

Arizona

National Park Service
U.S. Department of the Interior



National Monuments &
Parks

JUNIOR RANGER ARIZONA VIRTUAL EXPLORER



This book belongs to: _____

Age: _____

Home Town: _____

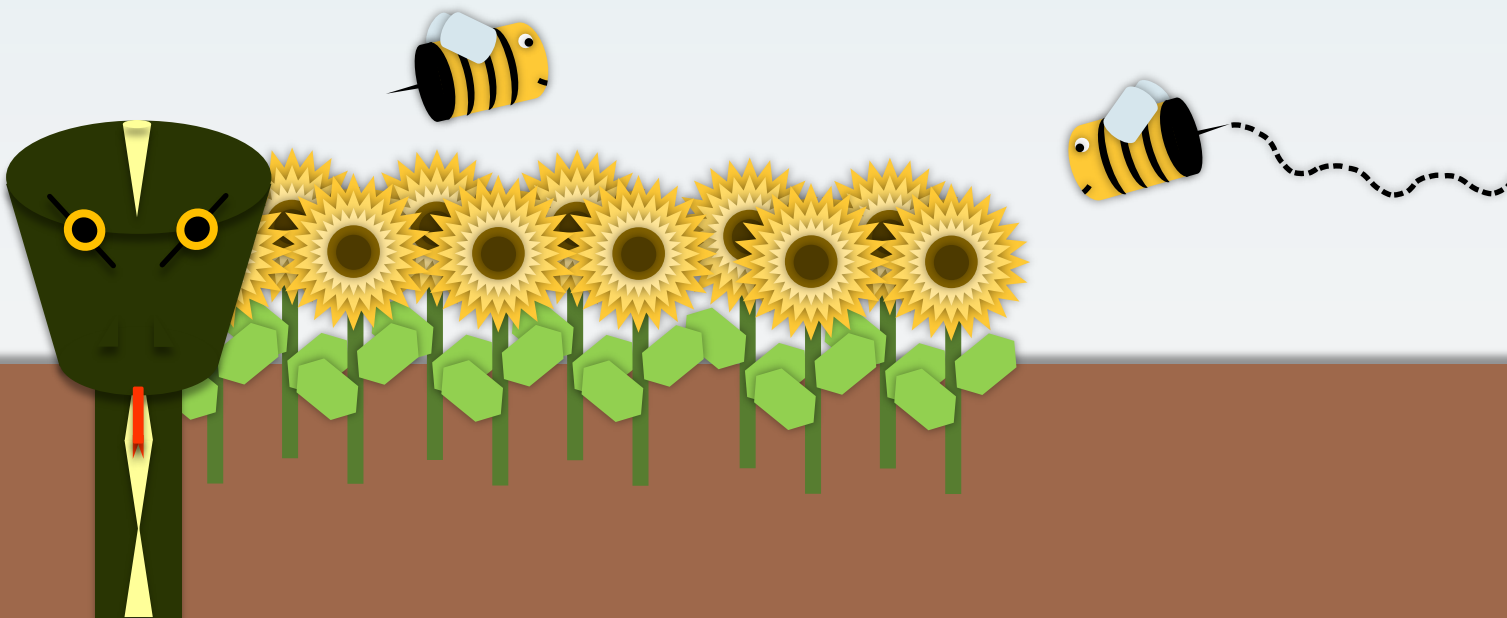
WELCOME, EXPLORER!



Are you ready to become an Arizona Junior Ranger Virtual Explorer? To earn your patch, complete at least 5 of the 8 activities in the book!

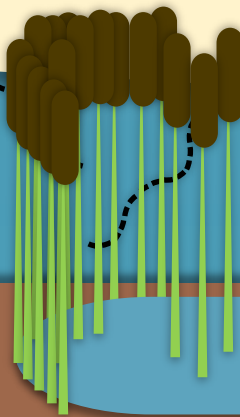
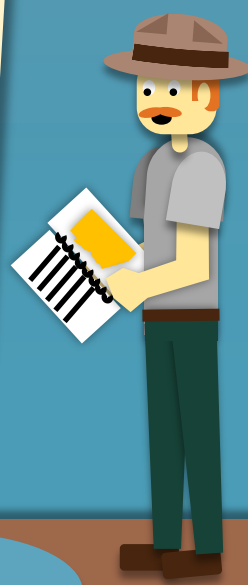
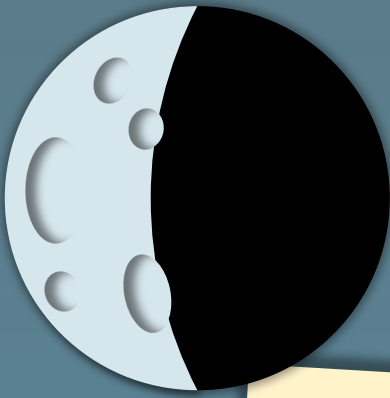
Once you complete your activities, download the virtual patch on our website:

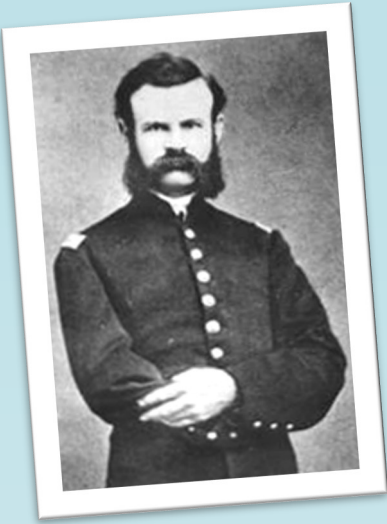
www.nps.gov/soar



MAP IT OUT

Arizona has 22 National Park Service units across the state. Use this map below to plan out an adventure of your very own! If you really want a challenge, fill in the highways and interstates that you will use on your trip!





John Wesley Powell

was no stranger to excitement and danger. After losing his right arm in the Civil War, he set off down the Colorado River in 1869 with 4 boats full of supplies.

His goal was to document the whole river for science, but the expedition turned into a test of will. 4 men left the expedition early and the rest of the crew made it out alive after 3 harsh months on the mighty river.

In order to prepare for his journey, John Wesley Powell had to plan out and pack everything he was going to need. Look at the items below and circle **5 things** that you think are the **most important** items to take on an expedition. Remember, you are going to be gone for 3 months and you have to eat, sleep, stay dry and document everything you find!



You are about to embark on an **Arizona Adventure** of your very own! Your family and friends are like your expedition crew, which means you all have to plan ahead for your trip, just like John Wesley Powell. Sit down with your expedition crew and plan your next trip by answering the follow questions:

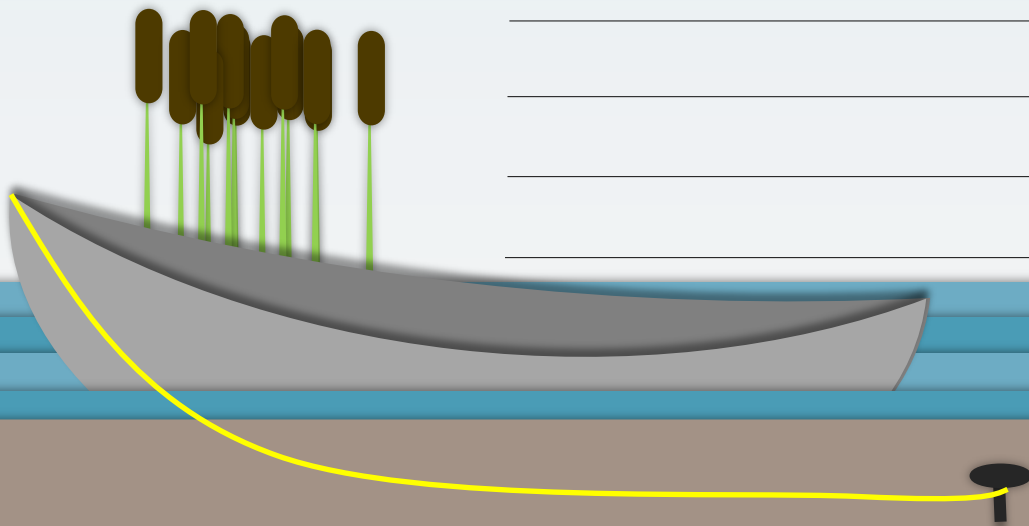
Which National Park Service site would you like to visit?

Would you want to camp or stay in a hotel? Why?

What time of year would you like to travel? Why?

What kinds of things would you do when you visit?

Based on the above questions, make a list of at least **5 things** you should pack for your adventure!



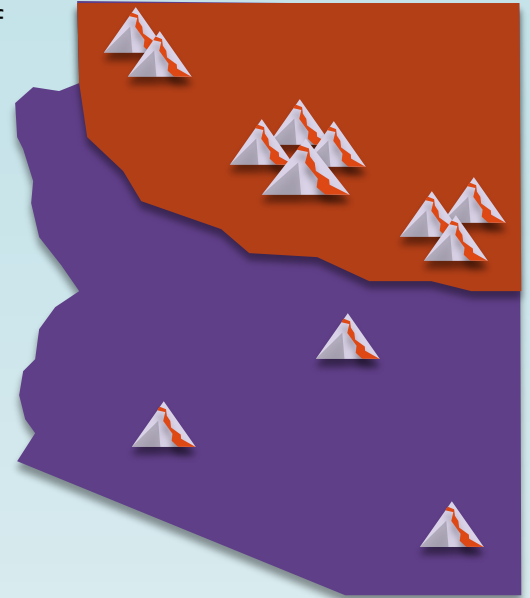
GEOLOGY

Every landscape is shaped by forces of nature. Geologists are the scientists that study these Earth processes. In Arizona, there are three major types of landscapes formed by different forces of nature. **Erosion** is the force that removes earthen materials by water or wind. This is the final sculptor of the land.

The Colorado Plateau has many canyons and flat topped mesas and buttes. Most of these formations are made of sedimentary rock and shaped by water erosion.

Basin and Range forms when the landscapes are pulled apart by faults or breaks in the Earth's Crust; imagine opening an accordion. Mountains (ranges) are pushed up and valleys (basins) fall down. In this complex landscape, you might find each of the three types of rock.

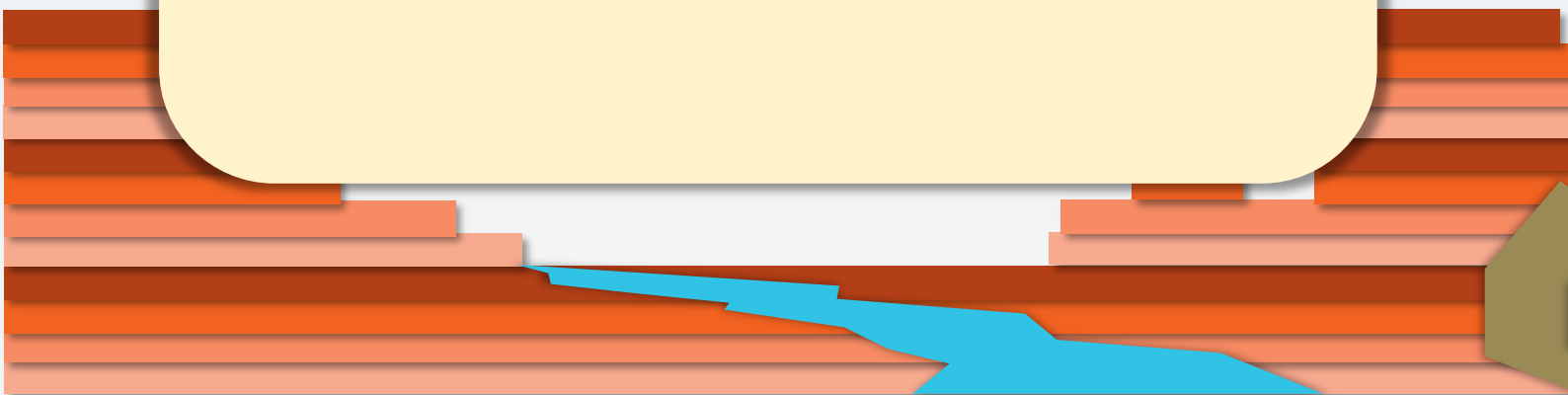
Volcanic formations dot the Arizona landscape. The cooled molten rock called igneous rock shows Arizona was fiery in the past.



Think of your favorite place in Arizona. What does the landscape look like?

Volcanic : 

Draw your landscape here





Rock formations don't just appear overnight. Every canyon, mountain, and basin you find in Arizona took a long time to become what they are today. The forces that shaped them may seem weak, like wind or water, but given enough time, major changes can occur!

How have you experienced change over time?

How have you grown?

What is a lesson you have learned that you would like to share with someone else?

Layer Cake!

Sedimentary Rocks are formed by water, wind, and even living creatures depositing layers of sediments like mud, sand, or calcium carbonate. Over time this hardens into rock. Today, sediments still build up on the bottom of the oceans, in swamps, on river beds, and in sand dunes.

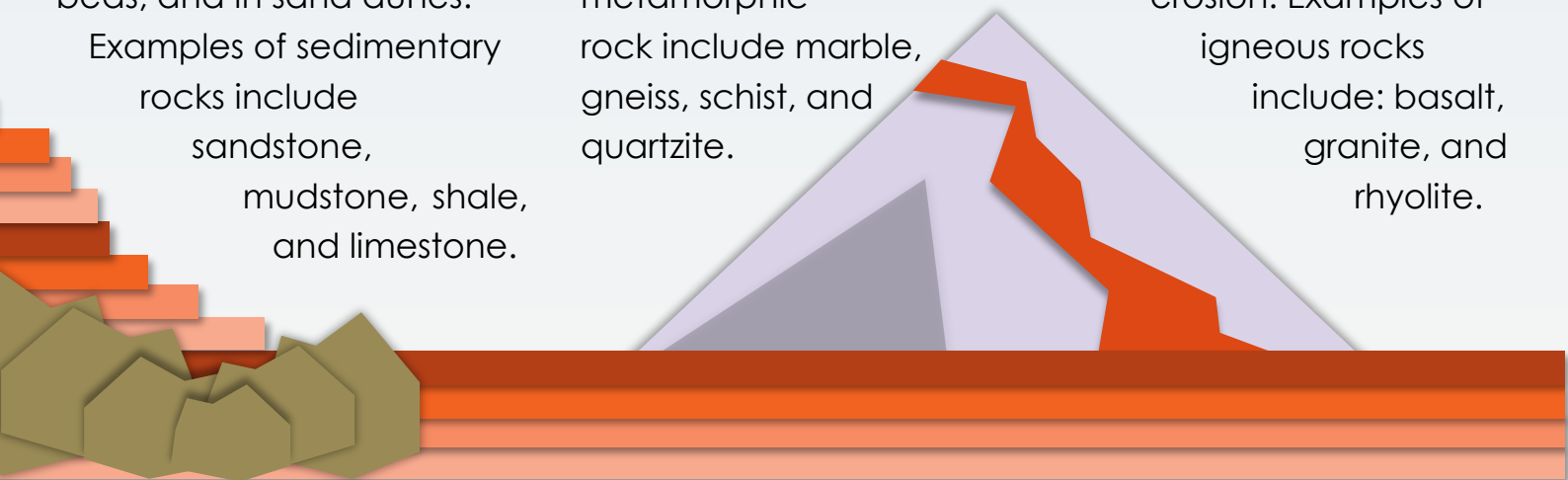
Examples of sedimentary rocks include sandstone, mudstone, shale, and limestone.

Under Pressure!

Metamorphic Rocks are formed by mountains colliding or rocks piled up pushing down. This pressure transforms the original rock into a new type of rock. Sometimes the rocks actually look twisted. Metamorphosis means to change from one thing into another. Examples of metamorphic rock include marble, gneiss, schist, and quartzite.

Fire Born!

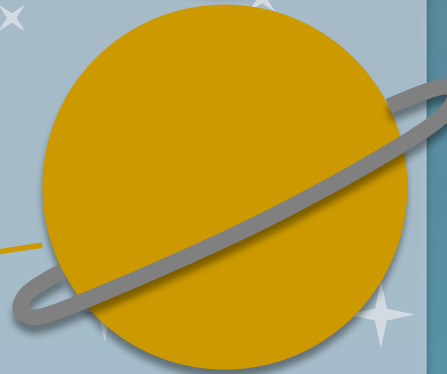
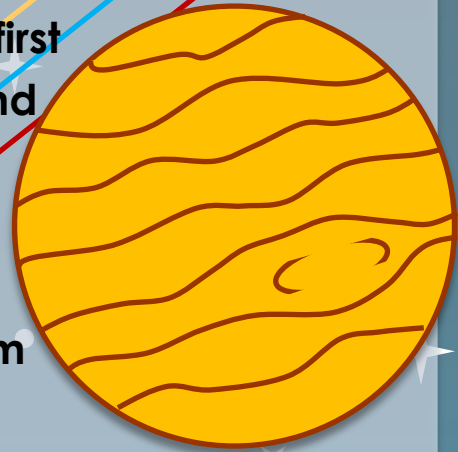
Igneous Rocks are formed by hot, molten rocks cooling and becoming solid again. Volcanos are molten rock that came to the surface. Molten rock can also cool underground and be revealed by erosion. Examples of igneous rocks include: basalt, granite, and rhyolite.



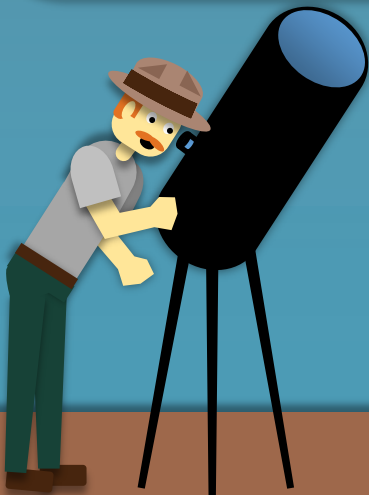
ASTRONOMY*

In 2006, NASA launched the New Horizons spacecraft. The mission: to take photographs of the dwarf planet, Pluto. The spacecraft reached Pluto in 2015 and for the first time, scientists were able to look at this distant land up-close. Although new planets have been documented that orbit beyond Pluto, we now have 9 planets that have been photographed at close range. Can you name them all in order from closest to furthest from the sun?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. Pluto



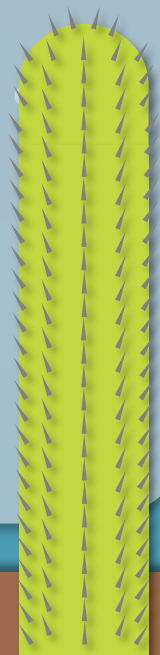
If the sun was only 23 inches in diameter, the planets would be the same size as the planets on this page.



Cultures throughout time have use the night sky to tell stories of the beginning of life, the heroes and villains who have shaped our world, and what the future holds. The sky also has practical uses, like telling us to plant corn or providing direction on a long journey.

Heroes come in many forms. Think of someone who has helped you or brought joy to your life. It could be a family member, a friend, a character from a book, or even a pet! Use the space below to make your own constellation that features your hero.

Why are they your hero?



NATIVE FOODS AND PLANTS

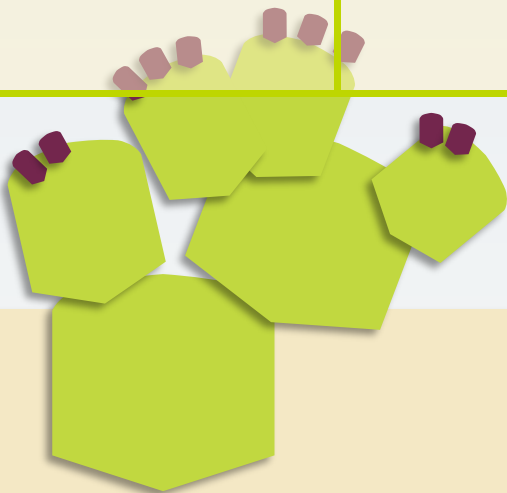
People living in the southwest long ago farmed and ate corn, beans, and squash, but their diet included wild native plants too! People ate sunflower seeds, cactus fruit, and amaranth leaves. Edible plants that grow here in the desert are called **native foods**.



Many foods that we eat today are native to North and South America, but these native foods have been incorporated into European regional cuisine. Choose 3 foods from the list below that you have had before and fill out the chart below.

- Tomato**
- Potato**
- Sweet Potato**
- Sunflower Seeds**
- Squash**
- Quinoa**
- Corn**
- Pineapple**
- Peppers**
- Peanuts**

Name of Food	Name of Dish	Type of Cuisine	Other Ingredients
Example: <i>Tomato</i>	<i>Pizza</i>	<i>Italian</i>	<i>Cheese, wheat</i>



CINQUAIN POETRY

Cinquain poems have 5 lines.

Write your own about a desert plant using the guidelines below:

An example cinquain about a Saguaro:

Saguaro

tall, pokey

living, growing, providing

a home to many

Cactus

Line 1. Title (noun) = 1 word

Line 2. Description = 2 words

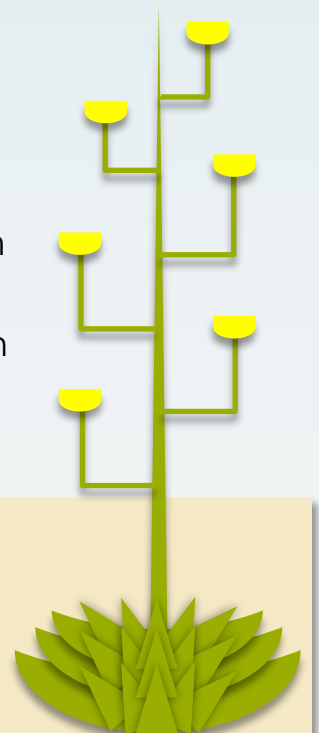
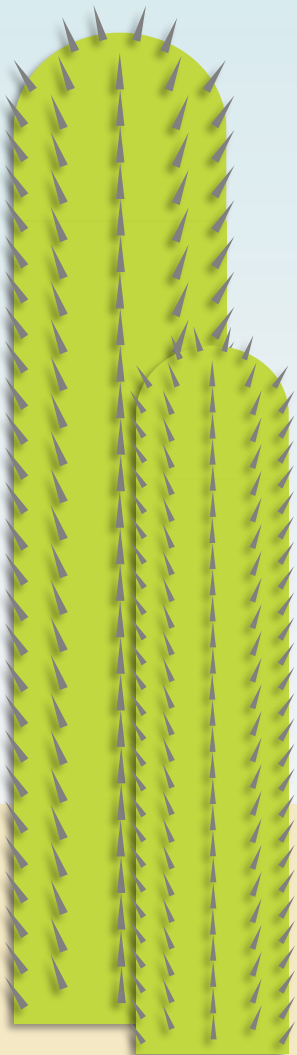
Line 3. Action = 3 words

Line 4. Feeling (phrase) = 4 or more words

Line 5. Title (synonym for Line 1) = 1 word

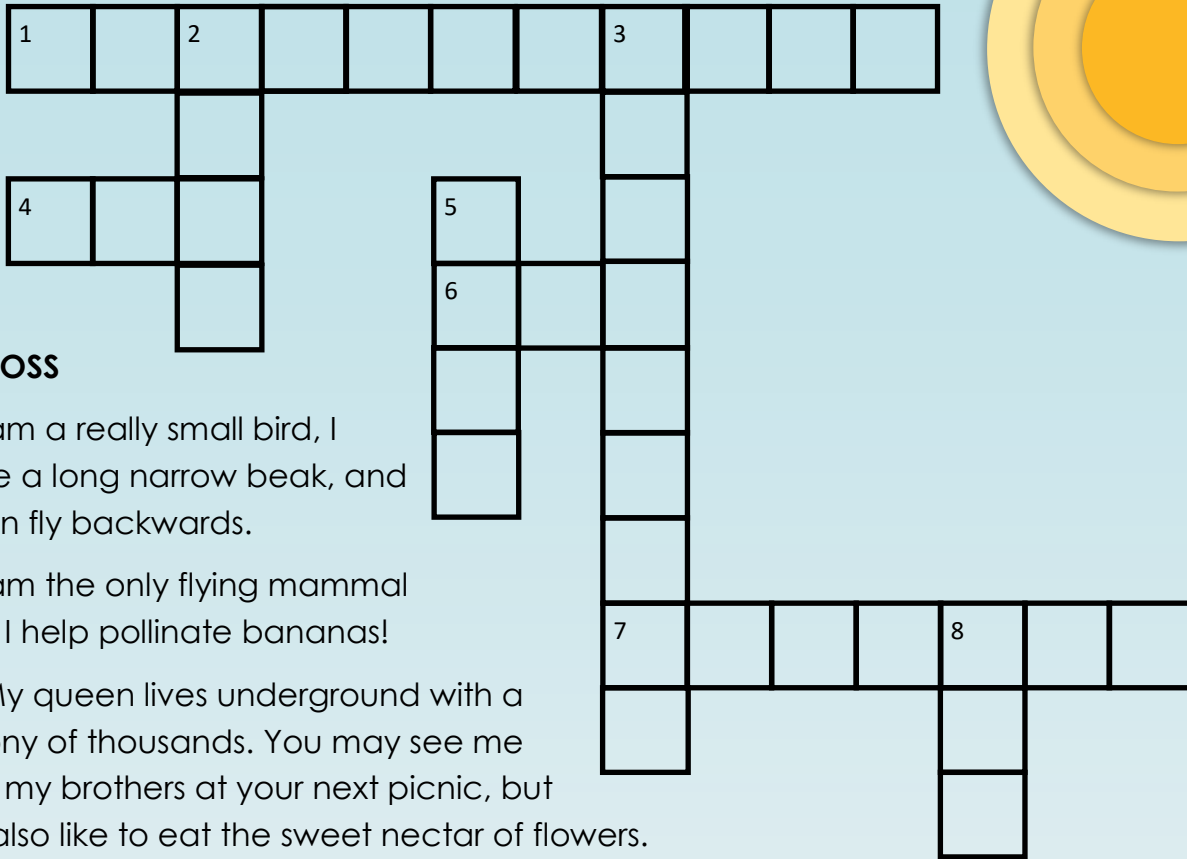
Did You Know?

The **Tohono O'odham** are believed to be descendants of the **Hohokam**. In the O'odham culture, the **saguaro** is a sacred plant, to be given utmost respect. The calendar is based on the cycles of the saguaro, and includes ceremonies involving the saguaro and its fruits.



HEALTHY HABITATS

Pollinator Puzzle

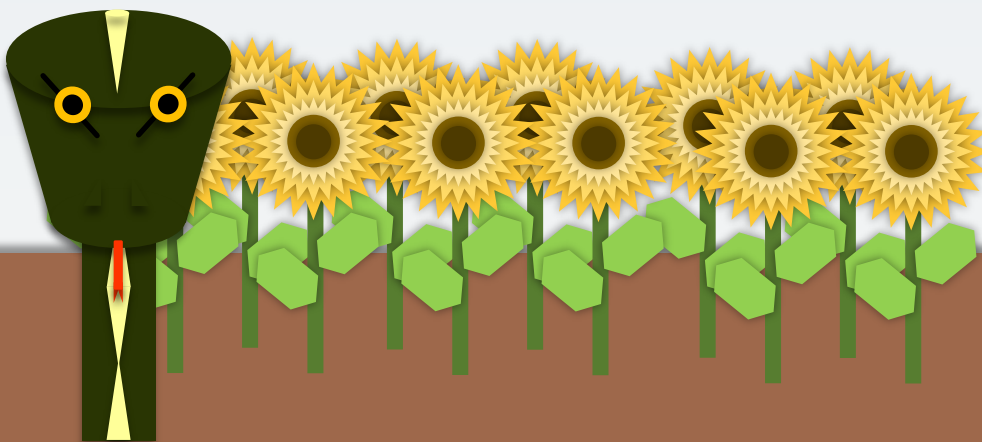


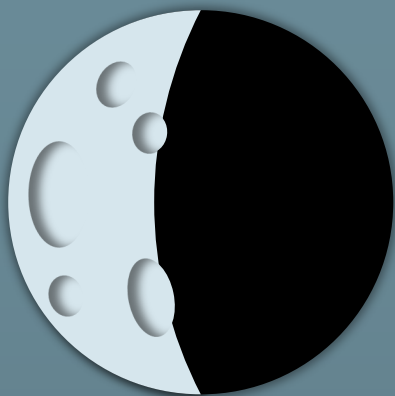
ACROSS

1. I am a really small bird, I have a long narrow beak, and I can fly backwards.
4. I am the only flying mammal and I help pollinate bananas!
6. My queen lives underground with a colony of thousands. You may see me and my brothers at your next picnic, but we also like to eat the sweet nectar of flowers.
7. I am a small beetle with a red and black polka dot shield over my wings. I protect plants from harmful insects.

DOWN

2. I am a cousin of the butterfly. I also work the pollination night shift.
3. My beautiful, multicolored wings help me float from flower to flower.
5. I am not a bee, but I am yellow and I have a stinger! I help produce sweet things like figs.
8. I collect pollen on my black and yellow fuzzy body and use it to make honey. Yum!





As Junior Rangers, it's our job to help Park Rangers protect natural **habitats**. Arizona is home to some of the most diverse habitats in the Southwest, including deserts, pine forests, marshes, and grasslands. A healthy habitat should include everything that an animal needs to not only survive, but thrive.

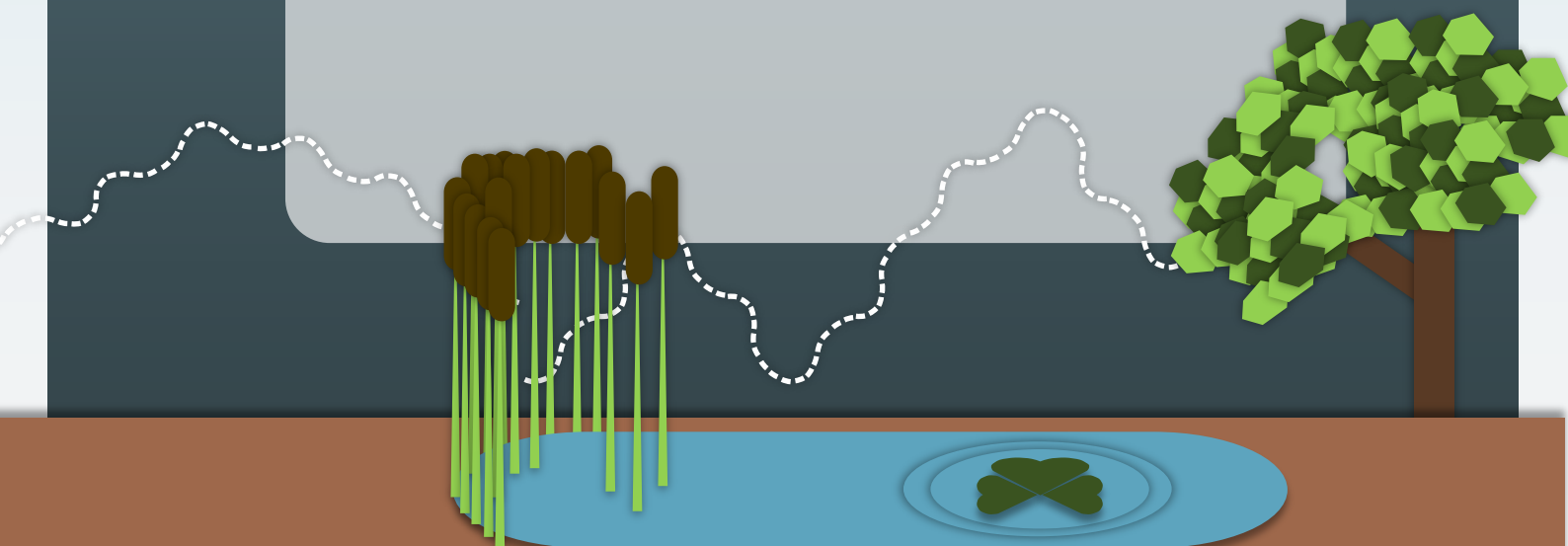
What are the things that you need to survive?

What is your favorite **wild** animal that lives in Arizona?

What kinds of things does your favorite animal need to live a healthy life?

What can you do to help Park Ranger protect natural habitats?

Draw your favorite Arizona animal in their natural habitat



ARCHAEOLOGY

Archaeologists are scientists who study people from the past based on the stuff they left behind, which are called **artifacts**. Some of the artifacts we find can be as small as an arrowhead, or as large as someone's house from 700 years ago. Groups of people that made and used similar artifacts are called **cultures**.



We are part of the American culture today. We will leave behind items that will tell our story for generations beyond us. Think of some objects that belong to you or your family. Choose some objects to fill in your story below.

The object I use to communicate with people is:

The object that brings me the most joy is:

The object that makes me feel safe is:

The object that I use to gather food is:

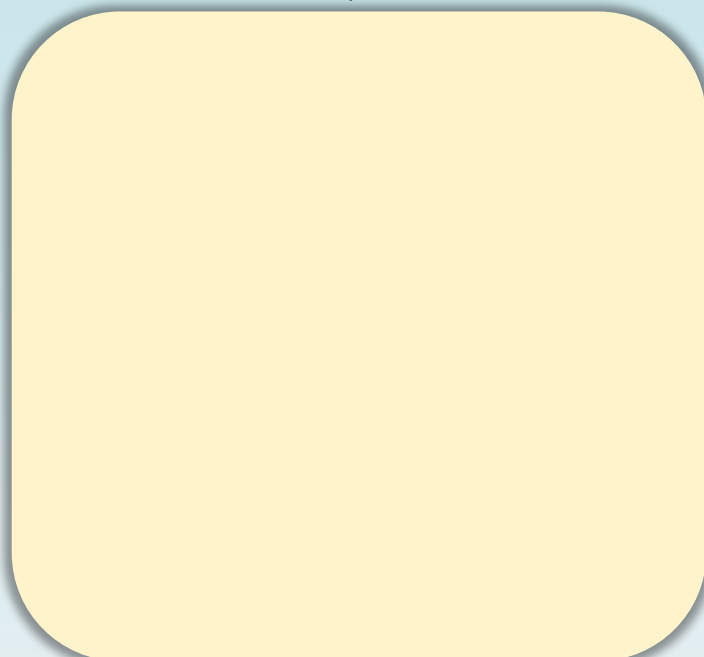


Archaeological sites protected by the National Park Service haven't always looked like they do today. Hundreds of years ago, these ancient structures once housed living communities. Some rooms may have been bedrooms, keeping people warm in the winters and at night, while others held dried vegetables and grain, and still others hosted special events, holding villages together. Once people left the dwellings for various reasons, they started on the slow path back to nature.

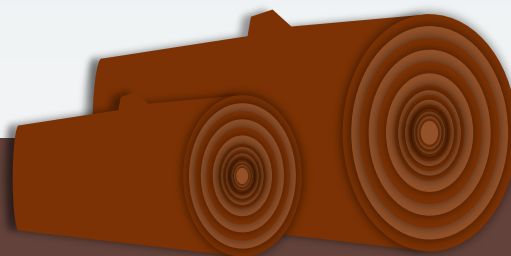
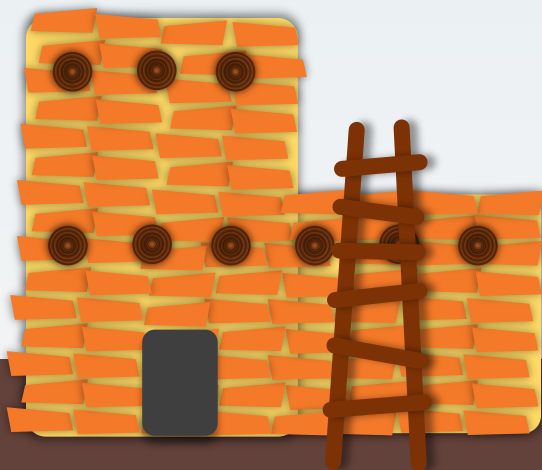
This is what the upper cliff dwelling at
TONTO NATIONAL MONUMENT
looks like today



Now draw how you think the dwelling
might have looked when families
occupied it.



What do you think caused the dwellings to fall apart over time?



WATER AND ADAPTATIONS

Arizona is a dry place. Limited rainfall affects the amount and availability of water throughout the year. Water found on the surface of the earth is vital to plants, animals and people. **Fill in the blanks below to learn more!**



Describe three types of surface water

year-round pools seasonal underground rivers snowmelt

Springs are found where water emerges from _____.

They may look like _____ or flowing streams. Some springs flow year-round. Others are dry for part of the year.

Springs often provide the only near by water source for animals and people. **Streams** are channels of water that

flow _____. They may be small creeks, large

_____, or something in between. Because streams contain water all the time, they are home to many animals, including fish, turtles, insects, and snails.

The trees and other plants that grow in and next to streams provide good habitat for birds and mammals. **Washes** are channels

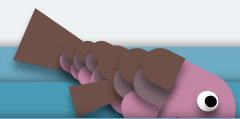
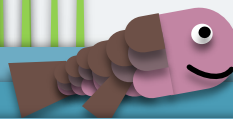
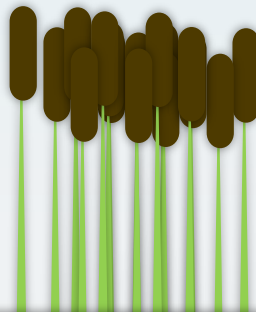
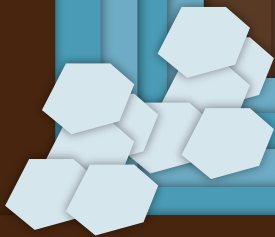
that are dry most of the year, but flow after rainstorms or _____.

Some washes have bedrock pools that store water after the rest of the wash has gone dry. Drought-tolerant

trees are often found on the

banks of washes. The _____

flow of water helps keep these plants alive.



National parks in Arizona include many different environments, from dry desert valleys up to temperate mountain ranges and streams. These habitats are home to a huge diversity of organisms. Over time, many plants and animals have developed special characteristics in response to their environment. These adaptations allow them to tolerate the hot climate and scarce water.

Match the animal to its adaptations



Jack Rabbit

To avoid drying out, I spend most of the time in an underground burrow that I dug with my hind feet. After large monsoon storms, I emerge to lay eggs in temporary pools of water. The



Big Horned Sheep

During winter and the dry parts of summer I hibernate in a burrow on a rocky hillside. My eggshells are hard so they do not dry out. I get much of my water from plants. After rainstorms, I drink from temporary pools and can store 40% of my weight in



Desert Tortoise

I am mainly active during the night, when temperatures are cooler. My large ears have many blood vessels that help me shed excess body heat. When water is not available, I eat cacti



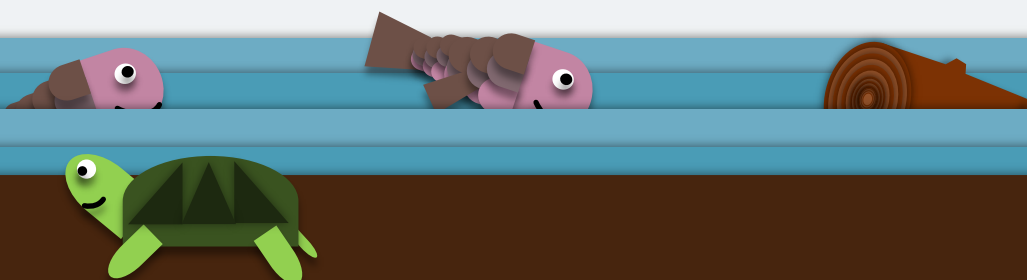
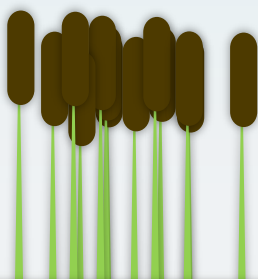
Spade Foot Toad

My large stomach can store enough water to last me several days. To get enough water in winter, I lick the dew off plants. In summer, I eat cactus and cactus fruit. I can withstand high body temperatures but also like to spend time in shade and

Name another animal found in Arizona: _____

What are its special adaptations?

How do you adapt to the Arizona environment?



LEAVE NO TRACE

These suggestions will help you responsibly explore public lands



1. Plan Ahead and Prepare

If you completed the John Wesley Powell page, you've done this already!

2. Travel and Camp on Durable Surfaces

As you walk or take a rest, look for designated trails, campgrounds, or picnic areas.

3. Dispose of Waste Properly

Use garbage and recycle bins whenever possible. If there are no garbage cans around, pack it out of the park! Draw a line to match the amount of time you think each item takes to degrade.



	1 Month	
Aluminum Can	2 Months	Cigarette Butt
	5 Years	
Paper	20 years	Banana Peel
	200 years	
Plastic Bottle	500 years	Plastic Bag

4. Leave What You Find

Everything in a National Park is special and protected. That means that everything should stay in the park. This includes flowers, leaves, and even rocks. Draw something special to you that you want to everyone to be able to enjoy.

5. Minimize Campfire Impacts

Human caused wildfires can be devastating to a park. In some places trained firefighters manage fires for ecological benefit. Before you light a campfire, as a park ranger if there are any fire restrictions in effect.

6. Respect Wildlife

Sit quietly for five minutes and observe a bird or other animal. Make sure you a safe distance and you are not disturbing the wildlife.

What animal do you watch?

What did you notice?

7. Be Considerate of Other Visitors

Doing something nice for another visitor, like hold open a door or make room on the trail for passing hikers, makes everyone's day a little better. Think of a time that you did something nice for someone else. How did it make you feel? What was their reaction?

YOU DID IT!

If you have completed your required activities, then you deserve an Arizona Junior Ranger Virtual Explorer patch! You are the next generation of park rangers, stewards, and visitors. We want to thank you for taking the time to get to know the beautiful, diverse, and adventurous state of Arizona.

Do you have a cool picture, funny story, or an interesting fact to share from your virtual travels? Use **#AZJRExplorer** on Facebook, Instagram, and Twitter. Your stories will be seen by park rangers and other Arizona Junior Ranger Explorers!



#AZJRExplorer



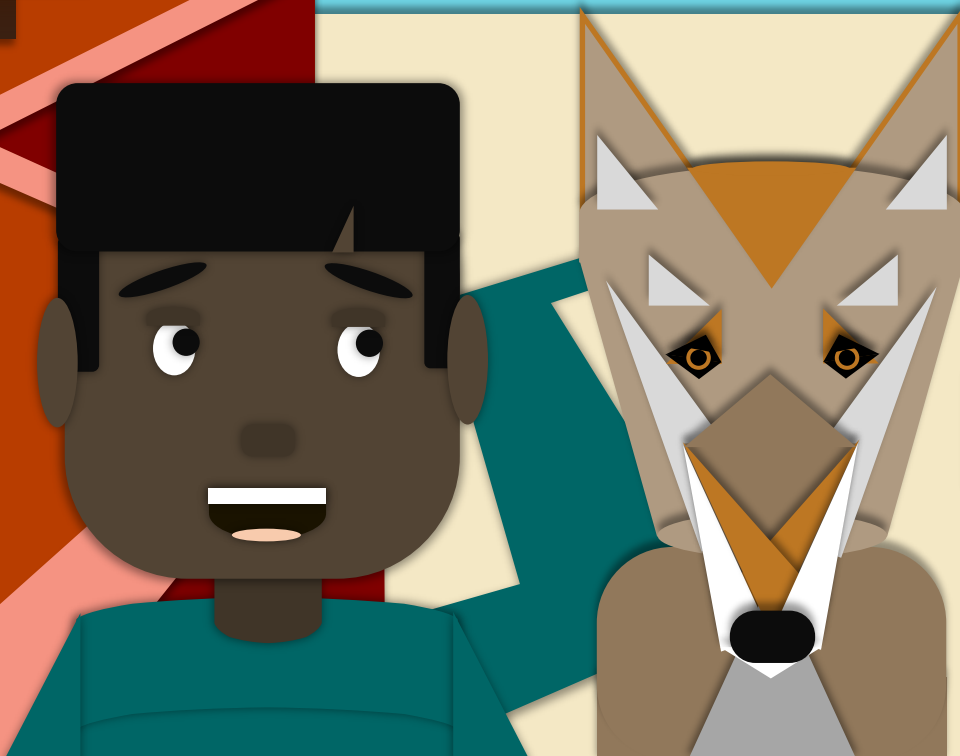
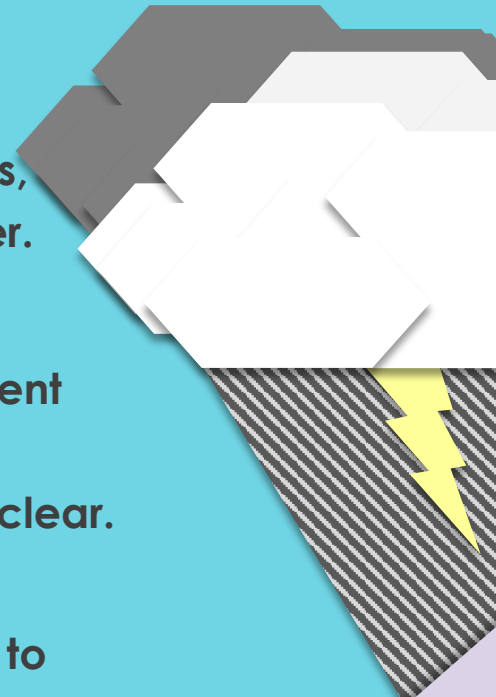
ARIZONA EXPLORER PLEDGE

From canyons, to mountains,
and cacti,
I will leave it all just where they lie.

In nature's beauty and
history's wonder,
I will stay safe from floods,
and lightning and thunder.

In every park and monument
adventure is near,
But on my trip, the mission is clear.

Preserve and protect, not to
destroy,
so future Arizona Junior
Explorers can enjoy.



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