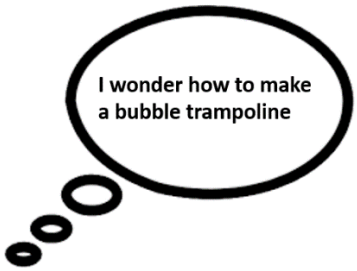
Big Bubbles are Dope

Bubbles are an interesting **mixture** of **materials**. They are usually made out of a blend of soap, water, and air. The soap and water form the outside surface of the bubble and the air is trapped on the inside. Bubbles are very delicate and they don't last very long before they pop. They pop as soon as most of the water in the bubble **evaporates**. Poof!

When most people blow bubbles, they use a bubble wand that they buy from the store. But you can make bubbles with lots of things like straws, strings, cups, and paper towel tubes. You just need something to hold the bubble film while you blow some air into it. Bubbles tend to be round, or spherical, in shape because this shape helps them to be more stable. Spherical shapes use a minimal amount of **surface area** to enclose the volume of air that is trapped inside. Surface area is the amount of space that an object occupies on the outside. The less surface area on the outside of an object, the more strong and stable it tends to be.

If you want to make bubbles that are stronger and last longer, you can add some other materials to the mixture. Glycerin is a gooey **liquid** that you can add to make the soap mixture thicker. Glycerin keeps the water from evaporating as quickly and this helps to make the bubbles tougher and more durable. But, most of the time, a simple mixture of soap, water and air will work just fine.



In this STEM Challenge, your first task is to make a bottle bubble using just the top and bottom of a two-liter bottle. Once you perfect your technique for blowing into the bottle, you can see how big you can make it. Your second task, is to make bubble trampoline that can bounce back and forth.