



Guadalupe
County 4-H₂O Water Fair
Student Activity Book
TEACHER'S ANSWER KEY

WHAT IS 4-H?

4-H is an exciting youth program that helps young people learn new and interesting things through various projects and activities. 4-H began in Texas in 1908, so we are now moving strong into our second century!! In case you're wondering, the four H's stand for **head, heart, hands and health**. Kids between the ages of 8 and 19 can join a 4-H club, and the Clover Kids program is open to kids age 5-8. Whether you live in the city or in the country, you can get involved. In fact, ***you are part of 4-H while you participate in these water fairs!***

Its not just about agriculture either! There are so many different things you can do in 4-H! Animals, science, cooking, gardening, wildlife, computers, clothing, leading others, all are things YOU can do in 4-H! You can be a part of 4-H in the community, in your school, or in other organizations. In fact, you are a 4-H member during the Ag Fair program!!

In addition to completing projects, you can go to camp, show your work at fairs and win ribbons, travel, host exchange students, attend events with other young people, and more! 4-H is a family affair with parents getting involved, too. 4-H is the youth program of the Texas A&M AgriLife Extension Service, a part of the Texas A&M University System. For more information about 4-H, contact the Guadalupe County Extension office:

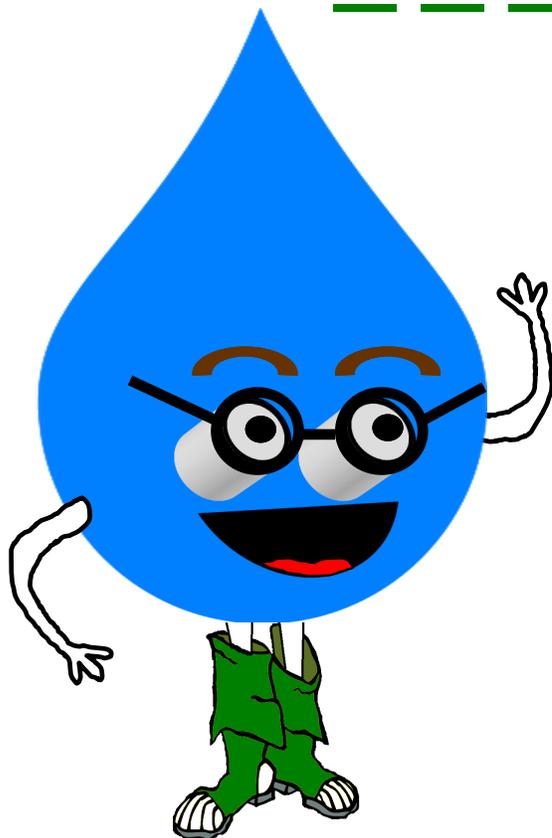


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Hi! My name is **Raindrop Rudy**, and I'm going to be your guide through this activity book! Did you know that **WATER** covers more than 75 Percent of the ENTIRE Earth? Even though there is a lot of water on the planet, the amount that you and I can actually drink and use is much, MUCH smaller...Its only two Percent!

That's why we need to do everything we can to help conserve and preserve this natural resource.

In this student book, you will find some fun activities about water, how to save it, take care of it and how we use it in our everyday lives!

What Exactly IS Water?

We talk a lot about water...conserving it, water pollution, the water cycle and more...BUT, WHAT exactly is it? Is it a nutrient like a vitamin? Is it a drink? Is it a food? Well, water is a lot of things!!!

Water is an odorless, tasteless substance that can appear in three main forms!



Solid Form
In its solid form, Water is called *Ice!* The same ice we put in our drinks to make them cold and the same ice in glaciers. Water becomes ice when it reaches the *freezing point*, which is 32 Degrees Fahrenheit (how we measure temperature)



Liquid Form
In its liquid form, Water is called *Liquid Water!* The same water we drink, bathe in, use to water our plants and falls from the sky as rain. Water stays in its liquid form as long as it stay between 33 and 211 degrees Fahrenheit.



Gas Form
In its gaseous form, water is called *Water Vapor*. Water Vapor is what collects in the sky to form clouds and what makes it feel “sticky” on a warm, humid day! Water becomes water vapor when it reaches 212 Degrees Fahrenheit. This is also called the *boiling point!*

Solid Form

Liquid Form

Gaseous Form

- Glaciers

- Icebergs

- Planet Mars

- Comets

- Lakes

- Rain

- Streams

- Aquifers

- Clouds

- The Sky

- Comets

- Steam

Below are a list of places where each form of water exists! Match and write the name of the place to the form of water!

Lakes, Glaciers, Clouds, Rain, Steam, Icebergs, Mars, Streams, Oceans, Comets, The Sky, Aquifers



Did you know that water is so powerful that it can dissolve rocks, metal, glass and even carved out the ENTIRE Grand Canyon? It is a COOL substance!!

Creating H₂O!

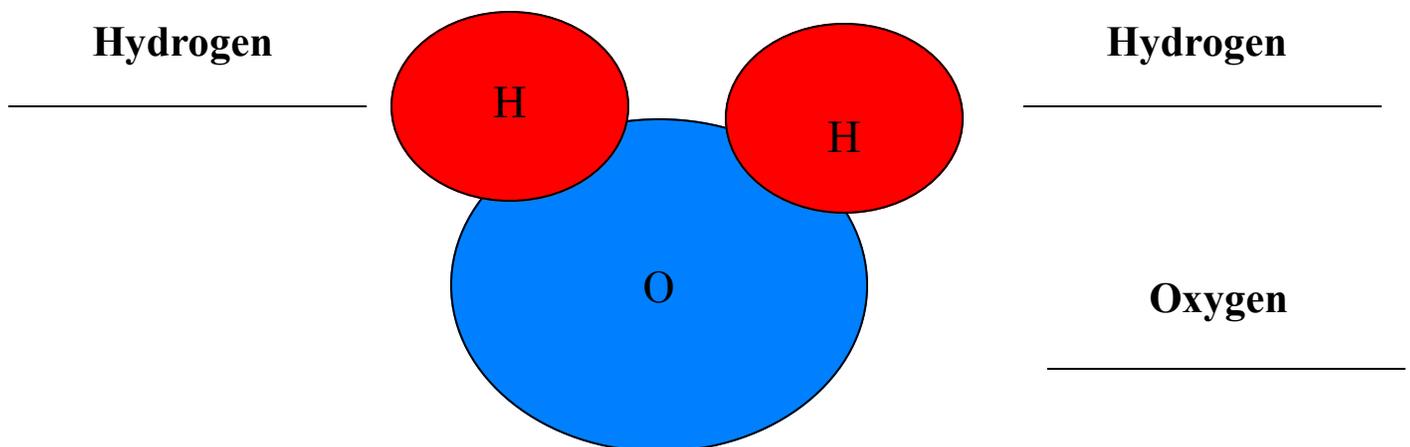
You may be thinking to yourself, WHY are these people calling the water I drink H₂O? What does that mean? H₂O is the *chemical formula* for water...it stands for the tiny things that make up the water we drink.

Think for a minute...Just one glass of water, that we drink everyday, is made up of millions and millions of tiny things *molecules*. ***A water molecule is the smallest possible size water can be and still be called water!*** Molecules are made of even smaller things called **Atoms**. You are probably still wondering why it is called H₂O though!

- The H in H₂O Stands for **Hydrogen**, one of the building blocks of water! Hydrogen is a type of Atom
- The 2 in H₂O means it has TWO ATOMS of Hydrogen
- The O in H₂O means it has ONE ATOM of Oxygen, the same stuff we breathe!

When you put these atoms together, it creates ONE MOLECULE of Water! This molecule looks like a Mickey Mouse Head!

Try to label the parts of the H₂O Molecule Using the paragraph above!



Molecule

What is the group of atoms called? _____

Water's Wild Ride

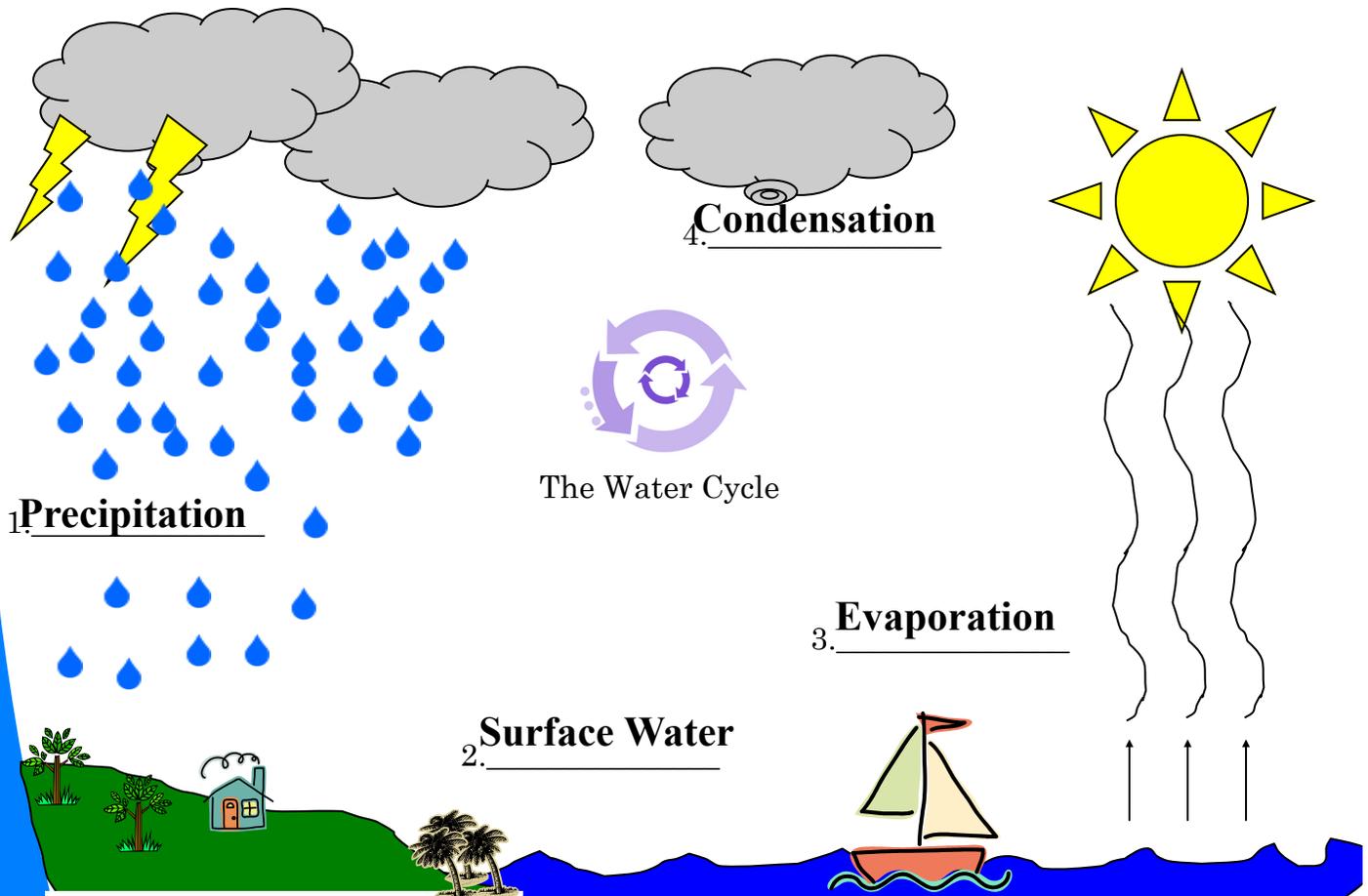


Water is our most important resources. 70 percent of our planet is covered with water. All of the water we have now is all we have ever had on earth! The same water you drink today was probably drank by a dinosaur millions of years ago!

How does that work? How does water move from place to place and location to location on earth? How does it recycle itself? Well, nature uses what we call the WATER CYCLE to clean, reuse and recycle the water of earth! There are four steps to completing the water cycle. They are:

- **Precipitation**, in the form of rain, snow and hail, comes from clouds
- **Surface Water** is the water that is seen on the ground, such as lakes, rivers and oceans
- **Evaporation** is when water is heated by the sun. It rises as an invisible vapor in the atmosphere.
- **Condensation** is when water vapor rises, it cools and eventually condenses...then it will fall back down as precipitation

And that is how the water cycle works! Below, is an activity to help you understand the water cycle! Use the blank spaces to write in the correct word that tells what part of the water cycle it is!



Saving Water In Your Home!

Did you know that over 29 BILLION gallons of water are used everyday in homes across the United States? Your house could be wasting as much as 10,000 gallons of water per year and you may not even know it! That is a LOT of water!

Saving water in your home is very important! It will help to make sure everyone has enough water in the future; even though it may seem like there is enough water for everyone, in some places, water can dry up and it may take many years for it to come back! Plus, it might also help your parents save some money! Below are some ways **YOU** can help save water in your home.



Take a shower instead of a bath and turn off the water while you shampoo your hair! You will save 36 gallons of water at least!



Turn off the water when you brush your teeth, you will save at least 3 gallons of water!



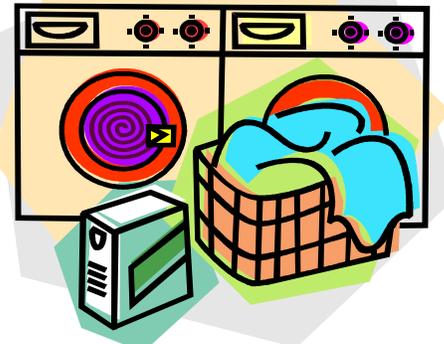
Washing dishes by hand instead of using the dishwasher will save 15 gallons of water for other uses!



Tell your parents to get a low-flow toilet, it will save you lots of water a day! If not, you can place a brick in the upper tank of your toilet to keep it from having to use as much water!

Doing all of these things will help to make you a **WATER SAVER!**

You can tell your parents and friends ways they can save water too!



Washing clothes **ONLY** when the washer is full will save as much as 55 gallons per load!

Finding Water Wasters!

A lot of what we do and use everyday are actually big wasters of water! Dish Washers use a lot more water to wash dishes than we use by hand! Water leaks can waste a lot of water and can lead to other problems. Taking a bubble bath is nice but if you fill that tub to the top, it will waste a whole lot of water!

We need to be smart about how we use water! Conservation of water is the only way we will have water in times of drought or little rain! Next time you or your parents are using water, think of ways to help conserve water, save your parents money and keep our water for the next generation!

Unscramble each of the clue words below. Copy the letters in the numbered cells to other cells with the same number to find the answer to wasted water!

SISNK

--	--	--	--	--	--

Sinks

3

FETSUCA

--	--	--	--	--	--	--	--	--	--

Faucets

8

PEISLKSNNR

--	--	--	--	--	--	--	--	--	--	--	--

Sprinklers

9

5

WSHSROE

--	--	--	--	--	--	--	--	--	--

Showers

2

LOISETT

--	--	--	--	--	--	--	--	--	--

10

4

GISWHNA NEHCAMSI

W	a	s	h	i	n	g
---	---	---	---	---	---	---

M	a	c	h	i	n	e	s
---	---	---	---	---	---	---	---

11

1

SIHD RESSWAH

--	--	--	--	--

--	--	--	--	--	--	--	--

Dish Washer

6

SALEK

--	--	--	--	--	--

Leaks

7

						V					
--	--	--	--	--	--	---	--	--	--	--	--

1 2 3 4 5 6 7 8 9 10 11

CONSERVATION

WORD BANK

Sinks, Faucets, Toilets,
Washing Machines
Showers, Sprinklers, Dish Washers,
Leaks

Texas Aquifers

When water falls as rain, it can cover a HUGE area of the ground. Water collects in puddles, rivers, lakes and streams. After a big rain, you have probably noticed there are a lot of places where water collects...but WHERE DOES IT GO!

One of the places water goes is into an AQUIFER! An aquifer is a big underground cave where water collects. Water will eventually seep down through the soil and through cracks in the ground because of gravity, the same thing that keeps us from floating into space. Over time, this water collects in caves underground and stays there until someone pumps it out or it comes out through rivers and springs!

Aquifers are where we get some of our water for drinking, bathing and playing from. In times of drought, when it doesn't rain a lot, the aquifer can get very low, that's why we must do all that we can to CONSERVE our water. The some of the aquifers we get our water from are called the **Carrizo- Wilcox** and the **Edwards Aquifer**.

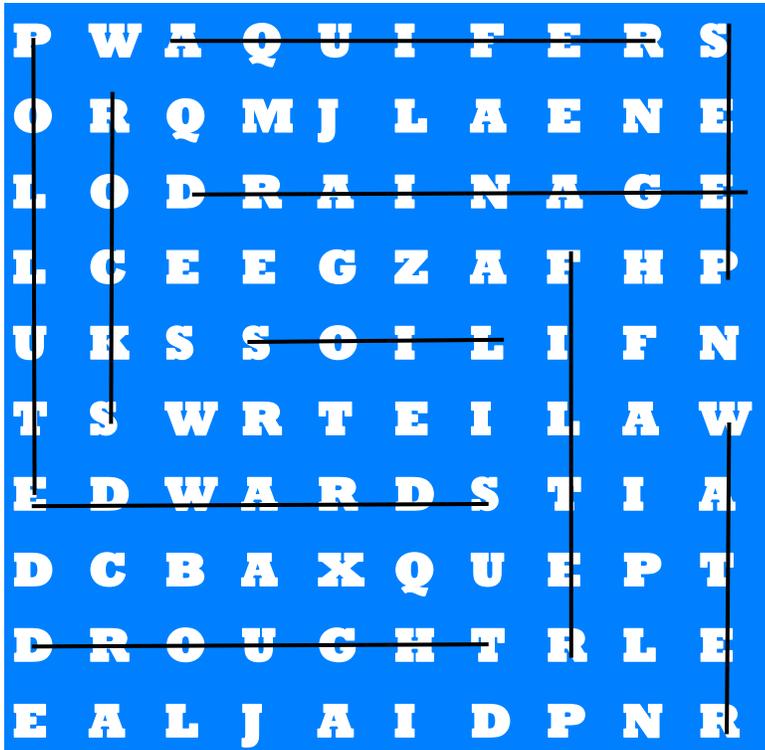
Use the word bank to find the hidden messages about the Aquifer

WORD BANK

Aquifer
Drainage
Drought
Edwards
Filter



Pollute
Rocks
Seep
Soil
Water



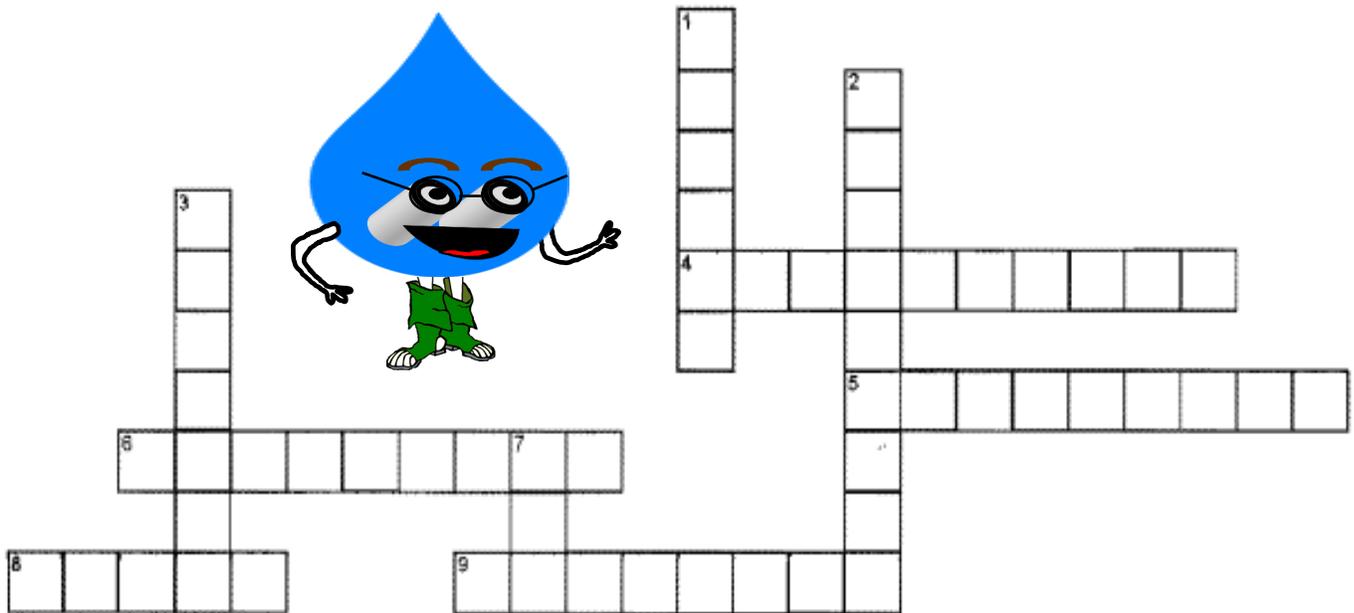
Preventing Pollution!

What happens when unwanted chemicals, poisons and other nasty stuff gets into our water supply? Our water becomes polluted! **Pollution** is the name we give to these unwanted things in our water!

Where do these pollutants come from? Well, some are natural pollutants like animal waste, tree limbs and natural chemicals. Others are man-made pollutants like plastics, batteries, fertilizers and many more! These pollutants end up in our drinking water after rain washes them in or if they are spilled or dumped in rivers and lakes!



Fill out the crossword puzzle below to learn some common pollutants and how we can keep them from getting in our water supply!



Across Clues

4. Used on plants to grow our food
5. A way to prevent pollution
6. Unwanted items and chemicals in our water
8. Items that have been thrown away
9. Used in everything from bottles to bags

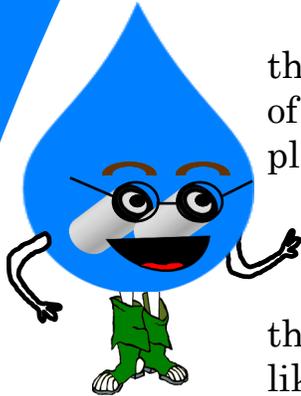
Down Clues

1. One of the way pollutants get in our water
2. Used to power your toys
3. chemicals used to get rid of plants/animals
7. Used in cars and trucks

Word Bank

Trash, Pollution, Oil, Plastics, Poisons, Runoff, Batteries, Fertilizer, Recycling

Wacky Water Words!



Have you ever seen a BIG rainbow after a thunderstorm? A really green field of grass? A bunch of brightly colored flowers? A river with lots of fish and plants by it? Water can help make some really pretty things!

Do you know how a rainbow is made? When the light from the sun reflects off of tiny water drops, like rain, in the sky, a rainbow is formed! The water drops break up the regular light from the sun and let us see all the colors that the sunlight actually has in it!

Lets make some other cool stuff with water! I'm sure you have heard of thinks like Mother Goose and Dr. Seuss? Those are examples of **poetry** and we are going to write a **poem!**

This type of poem is called an “**acrostic**” poem. Acrostic means that you use the letters from a word, like RAIN, to spell out what the poem is about. Here is an example!

R ainbows
A ppear
I n
N ature!

S hineing
U ntil
N ight
R ays
A re
Y ellow

W _____
A _____
T _____
E _____
R _____

R _____
A _____
I _____
N _____
S _____
H _____
O _____
W _____
E _____
R _____

Write your own Acrostic poem
about water using the words
Water and Rainshower!

Staying Safe Around Water!

Water can be a whole lot of fun! You can swim in it, play in the sprinkler, fish, go sailing, play and a lot more in it! Even though water is a lot of fun, it can also be dangerous if you don't be careful around it! Below are some safety tips to keep yourself and your family safe around water!



If you are going swimming, make sure you can swim well or that you are wearing float wings or a float tube! Always ask your parents permission first!

If you are going to be on a boat for sailing, fishing or anything else, make sure you are wearing a **lifejacket** that fits correctly!



If you see a lot of water in a stream or ditch after a really big rainstorm, **DON'T PLAY IN IT!** It can be too fast to stand in and can have some dangerous thing floating in it like branches and cars!

If you are going to play in a river or lake, be sure to wear close toed shoes! You don't want to step on glass, metal or sharp rocks that may be in the water!



Finally, never play in the water without an adult or your parents watching you! That way, incase you get hurt, they can help you!

More Water Conservation!

We have already talked some about saving and conserving water in our homes; now lets talk about saving water outside our homes! We use water outside for everything from washing the car or dog to watering the plants! So how can YOU help save water outside of your home?

If you are watering the grass or flowers with a sprinkler or a hose, there are some things you should keep in mind! During the summer, many places here in Texas have **water restrictions** due to drought; this means you can only water at certain times and days!



Only water plants and the yard before the sun comes up or in the early evening. This is the best time to prevent unwanted evaporation and save you 1,000s of gallons per year. You can use a cool trick to see if you used enough water! Put an empty tuna can in the yard...once it fills up from your sprinkler, you have enough water down!

WATER

24 11 19 12 10

RESTRICTIONS

10 12 14 19 10 6 13 19 6 3 2 14

HELP TO SAVE

21 12 16 20 19 3 14 11 18 12

OUR WATER

3 8 10 24 11 19 12 10

A B C D E F G H I J K L M N

11 9 13 1 12 15 26 21 6 4 22 16 7 2

O P Q R S T U V W X Y Z

3 20 5 10 14 19 8 18 24 23 25 17

Use the number code to unlock the secret message!
Hint: We use them in times of *drought!*

The Beverage of Life!

From the "Water, the Beverage of Life Presentation"

During the Water Fair at your school, we talked about how water is used in your body! Lets talk about some of those points! Circle the correct answer to each question!



How much of our body is made up of water?

- A. 20% B. 75% C. 90% D. 45%

How much water should you drink EVERY DAY?

- A. 8 Glasses B. 1 Glass C. 10 Glasses D. 5 Glasses

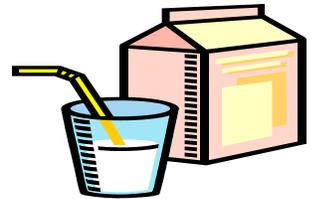


What is dehydration?

- A. Drinking too much water B. Using a fire hydrant
C. Not Enough Water D. Watering your plants

What is another good drink to have that rebuilds bones?

- A. Water B. Soda C. Sports Drinks D. Milk



What is the Difference between bottled and tap water?

- A. More Nutrients in Bottled B. No Difference
C. Bottled Water is Safer D. Tap water tastes better

What is odorless, colorless, tasteless, has no calories, but is something we must have to survive?

- A. Water B. Milk C. Food D. Grass



Water Word Scramble



As you know, water is a very important **resource** to humans, plants and animals! The **water cycle** is the method in which water moves around the earth, from the oceans to places where we can use it from!

When water falls down as rain, it can seep through the ground in the underground caves called **aquifers**. However, water is not the only thing that can drain into the ground. **Pollution** can drain into these places as well, so it is important to protect our water.

Another place where we collect the water we use is in large tanks or lakes called a **reservoir**. Canyon Lake, just up the road in New Braunfels is an example of one of these reservoir lakes! Our supply of water is not endless though, and we must **conserve** or save as much water as possible for times of drought, to make sure we have enough to go around for everyone!

Use the paragraphs above to find the scrambled words below!

Aquifer	F	A	Q	I	U	R	E	
—	—	—	—	—	—	—	—	
E	O	C	S	R	E	N	V	Conserve
—	—	—	—	—	—	—	—	
RESOURCE	E	S	U	R	E	C	O	R
—	—	—	—	—	—	—	—	—
E	W	T	A	R	Y	C	C	E
—	—	—	—	—	—	—	—	—
				R	O	R	S	R
				—	—	—	—	—
								I
								V
								E
								E
N	I	U	L	P	O	T	L	O
—	—	—	—	—	—	—	—	—
								Pollution

Water Conservation and the Aquifer

When water falls as rain, it can cover a HUGE area of the ground. Water collects in puddles, rivers, lakes and streams. After a big rain, you have probably noticed there are a lot of places where water collects...but WHERE DOES IT GO!

One of the places water goes is into an AQUIFER! An aquifer is a big underground cave where water collects. Water will eventually seep down through the soil and through cracks in the ground because of gravity, the same thing that keeps us from floating into space. Over time, this water collects in caves underground and stays there until someone pumps it out or it comes out through rivers and springs!

Aquifers are where we get all of our water for drinking, bathing and playing from. In times of drought, when it doesn't rain a lot, the aquifer can get very low, that's why we must do all that we can to CONSERVE our water.

Use the number code to unlock the secret message about saving our Water Supply!

WATER														
			24			11			19	12				10
CONSERVATION														
13	3	2	14	12	10	18	11	19	4	3			2	
CAN				HELP				TO			SAVE			
13	11	2	21	12	16	20	19	3	14	11	18	12		
OUR						AQUIFERS								
3	8	10		11	5	8	6	15	12	10	14			

A	B	C	D	E	F	G	H	I	J	K	L	M	N
11	9	13	1	12	15	26	21	6	4	22	16	7	2

O	P	Q	R	S	T	U	V	W	X	Y	Z
3	20	5	10	14	19	8	18	24	23	25	17

BIG Water Quiz!



Now that we've learned a little about water, see if you can answer the questions to find the answers for the puzzle! All of the answers can be found in this activity book too!

Using the clues, find the Seven Little Water Words that are spelled out with the series of letters below. Each Question is followed by the number of letters in the word that you are looking for!

CLUES		WRITE ANSWER HERE
1.	The Beverage Of Life (5)	WATER
2.	Fancy Word for Rain (13)	PRECIPITATION
3.	The "H" in H ₂ O (8)	HYDROGEN
4.	And Underground, Water-Filled Cave (6)	AQUIFER
5.	When it does not rain for a long time (7)	DROUGHT
6.	Steps to save water (8)	CONSERVE
7.	The gas form of Water (5)	VAPOR

WA	AQ	PRE	HT	AT	DRO	GEN	CI
HY	PIT	CON	DRO	UI	SER	UG	
FER	VE	VA			TER	POR	ION



TEXAS A&M AGRILIFE EXTENSION



I hope that you have had fun in this activity book and learned a little bit about water while doing so!

Water is our best, most **IMPORTANT** resource...without it, we could not grow plants, wash our clothes, brush our teeth, take care of our animals or even ourselves!

I hope that you will use what you have learned in this book and during the Water Fair to go home and show your parents how **THEY** can be a water saver too!

Remember kids, H₂O is For **YOU** and it is **YOUR** job to take care of it and save it for the future!!!

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