

# Bouncy Ball Experiments

## Supply List

**Borax**

**Cornstarch**

**White glue** (e.g., **Elmer's** glue, which makes an opaque ball) or blue or clear school glue (which makes a translucent ball)

**Warm water**

**Food coloring (optional)**

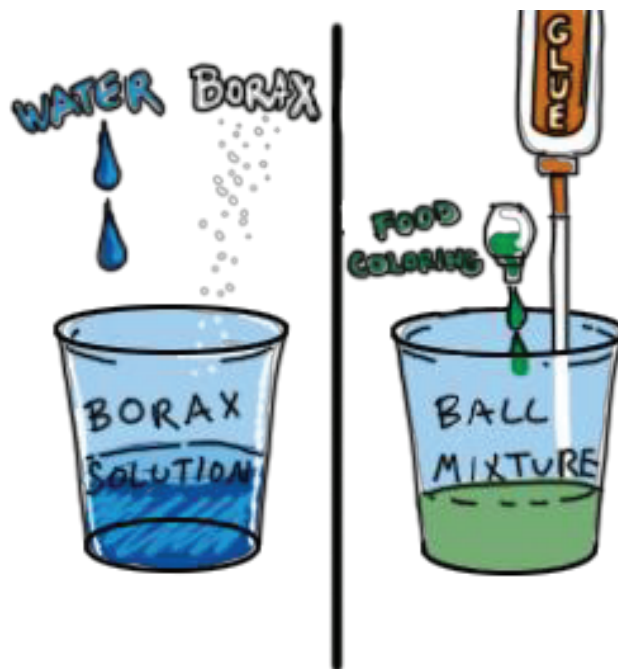
**Measuring spoons (1tbs, 1/2tsp)**

**Spoon**

**2 small cups** or other containers (for mixing)

**Marker / sharpie**

**Zip-top / sealable plastic bag**



## Steps

1. Using tape and a marker, Label one cup "borax" and the other "ball mix"
2. Pour 2 tablespoons of warm water and ½ teaspoons of borax powder into the cup labeled "Borax." Stir the mixture to dissolve the Borax. (add more warm water if Borax is not dissolved – important because Borax can irritate sensitive skin – you can wear gloves if you want and make sure to wash your hands after!)  
Add food coloring if desired. Type BORAX in the comments if you're ready to move to the next part!
3. Pour 1 tablespoon of glue into the cup labeled "Ball Mix." Add ½ teaspoon of the Borax solution you just made, and 1 tablespoon of cornstarch. **Wait** at least 10-15 seconds and then stir them together to fully mix.
4. Once the mixture becomes impossible to stir, take it out of the cup and start molding the ball with your hands. The ball will start out sticky and messy but will solidify as you mold it!
5. Once your ball isn't as sticky, go ahead and bounce it! You can store your plastic ball in a sealed bag when you are done playing with it, and make sure to wash your work area, utensils, and hands well! Let us know in the comments how yours went, and at the end we will do a bouncy ball test for you girls and compare this bouncy ball to our next one!

If you want to make more bouncy balls later, feel free to **experiment with the amounts of glue, cornstarch, and borax**. Adding more cornstarch will make the ball more stretchy and bendy. Less borax will produce a "goopier" ball. More glue will make a slimier ball.

# Bouncy Ball Experiments

## Supply List

½ Cup of **warm water**  
1 Tablespoon of **Borax**  
1-2 Tablespoons of Clear **Elmer's Glue** or  
Elmer's Clear Glitter Glue  
(Elmer's Brand glue works best)

## Steps:

1. Stir together ½ cup of warm water and 1 tablespoon of Borax, until it is completely dissolved (add more warm water if it is not dissolved – remember that Borax can irritate sensitive skin – wear gloves if you would like to and make sure to wash your hands after!)
2. Slowly pour 2 tablespoons of glue into the bowl of Borax solution, you can add more glue if you like, the more glue you use, the bigger your bouncy ball will be.
3. As soon as the glue hits the Borax solution, it will start to harden. Remove from the Borax solution and roll between your hands to make it ball shaped. Gently squeeze and squish the glue ball until it is no longer sticky.

The glue will get hard, but not the borax solution, the solution will stay in your cup or bowl and you can repeat the process and make more bouncy balls later!

These super bouncy balls are basically very thick slime, so if you leave them alone they will eventually go flat, but you can just roll them back into a ball. Feel free to store your bouncy balls in a sealed plastic bag when you're done playing with them, and make sure to wash your hands and your work station thoroughly when your done!

## So How Does It Work?

Both of our bouncy balls used three main ingredients: Borax, and warm water to dissolve it, and Elmer's glue. The first experiment also used cornstarch, let's try to figure out the difference!

When the glue was added to the borax water, the glue became firm and bouncy. That's because the Borax hooks the glue's molecules together and forms flexible bonds. Doing this causes the glue to stick together and form a more elastic substance, that also happens to be bouncy. The bounce comes from the flexibility of the bonds that were formed because when the ball hits the ground, it is able to momentarily deform or squish before regaining its shape.

In the first experiment, cornstarch was added to help bind the molecules together so that the ball would hold its shape. We didn't use cornstarch in the second experiment, so don't be surprised if that one doesn't hold its shape as well.

