



# **WATER SCIENCE**

## **WATER PASSPORT**

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

Sponsored By:



WATER REPLENISHMENT DISTRICT  
OF SOUTHERN CALIFORNIA



- Index finger: "pointing" finger.

**Materials:**

- Inflatable globe

1. Do you think there is more water or land on Earth? \_\_\_\_\_  
\_\_\_\_\_
2. Get an inflatable globe.
3. Throw the globe in the air and catch it.
4. *Is your right index finger on blue or green?* Record your answer by marking a tally on the chart below.
5. Repeat steps 2-4 **nine** more times.

Blue (Ocean)	Green (Land)

6. Look at your answer to question 1. Do you still think there is more water or land on Earth? Why? \_\_\_\_\_  
\_\_\_\_\_

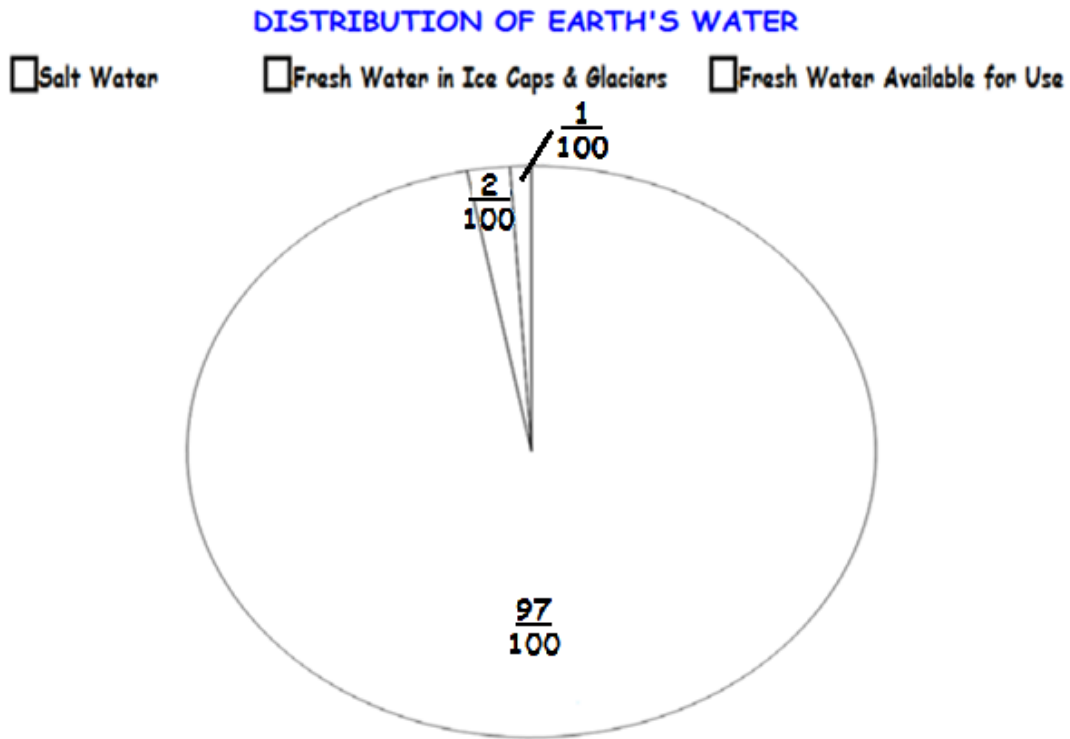
**Activity 1.2: Fresh Water**

Though most of Earth's surface is covered with water, 97/100 of it is undrinkable salt water! **Salt water** is filled with salt and humans cannot drink it. Only 3/100 of Earth's water is **fresh**

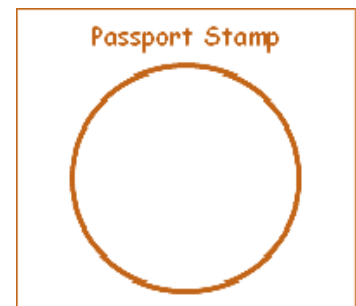
**water** or water with no salt. Polar ice caps and glaciers make up about  $\frac{2}{100}$  of this fresh water. This fresh water is frozen and too far away from where people live to be usable.

Only  $\frac{1}{100}$  of all the water on earth is fresh water that is available for us to use. We use this small amount for drinking, transportation, heating and cooling. It is found in the ground, lakes, rivers, and swamps.

**Directions:** Using the reading, color the pie chart to show how water is distributed on Earth. Use **red** for salt water, **green** for fresh water in ice caps & glaciers, and **blue** for fresh water available for us to use.



1. How much water do we really have available for us to use? \_\_\_\_\_



### Activity 2.1: Rain Clouds in a Jar

**Focus Question: Where does ground water come from?**

**Materials:**

**Procedure:**

- Clear jar
- Water (Room-Temperature)
- Shaving cream
- Blue water
- Dropper

1. Fill the jar up to the "end line" with water.
2. Spray shaving cream to completely cover the top of the water (do NOT shake your jar).
3. With a pencil, draw a picture of what your jar looks like.



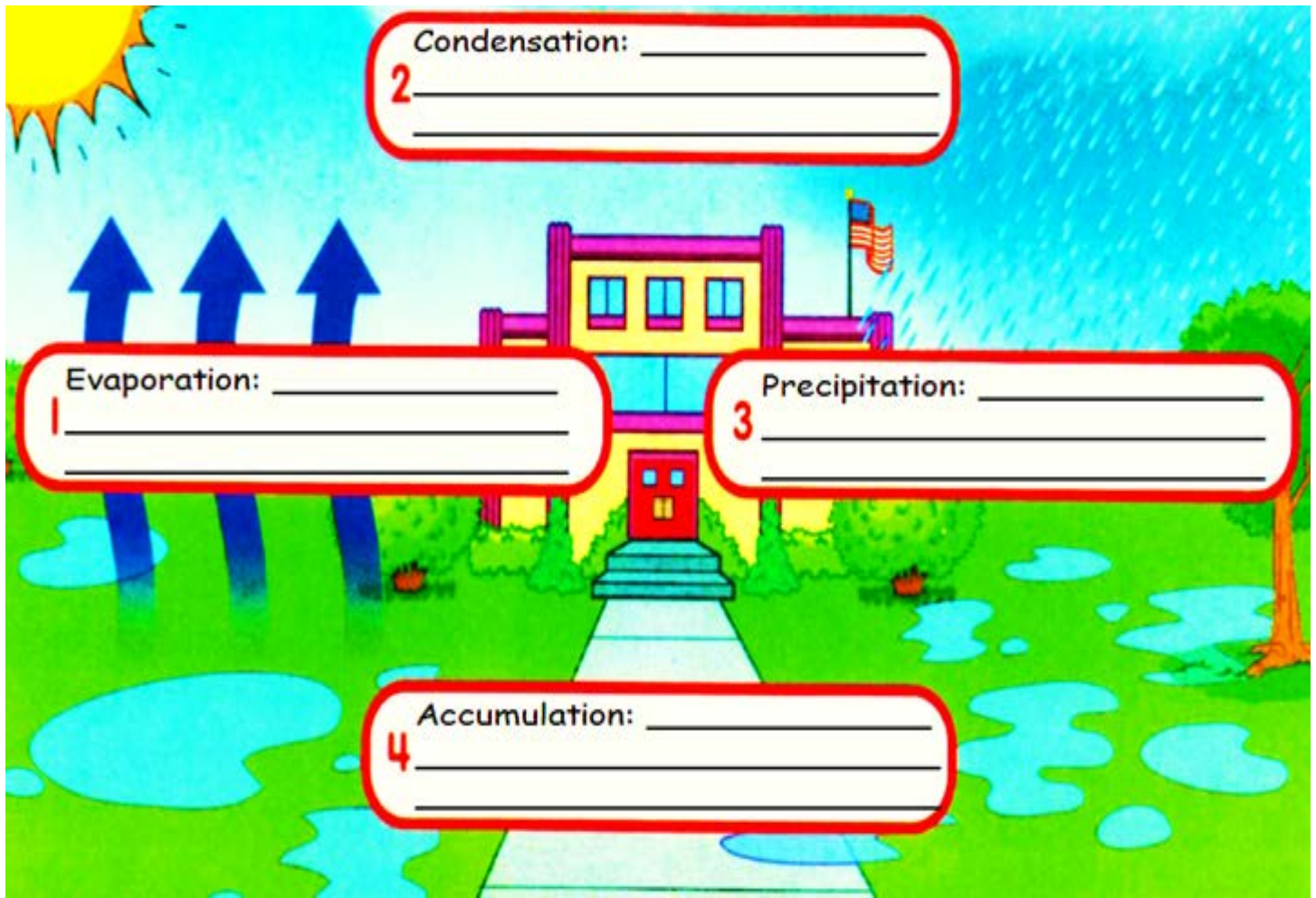
4. Label the shaving cream "cloud."
5. Label the surface of the water "ground." This represents Earth's surface or the ground we walk on.
6. Fill a dropper with "blue water."
7. Drip the blue water on top of the shaving cream.
8. Describe what happened to the blue water. \_\_\_\_\_

\_\_\_\_\_

### Activity 2.2: The Water Cycle

The movement of fresh water from clouds into the ground is one step of the **water cycle**. Thanks to the water cycle, Earth's water supply constantly moves from one place to another!

**Directions:** Use the water cycle wheel to learn about the steps of the water cycle.



2 Condensation: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

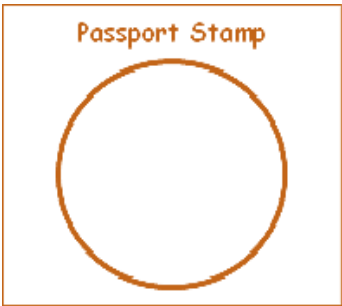
1 Evaporation: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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

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

1. In the "cloud in a jar" activity, which step of the water cycle did the **blue water** represent when it fell from the 'foam cloud'?

---



**Activity 3.1: Water Level**

**Focus Question: How is groundwater measured?**

**Vocabulary:**

- Water Level

**Procedure:**

1. Get a water level meter.

Meter: A meter that uses a thin wire to send a signal to a buzzer when water is detected.

2. Place the sensor in Well #1 and lower it until it buzzes.
3. Record its depth in the table below.
4. Repeat for Wells #2 and #3.

Well	#1	#2	#3
Depth			

5. Which well had the greatest depth? \_\_\_\_\_
6. Does the well with the greatest depth have the most or least amount of water? Explain. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Activity 3.2: Ground Water

Groundwater is fresh water that is used for drinking water. When it rains, water soaks into the ground in spaces between rocks and becomes groundwater. The rocks that hold groundwater are called **aquifers**.

The area of the aquifer that is filled by water is the **saturated zone**. The top of this zone is called the **water table**.

Groundwater can be brought up through a **well** which is a pipe in the ground that pumps water to the surface. Scientists check the water levels in wells using a water level meter.

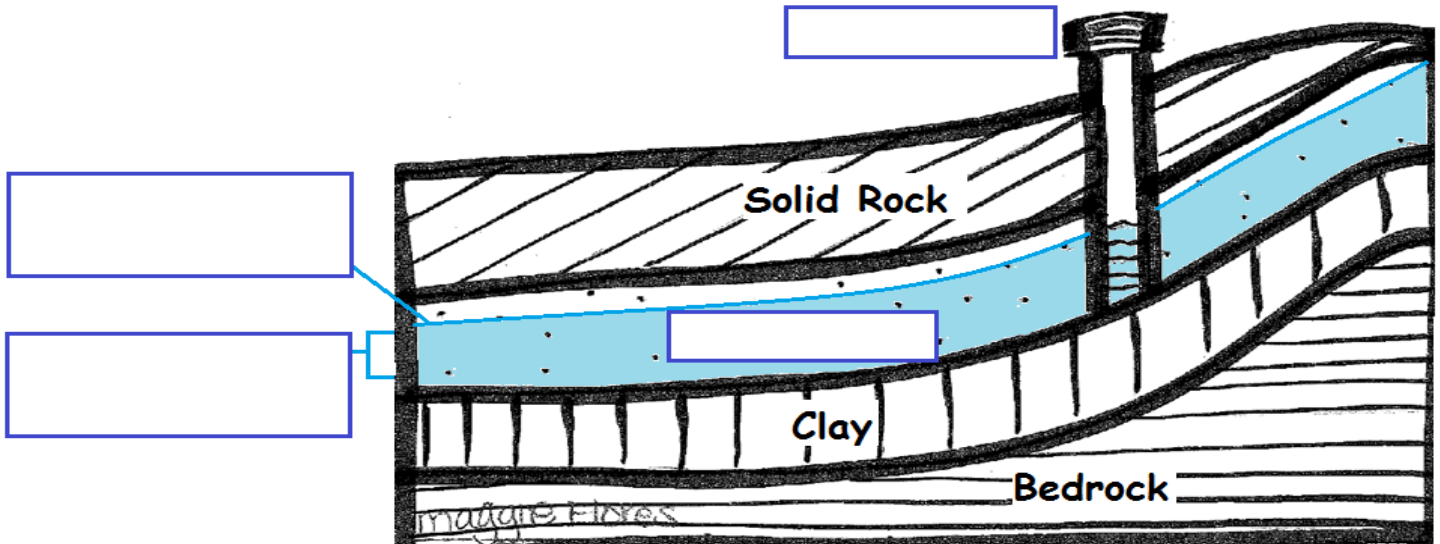
**Directions:** Use the words below to label the drawing:

Aquifer

Saturated Zone

Water Table

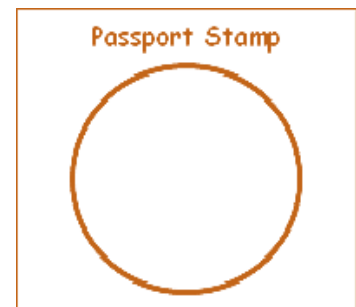
Well



1. What do you infer would happen if we experience a drought, or long period of time with no rain?

---

---



### Activity 4.1: Water Filtration

**Focus Question:** How can water be filtered?

**Vocabulary:**

- Filtration: the process of passing through a

**Procedure:**

1. Get a beaker.
2. Fill beaker to the "end line" with contaminated (dirty) red water from

filter.

**Background:**

Polluted water can sometimes be "cleaned" by using a filtration system. A filtration system separates harmful chemicals and trash from drinking water.

**Materials:**

- Beaker
- "Dirty" water

the bucket.

3. Slowly pour it into the top of the filtration system.
4. Observe!
5. Was the water completely clear after it passed through the filters?

Explain. \_\_\_\_\_  
\_\_\_\_\_

6. What would you need to do to get the water completely clear?

\_\_\_\_\_  
\_\_\_\_\_

**Activity 4.2: Water Pollution**

Get Discovery Tube #1. Shake and roll it. Then, set it on the table and wait a few seconds. Observe.

1. What happens to the white balls? \_\_\_\_\_
2. What happens to the colored glitter? \_\_\_\_\_



The white balls float because they are less dense (lighter) than water. The glitter sinks because it is denser (heavier) than water. Our trash contains items less dense than water, like Styrofoam cups. It also contains items denser than water, like computers.



Get Discovery Tube #2. Shake and roll it. Then, set it on the table and wait a few seconds. Observe.

3. What happens to the clear liquid? \_\_\_\_\_

4. What happens to the blue liquid? \_\_\_\_\_

The clear liquid is oil. It is less dense than water (the blue liquid), which is why it floats to the top. Our trash contains many items made from oil, such as soap and car oils.

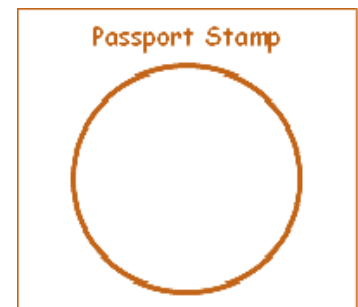


Groundwater can become **polluted** by trash, leaky oil tanks, and animal poop. These **pollutants**, or substances that make water dirty, can soak down into our groundwater. Pollutants can float, sink, or mix with water, making water dangerous to use. Although water can be filtered to remove many pollutants, this process is very costly and must be done several times.

5. How can you help reduce the amount of groundwater that needs to be filtered? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



### Activity 5.1: California Water Maze

**Focus Question: How is water carried from one place to another in California?**

**Vocabulary:**

**Procedure:**

- Compass: a tool for finding direction.



**Materials:**

- 1 Dropper
- Blue Water
- 1 Water Maze

1. Fill the dropper with blue water.
2. Make a water droplet the size shown at the START of the maze.
3. Trying your best to stay within the lines, move your drop through the maze to Los Angeles. (If your drop moves out of the maze, you must restart!)
4. Referring to the compass, *from* what direction did you move the water?  
\_\_\_\_\_
5. In what direction did you move the water to? \_\_\_\_\_  
\_\_\_\_\_

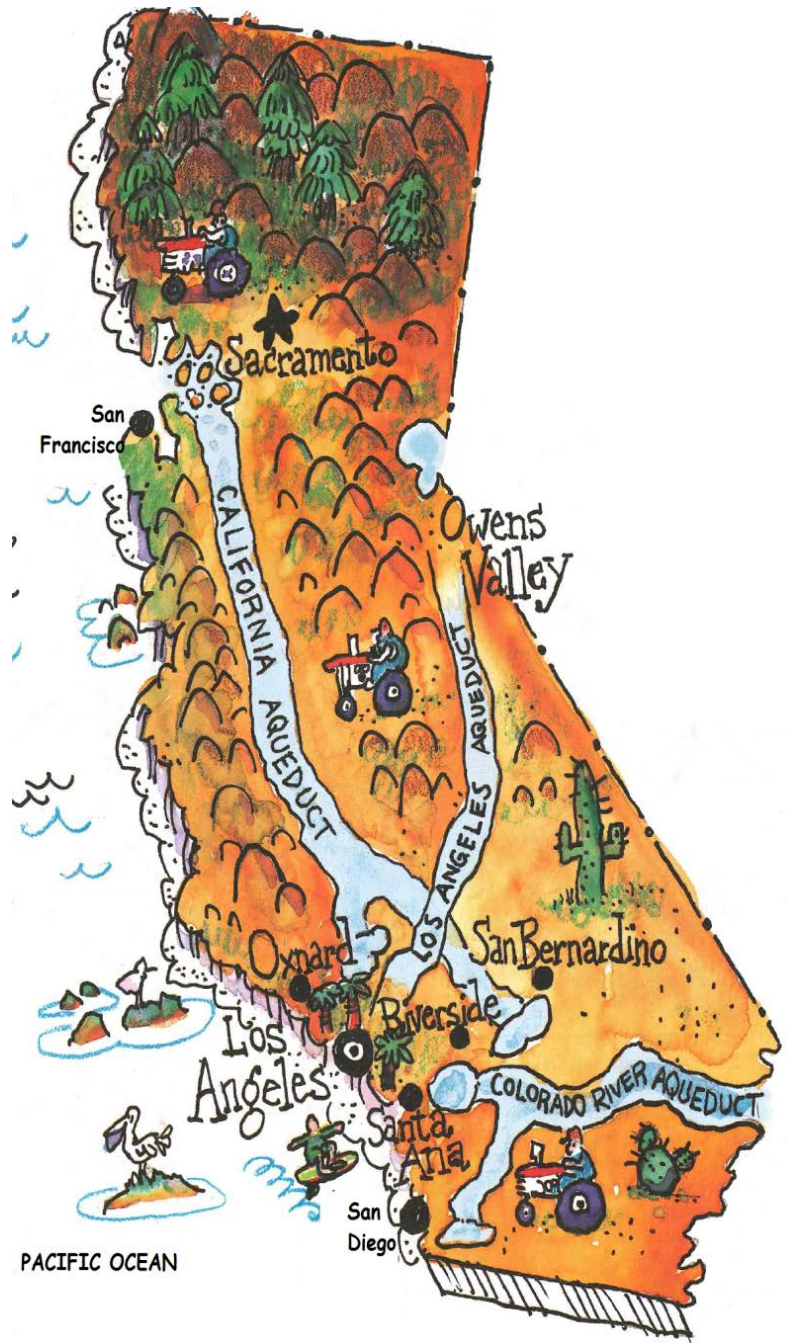
**Activity 5.2: Aqueducts**

In California, most of the rain and snowfall is in the north, where many of the big rivers and lakes are also located. Most of the state's people, however, live in the south.

Groundwater makes up only some of the water we use. Extra water must be moved from the north to the south.

The channels, pipelines, and tunnels that carry water are called **aqueducts**. The system of aqueducts in California moves more water farther than anywhere else in the world!

The picture to the right shows the largest aqueducts in California.



1. Which aqueduct is the longest?

---

---

2. Which aqueduct brings water to Los Angeles?

---

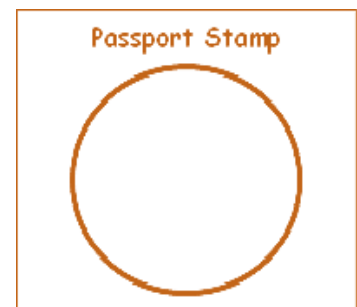
---

3. Why is water moved from the north to the south?

---

---

---



### Activity 6.1: Waterless World

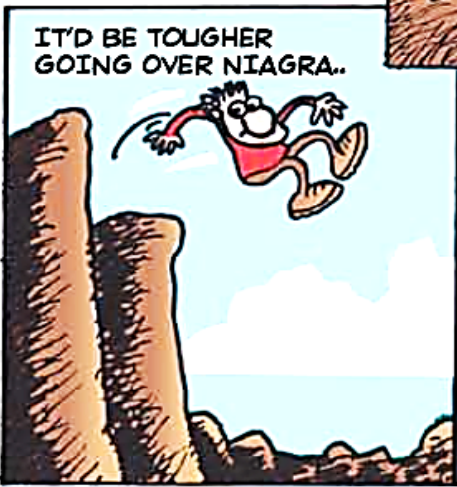
**Focus Question: What would Earth be like without water?**

Here are some of the things that might happen...



WE WOULD HAVE TO DO LIKE THE BIRDS..

GARGLING WOULD BECOME A THING OF THE PAST..



- WE'D HAVE TO GET RID OF OUR:
- WATER COLORS
  - UMBRELLAS
  - HOT WATER BOTTLES...

1. What do you infer Earth would be like if we had no water? \_\_\_\_\_

---

---

---

**Activity 6.2: Water Conservation Pledge**

Since there is only a small amount of fresh water available for us to use, we must practice ways to **conserve**, or save, water! Listed below are simple ways you and your family can help to save water. By making a promise, or pledge, you can make a bracelet to remind you of ways to conserve water!

**Materials:**

- 1 pipe cleaner
- 1 blue bead
- 1 red bead
- 1 green bead
- 1 yellow bead

**Procedure:**

Say, "I pledge to make the following choices at home:"

- Take shorter showers and turn off the tap.
- Power down to save electricity.

1. Take a blue bead and thread it through the pipe cleaner.

Say, "I pledge to make the following choices in my yard:"

- Recycle and properly dispose wastes.
- Pick up my pet's poop.

2. Take a red bead and thread it through the pipe cleaner.

Say, "I pledge to make the following choices in my community:"

- Walk, bike, or take the bus more often.
- Use reusable shopping bags.

3. Take a green bead and thread it through the pipe cleaner.

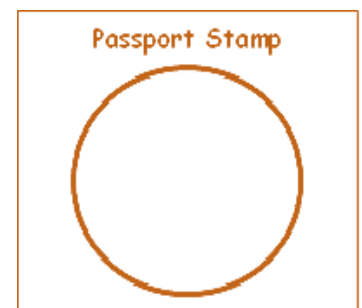
Say, "I pledge to make the following choices in my life:"

- Use a refillable water bottle.
- Reduce paper use at school.

4. Take a yellow bead and thread it through the pipe cleaner.

5. Have a friend tie the ends together.

**Wear your bracelet to remember your role in conserving water!**





*WATER REPLENISHMENT DISTRICT  
OF SOUTHERN CALIFORNIA*