

Bubbles

Best for Ages

3+

Workspace

Outdoor

Is electricity required?

No

Description

Explore the beauty and science of bubbles by making your own bubble solution and wands.

Materials

- Bubble solution: store bought or DIY using recipe on page 2
- Large container: small kiddie pool, plastic storage bin
- Hula hoops (1-2)
- Bubble wands
- Pipe cleaners
- Knit gloves
- Towels

Concepts Explored

- Surface Tension

What to Do

1. Set up a fun working space outside, possibly on the driveway or grass. You can also do this activity using an outdoor table.
2. Make bubble solution using the recipe on page two or use store bought solution. Pour bubble solution into a large container or multiple small size ones. This will get messy so keep a towel nearby!
3. Dip bubble wands into the solution, remove and blow air through the wand to make a bubble.
4. Try making your own bubble wands using pipe cleaners. Shape it into an enclosed shape such as a star, diamond, square, or circle. How does the bubble change with each shape?
5. Use the hula hoop to make a giant bubble.
6. Put on the knit gloves. What happens when you try catching the bubbles?



Bubbles

Troubleshooting Tips

- If your work surface becomes slippery from bubble solution, wipe it with a towel or rinse surface with water.
- Adjust your bubble exploring station area so the wind doesn't blow bubbles into your body or in your eyes.
- For giant bubbles, include a polymer such as guar gum in your bubble solution.



How could you make a bubble inside another bubble?

What will the bubble look like if I use a different shaped wand?

What do you notice about the colors on a bubble?

What is Happening?

A bubble is simply air wrapped in soap film. The bubble is made from layers of soap and water. A thin layer of water lies between an inner and an outer layer of soap molecules, sort of like a water sandwich where the soap molecules are the bread. **Surface tension** of water holds the bubble together. Once the water between the soap film layers drains toward the bottom or evaporates, the bubbles pop.

Why are bubbles round? Soap film can stretch into crazy looking shapes while forming a bubble. Once you seal a bubble by flipping it off your wand, the surface tension in the bubble film shrinks to the smallest possible shape for the volume of air it contains. That's why even if it had a goofy shape before you sealed it, once sealed shut, the bubble will shrink into a spherical shape.

Bubble Solution Recipes

- Add ingredients together and mix slowly to avoid creating bubbles.
- If possible, cover solution and let it sit overnight.
- Basic Solution:
 - 3 cups of water
 - 2. ½ tablespoon liquid dish soap
- Add 5 tablespoons of glycerin or ½ cup of corn syrup to make your bubbles last longer
- Add ¼ teaspoon of guar gum for giant bubbles. Guar gum needs to be mixed into glycerin, syrup, or rubbing alcohol before mixing into water to prevent clumping.