



# BUBBLES

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# HOW DO BUBBLES WORK?

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## TO UNDERSTAND THIS WE MUST UNDERSTAND SURFACE TENSION

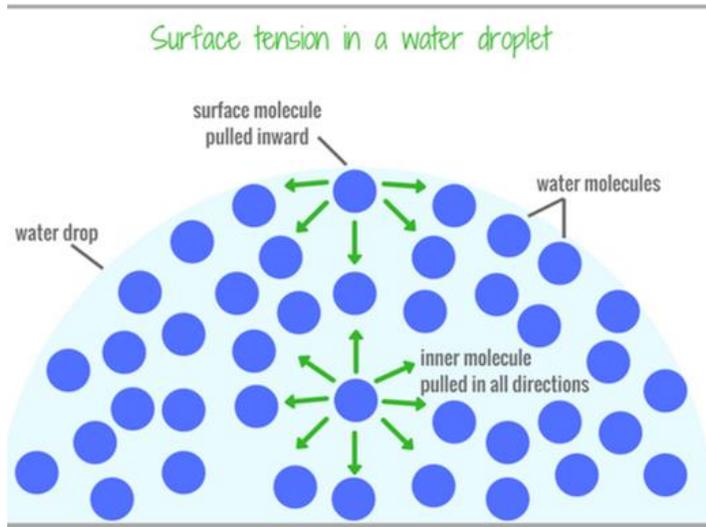
- Water is made up of lots of tiny *molecules*. The molecules are attracted to each other and stick together. The molecules on the very top of the water stick together very closely to make a force called *surface tension*.

# WHAT YOU NEED:

- 2 SHORT GLASSES OF WATER
- A PIE PLATE OR TRAY
- LIQUID DISH SOAP

- Put the first glass of water in the center of the pie plate.
- Slowly pour some water from the second glass into the first glass until it is very full and the water forms a dome above the rim of the first glass. Set the glass with less water aside.
- Carefully stick your finger straight down through the dome of the water in the full glass and watch what happens.

# WHAT HAPPENED?



- Water is made up of lots of tiny *molecules*. The molecules are attracted to each other and stick together. The molecules on the very top of the water stick together very closely to make a force called *surface tension*.
- Surface tension is what caused the water to rise above the rim of the glass in the experiment – the water molecules stuck together to make a dome instead of spilling over the side.
- Why didn't the dome break when you stuck your finger through it? Why didn't the water spill over the glass? Well, the surface tension was strong enough that it just went around your finger. The water molecules still stuck to each other and nothing spilled!

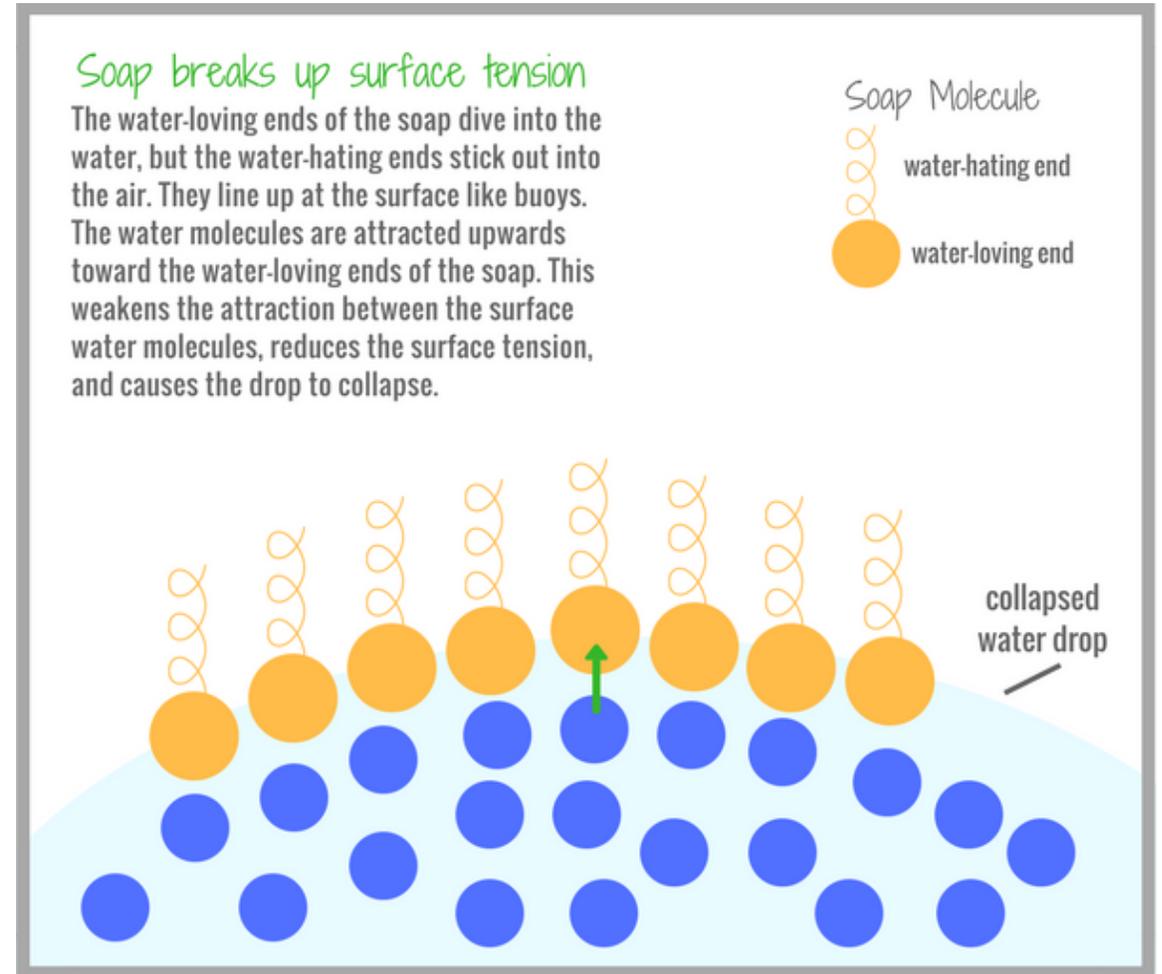
# BREAKING THE SURFACE TENSION



- Now put a small drop of dish soap on the tip of your finger and do the exact same thing –
- stick the finger with soap on it straight down through the dome of water.
- This time what happens?

# WHY DID THE SURFACE TENSION BREAK?

- As you learned in our past experiments, soap molecules are made up of two different ends - a water-loving end and a water-hating end. As the water-hating ends try to move away from the water molecules, they push to the surface. This weakens the attraction between the water molecules and breaks the surface tension, so the water can't form drops.



NOW WE UNDERSTAND  
SURFACE TENSION  
SO HOW DO BUBBLES WORK?

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# HOW TO MAKE BUBBLES

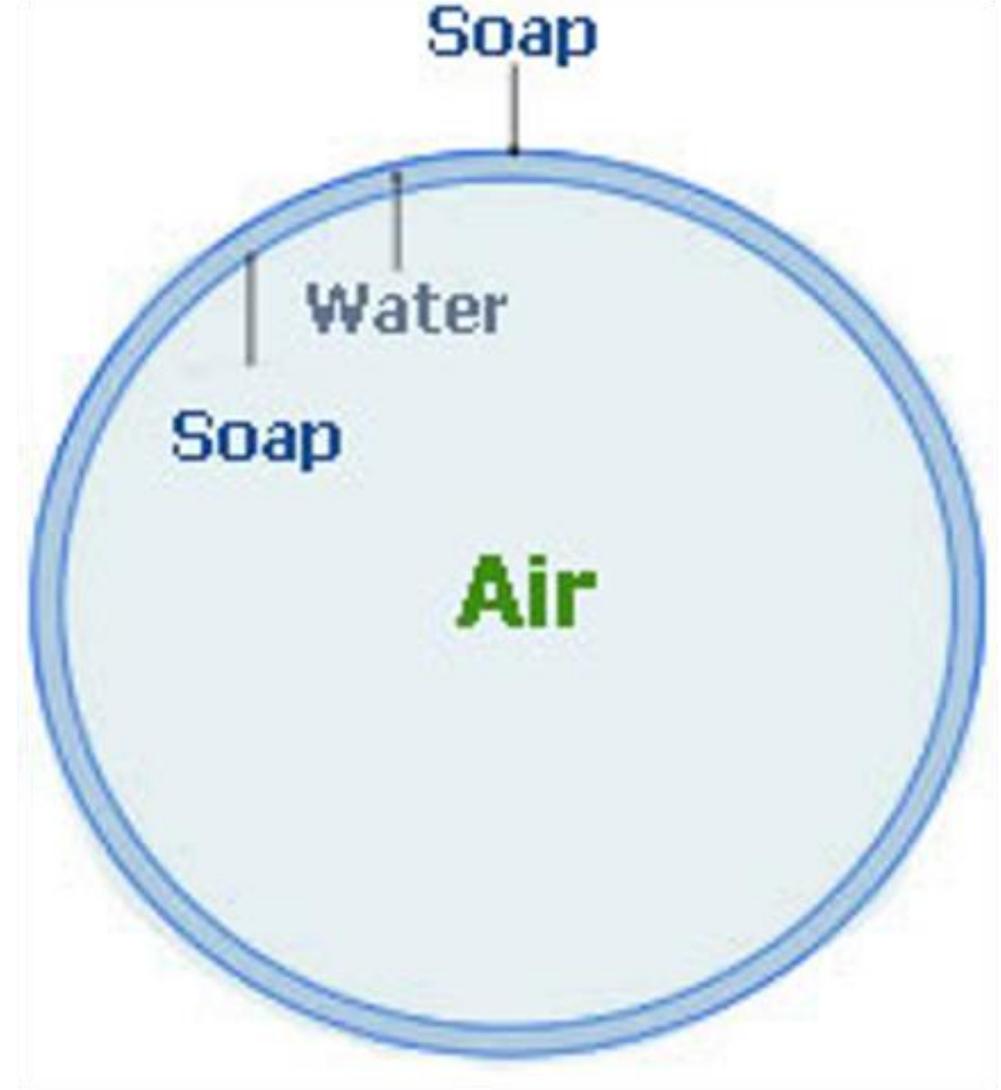
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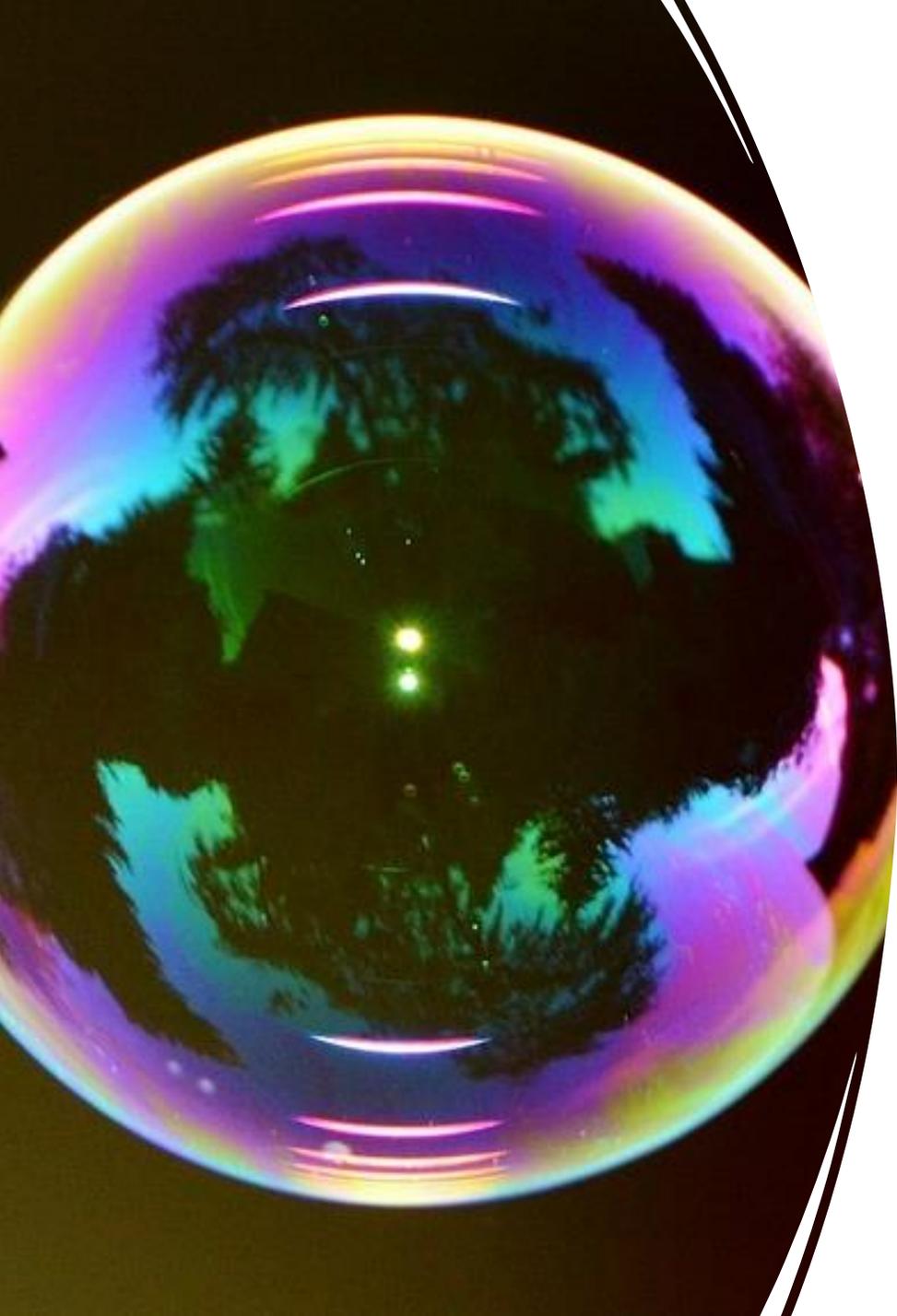
You can blow bubbles with any mixture of [soap and water](#)

# HOW BUBBLES WORK

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- The soap mixture on the outside of a bubble is actually made of three very thin layers:
- Soap, water, and another layer of soap.
- This "sandwich" that is on the outside of a bubble is called a soap film.
- A bubble pops when the water that is trapped between the layers of soap evaporates.





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- Bubbles are pockets of soap and water that are filled with air.
  - When soap and water are mixed together and air is blown into the mixture, the soap forms a thin skin or wall and traps the air, creating a bubble.

COOL RIGHT?!

NOW LETS ADD A SECRET INGREDIENT  
AND MAKE SOME SUPER BUBBLES!

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**ADULT  
SUPERVISION  
REQUIRED**

# MATERIALS:

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- Liquid Dish Soap
- Water
- 2 large containers (buckets)
- Light corn syrup
- Measuring cups
- Mixing spoon
- A sock or small towel
- A tube (can be made from an old plastic bottle or paper towel roll)
- Scissors

# SUPER BUBBLES:

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- Measure 6 cups of water into one container, then pour 1 cup of dish soap into the water and slowly stir it until the soap is mixed in. Try not to let foam or bubbles form while you stir.
- Measure a 1/4 cup of corn syrup and add it to the container. Stir the solution until it is mixed together.
- You can use the solution right away, but to make even better bubbles, put the lid on the container and let your super bubble solution sit overnight. (Note: If you used "Ultra" dish soap, double the amount of corn syrup.)
- Dip a bubble wand\* or straw into the mixture, slowly pull it out, wait a few seconds, and then blow. How big of a bubble can you make? How many bubbles can you make in one breath?



THE CORN SYRUP MIXES WITH THE SOAP TO MAKE IT THICKER. THE THICKER SKIN OF THE BUBBLES KEEPS THE WATER FROM EVAPORATING AS QUICKLY, SO THEY LAST LONGER. IT ALSO MAKES THEM STRONGER, SO YOU CAN BLOW BIGGER BUBBLES.

snake  
bubbles



NOW FOR SOME  
EXTRA FUN!

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**ADULT  
SUPERVISION  
REQUIRED**

# MATERIALS:

empty water  
bottle

a small towel or  
an old sock

liquid soap

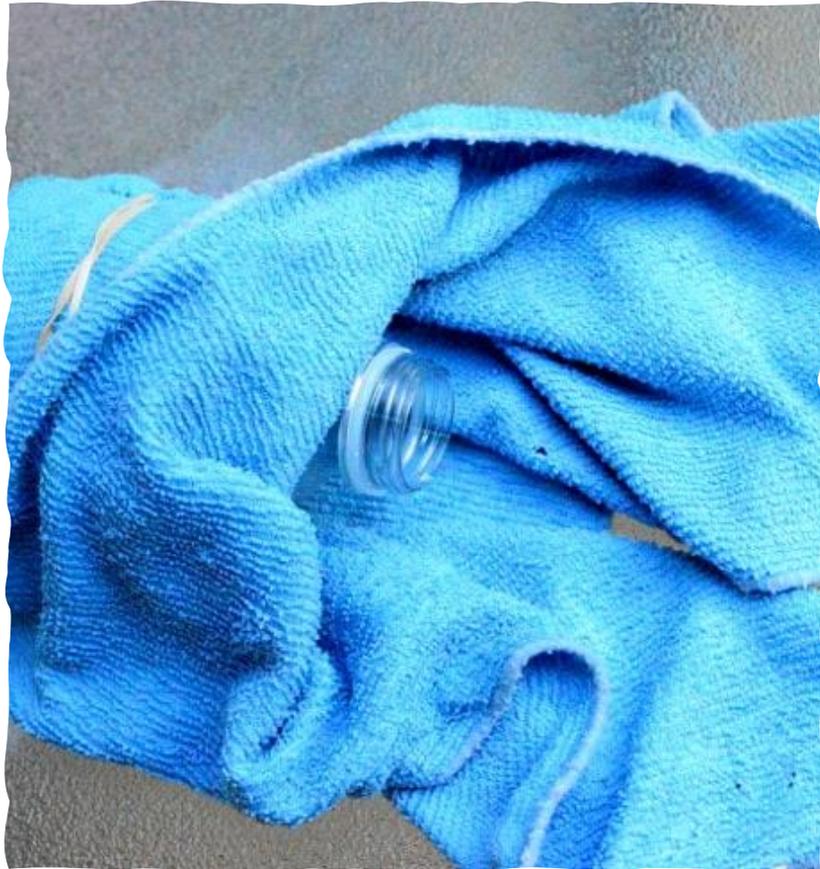
water

rubberband

scissors

# STEPS TO MAKE A SNAKE BUBBLE

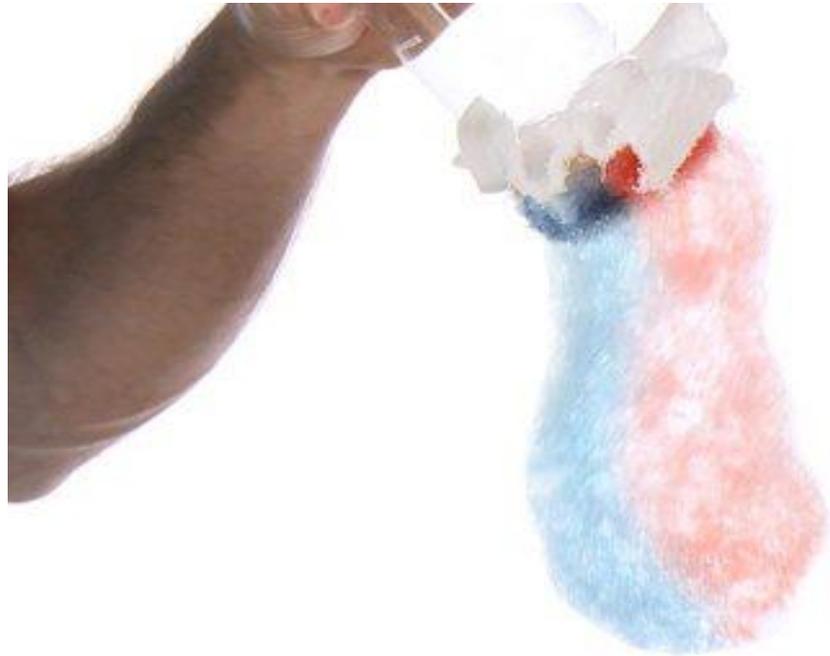
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1. Using a pair of scissors, cut off the bottom of the water bottle.
2. Cover the bottle's bottom with a small towel and secure it using a rubber band. Now you have a bubble snake maker.
3. Next, make the bubble solution. Mix one big squeeze of the liquid soap with one cup of water. Or use your corn syrup bubble solution.
4. Dip the wrapped end of the bottle into the bubble solution and then blow bubbles through the opening on the other end.

# WHATS HAPPENING?

- When you blow air through your Bubble Snake maker, you are creating hundreds of tiny bubbles. As the air wiggles through the fabric, bubbles are continuously being made. The bubbles attach to each other when they come out of the fabric. It's all thanks to the same hydrogen bonds that make bubbles possible!



# YOU CAN ALSO TRY

Try

Try mixing food colorings with the bubble solution to make a rainbow bubble snake.

Try

Try using different amount of liquid soap and see how that affects the bubbles.

Compare

Compare a regular bubble mixture to the corn syrup version



thanks for  
joining us!