Activities to try at home together

THE BIG PICTURE

Looking at objects closely is an important part of science, and a magnifying glass lets us see things we don't even know are there. It also helps us see how objects are similar or different from each other.

Kit

- A magnifying glass
- A notebook

Instructions

Use your magnifying glass to see:

1. What's hidden in soil or under leaves:
2. What's on both sides of leaves:
3. How mosquitos bite:
4. Different patterns of snowflakes and butterfly wings.

How many different objects can you find in the soil? Draw pictures or describe what you see in your notebook.

BUBBLES

Who doesn't enjoy blowing bubbles? You can make bubbles at home - they can be beautiful shapes and colours!

Kit

- 8 tablespoons of dishwashing liquid
- 1 pint of water
- 1 drinking straw
- a shallow tray

Grown-up alert!

- 1 tin can, open at both ends
- notebook

Instructions

1. Mix the dishwashing liquid with the water. Fill the shallow tray.
2. Blow through your straw as you move it slowly across the surface of the solution. How big are the bubbles you get?
3. Try making a very big bubble that covers the surface of the tray: dip one end of the straw into the sudsy solution then hold the straw slightly above the surface of the solution. Blow into it very gently. You may have to try several times to make a really big bubble. When you have made a bubble, touch it gently with a wet finger. What happens?
4. Make another big bubble. Touch this one with a dry finger. What happens?
5. Try making bubbles with a tin can (don't cut yourself) open at both ends. Dip the can into the soapy solution so that you get a soap "window" across one end when you pull it out. Blow gently on the other end to form a bubble. You can use wider tubes such as coffee containers to make even bigger bubbles.
6. Look closely at the bubbles you make. How many colours can you see? Do the colours change?
7. If you have a wand at home that is left over from a bottle of bubbles you bought at the store, you can use it with this bubble solution.

Bubbles are bits of air or gas trapped inside a liquid ball. The surface of a bubble is very thin. Bubbles are particularly fragile when a dry object touches them. That's because soap film tends to stick to the object, which puts a strain on the bubble. So, if you want your bubbles to last longer, keep everything wet, even the sides of the straw.



BUGS!

Some bugs help us, some annoy us, and some are downright dangerous. But you can learn a lot from bugs.

Kit

- An insect guide and a spider guide from the bookstore or library, preferably ones with pictures:
- Your magnifying glass:
- Your science journal.

Instructions

1. Search your home and neighbourhood for bugs.
   Grown-up alert!
   Look round your front door, in cracks in the sidewalk, on lamps or lights hanging from the centre of the room, on plants, in crevices, in drawers, in corners of rooms.
2. Identify types of bugs using the guides. What did you find? Ants, spiders, fleas, silverfish, moths, flies, ladybirds?

Ants can teach us how some insects work together as a community.

- Watch ants scurry in and out of their ant hills or find some spilled food on the pavement. Do they eat their food on the spot, or carry it back to their anthill?
- When an ant finds food, it runs back to the hill to "tell" the others. As it runs, it leaves a trail that other ants in the hill can smell. The ants find the food by smelling their way along the trail.

3. Find out what the difference is between an insect and a spider.

- Why do spiders spin webs?
- What are webs made of?
- Write down possible answers to all these questions in your notebook or draw pictures of what you see.

Bugs do what they do to survive. They are constantly looking for food. Some bugs are both good and bad. Termites, for example, have a nasty reputation because they destroy people's houses by eating the wood. But they also break down old trees, keeping the forest floor from becoming too cluttered with dead trees.

HAIR-RAISING RESULTS

Have you ever been shocked when you walked across a rug or touched a light switch? Wait until a cool, dry day to learn about static electricity.

Kit

- A cool, dry day
- 2 round balloons (inflated and tied)
- 2 20-inch pieces of string
- 1 wool or acrylic sock
- 1 mirror (or more)
- 1 friend (or more)
- Your science notebook

Instructions

1. Tie a string to each inflated balloon. Rub a balloon on your hair for about 15 seconds. Be sure to rub around the whole balloon. What happens to your hair? What happens when you bring the balloon back close to your hair? Rub the balloon on your hair again and have a friend (or parent) do the same with the other balloon.

2. Each of you hold the string to 1 balloon, letting the balloons hang freely but without letting them touch anything. Slowly move the 2 balloons toward each other but don't let them touch. What do you see? Do the balloons push away from each other or do they pull toward each other?

3. Place your hand between the two hanging balloons. What happens?

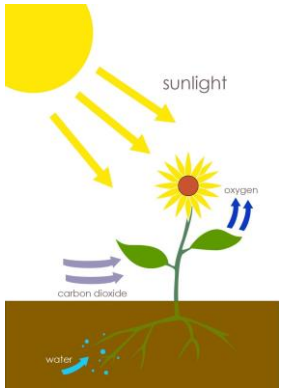
4. Place a sock over 1 hand and rub 1 balloon with the sock. Then let the balloon hang freely. Bring your sock covered hand near the balloon. What happens?

5. Try rubbing both balloons with the sock and then let them hang near each other. What happens now?

6. Look for other examples of static electricity around the house.

7. Have you ever felt a shock when you touched a metal doorknob on a cold winter's day? What often happens when you remove the clothes from the tumble dryer?

All materials contain millions of tiny particles, called protons and electrons, that have electric charges. Protons have positive charges and electrons have negative ones. Usually, they balance each other but sometimes when two surfaces rub together, some of the electrons rub off one surface onto the other and we can have static electricity. Materials with like charges (all positive or all negative) move away from each other; those with opposite charges attract each other.



PLANTS

Plants are the only things on earth that turn sunlight into food. They do it through a process called photosynthesis which is explored in this activity.

Kit

- some household plants
- a book on plant care from a store or the library

Grown-up alert!

- plant fertilizer
- paper
- scissors
- your magnifying glass
- your science notebook

Instructions

1. Look in your plant care book, or ask a grown-up, to find out how much water each plant needs. Some may need to be watered more than others.
2. Take two clippings from one plant. Put one in a glass of water. Put the other one in a glass with no water. Check each day to see how long the one without water can survive.
3. Water the rest of the plants each week for several weeks. Fertilize some of the plants but not others during this time. Label the ones you fertilized.
4. Record the following in your science journal for those plants that got fertilized and for those that didn't:
   i. Did any of the plants start to droop?
   ii. Did any of the plants have yellow leaves that fell off?
   iii. Did the plants grow towards the light?
   iv. See what happens when a plant (or part of a plant) doesn't get any light:

5. Then try the following too:
   i. Cut 3 paper shapes about 2 inches by 2 inches. Circles and triangles work well, but you can experiment with other shapes, too.
   ii. Clip them to the leaves of a plant, preferably one with large leaves. Either an indoor or an outdoor plant will do. Be very careful not to damage the plant.
   iii. Leave one paper cut out on for 1 day, a second on for 2 days, and a third on for a week. How long does it take for the plant to react? How long does it take for the plant to return to normal?

Photosynthesis means to "put together using light". Plants use sunlight to turn carbon dioxide from the air and water into food. Plants need all of these to remain healthy. When the plant gets enough of these things it produces a simple sugar which it uses immediately or stores in a converted form of starch. We don't know exactly how this happens. But we do know that chlorophyll, the green substance in plants, helps it to occur.