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Parenting

THE Budding SCIENTIST

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Volcano Action

Mix vinegar and baking soda, and then stand back and watch the reaction! It erupts like a volcano!

What You'll Need

- baking soda
- plastic dishpan
- small pitcher
- small plastic bottle with a wide mouth
- spoon
- vinegar

Books to Enjoy

Volcano! The Icelandic Eruption of 2010 & Other Hot, Smoky Fierce, and Fiery Mountains by Judy Fradin and Dennis Fradin

Volcano: The Eruption and Healing of Mount St. Helens by Patricia Lauber

Volcano Wakes Up! by Lisa Westberg Peters

Volcanoes by Franklyn M. Branley

What to Do

1. Place a small plastic bottle in the plastic dishpan. (The dishpan will catch the runoff.)
2. Pour two spoonfuls of baking soda into the bottle.
3. Pour a small amount of vinegar into a small pitcher. This will help you control the amount of vinegar used.
4. Add the vinegar to the baking soda in the plastic bottle.
5. As the vinegar mixes with the baking soda, a chemical reaction takes place and a foaming "volcano" erupts.
6. Each time you want to repeat the eruption, add an additional two spoonfuls of baking soda. You can repeat this several times before you will have to pour out the liquid mixture and begin again.

Try This!

Do this activity outside in a sandbox. You can build up a sand mountain around the bottle, then complete the process to make the sand "volcano" erupt.

Space Alien Slime

Instead of dissolving in water, cornstarch makes an ishy-squishy ooze.

What You'll Need

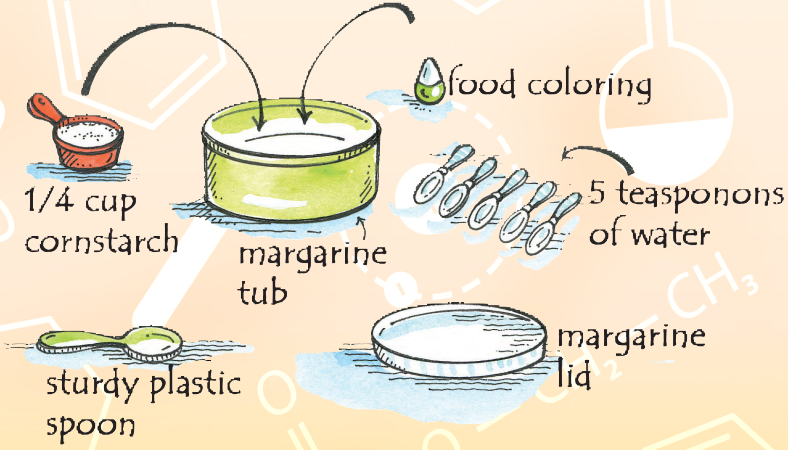
- ¼ cup cornstarch
- food coloring
- measuring cup
- measuring spoon
- ½-pound-size plastic margarine tub with lid, clean and dry
- 5 teaspoons water
- wooden or sturdy plastic spoon

Books to Enjoy

- *Aliens Love Underpants* by Claire Freedman
- *The Book of Slime* by Ellen Jackson
- *Dr. Xargle's Book of Earthlets* by Jeanne Willis and Tony Ross
- *How to Make Slime* by Lori Shores
- *Space Case* by Edward Marshall

What to Do

1. Place cornstarch, water, and food coloring into the margarine tub.
2. Mix with a spoon until you have a thick paste. The mixture will be stiff.
3. Handle the mixture. What happens when you poke it? when you roll it? when you let it sit for a moment?
4. This "alien slime" mixture will stay fresh for two or three days in an airtight container.



Liquid-Starch Bubbles

Observe what happens as a material changes from a liquid into a solid.

What You'll Need

- bubble wand
- dish soap (Ivory® works best)
- glitter
- liquid starch
- small, shallow tray
- spoon

Books to Enjoy

- *Bubble Trouble* by Margaret Mahy
- *Chavela and the Magic Bubble* by Monica Brown
- *Pop! A Book About Bubbles* by Kimberly Brubaker Bradley

What to Do

1. Put the tray on the table.
2. Pour some liquid starch onto the tray along with a squirt of dish soap, and stir gently. What do you notice about the mixture?
3. Sprinkle in the glitter.
4. Scoop some of the mixture into the bubble wand. What does the mixture look like? What does it feel like?
5. Try blowing bubbles with the mixture. What do you notice? Is it easy to blow the bubbles?
6. After several minutes, how does the mixture change?

Try This!

Ask an adult to help you make instant pudding. Notice that the pudding mix starts out as powder, which is a solid stage. Add milk and see the liquid stage, then chill the mixture to see another solid stage. Enjoy the yummy pudding!

A Baker's Balloon

What makes fresh bread smell so yummy? Try this activity to learn about yeast.

What You'll Need

balloon

Safety note: Balloons pose a choking hazard. Use with care.

bowl

cooking or baking thermometer

1 package or 1 teaspoon dry yeast

funnel

magnifying glass

measuring cup

measuring spoons

1 tablespoon sugar

tall, narrow bottle

¾ cup warm water, 98°—105°F

Books to Enjoy

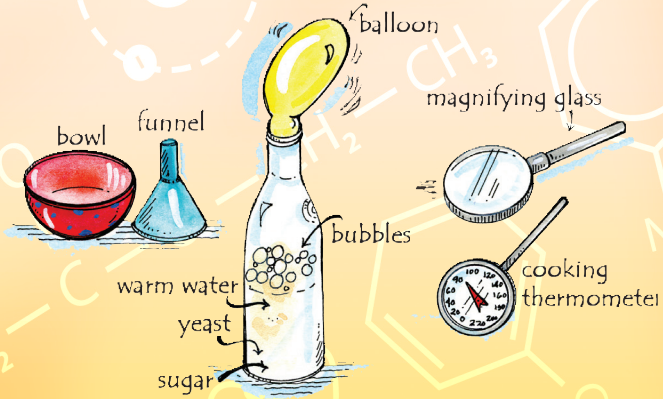
Bread, Bread, Bread by Ann Morris

The Little Red Hen by Paul Galdone (or any version)

Tony's Bread by Tomie dePaola

What to Do

1. Empty the yeast packet into a bowl. Look at the dry yeast under a magnifying glass. Smell it and touch it. What does it look like? Can you smell it? What does it smell like?
2. Ask an adult to heat the water to 98°—105°F. Use a cooking thermometer to measure the temperature.
3. Pour the dry yeast, the sugar, and the warm water through the funnel into the bottle. What do you think will happen to this mixture?
4. Secure the neck of the balloon over the top of the bottle. Leave the bottle in a warm place where it won't be disturbed.
5. Observe the bubbles in the bottle, and watch the balloon begin to inflate. What do you think is making the bubbles? What is causing the balloon to inflate? (The yeast converts the sugar into ethanol and a gas called carbon dioxide. Carbon dioxide is what creates the bubbles and inflates the balloon. It is also what makes bread rise.)
6. When you remove the balloon, smell the yeast again. You will notice quite a change!



Try This!

Ask an adult to help you make fresh bread using your yeast and a favorite recipe.

Silver Polishing

Some metals react to the air around us, becoming darker with time. This activity will make silver shiny again.

What You'll Need

- apron or smock
- baking soda
- large sheet of aluminum foil
- large spoon for stirring
- measuring spoon
- salt
- soft cloth for polishing
- tarnished silver spoon or small bowl
- very warm water

Books to Enjoy

S Is for Silver: A Nevada Alphabet by Eleanor Coerr

Science Verse by Jon Scieszka

What to Do

1. Look at the spoon or bowl. Do you notice dark, dull spots on the silver? That dark stuff forms when sulfur in the air reacts with the silver in the objects. Rub the tarnished spot hard with your finger. Can you rub the spot off?
2. Plug the drain of the sink, and line the sink with a large sheet of aluminum foil.
3. Ask an adult to fill the sink with very warm water.
4. Measure 1 tablespoon each of salt and baking soda, and add them to the water. Stir carefully until the salt and baking soda dissolve.
5. Add the tarnished silver to the warm water. Let the item sit in the salt–baking soda solution for about 5 minutes. Do you notice any changes?
6. When all of the tarnish has faded away, remove the item from the water, and rinse with clean water.
7. Polish with the cloth, and enjoy the shiny, clean silver.

Shiny Pennies

Copper reacts to the oxygen in the air in a process called *oxidation*. Try two different ways to clean your pennies. Which way works better?

What You'll Need

- carpet piece
- clear plastic cup
- cloth or paper towel
- magnifying glass
- measuring cup
- measuring spoon
- pennies
- salt
- white vinegar

Books to Enjoy

Benny's Pennies by Pat Brisson

Pennies by Mary Hill

The Penny Pot by Stuart Murphy

What to Do

1. Study a penny under a magnifying glass. Notice the designs on each side. What do you see? What do you think the penny is made of? Pennies made in the United States are made of mostly zinc with a little copper on the outside to give them their color. After pennies have been used for a while, they begin to tarnish or react to the air around them, becoming darker and duller.
2. Divide your pennies into two groups. For the first group, rub the pennies on the carpet until they shine. You may have to rub very hard (ask an adult to help if you need to).
3. Next, pour one cup vinegar and one tablespoon of salt into a plastic cup. Now drop the pennies from the second group into the vinegar-and-salt solution. What do you think will happen? What changes do you notice?
4. Take the pennies out of the vinegar solution, and rinse them in water. Dry them with a cloth or paper towel.
5. Which method for cleaning the pennies worked better? How was it better?

Make Crystals

You'll need to be patient to do this activity, but the wait will be worth it!

What You'll Need

- bowl or cup (clear, heat-resistant, and nonbreakable)
- coarse salt (kosher salt or sea-salt crystals work well)
- hot water (hot enough to dissolve salt)
- magnifying glass
- shallow, dark-colored dishes (white crystals show up well against a dark dish)
- spoon

Books to Enjoy

- *The Snowflake: Winter's Secret Beauty* by Kenneth Libbrecht
- *The Story of Salt* by Mark Kurlansky

What to Do

1. Ask an adult to fill a clear cup or bowl about two-thirds full with hot water.
2. Pour salt in the hot water (with adult help).
3. Stir and watch the salt disappear. Keep adding salt until it no longer dissolves in the water. What do you notice when the salt no longer dissolves?
4. Pour the solution into one or more shallow, dark bowls. Set aside, and leave undisturbed for several days.
5. As the solution cools, the water cannot hold as much salt, so the salt will slowly settle out, forming crystals. This process is called *precipitation*. Eventually the water will evaporate, leaving only salt behind.
6. Look at the crystals with a magnifying glass. Count their sides, and compare their shapes. (Salt crystals will be cubes and may overlap each other.) Note how the crystals fit together in different ways. Compare them to snowflake crystals you have seen in pictures or during a real snowfall.

Try This!

Go for a walk outside when fresh snow is falling. Catch snowflakes on dark clothing or a chilled piece of dark paper. Look fast—they lose their structure very quickly. Try to spot different shapes of snowflakes. How are they similar to salt? How are they different?