



# Floating on Air



## Directions

1. Bend the pipe cleaner into a circle.
2. To make your bubble wand, wrap both ends of the pipe cleaner around your popsicle stick.
3. Dip the pipe cleaner fully into the bubble solution plate and blow your bubble!
4. Try different shapes (hearts, stars, triangles) and explore what you can do with your supplies.



## Materials

- 1 pipe cleaner
- 1 popsicle stick
- dish soap with water
- plate



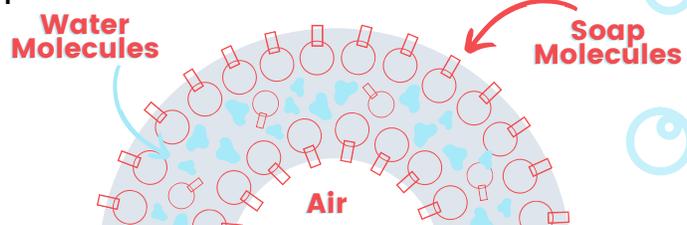
We've found Dawn works well

## Reflection Questions:

1. What was the shape of the bubbles made by your wands? Did the shape of the wand change the shape of the bubble? How does the science concept below help you think through what you saw?
2. What happens to bubbles' shape when they stick to one another? Why do you think this is?

## Science Connection

Your bubble liquid is a mixture of soap and water. The water molecules in the bubble liquid will pack together tightly. The soap molecules will then surround the water and make a very thin layer of water/soap that spreads across the bubble wand. When you blow air into the bubble and detach it from the wand, the thin film will wrap around the air pocket. Once the bubble detaches, what shape is made? To explore this question, let's talk about how amazing a sphere is, and why we see it a lot in nature. Spheres have the lowest surface area: this means that they can pack the water and soap molecules together tightly. Spheres do not have pointy edges, which do not allow the water and soap molecules to pack tightly and leaves some water molecules exposed to the air.



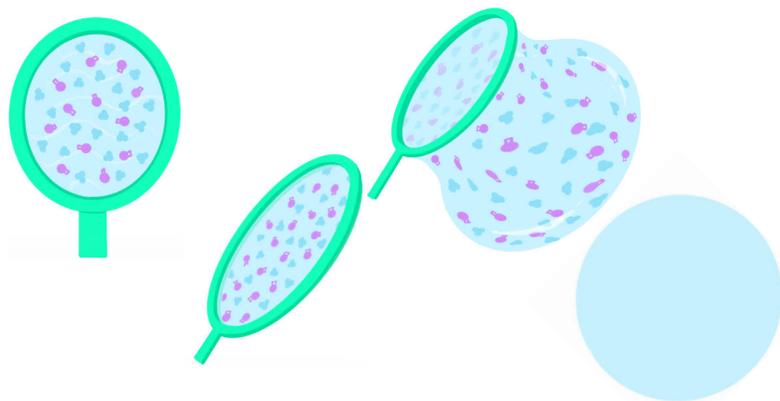
This activity is intended for use by adults and children who can read, follow directions and warnings. Choking hazard, small parts. Adult supervision advised.

# Activity 2: What colors are bubbles?

## Directions

As you watch your bubbles float through the air, look closely at the colors you see on the bubble's wall.

- What does it look like?
- Do the colors ever change?
- Do all bubbles look the same?
- When do you see more vs. fewer colors? In the sunlight vs. the shade?



## Science Connection

You might have seen a rainbow created by a prism or piece of beveled glass (or even after a rainstorm!). Sunlight actually contains all the colors of the rainbow!

When outside, sunlight hits bubbles from many angles. When light passes through a material (like the wall of a bubble), it can bend and the different colors will be visible; this results in changing colors that we can see. Some colors bend more than others and it depends on the thickness of the surface. The thickness of the bubbles' walls is always changing slightly because they are made out of liquid, thus causing light to bend in different amounts while you watch.

## Extension: Giant Bubble time!

1. Mix 1/2 cup of cornstarch & 1 Tbsp of baking powder together.
2. Mix 6 cups of water, 1 Tbsp of corn syrup, and 1/2 cup of dish soap together.
3. When you are ready to use your mixture, combine the dry & wet ingredients and stir well.

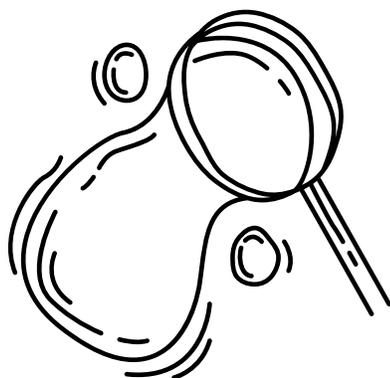


## Materials

water, cornstarch, baking powder, corn syrup, dish soap, two sticks, string, washer, tray

## Making your Giant Bubble Wand:

1. Put a washer on the string and tie the string to the other end of the stick so the washer is hanging in between.
2. Tie the remaining string to the end of the first stick to create a triangle



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### **Making A Giant Bubble:**

1. With the two sticks parallel, dip the bubble wand into the mixture, immersing all the string completely.
2. Pull the string up out of the bubble and pull the sticks apart slowly so it makes a triangle.
3. Walk backwards and move the wands to create giant bubbles.

### **Reflection Questions:**

1. How big of a bubble could you make?
2. Why do you think you need a different type of mixture to make such big bubbles?
3. What shape is the bubble that you make? Do you see rounded or sharp edges?
4. Are the same colors present in these giant bubbles as those you made with your smaller wands?

### **Science Concept:**

The science behind the giant bubbles: Water molecules like to stick together, and scientists call this stickiness “surface tension.” Soap molecules make it harder for water molecules to stick together. But when you blow a bubble made out of dish soap, you create a very thin film of water sandwiched between two layers of soap.



Check out more activity kits on the science circus website!

