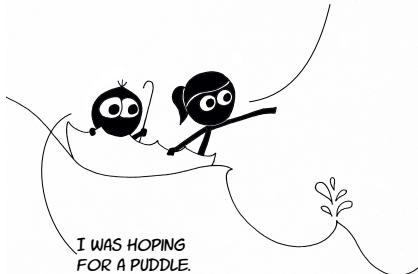


THE WATER'S MOVING  
FASTER! LOOKS LIKE  
WE'RE IN A RIVER!



## SCIENCE MOM

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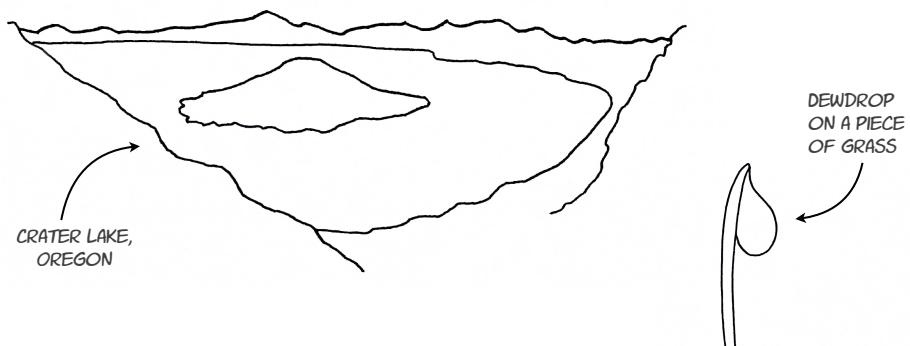
## SCIENCE MOM'S Guide to WATER, Part 2

SO WHAT HAPPENS  
NOW? WHERE DOES  
ALL THE WATER GO  
AFTER IT RAINS?

WHO KNOWS? WE  
COULD END UP IN A  
PUDDLE, GROUND  
WATER, OR A RIVER!



Think of a big lake versus a dewdrop. Pretty big difference in size, right?



The dewdrop is SUPER small compared to the lake. But a water molecule (the smallest bit of water you can have) is MUCH smaller than a dewdrop. A single drop of water has more than 1,000,000,000,000,000,000 water molecules! That huge number with 21 zeros is called a sextillion, and it is a TRILLION TIMES BIGGER than one billion.

1

2

3

**2. Soap Boat**

Materials:

- Water
- Concentrated dish soap
- Black pepper
- Bowl or plate
- Ground black pepper
- Dish soap

Method:

- Add a touch of soap to the water in the bowl.
- Place water in bowl and sprinkle with pepper.
- Add a touch of soap to the surface of the water.
- Watch the pepper scatter.
- One touch of soap, and the pepper shoots to the edges of the bowl!
- THEN SET THE BOAT IN WATER AND WATCH IT GO!

FRONT LIKE THIS.  
BACK OF THE BOAT.  
LIKE THIS FOR THE  
CUT THE PAPER  
HERE.  
GET A SQUARE  
OF PAPER,  
PREFERABLY  
CARDBSTOCK.

**3. Let's Talk About Big Numbers**

Assuming a rate of counting one number per second.

Name	How many zeros	How long to count that high*
Trillion	9 (1,000,000,000)	11 days
Billion	6 (1,000,000)	31 years
Quintillion	12	31,704 years
Sextillion	15	31 million years
Quintillion	18	31 billion years
Sextillion	21	31 trillion years
Quintillion	24	31 quadrillion years
Sextillion	27	31 quintillion years
Quintillion	30	31 sextillion years
Sextillion	33	31 googol years
Quintillion	36	31 googol and you'll
Sextillion	39	figure it out!
Quintillion	42	HUH?
Sextillion	45	THAT'S GOOGLE.
Quintillion	48	NAME OF AN INTERNET
Sextillion	51	GOOGLE? ISN'T THAT THE
Quintillion	54	SEARCH ENGINE?
Sextillion	57	THAT'S WHAT I SAID.
Quintillion	60	NO, YOU SAID GOOGOL.
Sextillion	63	A googol is bigger than the number
Quintillion	66	of PARTICLES in the UNIVERSE.
Sextillion	69	Don't be ridiculous!
Quintillion	72	317 trillion centuries
Sextillion	75	31 quadrillion centuries
Quintillion	78	31 googol and you'll
Sextillion	81	figure it out!

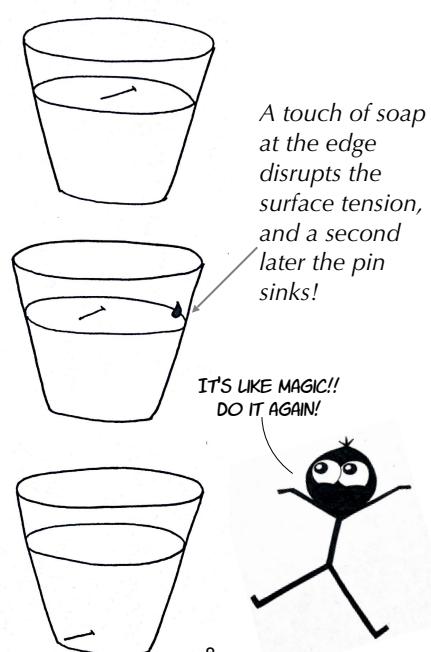
### 3. Floating Pin

#### Materials:

- A small pin or needle
- Bowl or cup
- Concentrated dish soap
- Water

#### Method:

- Fill bowl or cup with water and carefully place pin on surface. Hint: tweezers may help. The pin must be flat with the surface of the water. It will sink if it comes in at an angle.
- Add a touch of soap.
- Watch the pin sink!



### 4. Floating Paperclip

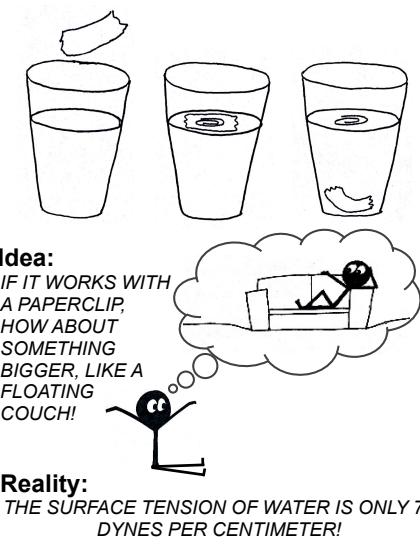
#### Materials:

- Paper clip
- Tissue paper or paper towel
- Cup or bowl
- Water

#### Method:

- Carefully place a dry paperclip on the tissue.
- The tissue should sink. If it doesn't, give it a gentle push downward.

Tip: be sure that the cup and water are not soapy.



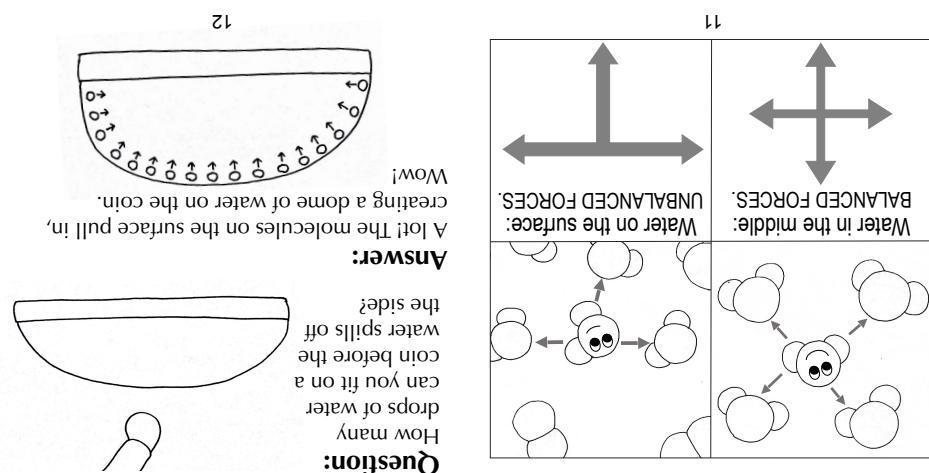
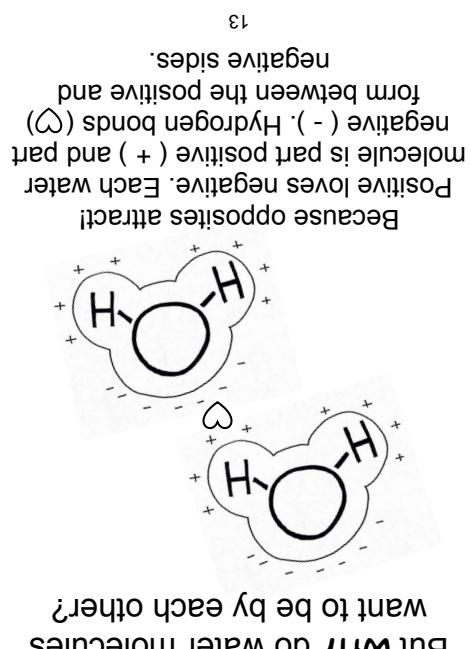
Idea:  
IF IT WORKS WITH  
A PAPERCLIP,  
HOW ABOUT  
SOMETHING  
BIGGER, LIKE A  
FLOATING  
COUCH!

Reality:  
THE SURFACE TENSION OF WATER IS ONLY 72 DYNES PER CENTIMETER!



IT'S CALLED  
POLARITY!  
I WONDER WHAT IT IS?

THAT'S SO COOL THAT PART  
OF WATER HAS A  
NEGATIVE CHARGE. THERE'S  
THE OTHER HALF HAS A  
POSITIVE CHARGE. THERE'S  
GOT TO BE A WORD FOR IT.



Water molecules like each other more than they like air, so the molecules on the surface stay together and creates surface tension.

Water molecules like each other more than they like air, so the molecules on the surface stay together and creates surface tension.

Surface Tension.

B

A

A

X

B

C

C

D

F

E

E

D

E

G

G

X