Preschool Winter Science Booklet

About this booklet

This is the first issue of the *Preschool Winter Science Booklet*. The science committee has assembled a list of experiments for you to try with your children over the winter break. We have all found that while the winter break is a great time to rest and recuperate, our children are often looking for things to *do*. This booklet contains six simple science experiments that you can do with your kids. They all use common household ingredients and should be suitable for preschool-age children (with supervision). Our hope is that you can use these experiments to have fun with your child and learn something in the process.

About the science committee

The Preschool Science Committee is a group of parents from the preschool that are interested in educating our kids about science & technology. Our goal is to engender a love of science in our children by giving them the confidence to experiment with the world around them.

Feedback

We'd love to hear from you! Did you try one or more experiments? How did they go? For comments or other feedback, please e-mail srcs-sc@vinayaugustine.com.

Borax Slime

Ingredients

1. Elmer's Glue
2. 2x disposable cups
3. Food coloring
4. Water
5. Borax Powder
6. Plastic Spoon
7. A tablespoon

Steps

1. Fill the first cup with water & add a spoonful of Borax
2. Fill the 2nd cup with 1" of glue
3. Add 3 tablespoons of fresh water to the glue & stir with the plastic spoon
4. Add a few drop of food coloring & stir until mixed
5. Add 1 tablespoon of borax solution (from step 1) and stir well
6. Let the slime sit for about 30 seconds. Then pull it off the spoon!

Tips

- Keep the slime in a closed plastic bag for storage
- Substitute Elmer's Clear Washable Glue for a translucent blob!
- Don't eat it!

1. https://sciencebob.com/make_slime_with_borax/
2. http://littlebinsforlittlehands.com/how-to-make-borax-slime-easy/
3. http://ourbestbites.com/2010/09/kids-in-the-kitchen-slime/

Baking Soda & Vinegar Balloons

Ingredients

- Balloons
- White vinegar
- Baking soda
- Plastic bottle
- Funnel

Steps

1. Fill plastic bottle with 1 cup of white vinegar
2. Use the funnel to add 1/3 cup of baking soda to the balloon
3. Attach the balloon to the mouth of the plastic bottle
4. Lift the balloon, allowing the baking soda to fall into the bottle

Tips

- Make sure the funnel is dry when adding the baking soda to the balloon (or you'll get fizzing!)
- Try tying the balloon and dropping it. Compare it to a balloon filled with air.

Why does this work?

The baking soda and vinegar react to form Carbon Dioxide (CO_2), which fills the balloon. However, CO_2 is heavier than air, so it won't float as well as a balloon filled with air or Helium.

1. http://onelittleproject.com/baking-soda-and-vinegar-balloons/

Cloud Jars

Ingredients

- Mason Jars (1 / child)
- Plastic cups
- Food coloring
- Shaving cream
- Eye/medicine dropper (1 / child)

Steps

1. Fill several cups of water and add food coloring
2. Fill each mason jar with water
3. Add a dollop of shaving cream to the top of each mason jar (the shaving cream is a cumulus cloud)
4. Let the children take food coloring and add it to the shaving cream with the medicine droppers
5. Watch as the colored water fills the “cloud” and then falls to the “ground” (the water below)

Tips

- Cover the table with paper towels for an easy (and colorful) cleanup
- Suitable for children 3yo+

http://www.teachpreschool.org/2012/03/10/clouds-in-jars-and-on-the-table-top-too/

Dancing Spaghetti

Ingredients

- Uncooked spaghetti (thin or angel hair is best)
- 1 cup of water
- 2 teaspoons of baking soda
- 5 teaspoons of vinegar
- Tall clear glass or jar

Steps

1. Add the water and baking soda to the jar
2. Stir until the baking soda is completely dissolved
3. Break the spaghetti into 1 inch pieces
4. Drop 6-9 pieces in the glass (they will sink to the bottom)
5. Add in the vinegar and watch the reaction as the spaghetti dance in the solution

Tips

- Reaction will continue for 5-10 minutes. Add a little extra vinegar to keep it going
- Be sure to add enough Vinegar to start the reaction
- Use caution as the reaction can spill over the glass

Why does this work?

The vinegar and baking soda combine to create CO_2. The CO2 bubbles “stick” to the noodles and act much like life jackets. Because the CO_2 is less dense than the water, it rises to the top bringing the noodle with it. As the bubbles reach the top of the water and pop, the noodles become denser and sink to the bottom.

Lava Lamp

Ingredients

- Cooking oil
- Cold tap water
- Tall clear glass or jar
- Food coloring
- Table salt

Steps

1. Fill the glass with water. Leave approximately ½ inch of room at the top
2. Stir in 1-2 drops of food coloring to lightly tint the water
3. Add in the cooking oil slowly. You'll have a ½ inch thick layer at the top
4. Allow the water & oil to separate before proceeding to step 5
5. Slowly sprinkle the salt on top of the oil
6. You'll see small droplets of oil plunge to the bottom and rise back to the top

Tips

- Use a very light cooking oil
- Use coarse, granular salt or sea salt
- Try and light the solution with a small flashlight

Why does this happen?

Oil is both less dense than water and not soluble in it (they don't mix). When you add them together, they separate with the oil on top. The salt mixes with the oil and becomes denser than the water. This causes the blobs to sink down into the water, where the salt dissolves. When the salt dissolves into the water, the oil rises back to the top.

Rock Candy

Note: This project requires adult supervision.

Ingredients

- 5 cups of granulated sugar
- 2 cups tap water
- Saucepan
- Wooden spoon
- Glass jar
- Wooden skewer
- Clothespin
- Food coloring or flavoring (optional)

Steps

1. Pour two cups of water into the saucepan and bring to a boil
2. Add one cup of sugar to the boiling water and stir gently with the wooden spoon until the sugar dissolves completely. Continue slowly adding the sugar one cup at a time until all the sugar is dissolved
3. Once all the sugar is completely dissolved, remove the mixture from the heat and allow to cool for at least 20 minutes. Add food coloring and/or flavoring to the water if desired
4. While cooling, dip the skewer in the water and then roll it in some granulated sugar. This will help "jump-start" the crystal growth). Allow the skewer to dry completely
5. **Carefully** pour the sugar solution into the jar, filling nearly to the top.
6. Place the skewer into the jar, using clothespins to hold it up. The clothespin should lay across the mouth of the jar. Make sure the skewer is hanging straight down and not touching the sides.
7. Once the jar is completely cool, place it somewhere where it won't be disturbed. Now, just wait! The first crystals should appear within a day or two, but they will continue to grow for about a week. Do not touch the jar during this time. **Note**: if no crystals are visible after 3 days, boil the sugar solution again and start over.
8. When the crystals have stopped growing (approximately 1 week) or your children can't wait any longer, remove the skewer and enjoy!

Why does this happen?

When you mix the water and sugar, you made a **super-saturated solution**. This means that the water can only hold that much sugar when it is very hot. As the water cools, the sugar will turn back into crystals on any suitable surface.