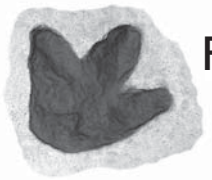
# Colorado National Monument

Environmental Education

National Park Service
U.S. Department of the Interior

**Fossils: Pre-Field Trip Activity**
*(4th Grade - Monumental Hike, Digging Into Fossils)*

Name_____



## Fossil Lingo - **Fill in the blanks** to learn more about the different types of fossils.

Key: body trace coprolite amber

1. A part of a plant or animal that was turned to stone is a _____ fossil.

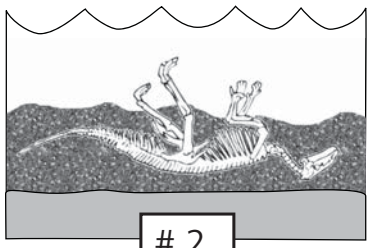
2. A _____ fossil is the remains of a sign left by a dinosaur or ancient animal like a fossilized track or _____ *(dinosaur droppings)*.

3. Some fossils are perfectly preserved, like insects trapped in _____ *(tree sap)*.

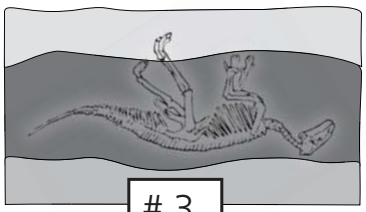
Trilobite Fossil

## A Fossil in the Making - The pictures below show how the bones of an *Allosaurus* dinosaur turned into fossils. **Write** a story on the lines below to describe what happened.

# 1



# 2



# 3

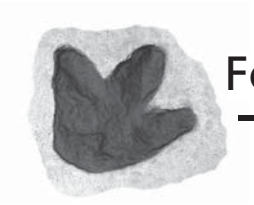
# Colorado National Monument

Environmental Education

National Park Service
U.S. Department of the Interior

Fossils: Pre-Field Trip Activity
*(4th Grade - Discovering Fossils Monumental Hike, Digging Into Fossils)*

**Answer Key**



## Fossil Lingo - **Fill in the blanks** to learn more about the different types of fossils.

Key: body trace coprolite amber

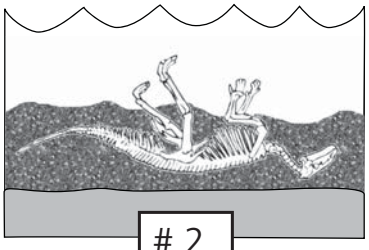
1. A part of a plant or animal that was turned to stone is a **body** fossil.

2. A **trace** fossil is the remains of a sign left by a dinosaur or ancient animal like a fossilized track or **coprolite** *(dinosaur droppings)*.

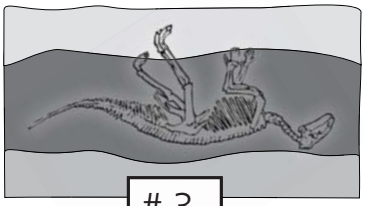
3. Some fossils are perfectly preserved, like insects trapped in **amber** *(tree sap)*.

## A Fossil in the Making - The pictures below show how the bones of an *Allosaurus* dinosaur turned into fossils. **Write** a story on the lines below to describe what happened.

# 1



# 2



# 3

***Answers will vary. Main points students should cover:***

**1. Allosaurus died**

**2. Bones were buried by sand in the bottom of a river/ocean.**

**3. Sand and bones turned to stone. *(Original bone material was replaced by minerals.)***

# Colorado National Monument
Environmental Education

National Park Service
U.S. Department of the Interior

Fossils, Post-Field Trip Activity, *(4th grade, Digging into Fossils, Discovering Fossils)*

Name_____

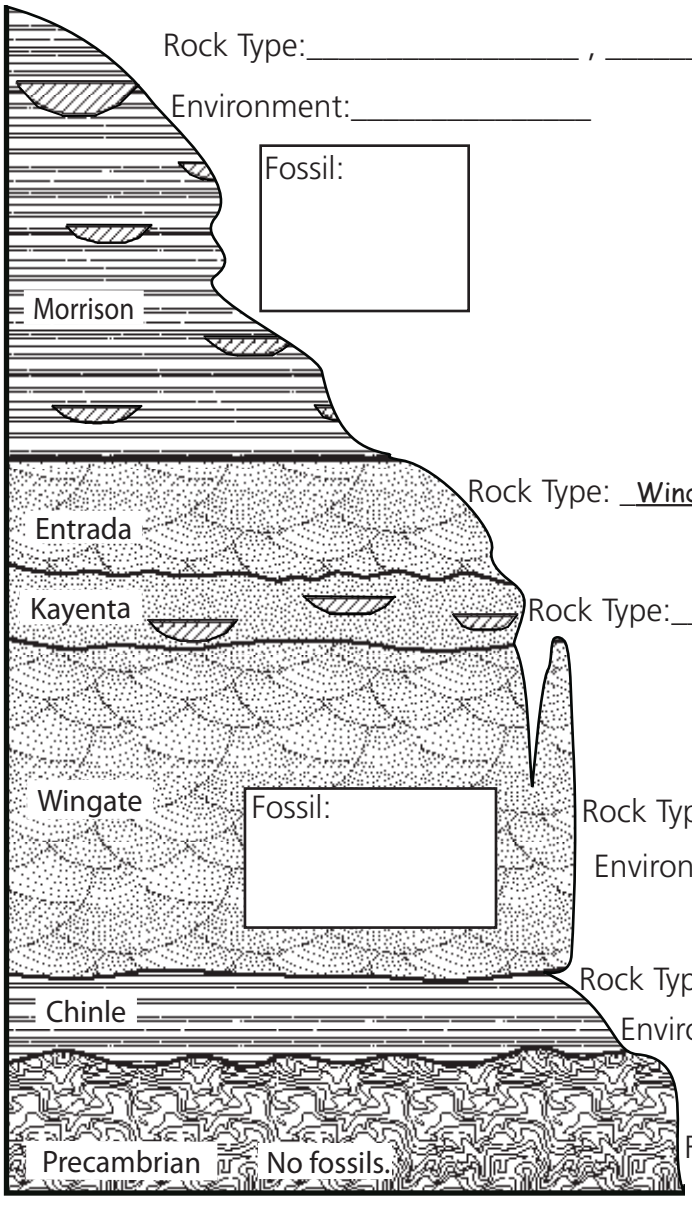
Clues to the Past - This drawing of the Monument's rock layers is called a stratographic column. Each layer has a name. Use the key to identify and **label the rock types.** (Entrada has been done for you.) Based on the rock types and what you learned during your field trip, write the name of the **ancient environment** next to the layers in the spaces provided. **Draw and label the fossils** found in the rock layers in the boxes below.

**Key**

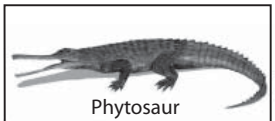
- Sandstone
- Mudstone
- Riverbed
- Windblown
- Metamorphic

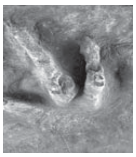
**Ancient Environments**

Swamp
Ocean
Desert
Lakes and Rivers




**Fossils**


Phytosaur


Grallator Track


Turtle Tracks

1) Draw a claw on the layer allosaurus fossils have been found in.
(Hint: Many dinosaur fossils have been found in the layer that is Riverbed Mudstone.)

2)Draw a star or stars on the layer or layers that you hiked in during the field trip.

**On the back of this paper, or on a seperate sheet:**
Write a paragraph explaining how **fossils** and **rock types** helped you figure out what the **ancient environment** was like for one of these layers: Morrison, Wingate or Chinle.

# Colorado National Monument
Environmental Education

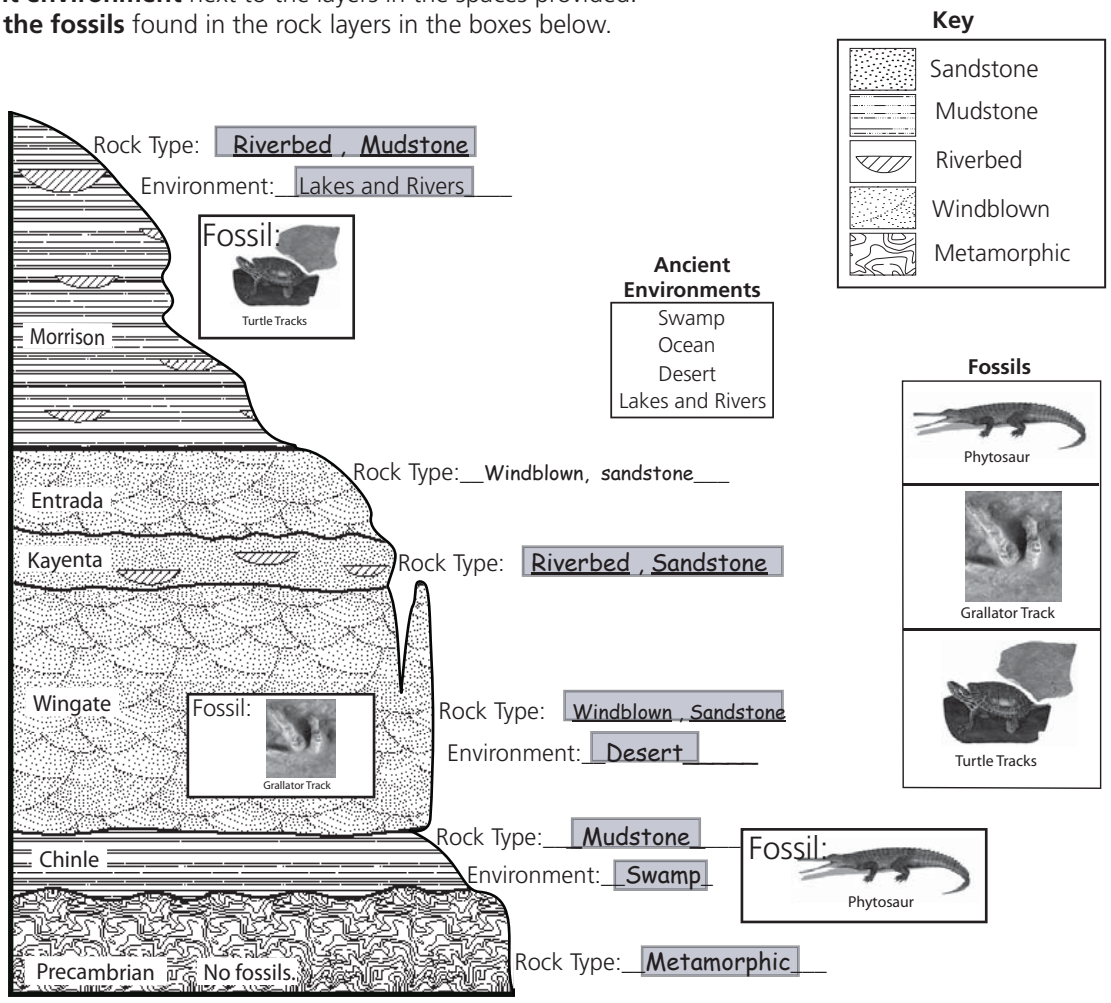
National Park Service
U.S. Department of the Interior

Fossils, Post-Field Trip Activity, *(4th grade, Digging into Fossils, Discovering Fossils)*

Name___ **Answer Key**

## Clues to the Past

This drawing is called a stratographic column. The rock layers names are labeled.
Use the key to identify and **label the rock types.** (Entrada has been done for you.)
Based on the rock types and what you learned during your field trip;
**write the ancient environment** next to the layers in the spaces provided.
**Draw and label the fossils** found in the rock layers in the boxes below.




1) Draw a claw on the layer allosaurus fossils have been found in. (Morrison Layer)

(Hint: Many dinosaur fossils have been found in the layer that is Riverbed Mudstone.)

2)Draw a star or stars on the layer or layers that you hiked in during the field trip. Field trips at the Visitor Center hiking on the canyon rim trail are on the Kayenta layer (the alcove trail is in Entrada). Lower Monument Canyon hikes in the Precambrian, Chinle and Wingate layers. (The trailhead is actually in Morrison, but rangers rarely point this out.)

**On the back of this paper, or on a seperate sheet:**
How did you determine what ancient environments matched the rock layers? Choose one of the rock layers: Morrison, Wingate or Chinle, and write a paragraph explaining how **fossils** and **rock types** helped you figure out what the **ancient environment** was like. Samples:

I know from using the key and from the hike that the chinle layer is mudstone. A fossil that has been found in the chinle layer is phytosaur a creature like a crocadile. Crocodiles today live in swamps. Phytosaur probably lived in swamps too. Swamps are muddy, which is why the rock layer is mudstone.

Turtles today live near water like lakes and rivers. The ranger told us fossilized turtle tracks have been found in the Morrison layer, and that is a clue that the ancient environment had shallow water. Also the key says the rock is riverbed mudstone which is formed from lakes and rivers.

Wingate is windblown sandstone. This is formed from sandunes in a desert. Fossilized grallator tracks are from a group of dinosaurs, some of these dinosaurs were desert dwellers.

# Colorado National Monument
Environmental Education

National Park Service
U.S. Department of the Interior

Animal Adaptations: Pre-Field Trip Activity
*(4th grade, An Alcove for an Abode, Desert Dwellers)*

Name_____

List three reasons why it would be hard for you to live in the desert:

1) _____

2) _____

3) _____

The animals below have **adaptations** that help them survive in the desert.

**A**nimals
**D**epend on their
**A**ctivities and
**P**arts
**T**o
**S**urvive

**Adaptation:** an activity or physical feature of an animal or plant that helps it survive in its environment.

## Who Am I?

Draw a line to match the description with the animal.

I can swoop down at speeds over 250 mph to capture my prey, smaller birds.

I am an excellent jumper and get all the water I need from the plants I eat.

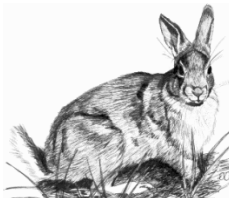
I pant like a dog to keep cool in the heat of the summer.

My big ears release heat to help me stay cool.

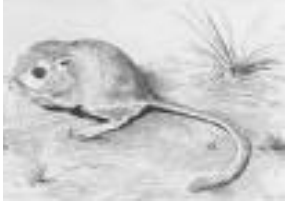
My large tail helps me balance as I climb through the trees in search of food at night.


Ringtail


Desert Bighorn Sheep


Desert Cottontail Rabbit


Peregrine Falcon


Kangaroo Rat

# Colorado National Monument
Environmental Education

National Park Service
U.S. Department of the Interior

Animal Adaptations: Pre-Field Trip Activity
*(4th grade, An Alcove for an Abode, Desert Dwellers)*

**Answer Key**

List three reasons why it would be hard for you to live in the desert:

1) _____ **It is hot.** _____

2) _____ **There is not much to eat.** _____

3) _____**There is not enough water. There is not much shade.** ___ **Etc., etc.**_____

The animals below have **adaptations** that help them survive in the desert.

**A**nimals
**D**epend on their
**A**ctivities and
**P**arts
**T**o
**S**urvive

**Adaptation:** an activity or physical feature of an animal or plant that helps it survive in its environment.

## Who Am I?

Draw a line to match the description with the animal.

I can swoop down at speeds over 250 mph to capture my prey, smaller birds.

I am an excellent jumper and get all the water I need from the plants I eat.

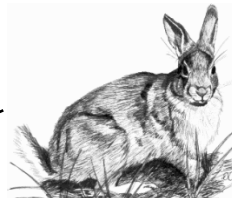
I pant like a dog to keep cool in the heat of the summer.

My big ears release heat to help me stay cool.

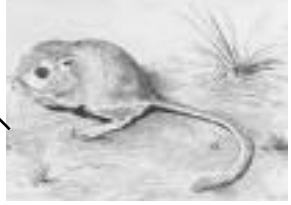
My large tail helps me balance as I climb through the trees at night in search of food.


Ringtail


Desert Bighorn Sheep


Desert Cottontail Rabbit


Peregrine Falcon

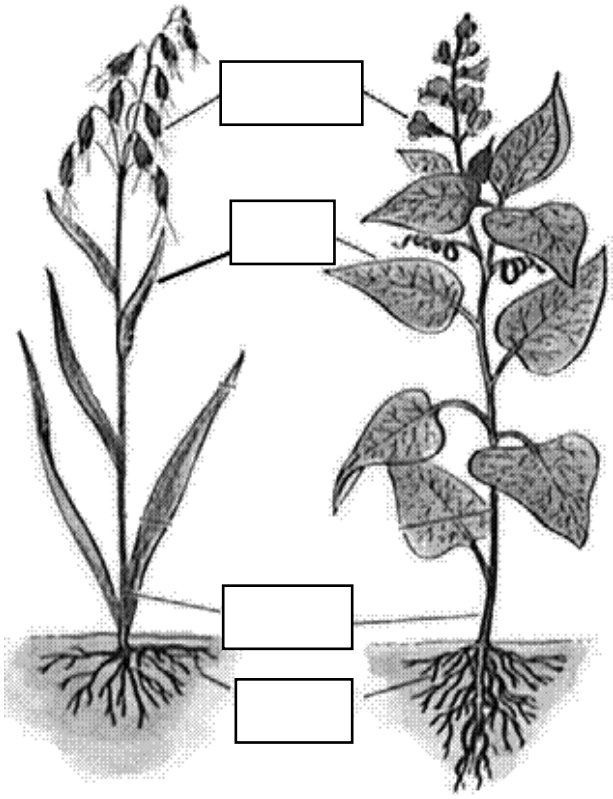

Kangaroo Rat

# Colorado National Monument
Environmental Education

National Park Service
U.S. Department of the Interior

Plant Adaptations: Pre-Field Trip Activity
*(4th grade, An Alcove for an Abode, Desert Dwellers)*

Name_____



As you will see during your field trip to Colorado National Monument, plants come in all shapes and sizes. Even though they look different, they all have the same parts.

**Label the parts of the plant using words from the word bank.**

**Word Bank**

| | |
|---|---|
| Stems | Leaves |
| Roots | Flowers |

**Use the word bank from above.**
**Write the name of the plant part next to the definition.**

Absorbs water and nutrients for the whole plant _____

Moves food and water between the roots and leaves _____

Where pollination takes place and seeds are formed _____

Uses sunlight, Carbon Dioxide ($CO_2$) and water ($H_20$) to make food _____

Colorado National Monument is a high elevation desert. Hot summertime temperatures, cold winters, and an average rainfall of about 10 inches describe the climate here.

**List two reasons living in the desert is a challenge for plants.**

**1.**_____

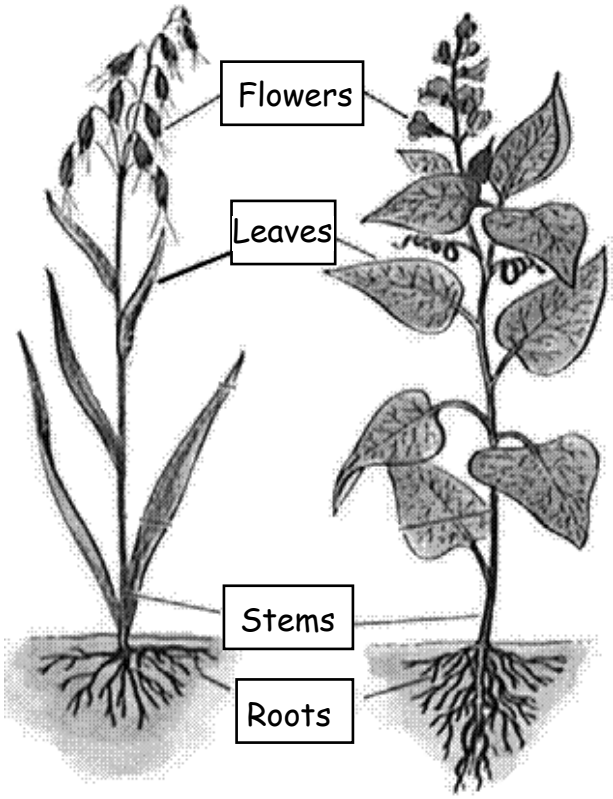
**2.**_____

# Colorado National Monument
Environmental Education

National Park Service
U.S. Department of the Interior

Plant Adaptations: Pre-Field Trip Activity
*(4th grade, An Alcove for an Abode, Desert Dwellers)*

**Answer Key**




As you will see during your field trip to Colorado National Monument, plants come in all shapes and sizes. Even though they look different, they all have the same parts.

**Label the parts of the plant using words from the word bank.**

**Word Bank**

| | |
|---|---|
| Stems | Leaves |
| Roots | Flowers |

**Use the word bank from above.**
**Write the name of the plant part next to the definition.**

Absorbs water and nutrients for the whole plant Roots

Moves food and water between the roots and leaves Stems

Where pollination takes place and seeds are formed Flowers

Uses sunlight, Carbon Dioxide ($CO_2$) and water ($H_20$) to make food Leaves

Colorado National Monument is a high elevation desert. Hot summertime temperatures, cold winters, and an average rainfall of about 10 inches describe the climate here.

**List two reasons living in the desert is a challenge for plants.**

**1.** Answers will vary. Getting enough water is a challenge.

**2.** Too much sun, losing water, animals eating plants are all challenges.

# Colorado National Monument

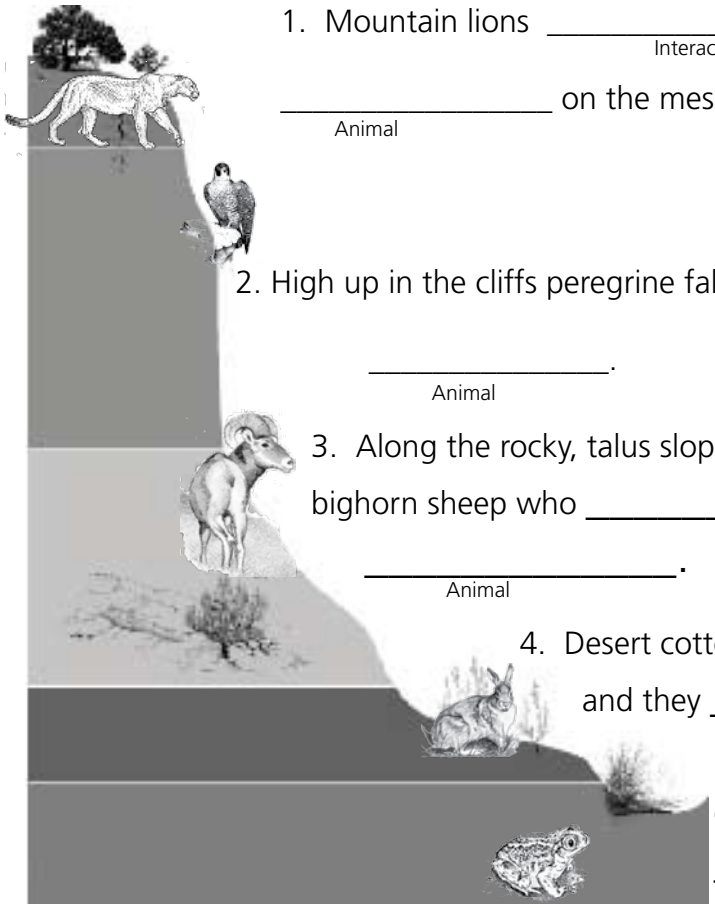
Environmental Education

National Park Service
U.S. Department of the Interior

Animal Adaptations: Post-Field Trip Activity
*(4th grade, An Alcove for an Abode, Desert Dwellers)*

Name_____

Complete the five sentences below by writing an interaction and an animal that lives in each life zone. There is more than one correct answer for each sentence.



1. Mountain lions _____ (Interaction) _____ (Animal) on the mesa tops.

2. High up in the cliffs peregrine falcons _____ (Interaction) _____ (Animal).

3. Along the rocky, talus slopes you can find desert bighorn sheep who _____ (Interaction) _____ (Animal).

4. Desert cottontail rabbits are often in the sagebrush meadows and they _____ (Interaction) _____ (Animal).

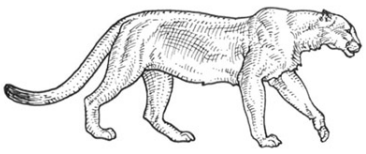
5. If you walk along the dry stream beds in the bottom of the canyons, you may see spadefoot toads who _____ (Interaction) _____ (Animal).

**Animals that live here:**
midget faded rattlesnakes
golden eagles
mule deer
coyote
collared lizards
ringtails
quails
swallows
turkey vultures

**Interactions:**
prey on
are hunted by
share the habitat with
compete for food with

Desert Bighorn Sheep

Sticky hooves
Large horns
Light brown color
Pants like a dog
Eyes on the side of the head
Teeth for grinding



Mountain Lion

Good jumper
Good climber
Stalks prey quietly
Tan color
Eyes on the front of the head
Teeth for tearing

Select either the Desert Bighorn Sheep or the Mountain Lion and choose two adaptations from the list. **Explain** how those adaptations help the animal survive.

*Example:* Teeth for grinding help the desert bighorn sheep survive because it is an herbivore and needs teeth that can grind plants. (Sorry, you may not use this example in your answers.)

1) _____

_____

2) _____

_____

# Colorado National Monument
Environmental Education

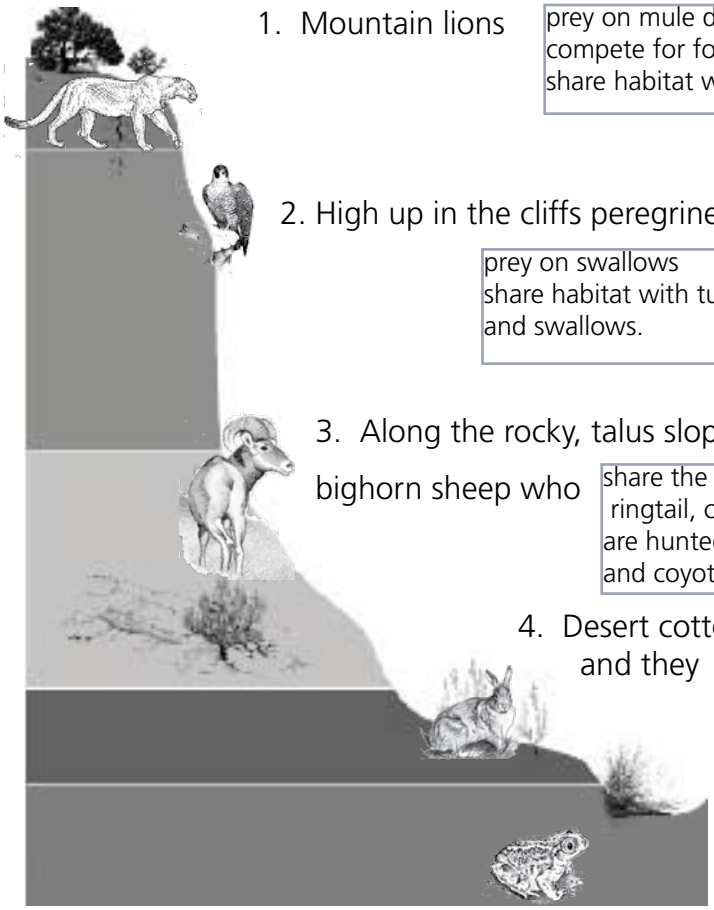
National Park Service
U.S. Department of the Interior

Animal Adaptations: Post-Field Trip Activity
*(4th grade, An Alcove for an Abode, Desert Dwellers)*

**Answer Key**

Name _____

Complete the five sentences below by writing an interaction and an animal that lives in each life zone. There is more than one correct answer for each sentence.



1. Mountain lions prey on mule deer and cottontail rabbits. compete for food with coyote share habitat with deer, coyote, rattlesnakes on the mesa tops.

2. High up in the cliffs peregrine falcons prey on swallows share habitat with turkey vultures, golden eagles and swallows.

3. Along the rocky, talus slopes you can find desert bighorn sheep who share the habitat with rattlesnakes, ringtail, collared lizards, mt. lions are hunted by mt. lion. golden eagles and coyote will hunt young sheep.

4. Desert cottontail rabbits are often in the sagebrush meadows and they are hunted by coyote, rattkesnake, golden eagles, mt. lion. share the habitat with deer, coyote, lizards, quails, mt. lion and rattlesnakes

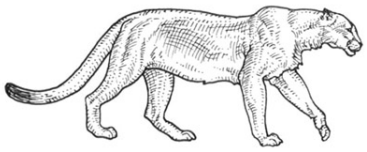
5. If you walk along the dry stream beds in the bottom of the canyons, you may see spadefoot toads who are hunted by coyote, ringtails, rattlesnakes share the habitat with deer, coyote, lizards, quails, mt. lion compete for food with lizards

**Animals that live here:**
midget faded rattlesnakes
golden eagles
mule deer
coyote
collared lizards
ringtails
quails
swallows
turkey vultures

**Interactions:**
prey on
are hunted by
share the habitat with
compete for food with


Desert Bighorn Sheep

Sticky hooves
Large horns
Light brown color
Pants like a dog
Eyes on the side of the head
Teeth for grinding


Mountain Lion

Good jumper
Good climber
Stalks prey quietly
Tan color
Eyes on the front of the head
Teeth for tearing

Select either the Desert Bighorn Sheep or the Mountain Lion and choose two adaptations from the list. **Explain** how those adaptations help the animal survive.

*Example:* Teeth for grinding help the desert bighorn sheep survive because it is an herbivore and needs teeth that can grind plants. (Sorry, you may not use this example in your answers.)

**Desert Bighorn Sheep**
Sticky hooves: helps to climb, avoid predators
Large horns: can fight other males to earn females
Light brown color: helps camaflauge from predators
Pants like a dog: Gets rid of heat to survive desert
Eyes on the side: Can see predators all around
Teeth for grinding: Herbavore - see example.

**Mountain Lion**
Good jumper: surprises prey to eat
Good climber: Helps hide from prey
Can stalk (sneak up) quietly: Helps surprise prey
Tan color: Camoflauge from prey
Eyes on the front: Judges distance to attack prey
Teeth for tearing:
Carnivore -sharp teeth for ripping meat.

# Colorado National Monument
Environmental Education

National Park Service
U.S. Department of the Interior

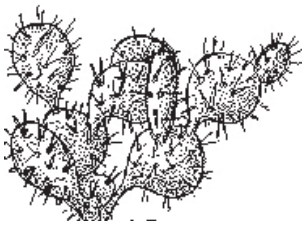
Plant Adaptations: Post-Field Trip Activity
*(4th grade, An Alcove for an Abode, Desert Dwellers)*

Name_____

**Draw a line to match the plant with the adaptation clue.**

Juniper Tree

Sagebrush



Prickly Pear Cactus

**Adaptation Clues**

I have hairy leaves which keep moisture inside. I give off a strong smell, which warns animals not to eat me.

I have deep roots which break apart rocks as I search for water. My scale-like leaves keep moisture inside.

I have shallow roots that absorb water quickly after a storm. I store water in my stem (pads). My spines provide shade and direct rain water down to my roots.

Remember all the parts of a plant? Roots, stems, leaves, and flowers or seeds all have a function that helps the plant. Create a plant that has an adaptation (a tool) that helps it survive in the desert. Maybe it has unique roots for gathering water or maybe the leaves do something special to avoid the heat. Be creative. Imagine a plant that will thrive in the high desert of Colorado National Monument.
**Draw a picture of your plant and explain one adaptation it has.**

# Colorado National Monument
Environmental Education

National Park Service
U.S. Department of the Interior

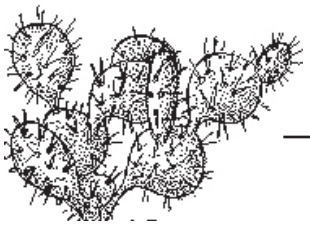
Plant Adaptations: Post-Field Trip Activity
*(4th grade, An Alcove for an Abode, Desert Dwellers)*

**Answer Key**

**Draw a line to match the plant with the adaptation clue.**

Juniper Tree

Sagebrush



Prickly Pear Cactus

**Adaptation Clues**

I have hairy leaves which keep moisture inside. I give off a strong smell, which warns animals not to eat me.

I have deep roots which break apart rocks as I search for water. My scale-like leaves keep moisture inside.

I have shallow roots that absorb water quickly after a storm. I store water in my stem (pads). My spines provide shade and direct rain water down to my roots.

Remember all the parts of a plant? Roots, stems, leaves, and flowers or seeds all have a function that helps the plant. Create a plant that has an adaptation (a tool) that helps it survive in the desert. Maybe it has unique roots for gathering water or maybe the leaves do something special to avoid the heat. Be creative. Imagine a plant that will thrive in the high desert of Colorado National Monument.
**Draw a picture of your plant and explain one adaptation it has.**

Answers will vary.
Encourage students to explain how and why their adaptation helps the plant survive.