

# SCIENCE MOM'S

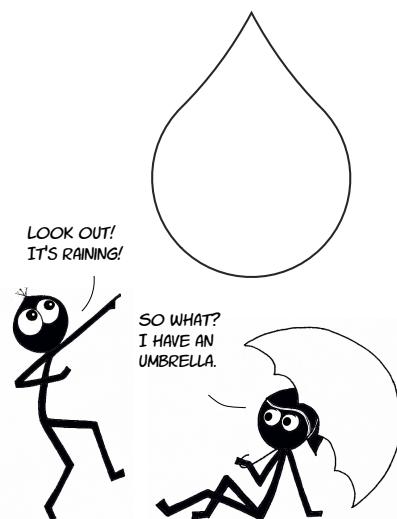
## Guide to WATER, Part 1

SEE? RAIN IS NO PROBLEM WHEN YOU HAVE AN UMBRELLA.

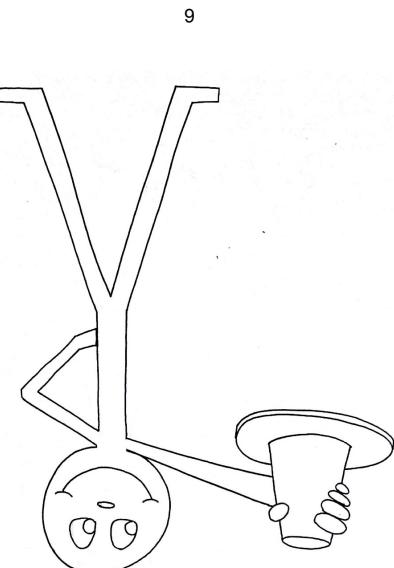


Check out my YouTube Channel!  
Science Mom - Jenny Ballif

@JennyBallif  
**SCIENCE MOM**



9



- Method:**
- Pour water in the cup and place the lid on top.
  - Place one hand on the lid and turn it upside down.
  - Invert the cup (turn it upside down).
  - Remove hand and be amazed!
- Materials:**
- Water
  - Cup
  - Cardstock or a piece of cardboard
- Color the Scientist**  
TO LOOK LIKE YOU ON THE OPPOSITE PAGE

1. Gravity Defying Lid

## 2. Magic Screen

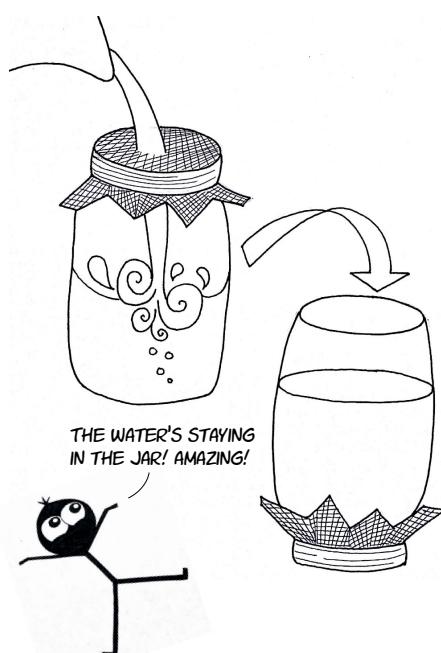
### Materials:

- Water
- Lid
- Canning jar with a metal ring
- A piece of screen or other mesh fabric

### Method:

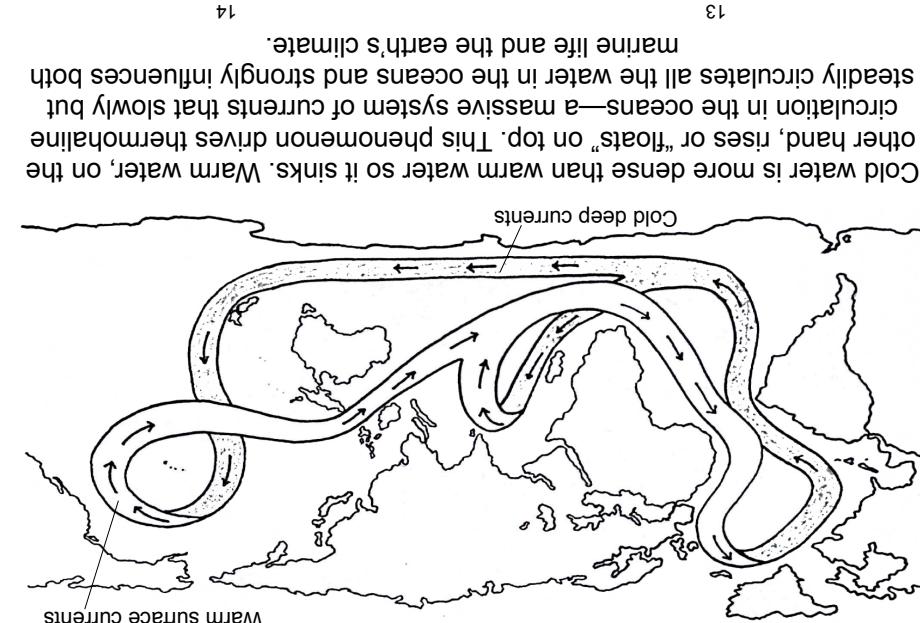
- Fill jar to rim and secure screen over the top.
- Cover with lid and flip over.
- Remove lid and observe.

No jar? No problem! Just use a cup and rubber band. But be sure the screen or mesh is FLAT and TIGHT across the rim of the cup.



7

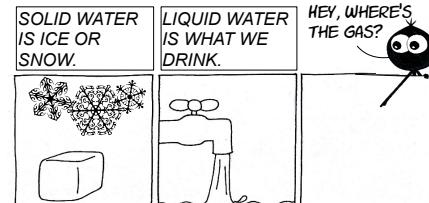
8



13

14

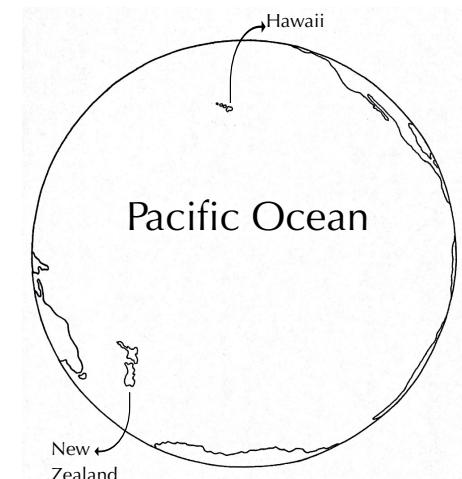
Water is the **only** thing on our planet that exists naturally in all three states of matter—as a solid, liquid, and a gas.



Gaseous water, or water vapor, is invisible. You can't see it, but it's in the air around you and we call it **humidity**. The more water vapor in the air, the more humid it is.

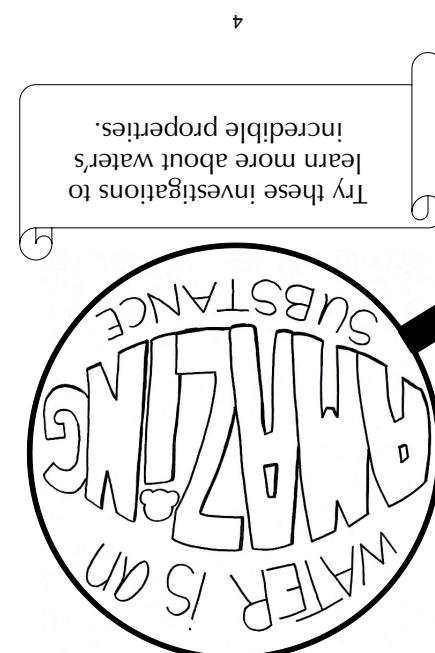
The only other things on earth that come close to existing in all three states of matter are mercury, acetic acid, and carbon dioxide. While all three states of matter are **possible** for each of these, they don't occur **naturally**. Water, on the other hand? It's everywhere.

1



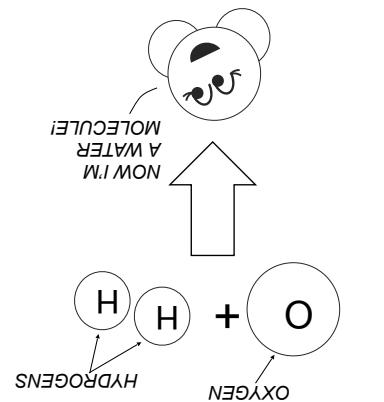
Oceans cover most of the surface of the earth, and at any given time about 50-70% of the planet is covered by another form of water: clouds.

2



3

That's why we call it **H<sub>2</sub>O**



WATER IS AN SUBSTANCE

BUT THEN WE'D HAVE TO SPLIT UP! THERE'S A SCREEN.

GRAVITY SAYS WE SHOULD GO DOWN.  
HAHA! OUR ATTRACTION FOR EACH OTHER IS STRONGER THAN GRAVITY.

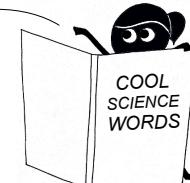
HEY! WHAT HAPPENED?

THE GRAVITATIONAL FORCE OVERCAME OUR HYDROGEN BONDING.

10

## HOW DOES IT WORK? Cohesion.

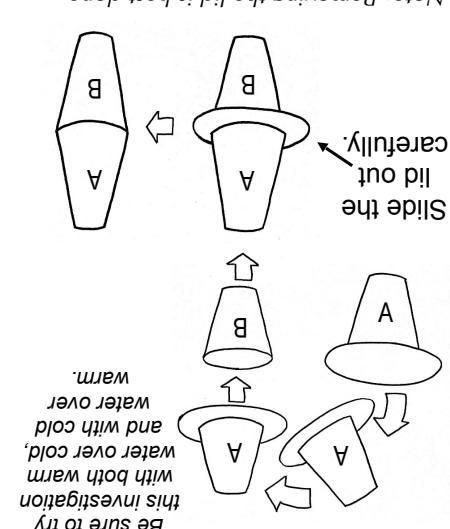
THAT MEANS WATER MOLECULES LIKE TO STICK TOGETHER!



The water molecules are sticky, or cohesive. They are attracted to each other and the jar and the screen. That attraction is strong enough that they effectively form a "lid" on the bottom of the jar, just like the plastic lid did in the first investigation. If air doesn't come in, the water can't go out. So the water stays inside—until you shake or tip the jar. If you do either of those things, then gravity wins.

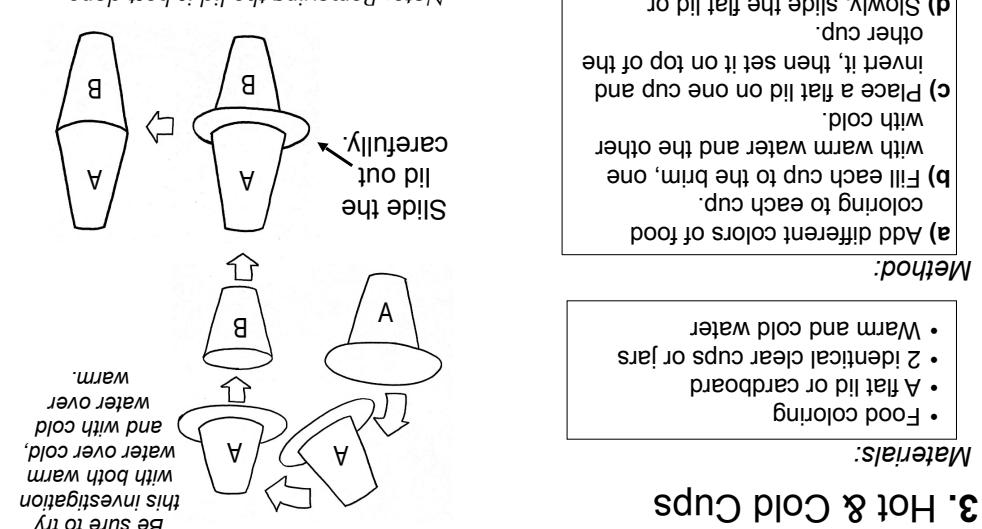
9

Note: Removing the lid is best done slowly, slide the flat lid or cardstock out from between the cups. With two people: one to hold the lid steady while the other pulls out the lid.



12

11



3. Hot & Cold Cups

B

A

A

X

B

C

C

D

F

E

E

D

E

G

G

X