

# Big Bend

National Park Service  
U.S. Department of the Interior

Big Bend National Park  
Rio Grande Wild & Scenic River



National Park Service  
**Centennial Edition**  
Centennial Hiking Challenge Included!

# BIG BEND JUNIOR RANGER

GREAT FOR  
COLORING!

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Age: \_\_\_\_\_

# Do you have what it takes?

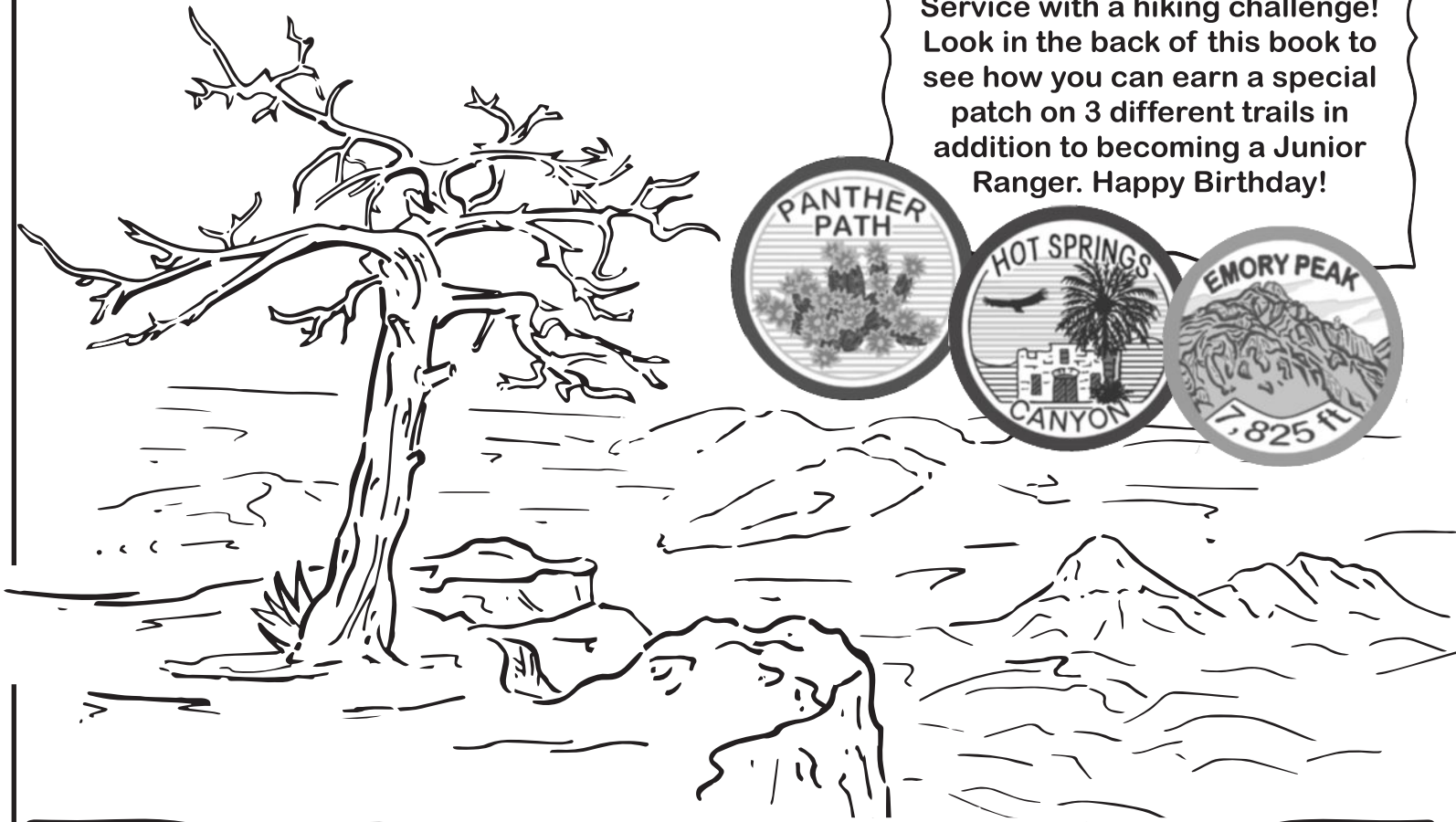
Becoming a Junior Ranger takes more than completing activities in this book. Big Bend is a wild place, and a Junior Ranger's most important job is to help the National Park Service keep it wild.

You can help the Park Rangers by protecting the plants, animals, historic sites, and even the rocks from being harmed, and always leaving the things you find for other visitors to enjoy.

Try to complete as many activities as you can, then stop by a Visitor Center to take the pledge and become a Junior Ranger. Do you have what it takes?

## The Centennial Challenge

Big Bend is celebrating the 100th birthday of the National Park Service with a hiking challenge! Look in the back of this book to see how you can earn a special patch on 3 different trails in addition to becoming a Junior Ranger. Happy Birthday!



**Ages 6 and Under**

**Complete at Least**

**5**

**Activities**

**Ages 7 to 11**

**Complete at Least**

**8**

**Activities**

**Ages 12 and Over**

**Complete at Least**

**11**

**Activities**

# Where have you been?

Big Bend National Park is a *big place*, with over 800,000 acres of mountain, desert, and river country. That's a lot of places to remember, even for a park ranger! Be on the lookout for changes in the scenery as you travel around the park. Look for different kinds of rocks and mountains. Find plants that only grow in the desert or the mountains.

**Activity:** Keep track of your trip to Big Bend by collecting passport stamps from the Visitor Centers, or draw a picture of your own to remember it by.

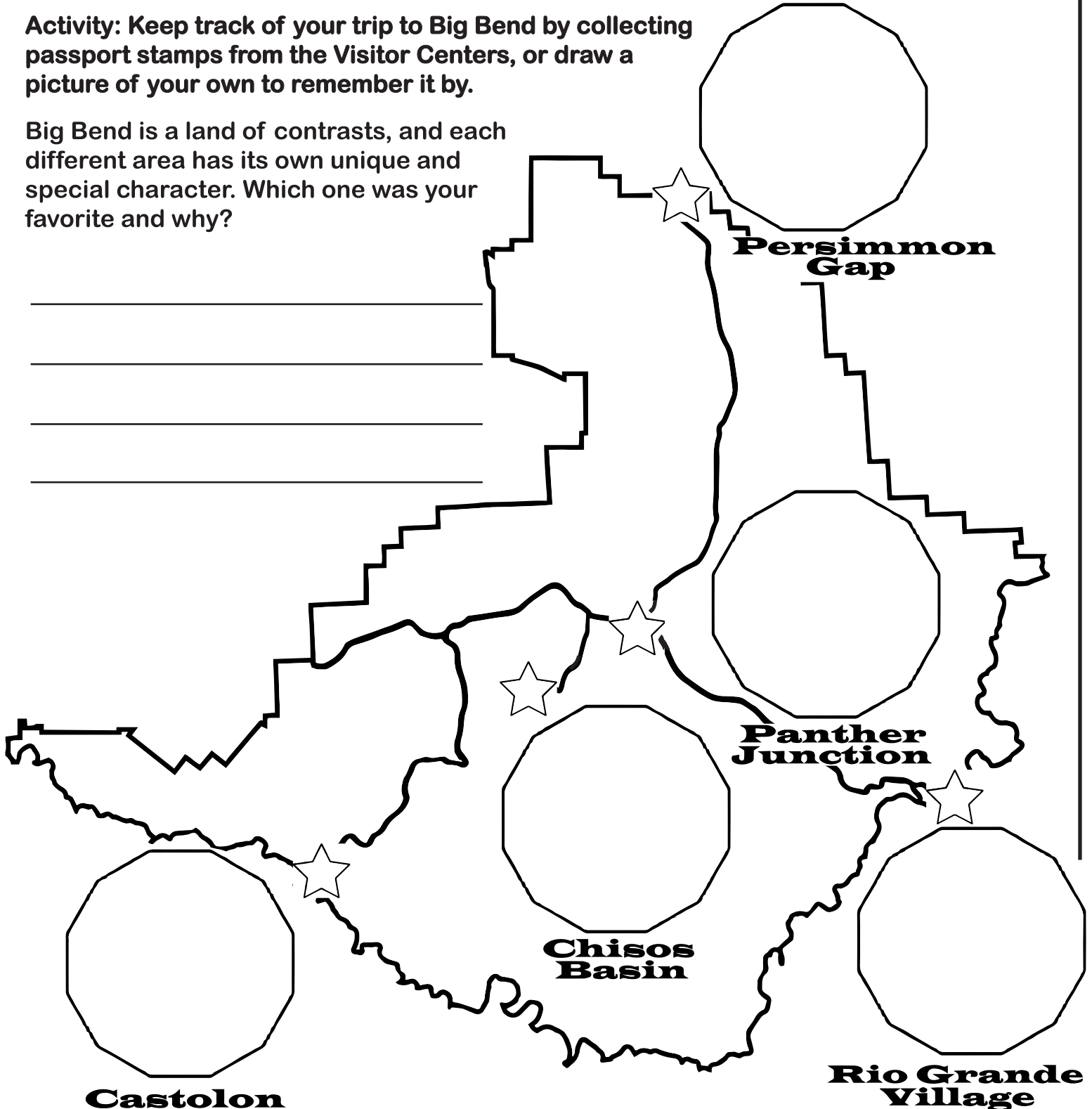
Big Bend is a land of contrasts, and each different area has its own unique and special character. Which one was your favorite and why?

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# Take a hike!

Go for a hike on a trail in Big Bend. Hiking is a great way to get to know the park, and will also help you finish the other activities in this book. But what sort of things should you bring along to have a safe and fun hike, and what things could you do without?

**Activity:** Put an X over the items you wouldn't need on a hike, or that you think don't belong in the wilderness.



**Nature Guide**



**Water**



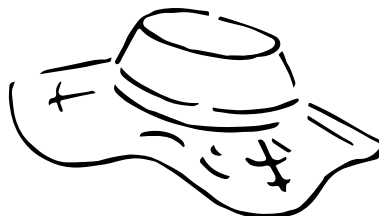
**Sunscreen**



**Jacket**



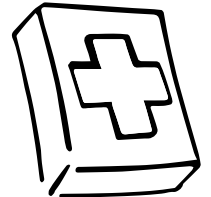
**Map**



**Sun Hat**



**Healthy Snacks**



**First Aid**



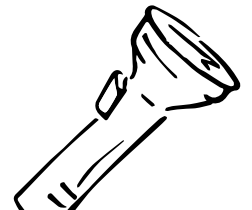
**Candy & Gum**



**Sturdy Shoes**



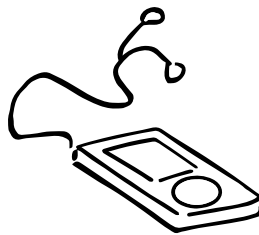
**Sandals**



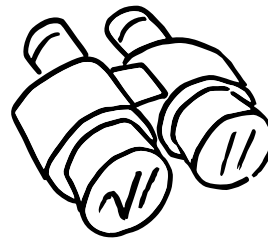
**Flashlight**



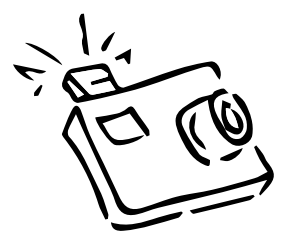
**Soda**



**Music**



**Binoculars**



**Camera**

Everyone enjoys hiking in the wilderness differently. What else might you bring along to have fun and be safe? Write your answers here:

Things to Bring:

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Things to Leave:

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# Bears & Mountain Lions

Did you know that Big Bend is home to mountain lions and Mexican black bears? Explore the Chisos Basin Visitor Center to find out how to safely behave in bear and mountain lion country and to learn more about helping us protect these beautiful wild animals.

**Activity: True or False? Put a "T" next to true statements and an "F" next to false ones.**

\_\_\_\_ There were black bears in Big Bend when it became a national park.

\_\_\_\_ You should try to make yourself look bigger if you encounter a mountain lion.

\_\_\_\_ Mountain lions are also called pumas, cougars, and panthers.

\_\_\_\_ It is OK to feed wildlife.

\_\_\_\_ Bears and mountain lions can climb trees.

\_\_\_\_ Bears only eat meat.

\_\_\_\_ Store anything that smells inside a bear-box, even if it's not food.

\_\_\_\_ Bears are called "lobos" in Spanish.

\_\_\_\_ Mountain lion tracks show their claws.

\_\_\_\_ Mountain lions travel in large groups.



**Activity: Do you know what to do if you see a bear or mountain lion? Circle what you should do and cross out what not to do to make a winning combination.**

<b>Run!</b>	<b>Stay Calm</b>	<b>Play Dead</b>
<b>Yell</b>	<b>Stay with an Adult</b>	<b>Throw Rocks</b>
<b>Feed It</b>	<b>Tell a Ranger</b>	<b>Climb a Tree</b>

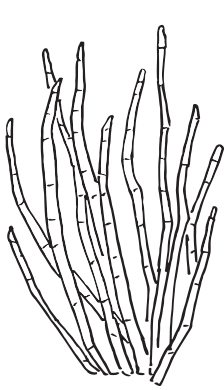
# Plant Products

Many plants of the Chihuahuan Desert are useful to people. Some of their uses are easy to see, but others may come as a big surprise! Look for clues in their names or walk the Panther Path at Panther Junction to see the plants and learn more about them.

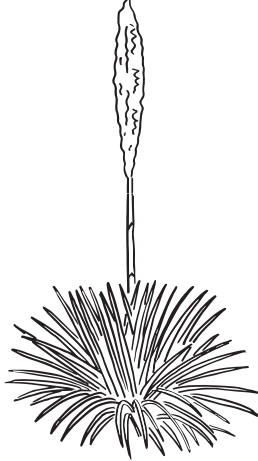
**Activity:** Can you match the desert plants below with the things that are made from them?



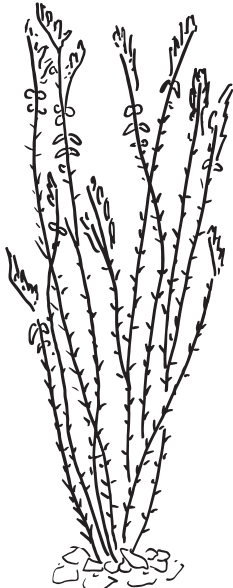
**Cottonwood - A**



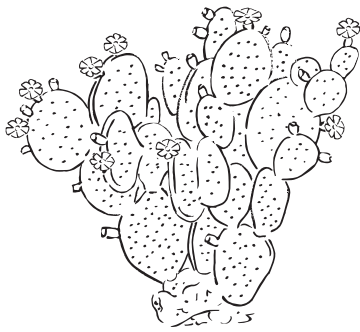
**Candelilla - B**



**Sotol - C**



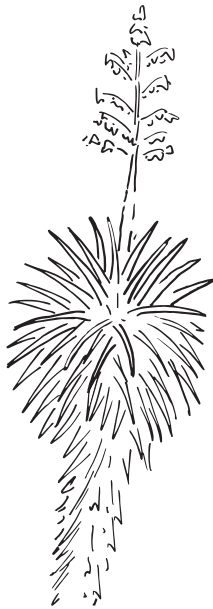
**Ocotillo - E**



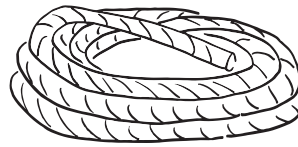
**Prickly Pear - D**



**Lechugilla - F**



**Soaptree Yucca - G**



**Rope \_\_\_\_\_**



**Soap \_\_\_\_\_**



**Wax \_\_\_\_\_**



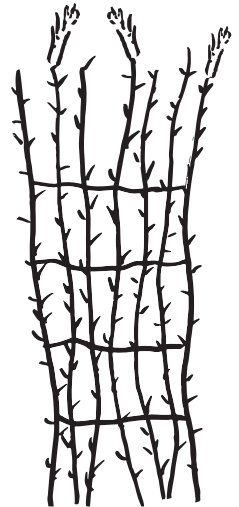
**Jam \_\_\_\_\_**



**Basket \_\_\_\_\_**



**Lumber \_\_\_\_\_**



**Living Fence \_\_\_\_\_**



# Night Explorer

Big Bend is far away from towns and cities that glow at night and make the sky brighter, so you can see more stars here than you will at home. Take a look at the night sky and see for yourself! You will see more stars if you wait a while to let your eyes adjust to the dark.

If you're not used to being in the wilderness at night, it can seem scary at first. There are different sounds, no street lights, and lots of rustling in the bushes. Discovering who or what these noises belong to can change scary into exciting.

**Activity:** Stand in a dark place, and try not to make ANY sounds for at least 5 minutes. Afterwards you can use the space below to record the things you saw in the sky or heard in the night.



# Life on the Border

Visit historic Castolon to learn about Big Bend before it became a national park, when people from the United States and Mexico often came together to start families, build communities and work alongside one another in this distant and challenging place.

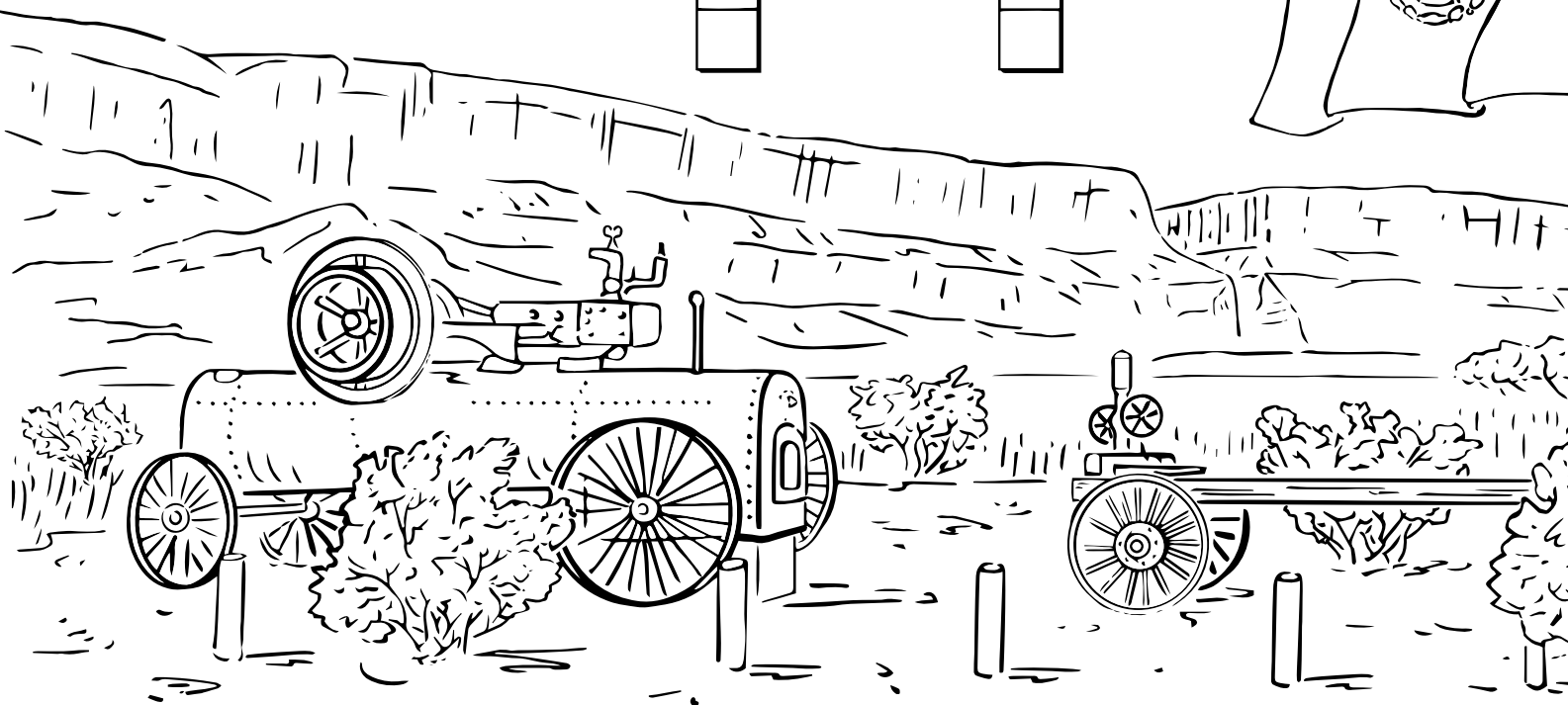
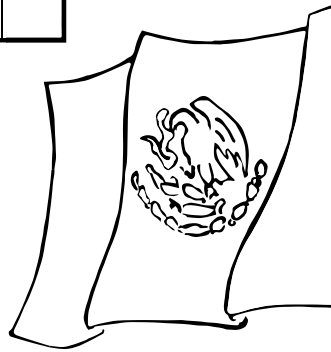
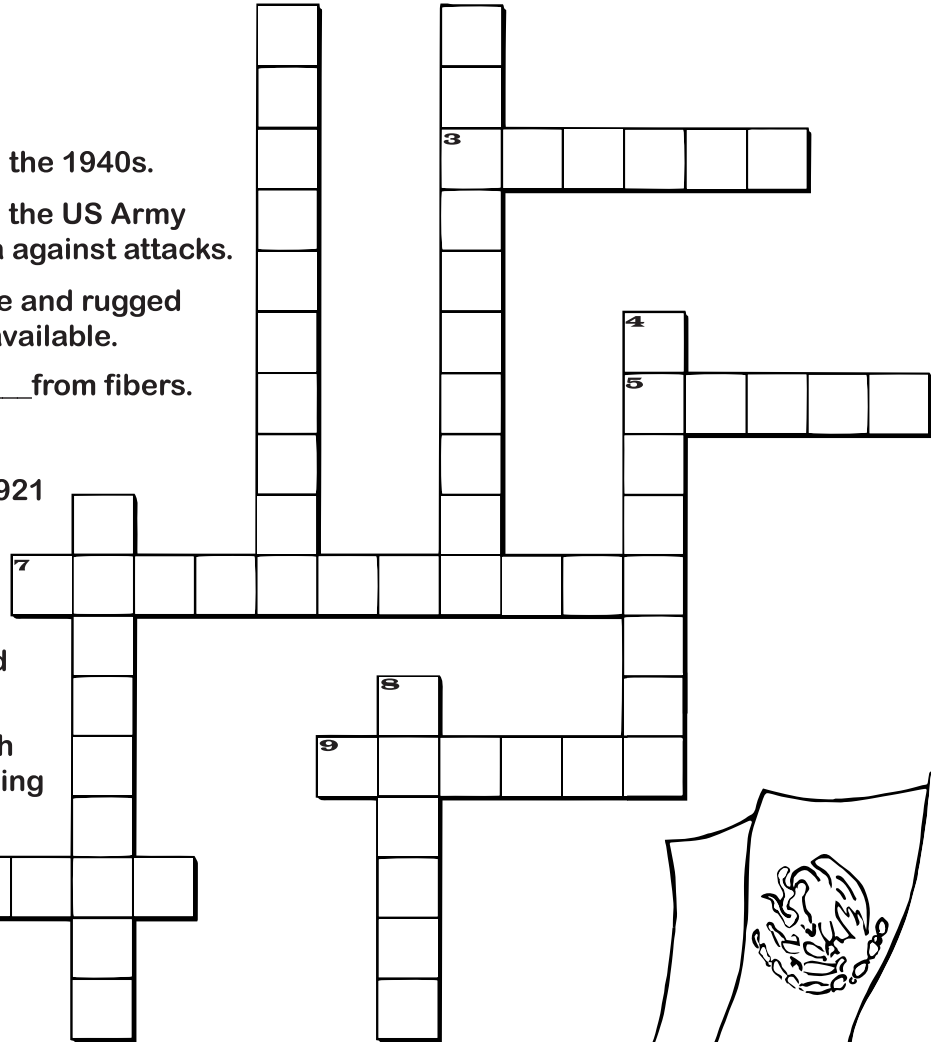
**Activity:** Use the outdoor exhibit signs at Castolon to complete the crossword puzzle.

## Across

- \_\_\_\_\_ was once farmed near Castolon.
- Crop fields occupied about 100 \_\_\_\_\_ in the 1940s.
- During the Mexican Revolution in 1916 the US Army established Camp \_\_\_\_\_ to guard this area against attacks.
- Soldiers used \_\_\_\_\_ to patrol this remote and rugged place, even after military vehicles were available.
- “Ginning” mechanically separates \_\_\_\_\_ from fibers.

## Down

- The trading post established here in 1921 was named the \_\_\_\_\_ Company.
- The military post grew into the \_\_\_\_\_ community known today as Castolon.
- The Army built the permanent \_\_\_\_\_ and officer’s quarters you still see here.
- Wayne \_\_\_\_\_ provided local families with goods, and they provided labor for ranching and farming.
- The store served people from \_\_\_\_\_ both sides of the \_\_\_\_\_.



# The Big River

Stand at the edge of the Rio Grande and look across the river to the other side. The river is the border between the United States and Mexico, so you are looking into another country!

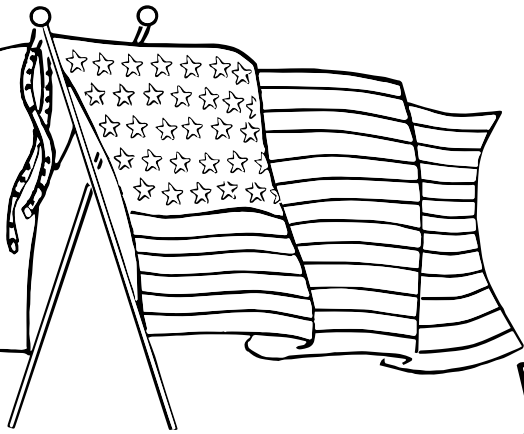
Rio Grande means “big river” in Spanish. How big does it look to you? Except during rare floods, the river you see in the park flows with less water than it did historically. Today much of the water is used for farming, for people to use at home, or held in dams to generate electricity. Almost no water is left over by the time the Rio Grande reaches the park. Most of the water we see in the river in Big Bend today comes from the Rio Conchos, a river in Mexico that flows into the Rio Grande northwest of the park.

**Activity:** Find a good spot anywhere along the river and answer the questions below.

What color is the water? \_\_\_\_\_ How deep does it look in the middle? \_\_\_\_\_

Have you seen any wildlife by the river or any signs of wildlife, such as tracks? \_\_\_\_\_

Can you think of three different ways you can help save water by using less at home? \_\_\_\_\_



What does the river sound like? \_\_\_\_\_

Where do you think the water is flowing? \_\_\_\_\_

Did you wave to anyone in Mexico? \_\_\_\_\_ Did you go to Mexico? \_\_\_\_\_

## Spanish Greetings

Good morning

Buenos días

Good afternoon

Buenas tardes

Good evening

Buenas noches

Welcome

Bienvenidos

Goodbye!

¡Adiós!



# Paleontology

Big Bend National Park is a treasure trove of ancient fossils, with more dinosaur diversity than any other national park. These important fossils are the clues that scientists use to help tell us what the park looked like millions of years ago.

**Activity:** Find as many words as you can and try visiting the Fossil Discovery Exhibit to learn more about them!

CRETACEOUS

PLAYA

QUETZALCOATLUS

FOSSIL

CROCODILE

T-REX

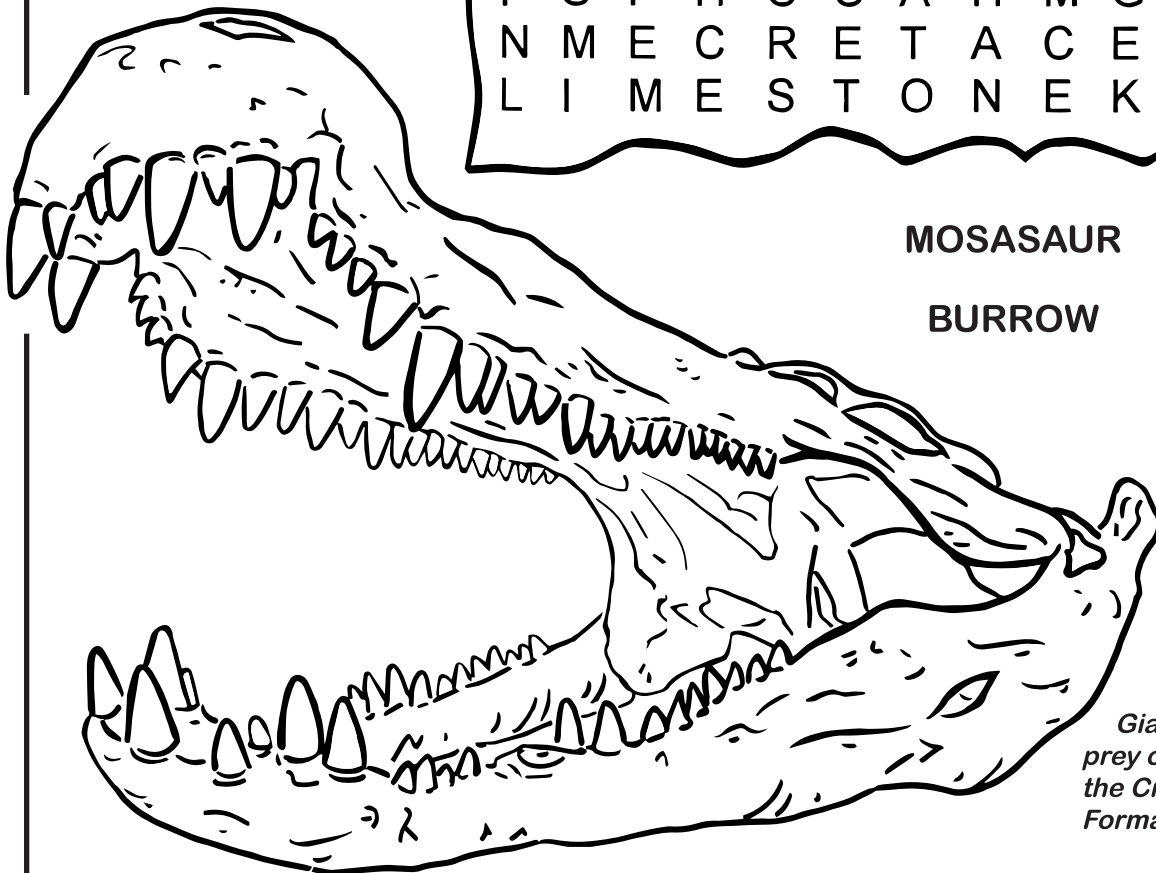
MESOZOIC

AGUJA

SEDIMENT

BONES

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



MOSASAUR

GIANT CLAM

BURROW

ALAMOSAURUS

EXTINCTION

LIMESTONE

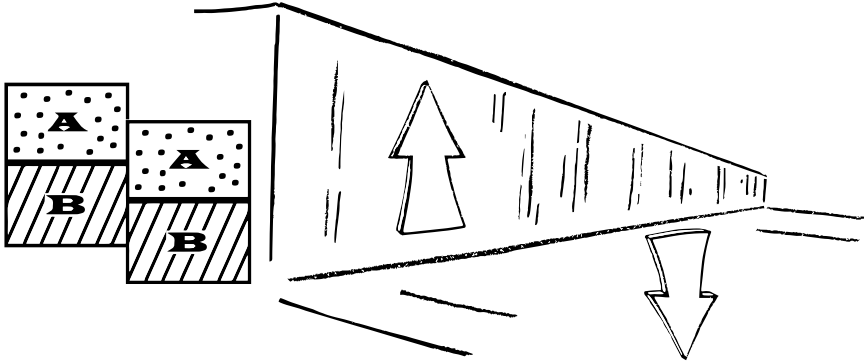
## ***Deinosuchus riograndensis***

*Giant "supercroc" big enough to prey on dinosaurs, first discovered in the Cretaceous Age rocks of the Aguja Formation in Big Bend National Park.*

# Geology 101

The surface of the Earth is always changing, and Big Bend is a great place to observe the way things like earthquakes, volcanoes, and the forces of erosion have shaped the landscape over time. Some changes happen fast, some happen too slowly for us to see, and some happened so long ago there was no one around to see them.

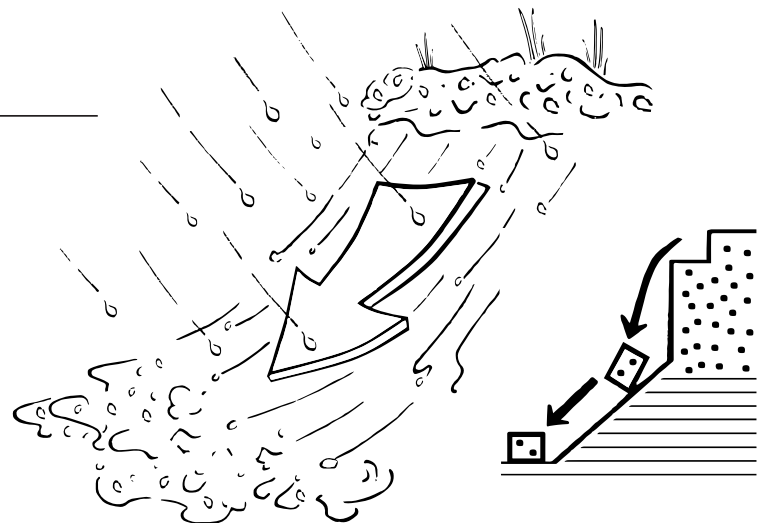
**Activity:** Match the three examples of geologic processes with their descriptions, and write down at least one place that you saw them in the park.



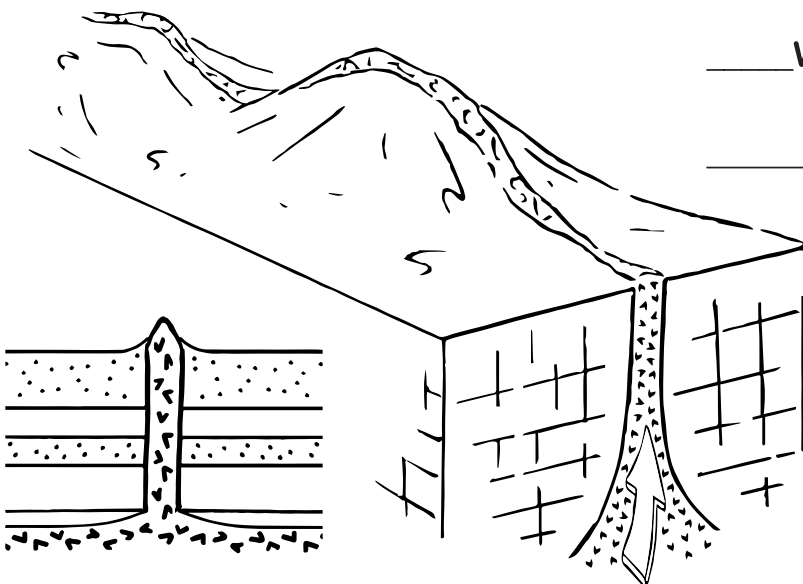
**A: Volcanic dikes** formed millions of years ago when hot, molten rock from deep within the Earth pushed its way up through cracks and holes in the rock layers above it before cooling off and hardening. Look for long, straight ridges stretching across the desert, or even tall spikes and spires of stone sticking up from the landscape.

\_\_\_\_\_ Where did you see this in the park?

**B: A fault** is a crack in the Earth's surface where pieces of the crust can shift up and down or side-to-side along the fault, causing earthquakes when they move. In the park, these are made of limestone that built up as sediment at the bottom of an ancient sea which has faulted and shifted over time. Look for long, steep cliffs with very flat surfaces.



\_\_\_\_\_ Where did you see this in the park?



**C: Erosion** occurs when forces like water flow, wind and gravity remove soil and rocks from one location and transport them to another location where they are deposited in layers of sediment. To find evidence of erosion in the park, look for places where water might flow when it rains, or where boulders have fallen off of cliffs and rolled down hillsides.

\_\_\_\_\_ Where did you see this in the park?

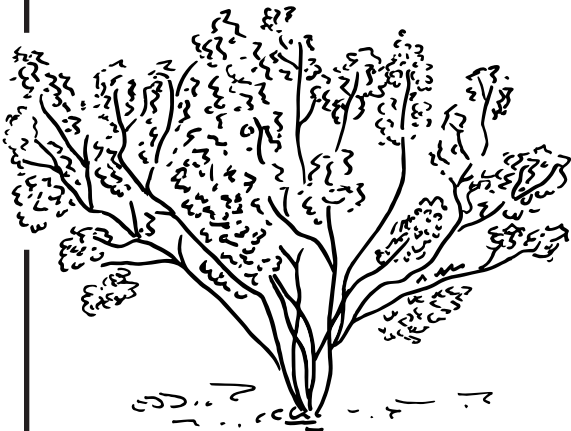
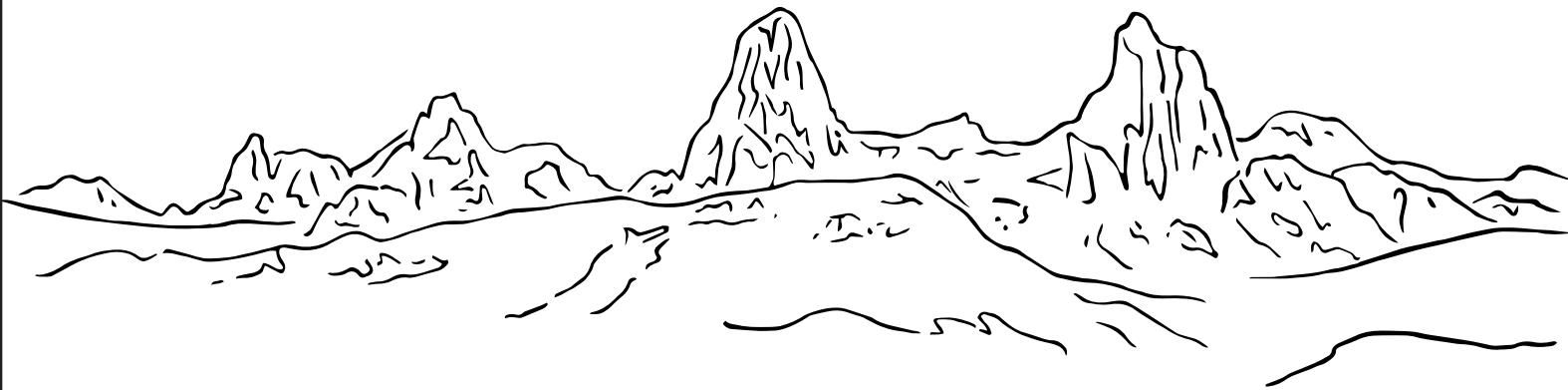
# Desert Adaptations

Big Bend is home to an incredible variety of plants with special adaptations that allow them to survive in this often very hot and very dry place. The skin of a cactus is one example of a desert adaptation: A tough, waxy covering helps the plant keep its moisture during the long periods between rains. The mouth of a javelina is another: It's so tough that these animals can eat cactus spines without getting hurt!

How do the plants here look different from plants that grow in cooler, wetter places? What about the animals that live in the desert? Why do you think that is? Take a closer look at some desert plants and wildlife and write down three more things that *you* think might be desert adaptations:

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**Activity:** Use the space below the Mule Ears to draw your favorite desert plants, and don't forget to include some of the animals too!



# Naturalist's Notebook

Using your senses to observe the wilderness is a great way to learn more about it: How things look, how they feel, how they smell, sound, or how they move. Be very careful not to disturb the things you find and always leave them where you found them for other people to see. If an animal reacts to your presence, you are already too close!

**Activity:** Examine an item from each of the categories below, and draw a picture of it. Try to include as much detail as you can, and remember that bugs are animals too.

## Plant

What color(s) is it? \_\_\_\_\_ How tall? \_\_\_\_\_

Does it have leaves? \_\_\_\_\_ What shape? \_\_\_\_\_

Does it have spines? \_\_\_\_\_ What shape? \_\_\_\_\_

What does it smell like? \_\_\_\_\_

Are there others nearby? \_\_\_\_\_ How far away? \_\_\_\_\_

What is it doing? \_\_\_\_\_

What color(s) is it? \_\_\_\_\_ How big? \_\_\_\_\_

What kind of body covering does it have? \_\_\_\_\_

How does it move? \_\_\_\_\_ Is it making noise? \_\_\_\_\_

What does it eat? \_\_\_\_\_ Is its food nearby? \_\_\_\_\_

## Animal

## Rock

Where did you find it? \_\_\_\_\_

What color(s) is it? \_\_\_\_\_ How big? \_\_\_\_\_

Is it rough or smooth? \_\_\_\_\_ Sharp or round? \_\_\_\_\_

Are there others nearby? \_\_\_\_\_ How far away? \_\_\_\_\_

Is it warm or cold? \_\_\_\_\_ Does anything grow on it? \_\_\_\_\_

## Notes & Observations

Use this space to record extra details about the things you saw, like the weather on the day of your hike. Was it hot or cold, cloudy or sunny? Did something happen during your hike that you want to remember? Record it here!

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# Scavenger Hunt

There are so many things to see in Big Bend that a person could explore for years and years and still not see it all. See how many of these items you can find on *your* visit, but remember to leave everything in place so that others can find them too!

**Activity:** Find at least 10 items below and identify them if you can.

**A Constellation** \_\_\_\_\_

**A Cactus** \_\_\_\_\_

**A Good Place  
to Camp** \_\_\_\_\_

**A Pictograph** \_\_\_\_\_

**A Reptile** \_\_\_\_\_

**A Canyon** \_\_\_\_\_

**A Track** \_\_\_\_\_

**A Mountain** \_\_\_\_\_

**A Seed** \_\_\_\_\_

**A Fossil** \_\_\_\_\_

**A Leaf** \_\_\_\_\_

**A Mammal** \_\_\_\_\_

**A Bird** \_\_\_\_\_

**Something  
Soft** \_\_\_\_\_

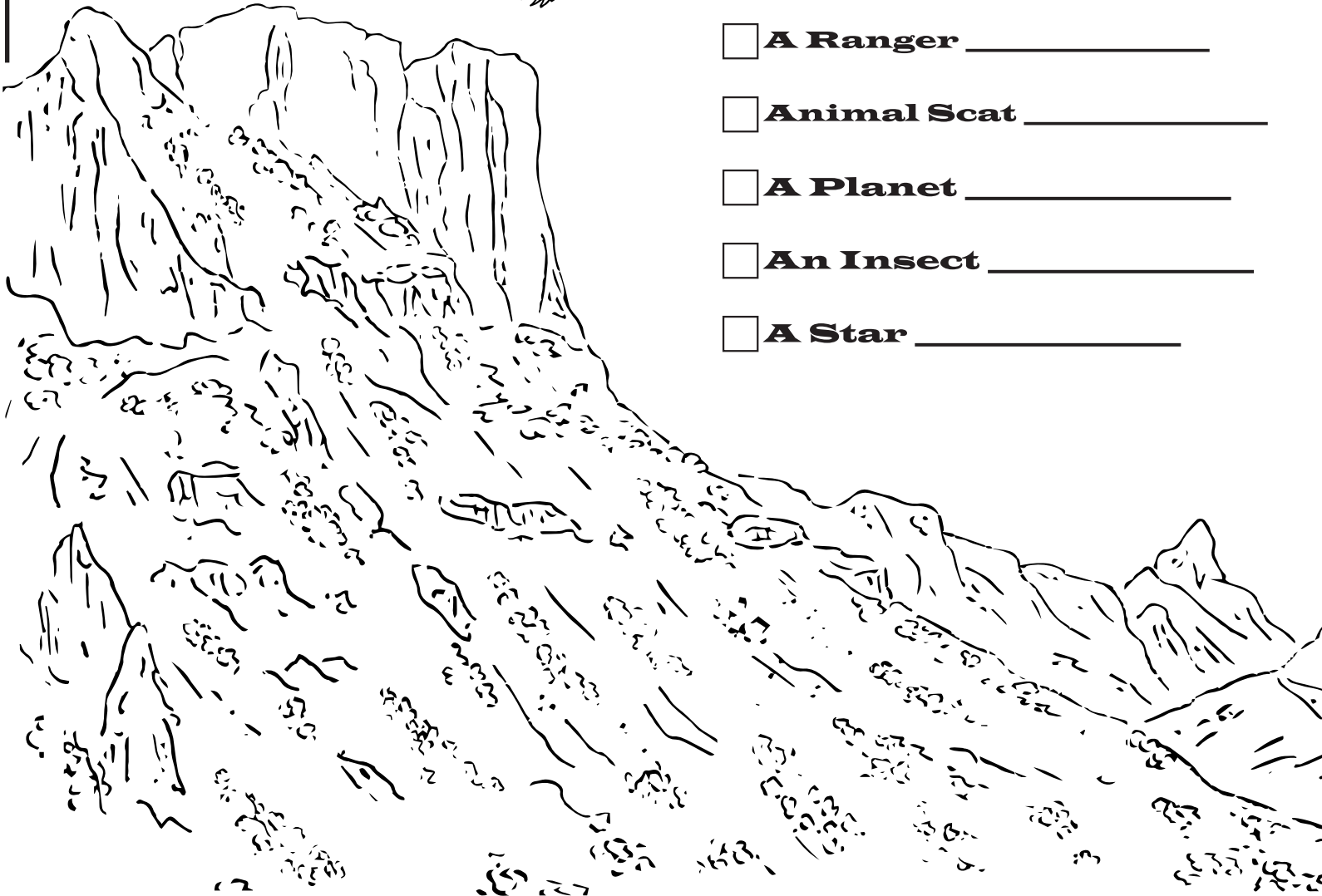
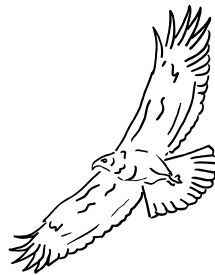
**A Ranger** \_\_\_\_\_

**Animal Scat** \_\_\_\_\_

**A Planet** \_\_\_\_\_

**An Insect** \_\_\_\_\_

**A Star** \_\_\_\_\_



# Desert Wildlife

Big Bend is home to many animals, but you may wonder where they all are! Many desert animals only come out at night so they can avoid the hot sun. Sometimes the tracks they leave behind are the only way to know they live here.

**Activity:** Can you match each animal with its name and tracks?  
Circle any tracks you saw in the park.

**A** Del Carmen Whitetail Deer live in the Chisos Mountains and are smaller than mule deer that live in the desert.

**B** Mountain Lions can grow to weigh 200 pounds!

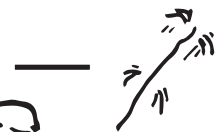
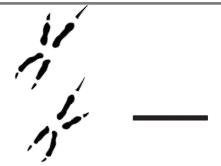
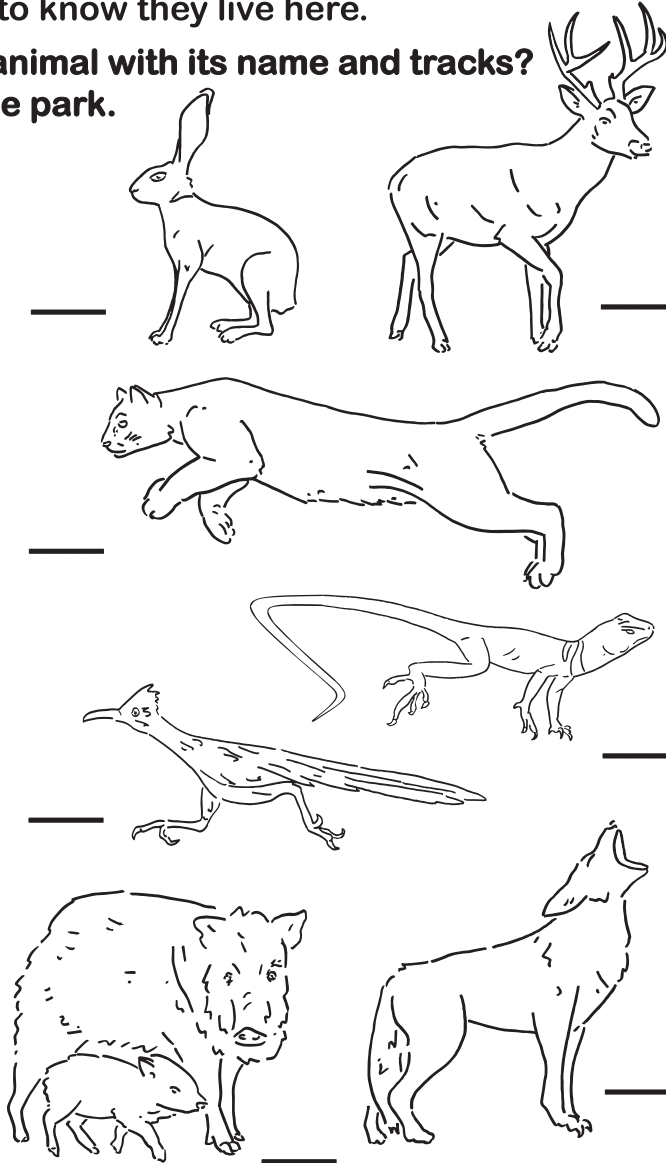
**C** Lizards live all over, and Big Bend is home to more kinds than any other national park!

**D** Coyotes eat jackrabbits and roadrunners and can be heard howling at night.

**E** Javelinas are not pigs, and are actually more closely related to hippos than pigs.

**F** Roadrunners can fly, but they prefer to run, and can reach speeds up to 20 miles per hour!

**G** Jackrabbits use their long ears to lose heat and cool off during the hot days.



# The Centennial Challenge

Celebrate the 100th anniversary of the National Park Service by challenging yourself to get out and experience Big Bend firsthand. Complete the following activities on the Panther Path, Hot Springs Canyon & Emory Peak trails to earn your commemorative patches. Collect all three if you're up to the challenge, and happy trails!

**PANTHER PATH**  
EASY  
400 FT. ROUND TRIP

**HOT SPRINGS CANYON**  
MODERATE  
3 MILES ONE WAY

**EMORY PEAK**  
STRENUOUS  
10.5 MILES ROUND TRIP

## Panther Path: Plant Life

The desert is full of life! Travel the Panther Path at the Panther Junction Visitor Center and identify these Chihuahuan Desert plants.

Strawberry  
32: Pitaya

22: \_\_\_\_\_

23: \_\_\_\_\_

25: \_\_\_\_\_

26: Draw Me!  
Ocotillo

29: \_\_\_\_\_

29: \_\_\_\_\_

What is this? \_\_\_\_\_

4: \_\_\_\_\_

3: \_\_\_\_\_

17: \_\_\_\_\_

16: \_\_\_\_\_

16: \_\_\_\_\_

Draw Me!  
Whitethorn Acacia

13: \_\_\_\_\_

13: \_\_\_\_\_



# Hot Springs Canyon: Outdoor Ethics

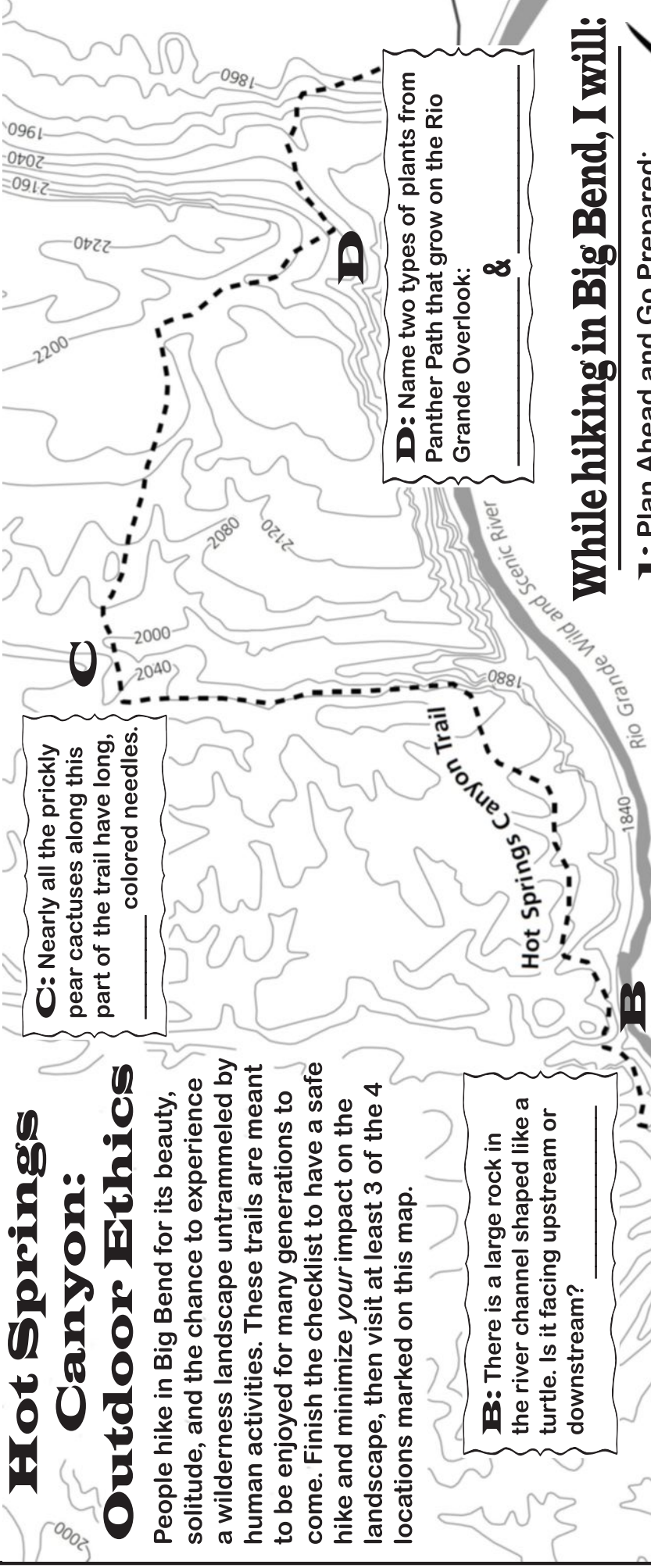
People hike in Big Bend for its beauty, solitude, and the chance to experience a wilderness landscape untrammelled by human activities. These trails are meant to be enjoyed for many generations to come. Finish the checklist to have a safe hike and minimize *your* impact on the landscape, then visit at least 3 of the 4 locations marked on this map.

**B:** There is a large rock in the river channel shaped like a turtle. Is it facing upstream or downstream? \_\_\_\_\_

**A:** The Hot Springs motel ruin has seven doors facing the river. How many windows face the river? \_\_\_\_\_

**C:** Nearly all the prickly pear cactuses along this part of the trail have long, \_\_\_\_\_ colored needles.

**D:** Name two types of plants from Panther Path that grow on the Rio Grande Overlook: \_\_\_\_\_ & \_\_\_\_\_



## While hiking in Big Bend, I will:

### 1: Plan Ahead and Go Prepared:

I will bring things like food, sunscreen, appropriate clothes and plenty of water.

### 2: Dispose of Waste Properly:

Everything I take in will come out with me, including my dirty tissue paper!

### 3: Travel on Durable Surfaces:

I will walk on the trail, or things like bare rock or sand if I need to leave it.

### 4: Leave What I Find:

I will not disturb rocks, plants, or other natural or historic features in the park.

### 5: Respect Wildlife:

I will keep my distance from animals and never feed wildlife.

### 6: Be Kind to Other Visitors:

I will be courteous to others and let nature's sounds prevail.

## Rocks and Me

✓ Cairns are well-built stacks of rock used to help hikers follow a trail in places where it is hard to see.



### Leave them be!

Collecting rocks to play with alters the landscape and causes erosion, and leaving stacks of them behind takes away from the next visitor's wilderness experience.



### Not for me!

## Legend



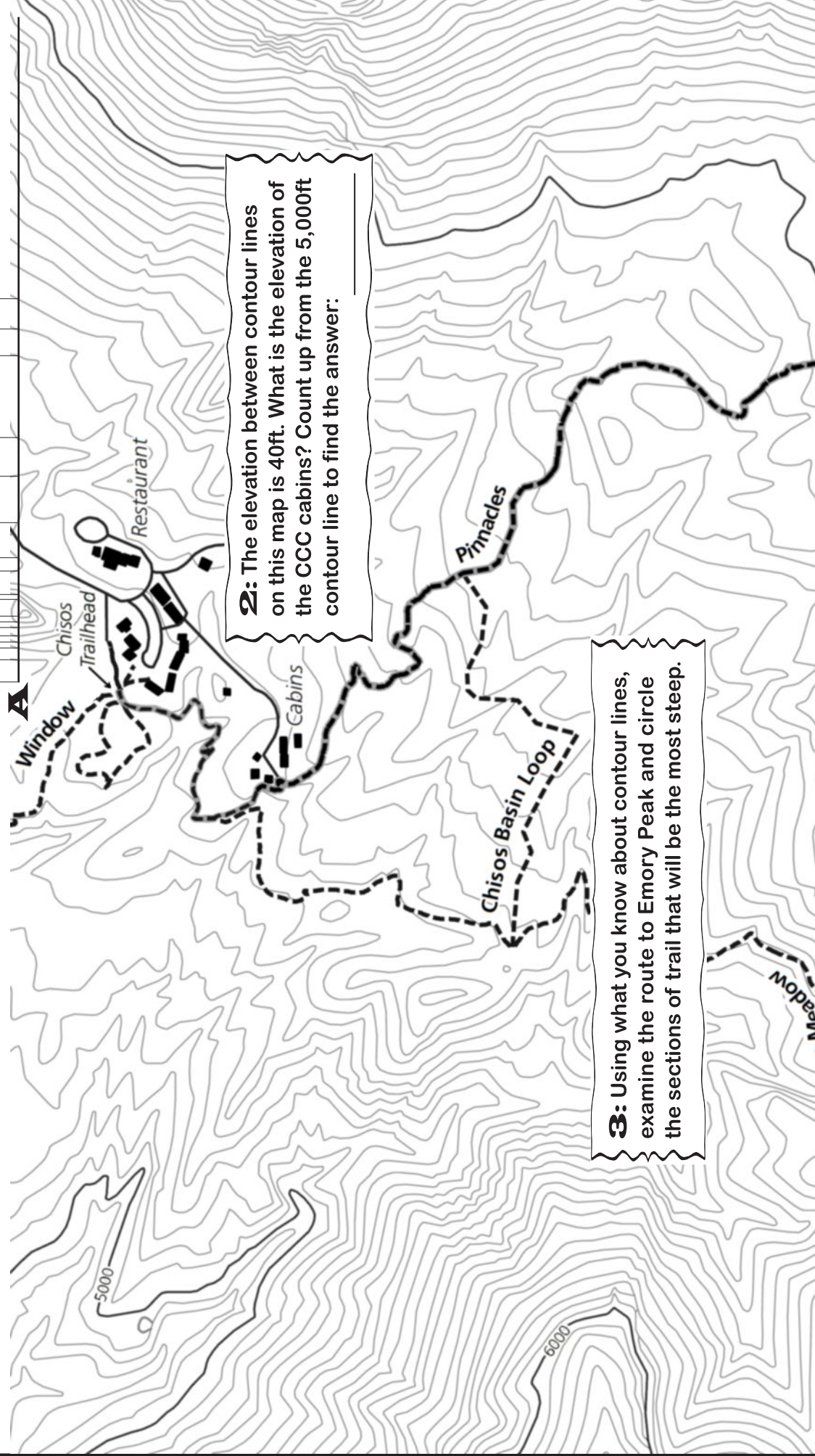
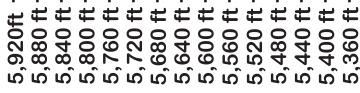
# Emory Peak: Map Skills

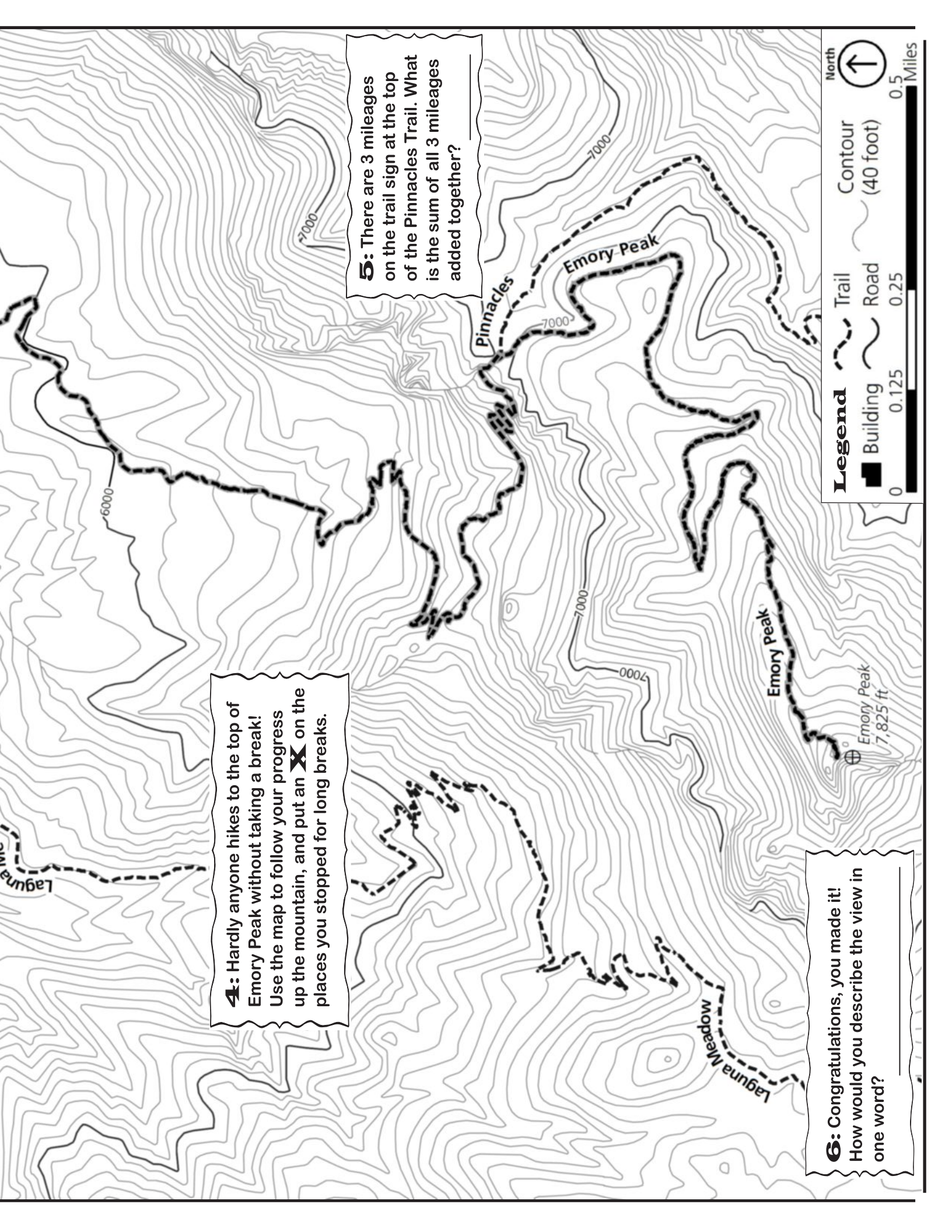
A topographic map uses wavy *contour lines* to draw a

3-dimensional landscape on a flat surface. Pick out a contour line on the map. Every point on that line has the same elevation, and the lines next to it are on a different elevation above or below it. Where the lines are far apart, the horizontal distance between those elevations is wide and the landscape slopes gently. Where they're close together the land is steeper, and lines that touch represent vertical cliffs.

Complete this activity while you hike up Emory Peak, and by the time you reach the top you will have a better understanding of how to read topographic maps.

**1:** Use the graph below to finish plotting the vertical profile of the landscape crossed by line **A**.





**4:** Hardly anyone hikes to the top of Emory Peak without taking a break! Use the map to follow your progress up the mountain, and put an **X** on the places you stopped for long breaks.

**5:** There are 3 mileages on the trail sign at the top of the Pinnacles Trail. What is the sum of all 3 mileages added together?

**6:** Congratulations, you made it! How would you describe the view in one word?

**Legend**

- Trail
- Road
- Building
- Contour (40 foot)

0 0.125 0.25 0.5 Miles

North

**I am proud to be a Junior Ranger. I promise to appreciate, respect, and protect all National Parks. I also promise to continue learning and to share what I learn with my family and friends.**

\_\_\_\_\_  
**Junior Ranger Signature**

\_\_\_\_\_  
**Ranger Signature**



Produced by the Big Bend National Park Division of Interpretation and Visitor Services, 2016.