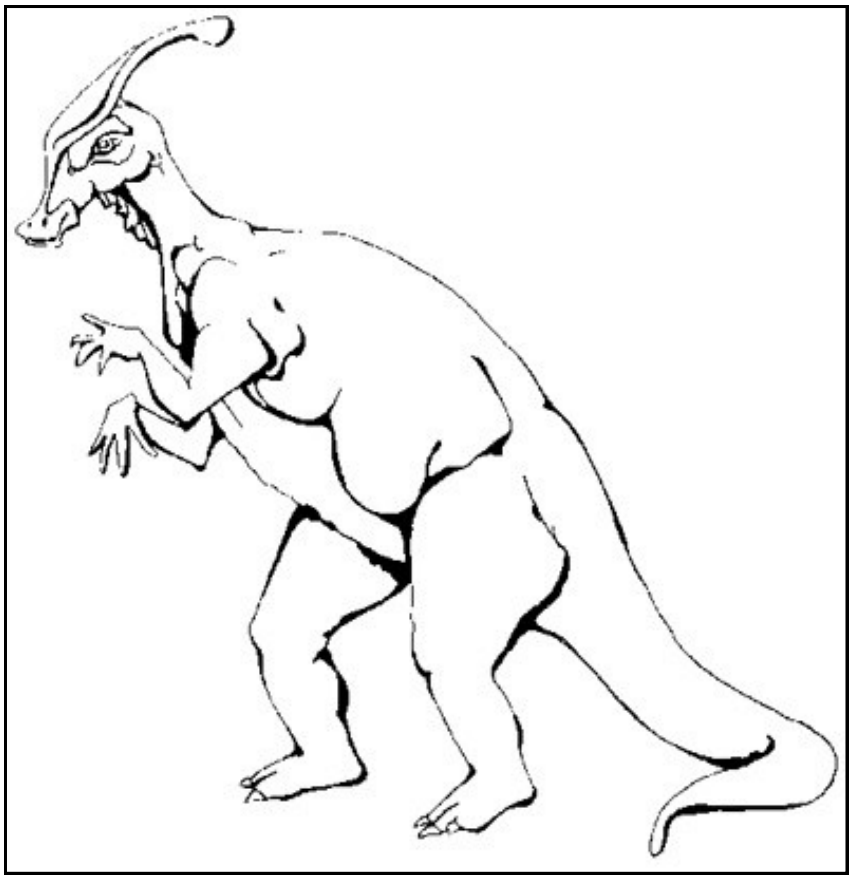

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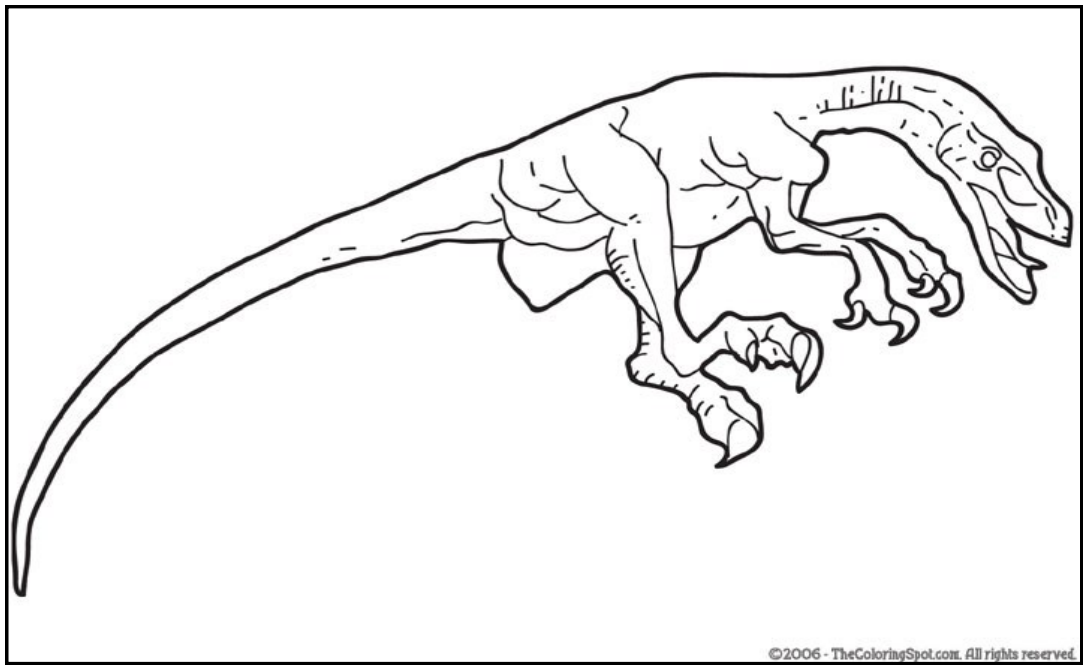


7. _____

Activity 3 continued

Activity 3 Questions

1. What is your favorite dinosaur and why? _____

_____

_____

2. Which dinosaur was the tallest? _____

How many floors in a building would this be, if one floor is 10 feet tall? _____

3. Which dinosaur do you think is the most famous?

_____Why? _____

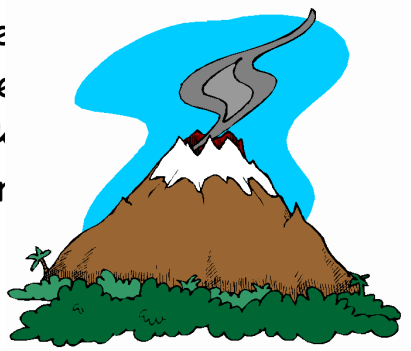
_____

_____

Where Dinosaurs Lived

Dinosaurs lived in the same world as we do now, just millions of years ago. They could have lived where you are sitting right now!

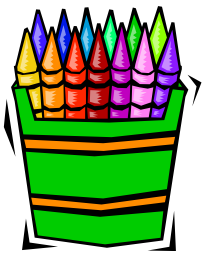
From plant fossils, scientists think the Earth was very warm and humid. There were many seas and swamps. It rained most of the year. The weather would have been very close to the rain forests in Central and South America.



Most of the plants that lived then were ferns, mosse and other smaller plants. The plants were very simple There were no flowers, fruits, or seeds. All plants lik the warm, wet climate. Plants gave a lot of tender, gr leaves to feed the large dinosaurs.

At one time, the continents were very close together. This was called Pangaea. Dinosaurs could walk from North America to Europe! But the Earth was changing. There were a lot of volcanoes. The continents began to move apart or divide.

Activity 4 — The Continents Divide



You will need:

- Crayons, colored pencils, or markers

Here is what to do:

1. Draw lines that show how dinosaurs could have moved from one continent to another on the Pangaea map.
2. Color the continents. Try to make them the same color on each map. For example, color the continent of North America green on both maps.

Activity 4 continued

Activity 4 Questions:

1. What would have to happen for dinosaurs to come back today?

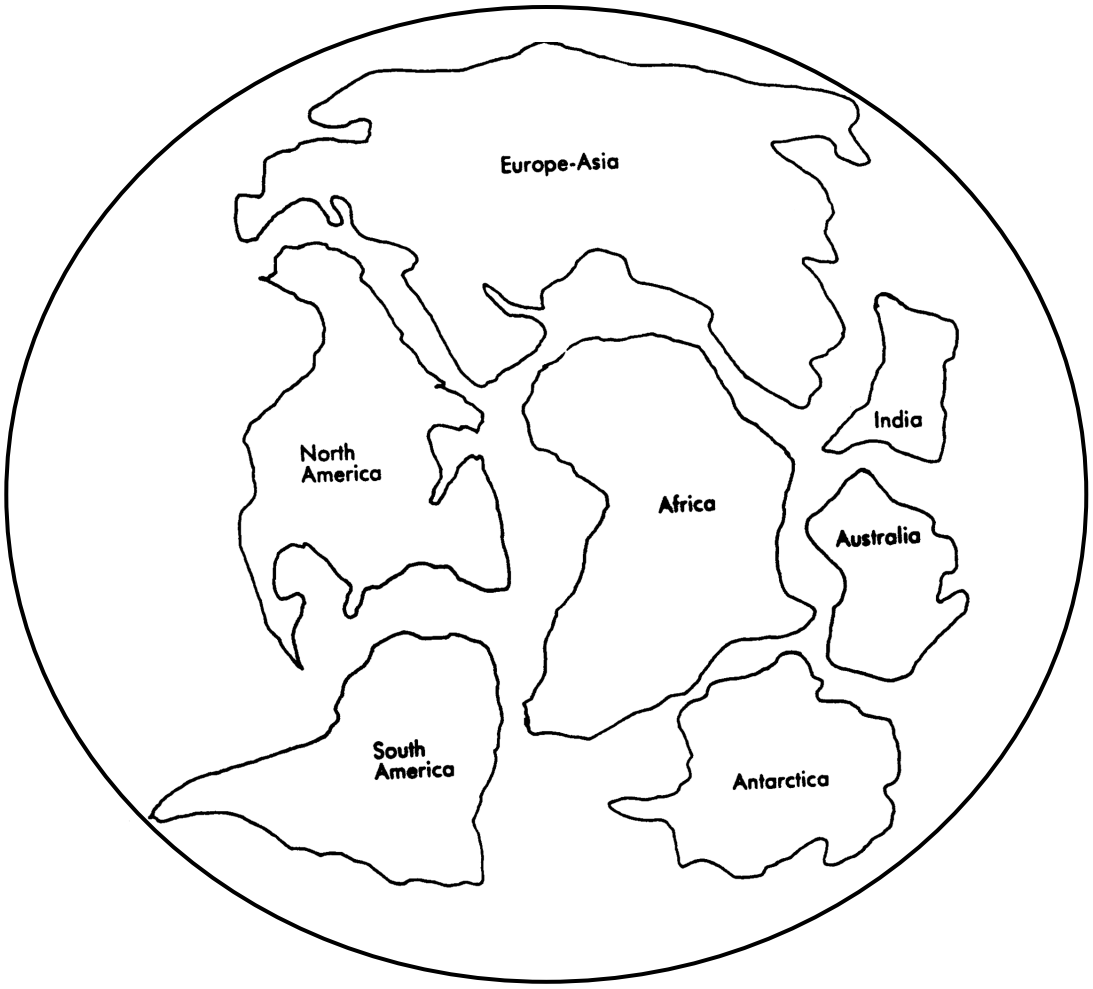
_____

_____

2. Where would they live? _____

3. What would they eat? _____

Pangaea



Earth Today

Extinction

About 65 millions years ago, something happened to dinosaurs. There are many ideas about dinosaur extinction. *Extinction* means that a species of plants or animals no longer exists.

One idea is that the weather on Earth changed. It became colder.

Another idea is that dinosaurs could not find enough food to survive. Other types of animals were able to live on smaller amounts of food and survived.

A popular idea is that a large meteorite (a rock from space) hit the Earth and made a big dust cloud that blocked out the sun. Because there was no sun, the plants died and the climate was colder.

There are many other ideas. Scientists still are looking for the answer. What do you think?

Activity 5 — Where Are the Dinosaurs?

You will need:

- Crayons, markers, or colored pencils

Here is what to do:

- Find and circle the dinosaur words in the puzzle.

Dinosaur Word Find

Find these words:

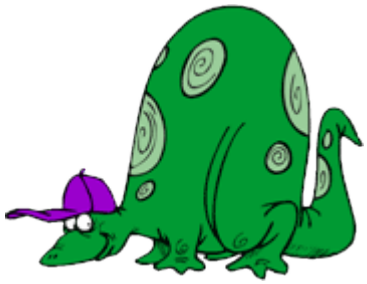
Armor
Bones
Claw
DNA
Eggs
Excavate
Extinct
Fossil
Geology
Herd
Horns
Lizard
Museum
Plants
Plates
Predator
Skeleton
Species
Spikes
Teeth

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

Answer on page 22.

Activity 6 — Papier-Mâché Dinosaur Hats

This activity creates papier-mâché dinosaur hats. Each step takes about an hour or less. A few days drying time is required between the papier-mâché part, applying decorations, and painting. It is also messy, involving tearing paper, gluing it, decorating, and painting.



You will need:

- One large balloon for each hat
- A lot of old newspaper and/or brown-bag paper
- Flour-water glue (instructions follow)
- Scissors
- Hole punch (or just use the tip of a scissors to make holes)
- Assorted paper, cardboard scraps, styrofoam scraps, egg cartons
- Paint
- String or elastic for chin straps

Here's what to do:

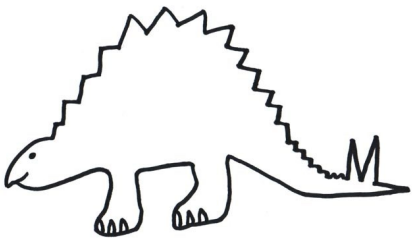
1. Choose the type of dinosaur hat(s) you want to make. Species with interesting heads include: Styracosaurus, Triceratops, Dilophosaurus, Lambeosaurus, and T. rex.
2. Make a simple, thin glue from flour and water (boiling gives it a nice consistency). A good recipe is: Mix 1 cup of flour into 1 cup of water until the mixture is thin and runny. Stir into 4 cups of boiling water. Simmer for about 3 minutes, then cool. **Remember — never use the stove or microwave unless an adult or older brother or sister helps you!**
3. Tear a lot of strips of newspaper and/or brown bag paper. Strips should be about 1 inch wide; the length doesn't really matter.

Activity 6 continued

4. Dip each strip of paper in the flour glue and put it on the balloon. **Put the balloon sideways because most dinosaurs had long heads.** Apply the papier-mâché strips to cover about half of each balloon . About 3 layers of paper are necessary for a hat thick enough to decorate later. You can do all the layers at one time, or wait between layers. Let dry for a few days.
5. Pop the balloon when the hat's dry, and remove the balloon. Trim the hat, depending on the dinosaur species chosen. Using glue or staples, add horns, frills, crests, beaks, teeth, and more, made of paper, cardboard, styrofoam, egg cartons, etc. Let dry.
6. When the hat is dry, punch holes for chin straps and paint the eyes, nostrils, beaks, skin color, etc. Let the paint dry. .
7. Add string or elastic to use as a chin strap.

Activity 7 — Stuffed Paper Dinosaurs

This activity takes about an hour or less. It is not very messy; it involves cutting two identical paper dinosaur shapes, decorating the dinosaurs, and stapling them together, and then stuffing them with newspaper.



You will need:

- Any thick paper, 8 1/2 x 11
- Scissors
- Stapler
- Crayons, paint, or markers to decorate the dinosaurs
- Newspaper or tissue paper to stuff the dinosaurs

Here's what to do:

1. Choose the type of dinosaur(s) you want to make (www.enchantedlearning.com/subjects/dinosaurs/printouts/a.shtml) that fits on standard 8.5" x 11" paper.
2. Cut out the template(s) you've chosen.

3. Make two identical dinosaur tracings, using two pieces of paper.
4. Staple around the edges, leaving a hole large enough to stuff the dinosaur later.
5. Decorate both sides of the dinosaur, adding eyes, nostrils, camouflage, teeth, etc., using crayons, markers, or paint.
6. Stuff the dinosaur with crumbled newspaper, scraps of paper, or tissue paper.
7. Staple the remaining hole shut.

NOTE: "Sewing" can be used as a more difficult alternative to stapling the dinosaur together. Using a hole punch, you can punch holes around the edges of the dinosaur while holding the two identical pieces together. Then use yarn or string to "sew" through the holes, attaching the two sides.

Activity 8 — Papier-Mâché Dinosaur Egg

This is a great way to make HUGE, hatchable, papier-mâché dinosaur eggs. If you make a bunch of these eggs a few days in advance, they can be decorated at a party.

You will need:

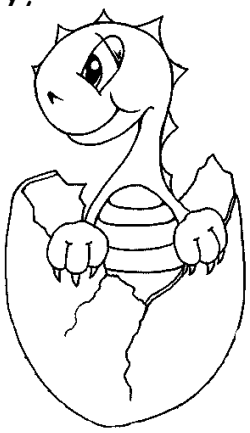
- One balloon for each dinosaur egg
- A lot of old newspaper and/or brown-bag paper
- Flour-water glue (instructions below)
- Paints (tempera works well) and markers

Here is what to do:

1. Make a simple, thin glue from flour and water (boiling gives it a nice consistency). Mix 1 cup of flour into 1 cup of water until the mixture is thin and runny. Stir into 4 cups of boiling water. Simmer for about 3 minutes, then cool. **Remember — never use the stove or microwave unless an adult or older brother or sister helps you!**
2. Tear a lot of strips of newspaper and/or brown bag paper. Strips should be about 1 inch wide; the length doesn't really matter.

Activity 8 continued

3. For an extra special dinosaur egg, put a small, plastic dinosaur inside the balloon before blowing it up.
4. Blow up a balloon for each child.
5. Dip each strip of paper in the flour glue and wrap around the balloon. Have at least two layers surrounding the balloon. Let it dry (at least overnight) after each layer.
6. Let the dinosaur egg dry for a few days. When it is dry, you can pop and remove the balloon from inside the e
7. After the dinosaur egg is completely dry, decorate with paint or markers. No one knows what color the dinosaurs' eggs really were. Some dinosaurs dug nest out of sandy soil and some just laid their eggs on the ground. Maybe the eggs were camouflaged to blend i with twigs, sand, mud, or fallen leaves.
8. You can later "hatch" your egg and find a tiny dinos



Answers to Types of Reptiles (page 5): (There are many more)
1. Lizard 2. Turtle 3. Snake
4. Alligator 5. Crocodile

Answers to Types of Dinosaurs (Activity 3, pages 11-13):
1. Triceratops 2. Stegosaurus
3. Ankylosaurs 4. Velocirapor
5. Tyrannosaurs Rex
6. Apatosaurus
7. Parasaurolophus

Answer to Word Search, Activity 5, Page 18:

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

What to Exhibit

Here is a list of projects that can be shown at the 4-H Fair. Pick ***one*** project you would like to exhibit at the fair. You do not need to make the projects in a special order.

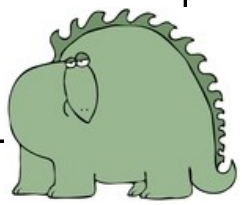
If you have any questions about your projects, please call the Extension Office. There are people there who can help you.

- Make a fossil cast. Use something that will make a fossil that might have been around 200 million years ago. (Examples: bones, leaves, and twigs)
- Find four pictures of dinosaurs. Answer these questions for each picture. You can use the dinosaurs in this book. Put the pictures and information in a self-made notebook.
  - What is the name of dinosaur?
  - How big is the dinosaur?
  - How much does the dinosaur weigh?
  - What type of dinosaur is it?
- Make a poster that shows how big dinosaurs were. Draw pictures of yourself, your house, your school, and your favorite dinosaur. Answer these questions for each thing:
  - Name of thing
  - Size of thing
- Make a model of your favorite dinosaur. You can use model materials of your choice.

Joke Time!

What do you get when you cross a dinosaur with a lemon?

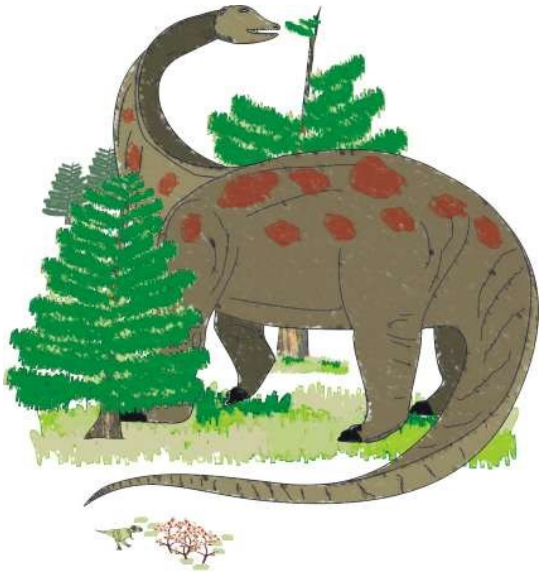
A dino-sour!



What to Exhibit, continued

- Make a dino-time Dinorama.
  - Find a large shoebox.
  - Paint the inside of the box to look like the Earth when dinosaurs were alive.
  - Put soil in the bottom of the box. Put enough in to make hills and swamps. You can use poster board painted blue for water. Collect rocks for your dinorama.
  - Collect small twigs, leaves and other plants.
  - Make models of dinosaurs and put them in your box.
  - You can use poster board to add stiffness. Clay works too!
- Collect five types of plants that dinosaurs would be able to eat if they lived today. (Hint: The plants that dinosaurs ate did not have flowers.) Put the plants in a self-made notebook. Answer the following questions next to each plant:
  - Name of plant?
  - Why would a dinosaur eat it?
  - Where did you find the plant?

For information on how to label your project, when to enter it in the Fair, and where the project needs to go, please contact your Extension Office.



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Resources and References

Exploring 4-H, Purdue University Cooperative Extension Service
Mini 4-H Dinosaur Manual, Decatur County, Indiana
Dinosaurs, Paso Partners, California (access through Internet)

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PURDUE AGRICULTURE