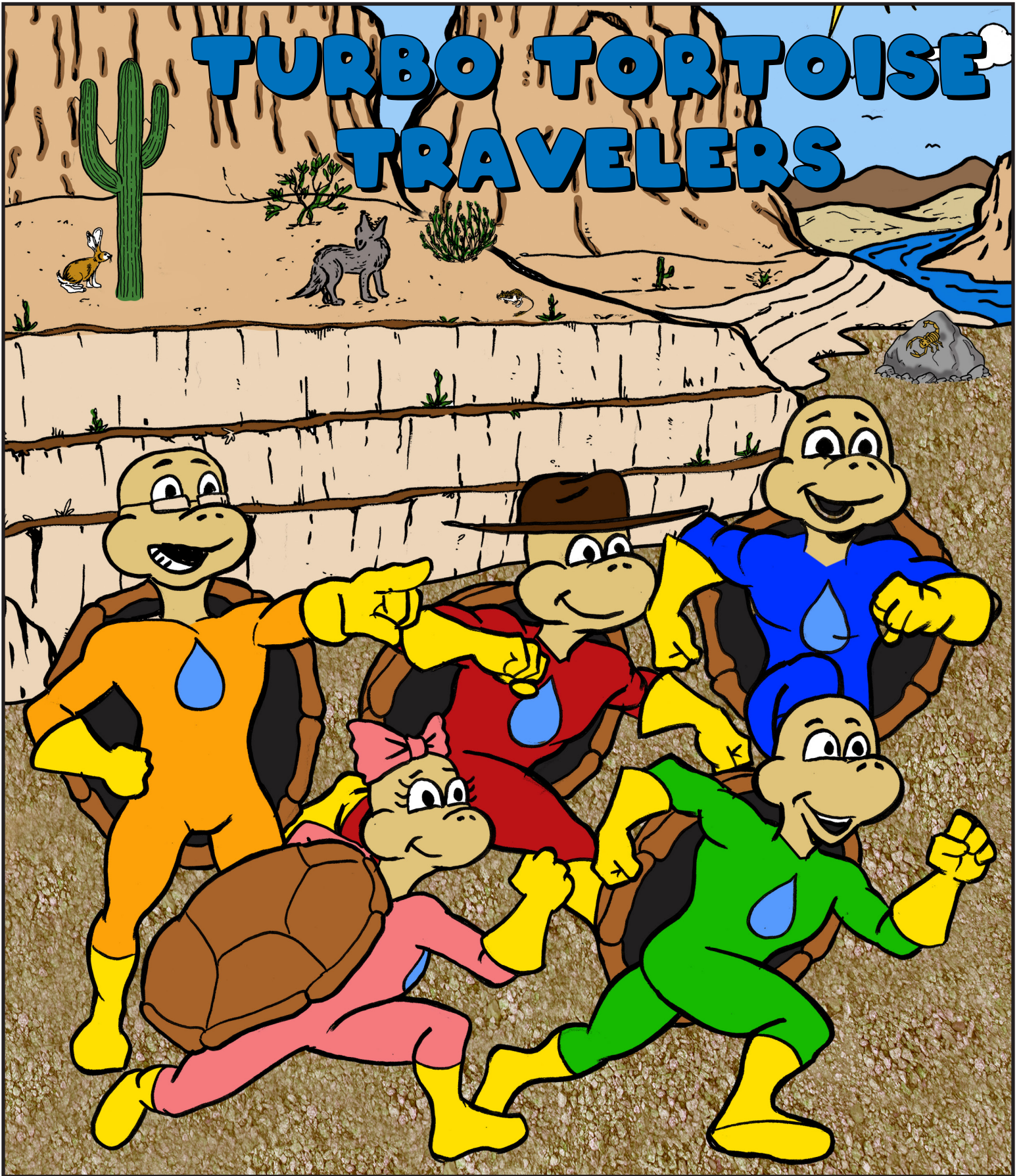
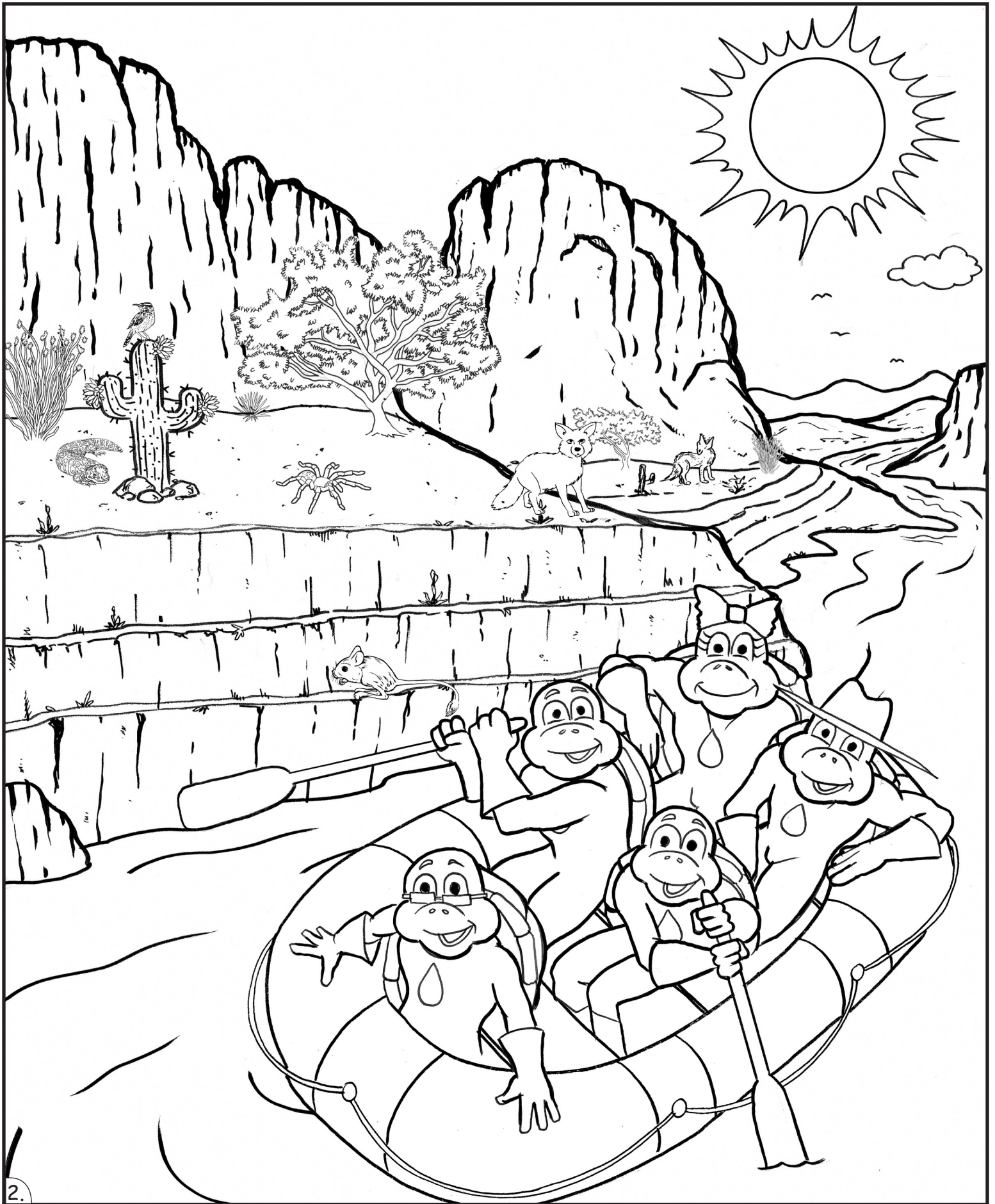


# TURBO TORTOISE TRAVELERS



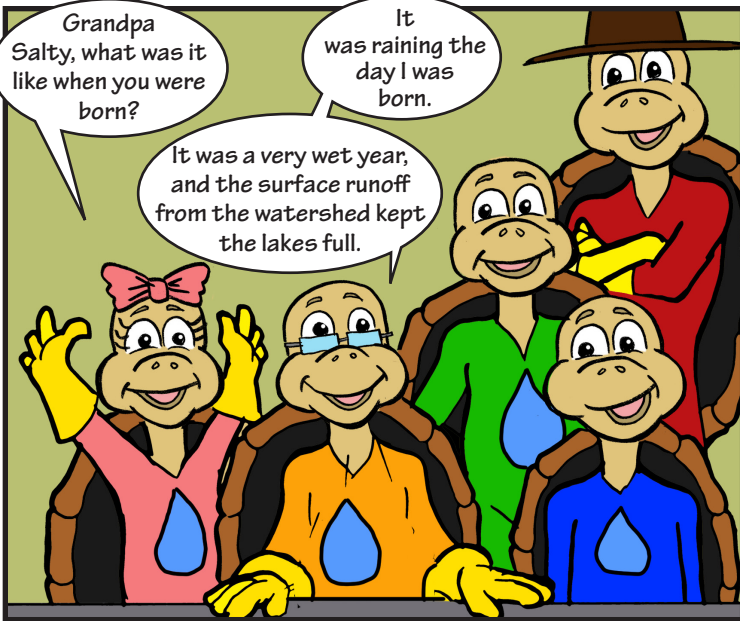
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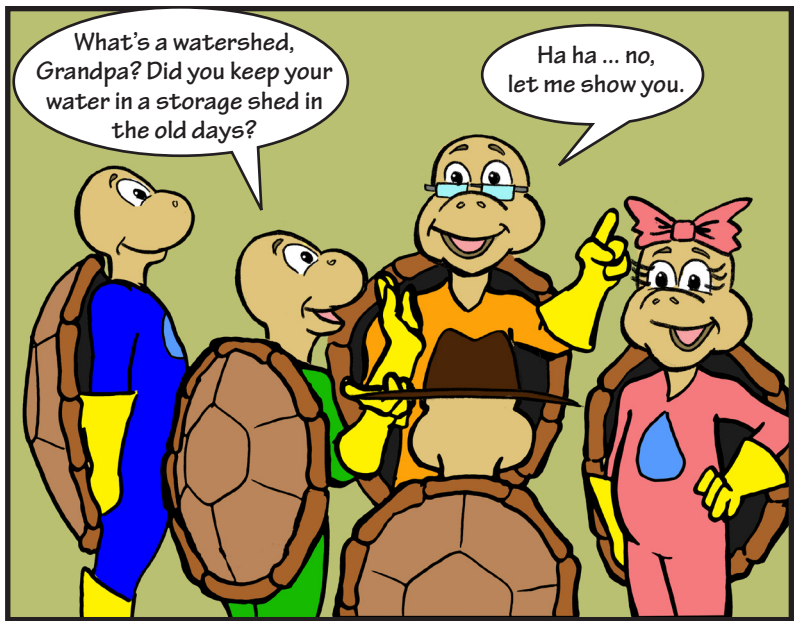
In Arizona, we get water from rain and melted snow. We store it behind dams until it is needed. This creates lakes for us to enjoy. Then it is released into canals where it travels to the water treatment plant to be cleaned. Color the Turbo Turtles. Find and circle the desert plants and animals shown above.



Grandpa Salty, what was it like when you were born?

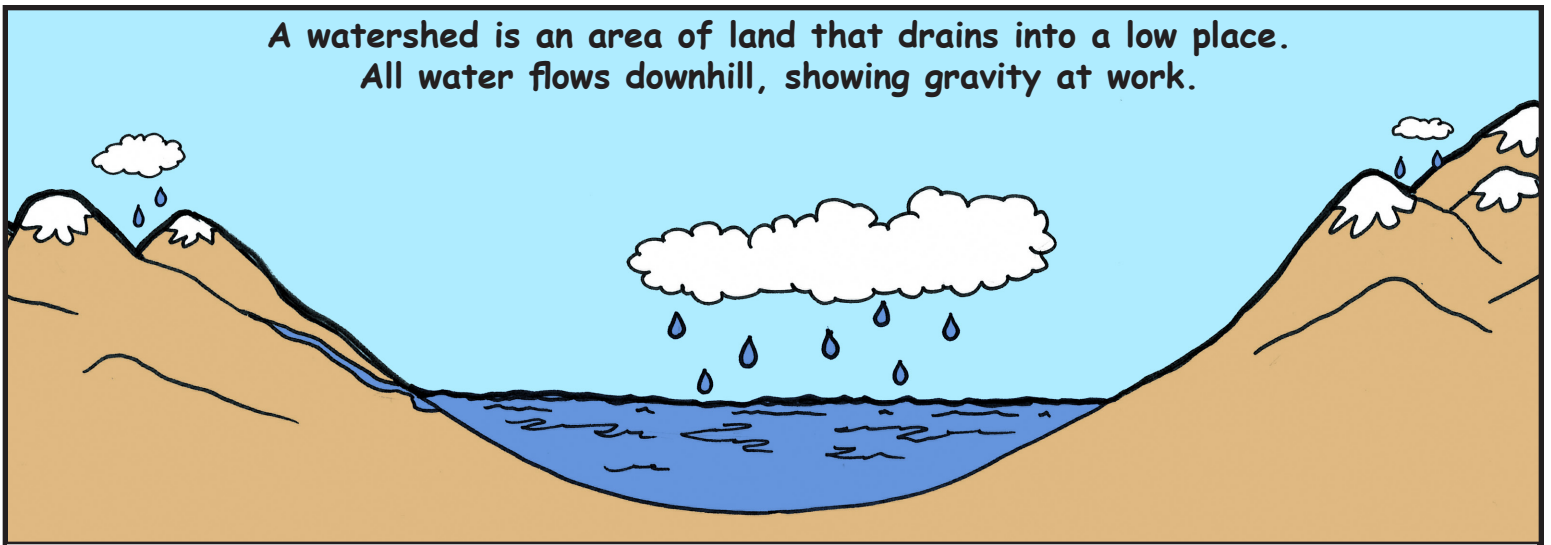
It was raining the day I was born.

It was a very wet year, and the surface runoff from the watershed kept the lakes full.



What's a watershed, Grandpa? Did you keep your water in a storage shed in the old days?

Ha ha ... no, let me show you.



A watershed is an area of land that drains into a low place. All water flows downhill, showing gravity at work.

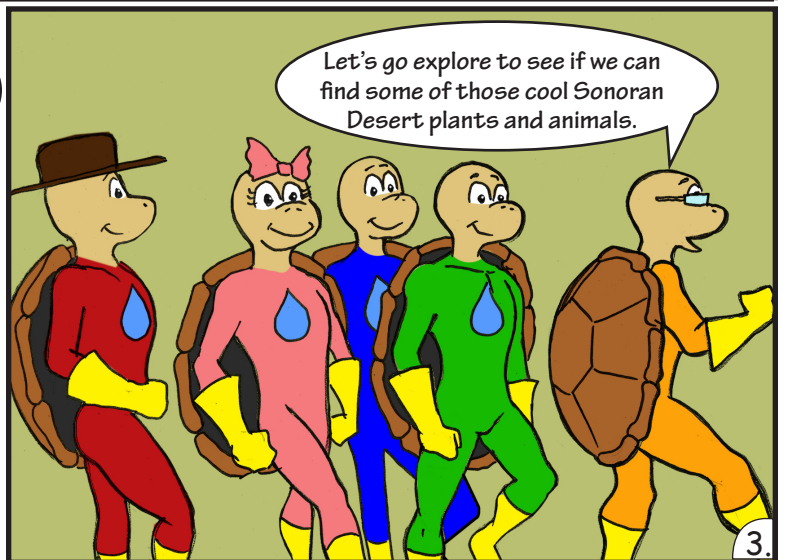
Count the vowels in each word. Write the number in each space.

- |           |           |             |             |                 |
|-----------|-----------|-------------|-------------|-----------------|
| ___ river | ___ rain  | ___ runoff  | ___ wetland | ___ watershed   |
| ___ canal | ___ snow  | ___ gravity | ___ aquifer | ___ reservoir   |
| ___ lake  | ___ water | ___ rock    | ___ spring  | ___ power plant |
| ___ dam   | ___ cloud | ___ stream  | ___ well    | ___ mountain    |



Living in the desert can be hard because some years can have a lot of rain, while other years are very dry.

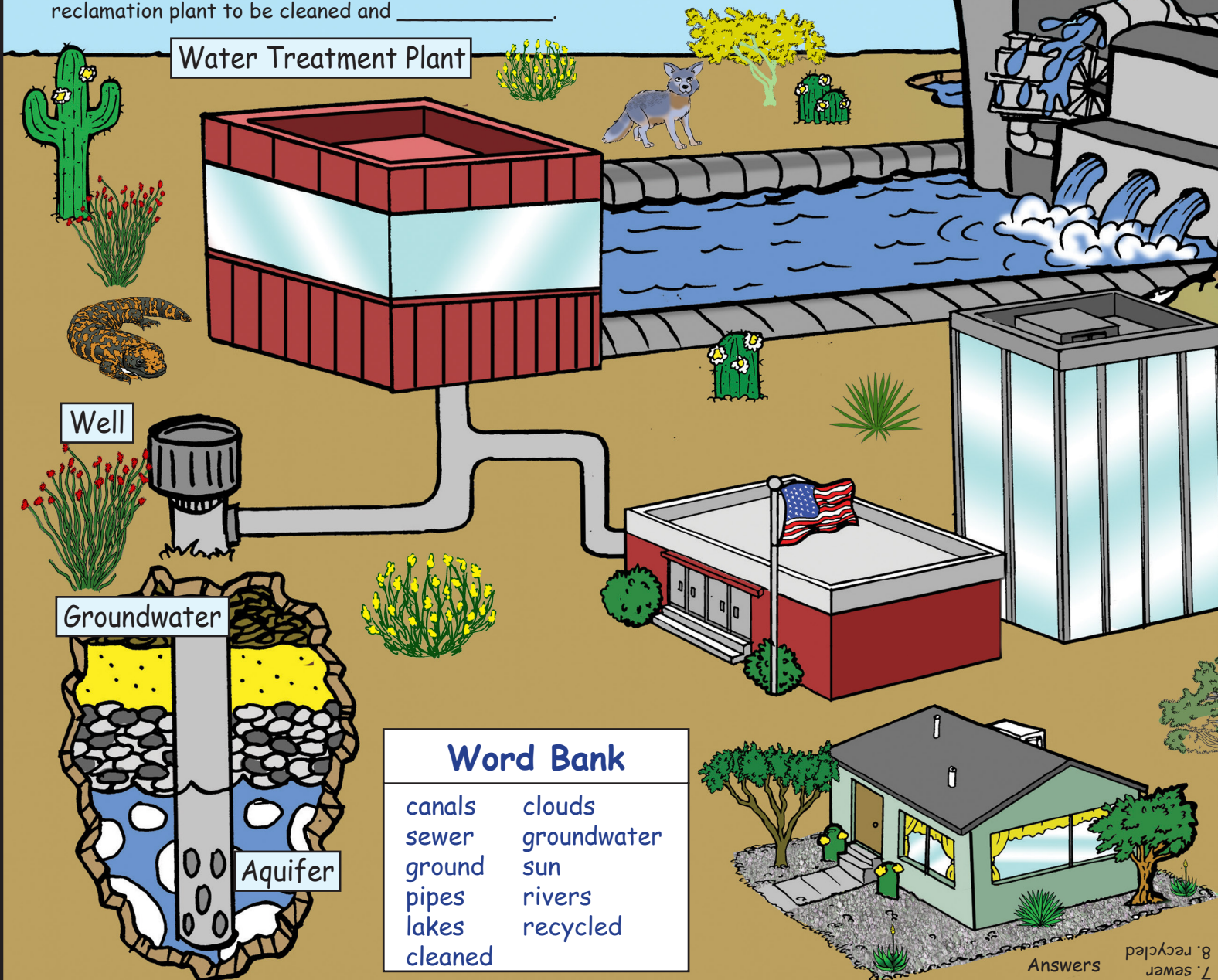
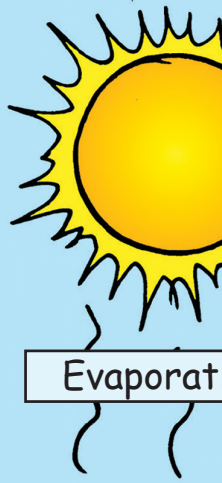
Plants and animals that live in the desert have to adapt to get through those very dry years.



Let's go explore to see if we can find some of those cool Sonoran Desert plants and animals.

The Water Cycle is a process the Earth uses to clean and recycle our water. Follow the arrows and numbers to learn the steps of the water cycle. Then fill in the blanks with the correct words to define each step. Use the word bank below.

- Heat from the \_\_\_\_\_ changes the water from a liquid to a gas called water vapor.
- As the water vapor floats up into the air, it cools and changes back into small drops of water that form into \_\_\_\_\_.
- Soon rain and snow fall to Earth and become \_\_\_\_\_ and \_\_\_\_\_ called surface water.
- In some places, surface water will flow through \_\_\_\_\_ to a water treatment plant to be \_\_\_\_\_.
- After the water is cleaned and treated, it will be pumped through underground \_\_\_\_\_ to your school, home or work.
- In other places, surface water will soak into the \_\_\_\_\_ and be cleaned and filtered by sand and gravel. This will become \_\_\_\_\_ for our wells.
- After the water is used, it goes down the drain into the \_\_\_\_\_. This dirty water is called wastewater.
- The sewer pipes will carry the wastewater underground to the wastewater reclamation plant to be cleaned and \_\_\_\_\_.



**Word Bank**

canals	clouds
sewer	groundwater
ground	sun
pipes	rivers
lakes	recycled
cleaned	

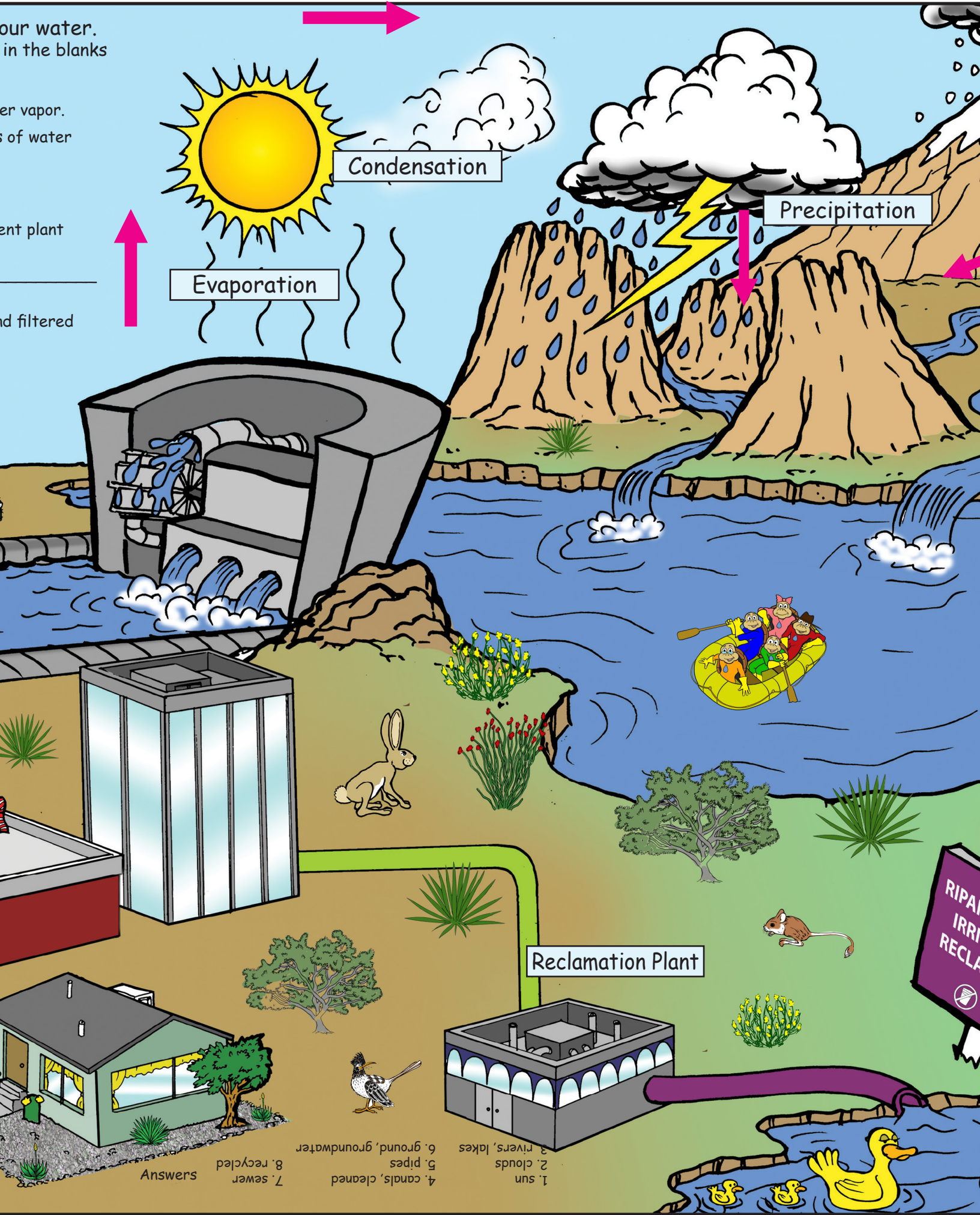
Answers  
7. sewer  
8. recycled

our water.  
in the blanks

er vapor.  
s of water

ent plant

nd filtered



Condensation

Precipitation

Evaporation

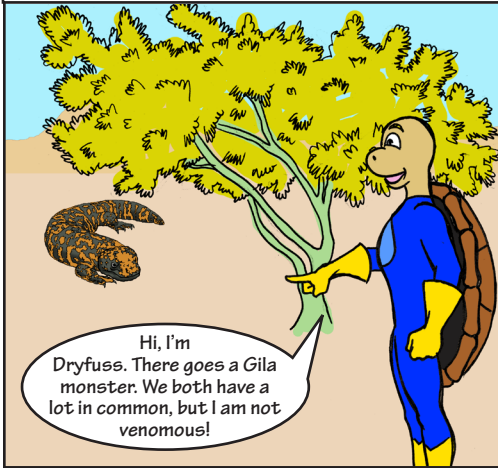
Reclamation Plant

RIPARIAN  
IRRIGATION  
RECLAMATION

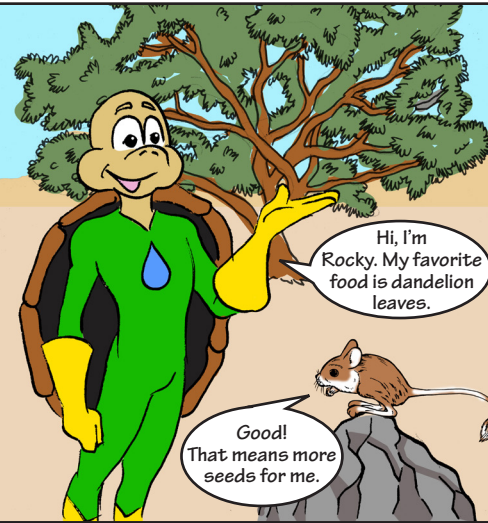
Answers

- 1. sun
- 2. clouds, lakes
- 3. rivers, lakes
- 4. canals, cleaned
- 5. pipes
- 6. ground, groundwater
- 7. sewer
- 8. recycled

The desert tortoise is able to store water in tissue under its shell. The Gila monster can store water in tissue in its tail. This allows them both to absorb water when they need it. The palo verde tree has adapted to living in the desert by dropping its leaves and using its green trunk to make food through photosynthesis.



The kangaroo rat gets most of its water from eating seeds. The desert tortoise gets some of its water from eating leaves. The mesquite tree has adapted by developing long roots that will spread out in search of water and grow slower during a drought.



The cactus wren likes to make its nest inside the saguaro cactus. The desert tortoise likes to live in hard, rocky areas. These harsh environments help protect them from predators. The saguaro cactus has adapted by storing water in its spongy core and protects itself with sharp needles.



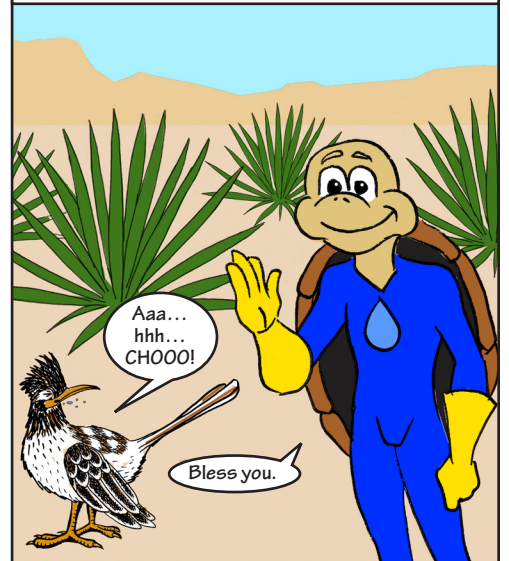
The gray fox has adapted to keep cool. They can climb trees with their sharp claws to find food or to rest in the shade. The gray fox does its hunting at night and is an omnivore. The creosote bush has adapted by developing waxy leaves. This helps keep the plant's water from evaporating while its roots give off toxins to chase away other plants.



The tarantula spider and the desert tortoise like to find some shade when they need to cool off. The desert tortoise has sharp claws and can burrow into the ground where it is always cooler. The ocotillo has adapted by dropping its leaves when the soil is dry and attracting pollinators with its bright red flowers.



The roadrunner does not sweat. He sneezes out his impurities so his body can conserve water. The agave plant has figured out how to photosynthesize at night. They are being studied by scientists to see how they do it.



### Match the desert dweller to its water-saving adaptation.

- |                          |  |
|--------------------------|--|
| _____ 1. Gila monster    | A. I will grow deep roots that will search for and find water.                 |
| _____ 2. Saguaro cactus  | B. I will save water in my tail and eat juicy bugs.                            |
| _____ 3. Mesquite tree   | C. I will hide in the shade like many of my desert friends.                    |
| _____ 4. Gray fox        | D. I will dig a burrow underground and stay in it to keep cool during the day. |
| _____ 5. Tarantula       | E. During the day, I will block my burrow with soil to keep out the heat.      |
| _____ 6. Kangaroo rat    | F. I will hunt at night when it's cooler to save energy.                       |
| _____ 7. Desert tortoise | G. I will store water in my spongy core and protect myself with sharp needles. |

# EVEN HUMANS CAN MAKE ADAPTATIONS TO SAVE WATER IN THE DESERT.

Animals aren't the only ones who can adapt their lives to desert living. Humans can make changes that can add up to big water savings. Let's test this out. Use the yellow chart to see how you might use water on an average day. Then use the blue chart to see how much water those activities use before any adaptations. Add the gallons from Part A to get an average daily water use without adaptations.

Water Use Activities	Average Use	Human Conservation Adaptations
Shower	Water running 25 gallons	Wet down, soap up, rinse off 4 gallons
Brush My Teeth	Tap running 5 gallons	Wet brush, rinse briefly nearly 0
Take a Bath	Full 35 gallons	Minimal water level 8 gallons
Wash Dishes	Tap running 30 gallons	Wash full load in dishwasher 15 gallons
Wash Hands	Tap running 2 gallons	Wet hands, soap up, rinse off .25 gallon
Flush the Toilet	Pre-1992 toilet 5 gallons	Use a high-efficiency toilet 1.28 gallons
Use the Clothes Washer	Full cycle, 60 gallons	Use a high-efficiency washer 15 gallons
Water the Lawn	Hose running 100 gallons without nozzle	Automatic sprinkler 50 gallons
Wash the Car	Hose running 100 gallons	Bucket and hose 10 gallons with nozzle

## Part A: My average daily water use without adaptations

I use water when I...	=	I used this # of gallons
1 _____	=	_____
2 _____	=	_____
3 _____	=	_____
4 _____	=	_____
5 _____	=	_____
6 _____	=	_____
7 _____	=	_____
		<b>Total A</b> _____

We live in the desert and it's often very dry. This time, use the conservation adaptations you've learned to see how much water you might be able to save! Add the gallons from Part B to get an average daily water use total.

## Part B: My average daily water use with adaptations

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
<b>Total B</b> _____

Now let's compare Total A to Total B.

1. How much water did you use without making adaptations?

2. How much water did you use with conservation adaptations?

3. Subtract B from A to see how much water conservation adaptations save.



This is how many gallons you could save!



# Count the containers below to find out how much water the different activities use.

1. How many gallons are used for drinking, cooking and preparing food?



1. \_\_\_\_\_ gallons.

2. How many gallons are used for bathing & showering?



2. \_\_\_\_\_ gallons.

3. How many gallons are used for flushing toilets?



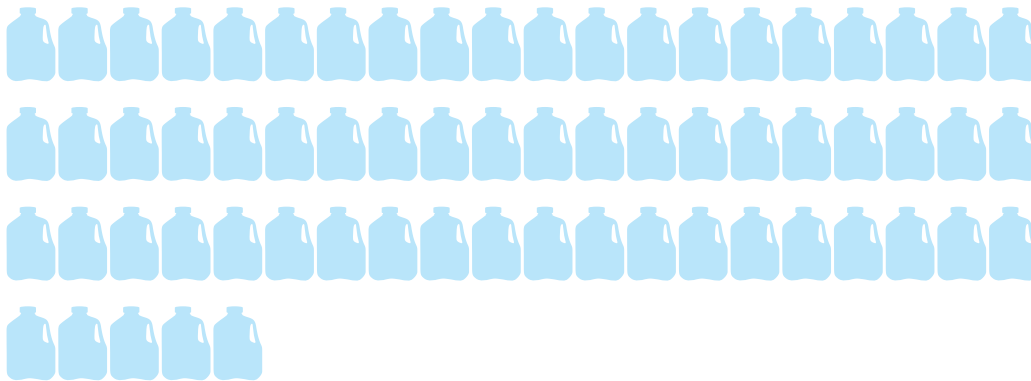
3. \_\_\_\_\_ gallons.

4. How many gallons are used for indoor household cleaning?



4. \_\_\_\_\_ gallons.

5. How many gallons are used outside for trees, plants and grass?



5. \_\_\_\_\_ gallons.

6. How many gallons are used inside the house?

\_\_\_\_\_

7. How many gallons are used outside the house?

\_\_\_\_\_

8. How many gallons are used altogether?

\_\_\_\_\_

9. If new water-saving items have been installed and they save 10%, how much is saved?

\_\_\_\_\_

10. What would be the new daily water use average?

\_\_\_\_\_