Science at Home

Distance Learning Science Ideas

These science tasks are ideal for home based learning. (This term we were going to complete a space unit following on from our visit last year to the Planetarium and have an incursion from EarthEd. Grade 5-6 can still do an abridged version of our space unit but the EarthEd incursion has been postponed)

We completed a Plants and Trees unit in 2018 and a Kitchen Science unit in 2016. Some of the activities in this unit were used then while others are new. Some of the kitchen science activities are new to me (I've made crystals here at school before but not edible ones and I've seen the rubber egg experiment plenty of times but never tried it myself.)

The garden science activities will require you to get your hands dirty and be patient observers. I have provided plenty of seeds and containers for the experiments suggested. (You will have to provide some consumables to help with some experiments – like some celery)

A packet of easier worksheets (Entitled **Plants, Seed and Stuff**) has been included for Early Years students (Prep-2) if they wish to use it. I am including one **Science at Home pack** for each family.

As far as Kitchen Science is concerned, you will have to raid your own pantry or fridge. I have tried to incorporate experiments requiring easy to source consumables. For some experiments heat is required.

Parents should help with that, in fact none of the kitchen experiments should be undertaken without activate parent supervision as I would do if we were doing the experiments at school. This unit is written for parents rather than students' parents will need to take the lead when choosing what to do and when (It is up to you to decide how many of these experiments you do, if any at all. Results can be written up and/or photos /video taken using iPads. Be careful with your iPad around potential mess and spillage.

Make sure you wash your hands carefully after handling plants, soil, minibeasts or chemicals from the kitchen.

By T. Shaw

Science in the Garden

Discuss prior to experimenting

- HABITAT: As you plant your garden or pot, talk about the habitat you are working with -- what insects live in the soil? What animals visit your garden for food (such as bees) or might live there all the time (for example, snails or ladybugs)?
- GROWTH & ENVIRONMENT: Plants need four things to grow -- water, sunlight (for most), air and good soil (dirt with nutrients). Mention these items kids as you plant your garden or pots or undertake experiments.
- PLANT BIOLOGY: Discuss the various parts of a plant (roots, stem, leaves, buds, flower, fruit). The detail of the discussion will vary with the age of your child

Grow Beans in a CD case

Recycle a clear CD jewel case (I've provided one just in case you don't have any) to grow beans and teach kids about the parts of a plant. With the empty case hinge side up, fill about one-third of the case with potting soil. "Plant" a bean concave side down (like the letter "n") on top of the soil and let the kids water with a dropper through the hole at the top of the CD case. Stand the "planter" upright in a sunny window and kids will be able to clearly see the roots reaching down into the soil as the plant grows out of the bean. (beans included)

Grow Flowers from Bulbs

growing flowers from bulbs is a great science experiment. (bulbs included)

Use any see-through container as a vessel (think plastic growing cup provided). Add rocks or marbles to the bottom of the container and place the bulb on top, root side down. Fill with just enough water to cover the bottom of the bulb. Observe the bulb as it grows roots and

eventually a flower. *Bonus lesson*: Cut open an extra bulb so that kids can see inside this plant powerhouse. (An extra tulip bulb has been provided for you to do that. **Make sure an adult does the cutting.**

Colour Celery

Fill a vase or glass with water and tint the water with food color. (one bottle provided) Add a celery stalk and watch the plant become colorful as it "drinks" the tinted water. This is a great, short experiment to show how plants take in water.

Root Vegetables

Find out how root veggies form underground by planting root vegetables in a clear container. (Two have been provided for you) Clear Mason jars are perfect for this too if you have any. First, fill the bottom of the container with pebbles, marbles or gravel for drainage. Then, add potting soil. Plant root vegetable seeds (try carrots, onions, radishes or turnips) with several per jar. Keep the soil moist and enjoy watching the root form. Best of all, when the vegetable is done growing, you can eat it!

Recycle a Carrot

Use the end of a carrot from your veggie scraps or buy a whole carrot with the green fronds still attached for this experiment. Cut off the carrot near the plant end, leaving a few centimetres of root. (Remember: The root is the edible part of the carrot, so you'll want to cut your carrot near the wide end, leaving the part where the green leaves

attach for growing.) Place several cotton balls (Provided) on a plate or shallow dish and add water until the cotton is moist. Place the carrot top on the wet cotton, orange side down. Help the kids check and add water as needed. The green plant will sprout within a few days.

Inside of a Seed!

Materials for Dissecting a Bean Seed

- Large beans (kidney, pinto or lima beans for example) soaked in water for 12-24 hours. I couldn't find any of those beans so hopefully the beans in your pack will work just as well.
- Magnifying glass (provided. Look after them please, the lens is made from glass)
- Recording sheet

Procedure for Bean Seed Dissection

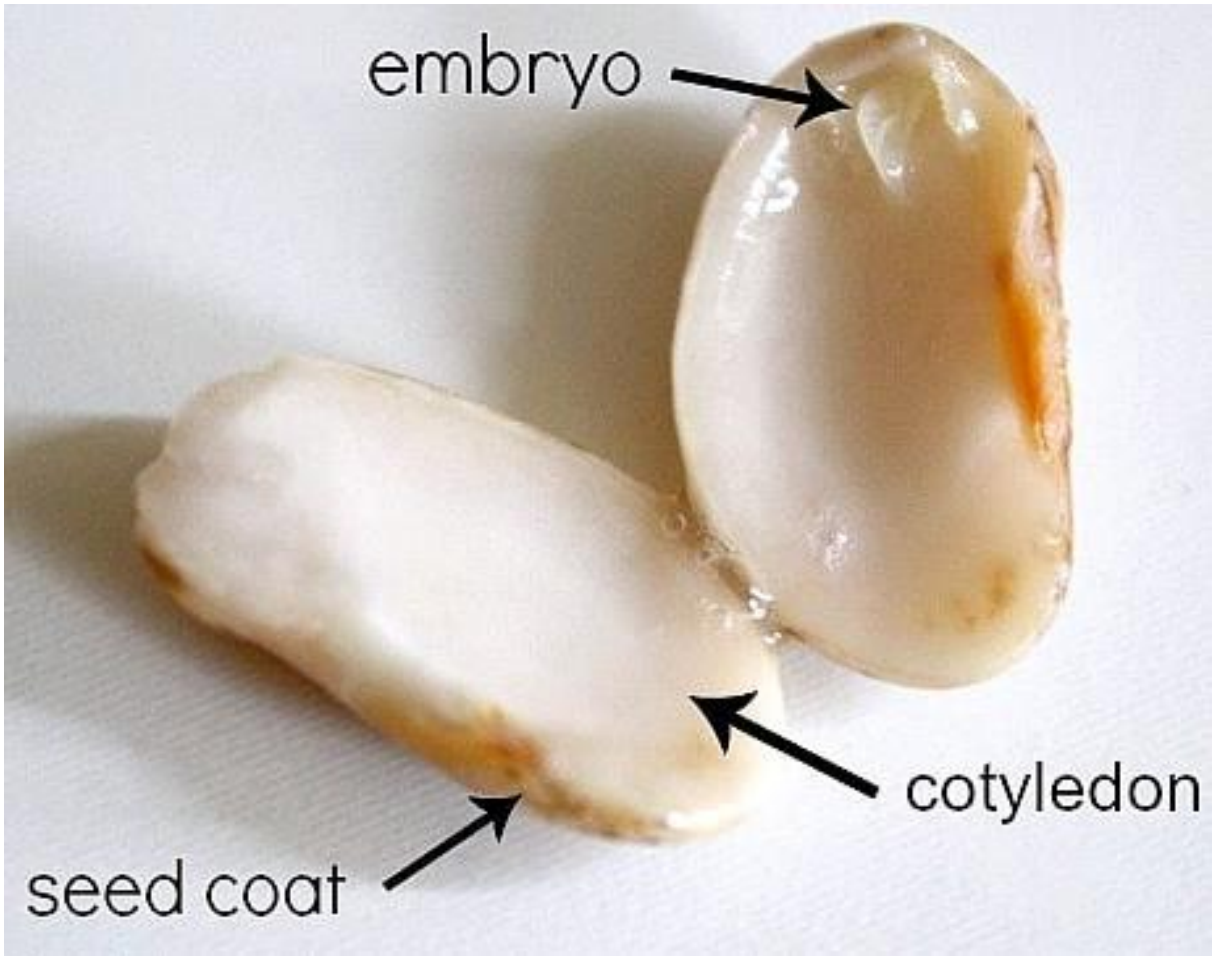
1. Pick up a soaked bean and examine it.
2. *What do you think the inside of the seed will look like? Why?* Illustrate your prediction on your paper.
3. Rub the soaked bean between your fingers. The seed coat should rub off. *Why do you think the seed coat is important?*
4. Now split your seed in two. (There is a slit going down the middle of your seed where it should come apart with a little help.)
5. Observe the inside. (Use a magnifying glass if you'd like). Describe and/or draw what you see. *Were your predictions correct?*

NOTE: Different seeds require different amounts of time to soak in the water before being easy to dissect. You might have to be patient with our beans or try something different.

– It's easier to see the baby plant after the seed dries out. After the dissection, set your bean aside and reexamine it after it's dry.

WHAT IS HAPPENING: *A bean is a seed and has many different parts:*

- **seed coat:** the protective covering that surrounds the seed
- **embryo:** baby plant
- **food supply (cotyledon):** the material that feeds the baby plant



Complete the separate **'Life cycle of a Bean' worksheet**

Garden in a Glove Add seeds in moist cotton wool to each finger.(I have provided gloves but they may be too thick to see through properly) Record how many days each seed takes to sprout and compare the sprouts to one another.

Sunlight

For this experiment, we put a seedling in front of a window, and observed that it bent its stem to expose its leaves completely to the sun. Mark which side of the pot (Small cardboard pots to grow seedlings and complete this experiment have been provided) the leaves were leaning using a marker.

You'll find an example of this on the right edge of the pot in the photo above. Then rotate the pot so that the plant was facing away. Do this several times, always marking the edge of the pot that the leaves were closest to. You will be amazed to find that the plant changes directions to get as much sunlight as possible.

Plants

Dissect a flower and label its different parts (if you have access to a flower) A worksheet is attached. You will need to do some research to discover the names of some of these flower parts.

Soil

The soil is the top part of the Earth where plants grow. This loose material is made of a combination of eroded rocks and organic matter (decaying plants and animals). The type of rocks and living organisms combined with the conditions in the area determine the type of soil you will find. The soil has different layers. If you were to dig down and cut out a cross section, you

would see the layers, or horizons (humus, top soil, subsoil, and parent material).

Collect a sample of soil from your yard. Spread it out on white card. (Provided)

Questions to Ask While Observing Soil

- What colour is the soil?
- What does the soil feel like? Does it feel gritty or smooth?
- Is the soil crumbly or clumpy?
- Does the soil have rocks? How about leaves or sticks?
- Can you squish the soil into a ball?

Next

- Use magnifying glasses, tweezers, and a sieve (if you have them) to explore the soil.

- Sifting the soil will help break apart the pieces and allow you to examine it more closely.

- Scientists use a texture test as a quick way to identify the type of soil. Describe the texture of your soil. Add a bit of water to your soil sample and try squishing it into a ribbon.

Is the soil the same all over your yard?

While experimenting in the soil did you find any **worms?**

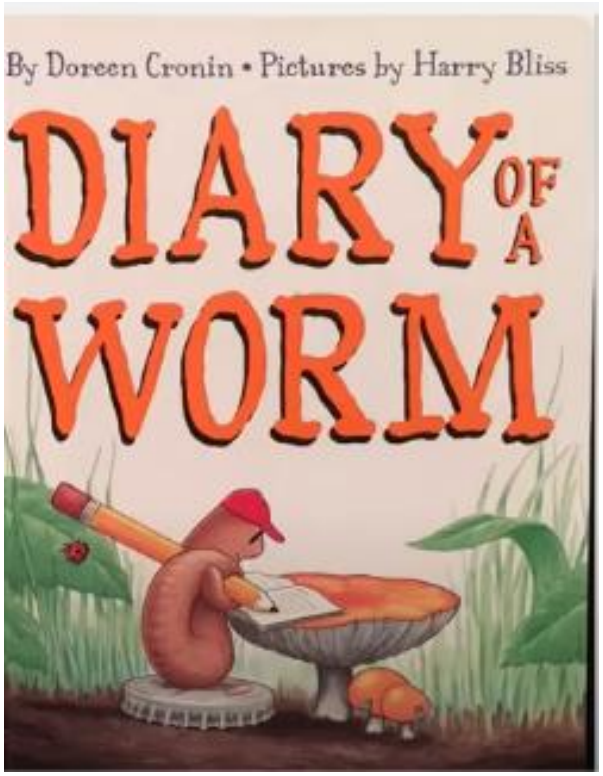
If not then maybe you can look for them .

Go on a worm hunt.

- Look under backyard furniture or toys.
- Look under rocks.
- Look for leaves that have been pulled into holes in the ground.

- Take a walk around the neighborhood after a rain storm. Rescue the earthworms on the sidewalk by placing them on the grass.

1. How can you tell which end is the head? Watch the earthworm move. Usually it moves forward, so the head in will be in front. The head is also more pointed whereas the tail is more rounded.
2. The earthworm is made of ring-like segments. Can you count how many segments it has?
3. Earthworms have setae, little hair like bristles on each segment that help the worm move.
   A. Wash off the earthworm in a bit of water. Then, place the earthworm on a piece of paper. Do you hear the rustling sound when it moves? That's the sound of the setae rubbing against the paper.
   B. Place the earthworm in your hand. Can you feel the setae on your hand as the worm moves?
   C. Look at the earthworm under a magnifying glass. Can you see the setae on each segment?
4. What does the earthworm feel like? Is it slimy? Is it cold?



5. Take some photos (video) Don't forget to release whatever you found. They help our soil.

Watch diary of an earthworm

https://www.youtube.com/watch?v=9y6Mtll5b0w

Animals in the Garden

Complete some inventories while you are learning from home.

This will take some time and patience and some observational skills.

For a set period of time over the course of a week observe the birds and or minibeasts you can see in your garden. (Early in the morning is a good time. That's when the kookaburras are about at school)

You will need a note book for this. (Provided)

What birds did you see? Try taking some photos with your iPad or recording their song.

Do some independent research into some of the birds or minibeasts that live in your garden. (A3 card has been included if you wish to make a poster project)

Find out their scientific names, habitat, life cycle and interesting facts.

Don't forget to check out your garden at night. How is it different to the garden during the day? Do other creatures visit or come out at night that hide during the day?

Complete an inventory of your garden tools or the trees in your garden.

Kookaburra at school 22/04/20

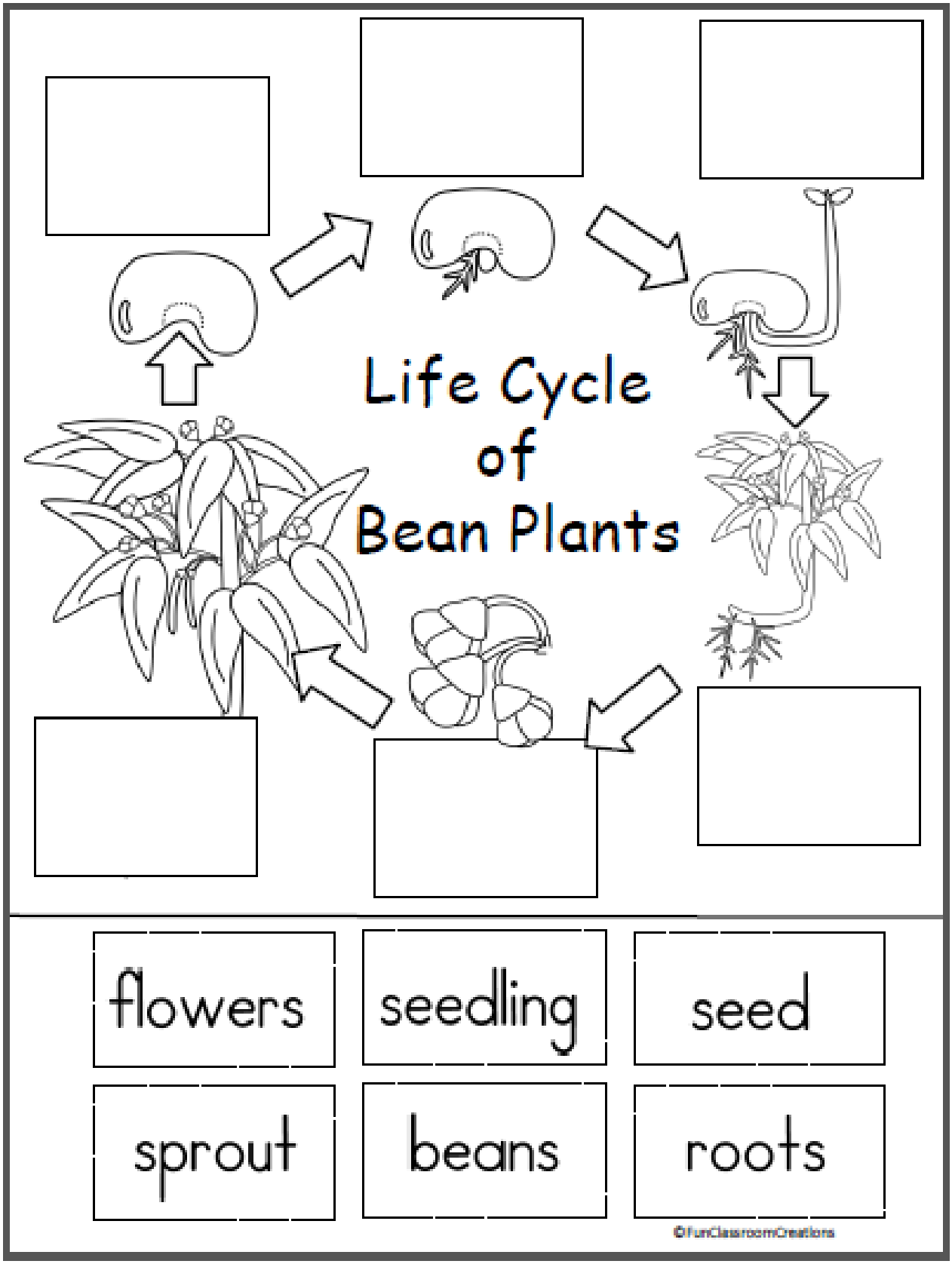
Create a **Backyard Scavenger Hunt**

(I can't make one of those for you because I don't know what is in your garden. But you can make one up for a parent or older sibling to complete.)

Other things to do

*You can also try flower pressing or create spore patterns (**Only collect fungi from the garden under parent supervision and wash your hands if touching them**. A piece of white card is provided and an instruction sheet) Grow moulds (on bread) Collect autumn leaves for an art activity. Make a Hairy Harry or Grass Head (lawn seed and instructions provided but you'll have to supply the stockings)*

LIFE CYLE OF A BEAN



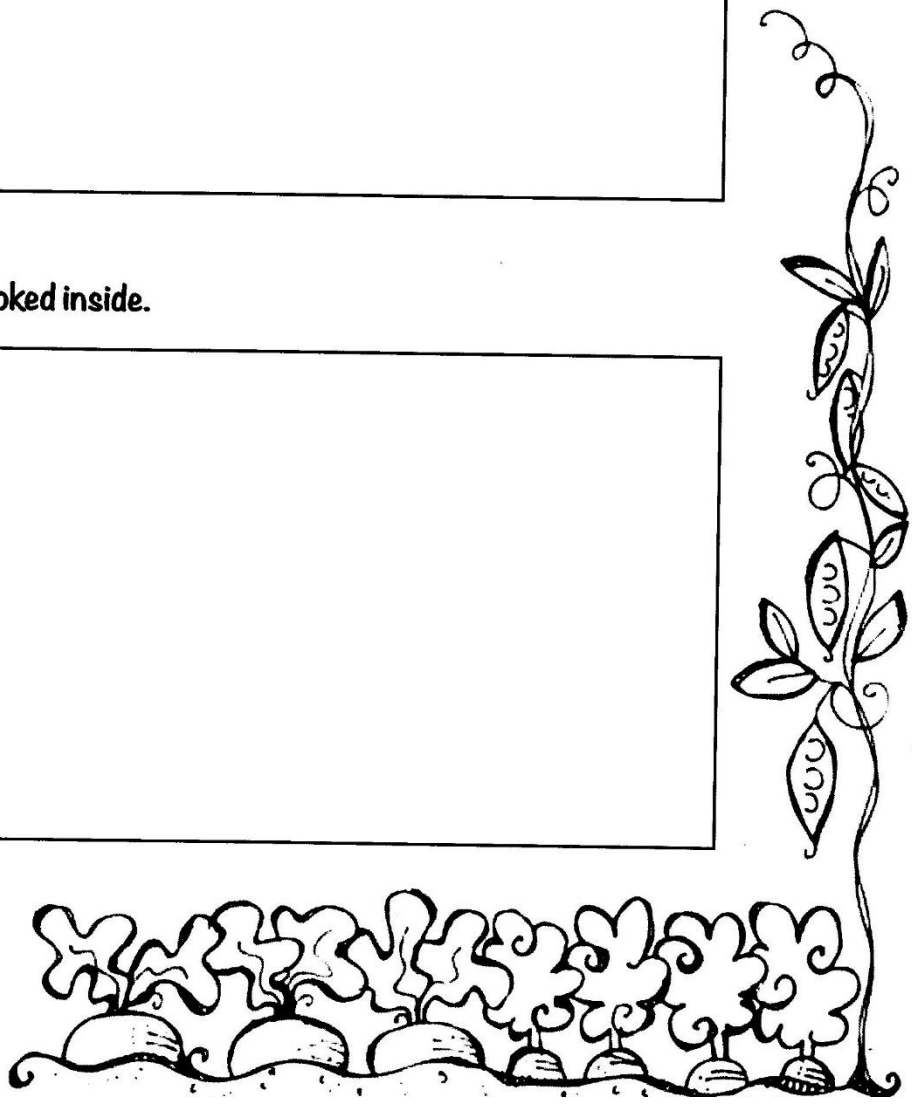
Parts of a flower

Anther	Filament	Peduncle	Petal	Pistil	Receptacle
Sepal	Stamen	Stigma	Style	Ovary	Ovule

Bean Seed Dissection

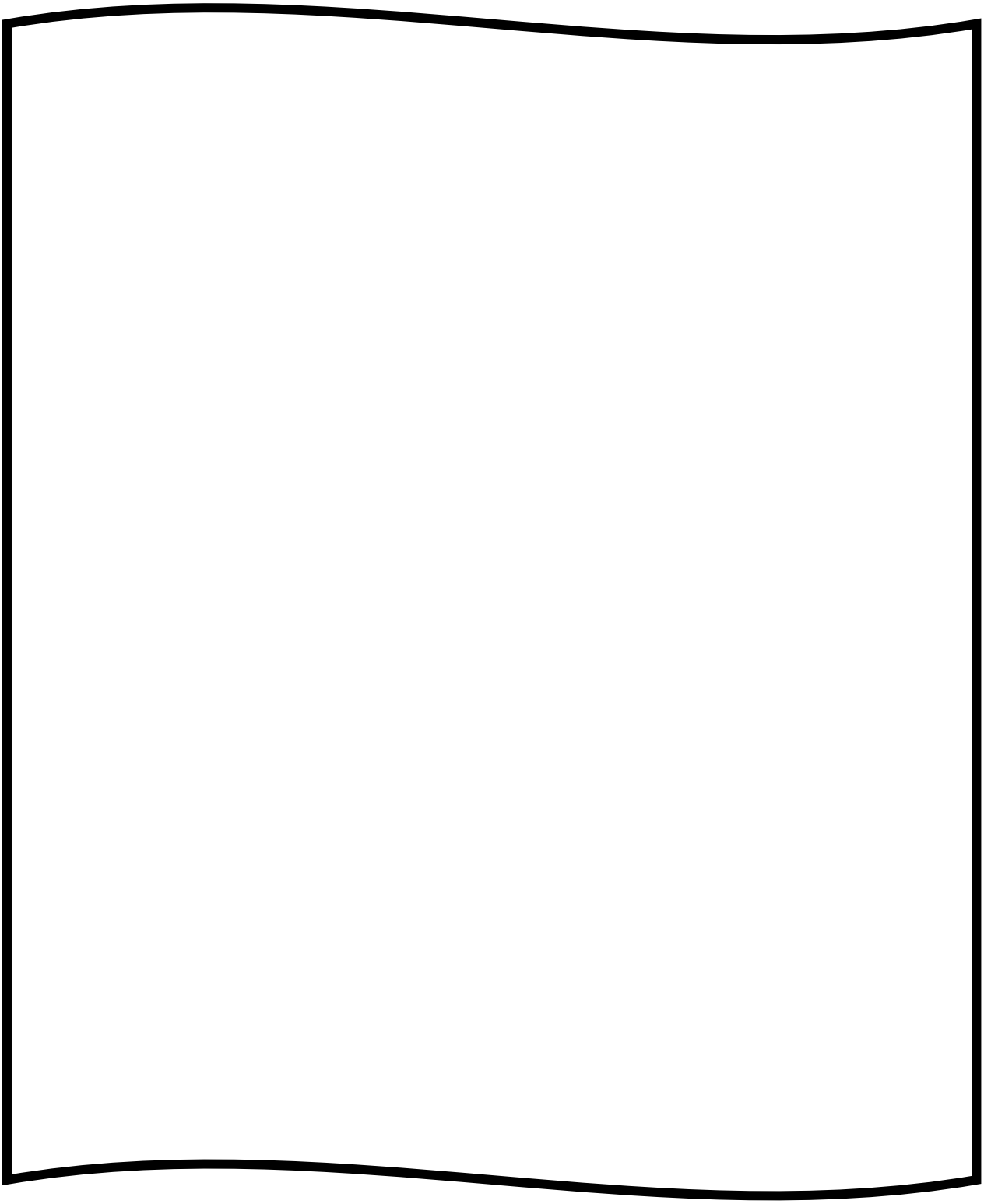
1. What do you think the inside of your bean will look like when you open it?

2. Draw how your bean looked inside.

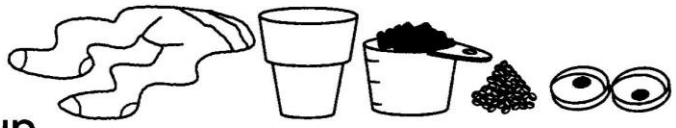


Garden Profile

Draw a plan of your house and garden below and identify where you found soil, flowers, birds or other creatures in the garden you observed, worms



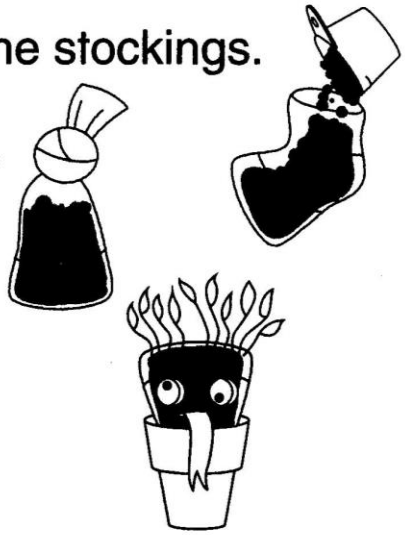
Make a grass-head!



Materials:

- plastic or polystyrene cup
- leg of a pair of stockings
- 1 cup of sawdust or potting mix • elastic bands
- decorating materials (e.g. felt, markers, craft eyes)
- 1 teaspoonful of grass seeds

What to do (tick each step as you do it).



☐ **1.** Put grass seeds into the toe of the stockings.

☐ **2.** Put potting mix into the stocking.

☐ **3.** Tie a knot in the open end.

☐ **4.** Put it in the cup, knot end down.

☐ **5.** Decorate a face.

Questions

1. What does your grass-head need to grow?

2. How will you make sure it gets these needs?

Fungi

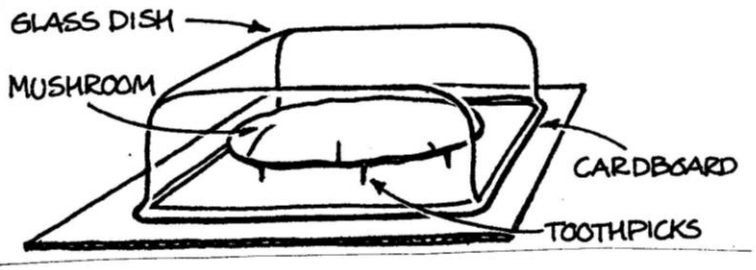
Mushrooms are an example of fungi.

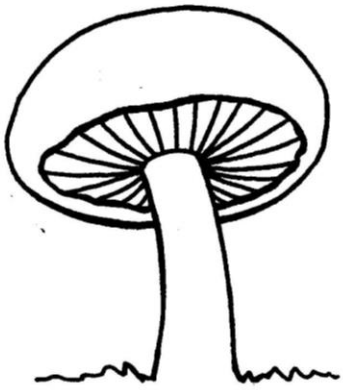
In pairs — or singly if there is equipment enough for every child — have the children perform the following experiment.

Spread a thin coat of glue and water mixture on a piece of cardboard.

Remove the stem of a mushroom. Prop up the cap with toothpicks and set it on the cardboard. Cover the cap with a glass dish and let it stand overnight.

Millions of spores will fall, and leave their prints on the sticky paper.





images.

Growing moulds

Children will be able to set up the experiment of growing bread mould, which should be prepared in advance.

Science in the Kitchen

Simple kitchen science experiments are terrific. Why kitchen science? Because everything you need is already in your kitchen cupboards. There are so many interesting and engaging experiments to do at home with household items. These food experiments are sure to develop a love for learning and science with your kids!

Homemade Ice Cream In a Bag

Have you ever tried this awesome edible ice cream science experiment? We did it at school a few years ago (Maybe Charlie remembers?) Whether you make it inside or outside, make sure you have a pair of warm gloves ready. This homemade ice cream in a bag recipe is chilly chemistry for kids you can eat! Enjoy fun science experiments all year round!

HOW TO MAKE ICE CREAM IN A BAG

Making homemade ice cream is actually quite easy and a good workout for the arms! This ice cream in a bag science experiment is a fun activity to try at home or in the classroom. It does require some adult supervision and assistance. A good pair of gloves are needed as this science activity does get very cold.

What's the chemistry behind ice cream because it's pretty sweet!

The magic is in the salt and ice mixture in the bag! In order to make your homemade ice cream, your ingredients need to get very cold and actually freeze. Instead of placing the ingredients for ice cream in the freezer, you mix together salt and ice to make a solution.

Adding salt to the ice lowers the temperature at which water freezes. You will actually notice your ice melting as your ice cream ingredients start to freeze.

Shaking the bag allows the warm cream mixture to move around to allow for better freezing. Plus, it also creates a little air that makes the ice cream a bit fluffier.

Is ice cream a liquid or a solid? Homemade ice cream changes states of matter. Also more chemistry! It starts out as a liquid but changes to a solid in its frozen form, but it can go back to a liquid when it melts. This is a good example of reversible change as it's not permanent.

You will definitely notice that the bag becomes much too cold to handle without gloves, so please make sure you have a good pair of gloves to shake it with. Read on to find out how to make ice cream in a bag!

ICE CREAM IN A BAG RECIPE

INGREDIENTS:

•1/2 cup half and half (cream and milk)

•¼ tsp vanilla

•1 TBSP sugar

•3 cups ice

•⅓ cup rock salt

•Large size zip top bag(s)

•smaller size zip top bag(s)

•Sprinkles, chocolate topping, fruit ?

HOW TO MAKE ICE CREAM IN A BAG

STEP 1. Place the ice and salt in a large sealable plastic bag; set aside. (One has been provided)

STEP 2. In a smaller bag mix together half and half, vanilla and sugar. Make sure to seal the bag tightly.

Ice Cream Ingredients in zip top bags

STEP 3. Place the smaller bag inside the gallon size bag. Shake the bags for about 5 minutes until your milk is solid.

Make sure to use gloves as the bag gets very cold.

TURN IT INTO AN ICE CREAM SCIENCE PROJECT

If you would like to take this your homemade ice cream in a bag recipe and turn it into a science experiment, try these suggestions:

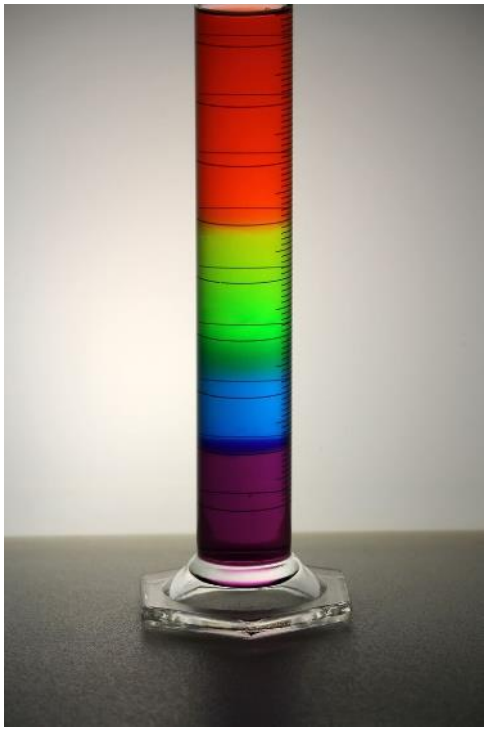
•What happens if you don't use salt? Set up two bags for making ice cream but leave the salt out of one bag.

•What happens if you use a different type of salt? Set up two or more bags for making ice cream and choose different types of salt to test!

•What happens if you swap out the milk for the heavy cream? Or what happens if you try another type of milk like almond milk. Set up two or more bags for making ice cream and choose different types of milk to test!

Try making pop-corn or pancakes from scratch next.

Rainbow in a glass



What You Need

- Sugar
- Water
- Food coloring
- Tablespoon
- 5 glasses or clear plastic cups

The Process

1. Line up five glasses. Add 1 tablespoon (15 g) of sugar to the first glass, 2 tablespoons (30 g) of sugar to the second glass, 3 tablespoons of sugar (45 g) to the third glass, and 4 tablespoons of sugar (60 g) to the fourth glass. The fifth glass remains empty.
2. Add 3 tablespoons (45 ml) of water to each of the first 4 glasses. Stir each solution. If the sugar does not dissolve in any of the four glasses, then add one more tablespoon (15 ml) of water to each of the four glasses.
3. Add 2-3 drops of red food coloring to the first glass, yellow food coloring to the second glass, green food coloring to the third glass, and blue food coloring to the fourth glass. Stir each solution.
4. Now let's make a rainbow using the different density solutions. Fill the last glass about one-fourth full of the blue sugar solution.
5. Carefully layer some green sugar solution above the blue liquid. Do this by putting a spoon in the glass, just above the blue layer, and pouring the green solution slowly over the back of the spoon. If you do this right, you won't disturb the blue solution much at all. Add green solution until the glass is about half full.

6. Now layer the yellow solution above the green liquid, using the back of the spoon. Fill the glass to three-quarters full.
7. Finally, layer the red solution above the yellow liquid. Fill the glass the rest of the way.

Safety and Tips

- The sugar solutions are miscible, or mixable, so the colors will bleed into each other and eventually mix.
- If you stir the rainbow, what will happen? Because this density column is made with different concentrations of the same chemical (sugar or sucrose), stirring would mix the solution. It would not un-mix like you would see with oil and water.
- Try to avoid using gel food coloring. It is difficult to mix the gels into the solution.
- If your sugar won't dissolve, an alternative to adding more water is to microwave the solutions for about 30 seconds at a time until the sugar dissolves. If you heat the water, use care to avoid burns.
- If you want to make layers you can drink, try substituting unsweetened soft drink mix for the food coloring, or four flavors of a sweetened mix for the sugar plus coloring.
- Let heated solutions cool before pouring them. You'll avoid burns, plus the liquid will thicken as it cools so the layers won't mix as easily.
- Use a narrow container rather than a wide one to see the colors the best,

The old baking soda experiment

The baking soda and vinegar volcano is a classic science experiment that can help kids learn about chemical reactions and what happens when a volcano erupts. While it's obviously not the *real* thing, this kitchen equivalent is fun all the same! The baking soda volcano is also non-toxic, which adds to its appeal—and it only takes about 30 minutes to complete.

Did You Know?

1. The cool red lava is the result of a chemical reaction between the baking soda and vinegar.
2. In this reaction, carbon dioxide gas is produced, which is also present in real volcanoes.
3. As the carbon dioxide gas is produced, pressure builds up inside the plastic bottle, until—thanks to the detergent—the gas bubbles out of the mouth of the volcano.

Volcano Science Project Materials

- 6 cups flour
- 2 cups salt
- 4 tablespoons cooking oil
- warm water
- plastic soda bottle
- dishwashing detergent
- food coloring
- vinegar
- baking dish or another pan
- 2 tablespoons baking soda

Make the Chemical Volcano

1. Start by making the cone of your baking soda volcano by mixing 6 cups flour, 2 cups salt, 4 tablespoons cooking oil, and 2 cups of water. The resulting mixture should be smooth and firm (add more water if needed).

2. Stand the soda bottle in the baking pan and mold the dough around it to form a volcano shape. Be sure not to cover the hole or drop dough inside the bottle.
3. Fill the bottle most of the way full with warm water and a bit of red food coloring. (You can do this prior to sculpting the cone as long as you don't take so long that the water gets cold.)
4. Add 6 drops of detergent to the contents of the bottle. The detergent helps trap bubbles produced by the chemical reaction so you get better lava.
5. Add 2 tablespoons baking soda to the liquid in the bottle.
6. Slowly pour vinegar into the bottle, and then watch out...It's eruption time!

Experiment With the Volcano

While it's fine for young explorers to tackle a simple model volcano, if you want to make the volcano a better science project, you'll want to add the scientific method. Here are some ideas for different ways to experiment with a baking soda volcano:

- Make a prediction about what happens if you change the amount of baking soda or vinegar. Record and analyze the effect, if any.
- Can you think of ways to change the volcano to make the eruption go higher or last longer? This might involve changing the chemicals or the shape of the volcano. It helps to record numerical data, such as the volume of liquid, the height of the "lava," or the duration of the eruption.
- Does it affect your volcano if you use a different kind of chemical to color the volcano? You could use tempera paint powder.

- Try using tonic water instead of regular water to get a volcano that glows under black light.
- What happens if you substitute other acids instead of vinegar or other bases instead of baking soda? (Examples of acids include lemon juice / examples of bases include laundry detergent.) **Use caution if you decide to substitute chemicals because some mixtures can be** dangerous **and may produce hazardous gasses. Never experiment with bleach or bathroom cleaners.**
- Adding a bit of food coloring will result in red-orange lava! Orange seems to work best. Add some red, yellow, and even purple, for a bright display. I usually do this experiment in the sand pit….for obvious reasons.

Invisible Ink

Making invisible ink to write and reveal secret messages is a great science project to try, even if you think you don't have the right chemicals. Why? Because just about any chemical can be used as invisible ink if you know how to use it.

What Is Invisible Ink?

Invisible ink is any substance that you can use to write a message that is invisible until the ink is revealed. You write your message with the ink using a cotton swab, dampened finger, or toothpick. Let the message dry. You might also want to write a normal message on the paper so that it doesn't appear to be blank and meaningless. If you write a cover message, use a ballpoint pen, pencil, or crayon, some fine liners are water based and the ink could run into your invisible ink.

How you reveal the message depends on the ink you use. Most invisible inks are made visible by heating the paper. Ironing the paper and holding it over a 100-watt bulb are easy ways to reveal

these types of messages. Some messages are developed by spraying or wiping the paper with a second chemical. Other messages are revealed by shining an ultraviolet light on the paper.

Ways to Make Invisible Ink

Heat-Activated Invisible Inks

You can reveal the message by ironing the paper, setting it on a radiator, placing it in an oven or holding it up to a hot light bulb**.(All of these things should be done by an adult or by you with close adult supervision)**

To write the message you can use:

- Any acidic fruit juice (e.g., lemon, apple, or orange juice)
- Onion juice
- Baking soda (sodium bicarbonate) You might have some left after making the volcano?
- Vinegar
- White wine
- Diluted cola
- Diluted honey
- Milk
- Soapy water
- Sucrose (table sugar) solution

Inks Developed by Chemical Reactions

These inks are sneakier because you have to know how to reveal them. Most of them work using pH indicators, so when in doubt, paint or spray a suspected message with a base (such as sodium carbonate solution) or an acid (such as lemon juice). Some of these inks will reveal their message when heated (e.g., vinegar).

Examples of such inks include:

- Ammonia, developed by red cabbage water
- Sodium bicarbonate (baking soda), developed by grape juice
- Sodium chloride (table salt), developed by silver nitrate
- Starch (e.g., corn starch or potato starch), developed by iodine solution
- Lemon juice, developed by iodine solution

Inks Developed by Ultraviolet Light (Black Light)

Most inks that become visible when you shine a black light on them also would become visible if you heated the paper. Glow-in-the-dark stuff is still cool. Here are some chemicals to try:

- Dilute laundry detergent (the bluing agent glows)
- Tonic water (quinine glows)
- Vitamin B-12 dissolved in vinegar

Any chemical that weakens the structure of paper can be used as an invisible ink, so you might find it fun to discover other inks around your home and see if they work.

Rock Candy

Rock candy is another name for sugar or sucrose crystals. Making your own rock candy is a fun and tasty way to grow crystals and see the structure of sugar on a big scale. Sugar crystals in granulated sugar display a monoclinic form, but you can see the shape much better in homegrown large crystals. This recipe is for rock candy that you can eat. You can color and flavor the candy, too.

Materials

Basically, all you need to make rock candy is sugar and hot water. The color of your crystals will depend on the type of sugar you use (raw sugar is more golden than refined granulated sugar) and whether or not you add coloring. Any food-grade colorant will work.

- 3 cups sugar
- 1 cup water
- Pan
- Stove or microwave
- Optional: food coloring
- Optional: 1/2 to1 teaspoons flavoring oil or extract
- Cotton string
- Pencil or knife
- Clean glass jar
- Optional: Lifesaver candy

Instructions

1. Pour the sugar and water into the pan.
2. Heat the mixture to a boil, stirring constantly. You want the sugar solution to hit boiling, but not get hotter or cook too long. If you overheat the sugar solution you'll make hard candy, which is nice, but not what we're going for here.
3. Stir the solution until all the sugar has dissolved. The liquid will be clear or straw-colored, without any sparkly sugar. If you can get even more sugar to dissolve, that's good, too.

4. If desired, you can add food coloring and flavoring to the solution. Mint, cinnamon, or lemon extract are good flavorings to try. Squeezing the juice from a lemon, orange, or lime is a way to give the crystals natural flavor, but the acid and other sugars in the juice may slow your crystal formation.
5. Set the pot of sugar syrup in the refrigerator to cool. You want the liquid to be slightly cooler than room temperature. Sugar becomes less soluble as it cools, so chilling the mixture will make it so there is less chance of accidentally dissolving sugar you are about to coat on your string.
6. While the sugar solution is cooling, prepare your string. You are using cotton string because it is rough and non-toxic. Tie the string to a pencil, knife, or another object that can rest across the top of the jar. You want the string to hang into the jar, but not touch the sides or bottom.
7. You don't want to weight your string with anything toxic, so rather than use a metal object, you can tie a Lifesaver to the bottom of the string.
8. Whether you are using the Lifesaver or not, you want to 'seed' the string with crystals so that the rock candy will form on the string rather than on the sides and bottom of the jar. There are two easy ways to do this. One is to dampen the string with a little of the syrup you just made and dip the string in sugar. Another option is to soak the string in the syrup and then hang it to dry, which will cause crystals to form naturally (this method produces 'chunkier' rock candy crystals).
9. Once your solution has cooled, pour it into the clean jar. Suspend the seeded string in the liquid. Set the jar somewhere quiet. You can cover the jar with a paper towel or coffee filter to keep the solution clean.
10. Check on your crystals, but don't disturb them. You can remove them to dry and eat when you are satisfied with the size of your rock candy. Ideally, you want to allow the crystals to grow for 3 to 7 days.

11. You can help your crystals grow by removing (and eating) any sugar 'crust' that forms on top of the liquid. If you notice a lot of crystals forming on the sides and bottom of the container and not on your string, remove your string and set it aside. Pour the crystallized solution into a saucepan and boil/cool it (just like when you make the solution). Add it to a clean jar and suspend your growing rock candy crystals.

Once the crystals are done growing, remove them and let them dry. The crystals will be sticky, so the best way to dry them is to hang them. If you plan to store the rock candy for any length of time, you'll need to protect the outer surface from humid air. You can seal the candy in a dry container, dust the candy with a thin coating of confectioner's sugar to reduce sticking, or lightly spray the crystals with non-stick cooking spray.

Rubber Eggs

I've seen this experiment performed many times. It always amazes me. Soak an egg in a common kitchen ingredient, vinegar, to dissolve its shell and make the egg rubbery enough that you can bounce it on the floor like a ball. Soaking chicken bones in vinegar will soften them so that they will become rubbery and flexible.

Rubber Egg Materials

You only need a few simple materials for this project:

- Hard-boiled egg
- Glass or jar, big enough to hold the egg
- Vinegar

Turn the Egg into a Bouncy Ball

1. Place the egg in the glass or jar.
2. Add enough vinegar to completely cover the egg.
3. Watch the egg. What do you see? Little bubbles may come off the egg as the acetic acid in the vinegar attacks the calcium carbonate of the eggshell. Over time the color of the eggs may change as well.
4. After 3 days, remove the egg and gently rinse the shell off of the egg with tap water.
5. How does the boiled egg feel? Try bouncing the egg on a hard surface. How high can you bounce your egg?
6. You can soak raw eggs in vinegar for 3-4 days, with a slightly different result. The eggs shell will become soft and flexible. You can gently squeeze these eggs, but it's not a great plan to try to bounce them on the floor.

Make Rubbery Chicken Bones

If you soak chicken bones in vinegar (the thinner bones work best), the vinegar will react with the calcium in the bones and weaken

them so that they will become soft and rubbery, as if they had come from a rubber chicken. It is the calcium in your bones that makes them hard and strong. As you age, you may deplete the calcium faster than you replace it. If too much calcium is lost from your bones, they may become brittle and susceptible to breaking. Exercising and eating a diet that includes calcium-rich foods can help prevent this from happening.

Fireworks …ina glass

Fireworks are a beautiful and fun part of many celebrations, but not something you want kids to make themselves, but even very young explorers can experiment with these safe underwater 'fireworks'.

What You Need

- Water
- Oil
- Food coloring
- Tall clear glass
- Another cup or glass
- Fork

Create Fireworks in a Glass

1. Fill the tall glass almost to the top with room-temperature water. Warm water is ok, too.
2. Pour a little oil into the other glass (1 to 2 tablespoons).
3. Add a couple of drops of food coloring.
4. Briefly stir the oil and food coloring mixed with a fork. You want to break up the food coloring drops into smaller drops, but not thoroughly mix the liquid.
5. Pour the oil and coloring mixture into the tall glass.
6. Now watch! The food coloring will slowly sink in the glass, with each droplet expanding outward as it falls, resembling fireworks falling into the water.

How It Works

Food coloring dissolves in water, but not in oil. When you stir the food coloring in the oil, you are breaking up the coloring droplets (though drops that come into contact with each other will merge... blue + red = purple). Oil is less dense than water, so the oil will float at the top of the glass. As the colored drops sink to the bottom of the oil, they mix with the water.

The color diffuses outward as the heavier colored drop falls to the bottom.

Pepper and Water Trick

The pepper and water science trick is one of the easiest magic tricks you can perform. It was quite popular recently when it was used by people to show how important it is to wash your hands (https://www.youtube.com/watch?v=_KirHm_sYfI)Here's how to do the trick and an explanation of how it works.

Necessary Materials

You only need a few common kitchen ingredients to perform this science magic trick.

- black pepper (Be careful not to get rub your face with pepper on your fingers)
- water
- dishwashing liquid
- plate or bowl

Steps to Performing the Trick

1. Pour water into a plate or bowl.
2. Shake some pepper onto the water's surface.
3. Dip your finger into the pepper and water (Nothing much will happen).
4. However, if you put a drop of dishwashing liquid on your finger and then dip it into the pepper and water the pepper will rush to the outer edges of the dish.

If you are doing this as a "trick" then you might have one finger that is clean and another finger that you dipped in detergent before performing the trick. You could use a spoon or chopstick if you don't want a soapy finger.

Here's How the Trick Works

When you add detergent to water the surface tension of the water is lowered. Water normally bulges up a bit, like what you see when you look at a water drop. When the surface tension is lowered, the water wants to spread out. As the water flattens on the dish, the pepper that is floating on top of the water is carried to the outer edge of the plate as if by magic.

Exploring Surface Tension with Detergent

What happens if you mix detergent into the water and then shake pepper onto it? The pepper sinks to the bottom of the plate because the surface tension of the water is too low to hold up the particles.

The high surface tension of water is why spiders and some insects can walk on water. If you added a drop of detergent to the water, they would sink, too.

Floating Needle Trick

A related science-based trick is the floating needle trick. You can float a needle (or paperclip) on water because the surface tension is

high enough to hold it up. If the needle gets completely wet, it will sink immediately. Running the needle across your skin first will coat it with a thin layer of oil, helping it to float. Another option is to set the needle on a floating bit of tissue paper. The paper will become hydrated and sink, leaving a floating needle. Touching the water with a finger dipped in detergent will cause the metal to sink.

Coins in a Glass of Water

Another way to demonstrate the high surface tension of water is to see how many coins you can add to a full glass of water before it overflows. As you add coins, the surface of the water will become convex before finally overflowing. How many coins can you add? This depends on how you add them. Slowly sliding the coins into the water edge-on will improve your results. If you're competing with a family member, you can sabotage his efforts by coating his coins with soap.

Cloud in a Bottle

We made this quick and easy science project at EcoLink last year. Clouds form when water vapor forms tiny visible droplets. This results from cooling the vapor. It helps to provide particles around which the water can liquefy. In this project, we'll use smoke to help form a cloud.

Cloud in a Bottle Materials

You only need a few basic materials for this science project:

- 2-litre bottle
- Warm water
- Match

Let's Make Clouds

1. Pour just enough warm water in the bottle to cover the bottom of the container.
2. **Have an adult** light a match and place the match head inside the bottle.
3. Allow the bottle to fill with smoke.
4. Cap the bottle.
5. Squeeze the bottle really hard a few times. When you release the bottle, you should see the cloud form. It may disappear between "squeezes."

How Clouds Form

Molecules of water vapor will bounce around like molecules of other gases unless you give them a reason to stick together. Cooling the vapor slows the molecules down, so they have less kinetic energy and more time to interact with each other.

How do you cool the vapor? When you squeeze the bottle, you compress the gas and increase its temperature. Releasing the container lets the gas expand, which causes its temperature to go

down. Real clouds form as warm air rises. As air gets higher, its pressure is reduced. The air expands, which causes it to cool. As it cools below the dew point, water vapor forms the droplets we see as clouds. Smoke acts the same in the atmosphere as it does in the bottle. Other nucleation particles include dust, pollution, dirt, and even bacteria.

Most of these tasks were found at this website

https://www.thoughtco.com/kitchen-science-experiments-for-kids-604169

This was another handy website

https://www.fizzicseducation.com.au/category/150-science-experiments/kitchen-chemistry-experiments/

WARNING

There are loads of sites on the Internet with fantastic experiments you can try at home. Remember that none of these or other experiments using chemicals or heat should be undertaken unless under active parent supervision.