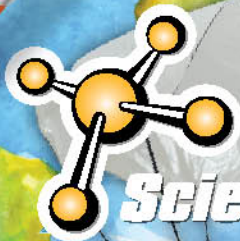


Green Science

Explore eco-science with these fun and Earth-friendly projects re-using old materials!



Science4you



WARNING:

CHOKING HAZARD - Toy contains marbles.
Not for children under 3 years.

Play Monster



WARNING:

This set contains chemicals that may be harmful if misused. Read cautions on individual containers carefully. Not to be used by children except under adult supervision.



Dear Parents and Guardians:

Through play, children develop different cognitive skills. Scientific studies show that when we are having fun or making discoveries during an experiment, a neurotransmitter called Dopamine is released.

Dopamine is known to be responsible for feelings like motivation, reward and learning and that's why experiences are related to positive feelings. So, if learning is a positive experience, it will stimulate the brain to develop various skills.

Therefore, Science4you aims to develop educational toys that combine fun with education by fostering curiosity and experimentation.

Find out below which skills can be developed with the help of this educational toy!



The educational feature is one of the key strengths of our toys. We aim to provide toys which enable children's development of physical, emotional and social skills.

Find out more about Science4you toys at:

www.playmonster.com

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For more fun, visit playmonster.com

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Green Science

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SAFETY RULES

- Read these instructions before use, follow them and keep them for reference.
- Keep young children and animals away from the experimental area.
- Clean all equipment after use.
- Make sure that all containers are fully closed and properly stored after use.
- Ensure that all empty containers are disposed of properly.
- Wash hands after carrying out experiments.
- Do not use any equipment which has not been supplied with the set or recommended in the instructions for use.
- Do not eat or drink in the experimental area.
- Do not replace food items back in their original container(s) or packaging. Dispose of immediately.
- Take care while handling with hot water and hot solutions.

GENERAL FIRST AID INFORMATION

- **In case of eye contact:** Wash out eye with plenty of water, holding eye open if necessary. Seek immediate medical advice.
- **If swallowed:** Wash out mouth with water, drink some fresh water. Do not induce vomiting. Seek immediate medical advice.
- **In case of inhalation:** Remove person to fresh air.
- **In case of skin contact and burns:** Wash affected area with plenty of water for at least 10 minutes.
- In case of doubt, seek medical advice immediately. Take the product and its container with you.
- In case of injury always seek medical advice immediately.

ADVICE FOR SUPERVISING ADULTS

- Read and follow these instructions, the safety rules and the first aid information, and keep them for reference.
- This experimental set is for use only by children over 6 years.
- Because children's abilities vary so much, even within age groups, supervising adults should exercise discretion as to which experiments are suitable and safe for them. The instructions should enable supervisors to assess any experiment to establish its suitability for a particular child.
- The supervising adult should discuss the warnings and safety information with the child or children before commencing the experiments.
- The area surrounding the experiment should be kept clear of any obstructions and away from the storage of food. It should be well lit and ventilated and close to a water supply. A solid table with a heat resistant top should be provided.
- This experimental set contains seeds. The seeds must be kept away from eyes, nose and mouth. In case the seeds come in contact with eyes or mouth, wash with running tap water. In case of rash or irritation seek medical advice.

In case of poisoning by any of the components used in the experiments of this toy, contact your local poison control center or the nearest hospital. Please consult the following link for more information: <https://www.poison.org/>



In case of emergency dial:
9-1-1 or Poison Control: 1-800-222-1222



LIST OF SUBSTANCES SUPPLIED

Watercress seeds

Green bean seeds

Soil

Recommendations for substances and mixtures: Do not ingest. Avoid contact with the eyes and mouth. Use only according to the instructions. Store in tightly closed containers. Keep in a cool, dry place. Protect from moisture, direct sunlight and heat sources.

DISPOSAL OF SUBSTANCES

Do not dispose of substances and / or mixtures together with household or other waste. Please recycle packaging materials where local recycling programs exist.



KIT CONTENTS



Green Science puzzle
(60 pieces)



Card with graphic elements



Wooden sticks



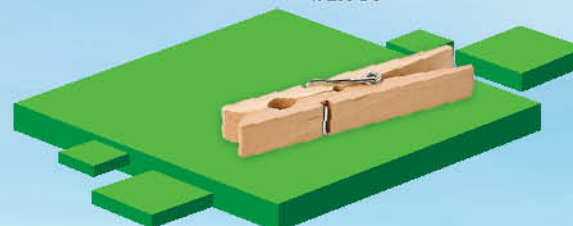
Cotton balls



Decorative stickers



Paper straws



Clothes pin



Paper clips



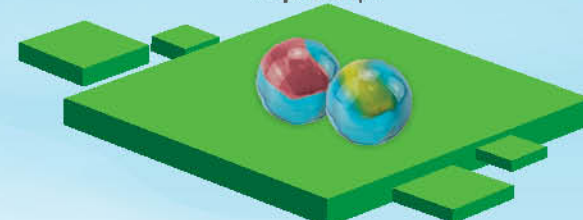
Biodegradable flower pots



Wooden stirrers



Craft wires



Marbles



Rubber bands



Watercress seeds



Green bean seeds



Yarn



Soil



5R's - Rethink • Refuse • Reduce • Reuse • Recycle
See page 9 for these definitions!

You can give your kit cuvettes a new life!

Eco-Scientist, you can use the cuvettes as a laboratory bench for your experiments or even to make your recycling containers (see experiment 15).



Suggested setup

1. Think greener

Our planet is an amazing place to live, but ... it needs your help if we want it to last for generations to come!



The loss of **biodiversity**, the increase in **carbon dioxide emissions** (CO₂) and excessive **energy consumption** affect our planet and the consequences are already visible...

...but there are small changes that, if done by enough people, can make a difference! We have to make the Earth a **greener** planet!

Nowadays, **“green”** is more than just a color. Being green, or environmentally responsible, means taking steps to protect the environment — the plants, animals, water, land and the air we breathe.

But what does it mean to be “green”?

And why green?

Green is the nature's color! **Plants are green** and without them the Earth would not be a place that could be inhabited by us and other living beings!

Due to the presence of **chlorophyll**, which is a natural green pigment present in plant leaves that is responsible for light absorption.



Every day we make choices that affect the amount of waste and pollution that is produced in the world.

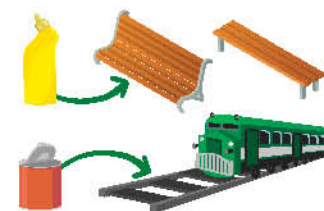
But what can we do to be greener?

1. Reduce: reduce the amount of waste generated and avoid excessive consumption of water, light, gas and other resources.

2. Reuse: use a product more than once for the same purpose, or give it a new utility.

3. Recycle: transform materials already used as raw material to manufacture new products.

Metal, plastic, paper, books and even your toys can all be recycled and made into all kinds of new and different objects!



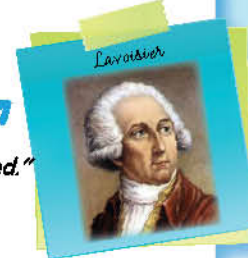
4. Rethink: before using or buying any item, we should always consider if we *really* need it.

5. Refuse: sometimes it's important to say “No!” We should always try to refuse products that come in plastic packaging, opting for more environmentally friendly packaging.

This is the **5R's policy!** That allows us to think about our daily lives and take green actions, even small ones. They add up!

As the French chemist, Lavoisier said:
“Nothing is lost, nothing is created, everything is transformed.”

And yet... enjoy and respect what nature has to give us — walk through the woods, plant a tree and harness its resources in a **sustainable** way!



What does it mean by being sustainable?

Sustainability is the word which tells us that we should all pay attention to what we consume today so that there will be enough for everyone tomorrow.

We must consume and use the resources that the Earth gives us in the best possible, most intelligent and efficient way, to ensure that these resources continue to exist in the future.

2. Scientific experiments

2.1. Mission: Save the planet

EXPERIMENT 1

What do plants need to grow?

What you will need:
Material included in the kit:



Extra items you will need:
• Water

How to make it:

1. Put some soil in one of the flower pots and add a bean seed, with the help of the wooden stick. The bean must be covered with about 1/2-inch of soil.
2. Put 2 cotton balls in another pot and add a few drops of water to make them moist.
3. Add a bean seed to the pot with the cotton balls.

4. Place the 2 flower pots near a window exposed to direct sunlight. Keep the cotton moist and water the soil in the flower pot.

5. Transplant

When your plants grow you can transplant them to a larger flower pot or to the garden, along with the biodegradable flower pot!

What happens?

Plants germinate (are born) from seeds! To grow, they need nutrients, water and sunlight. But not too much water, or they may not germinate.

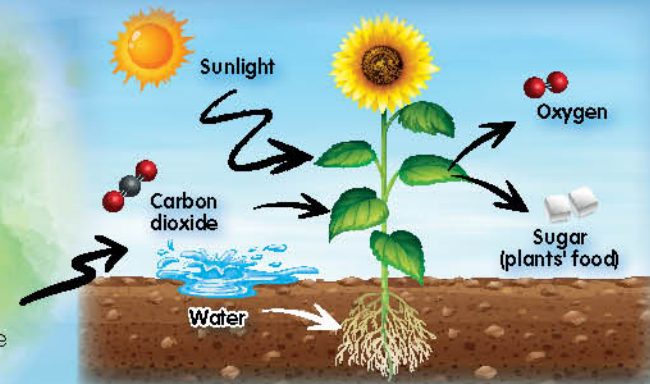
Plant life is mainly influenced by 4 factors:



Why are plants essential to save the planet?

Nowadays, due to atmospheric pollution (mainly from the release of carbon dioxide), the presence of many plants is essential in order to absorb **carbon dioxide**.

Plants, including trees, are responsible for **photosynthesis** a process in which they consume the carbon dioxide in the atmosphere and **release oxygen**!



We must keep practicing sustainable farming!

That is, trying to make the best use of existing conditions. Such as, adapting crops to climate and using the cooperation between soil and the living beings that make up part of the soil to benefit them both!

How can you help?

- Only consume seasonal products (fruits and vegetables) and preferably local.
- Create natural fertilizers for your crops, reducing the amount of waste that is produced daily.

DID YOU KNOW...

40% of our daily waste is organic waste (food and garden)? You can use this waste to make **compost**, a soil-like substance that is rich in nutrients and great for plants!

ECO-Challenge

Homemade compost

What to use: Lawn clippings, weeds, tree leaves, pieces of plant and vegetables, coffee grounds, eggshells, soil, water, paper, potato peels...

What you cannot use: Bones, fat, butter, animal feed, milk, stones, cans...

How to make it:

Prepare the compost

Put the organic material in layers with some garden soil.

Add water

Stir the contents regularly

at least once every 2 weeks.

The compost will be ready in **3 months**.

When it is ready, you can add it to your garden soil to improve its quality.

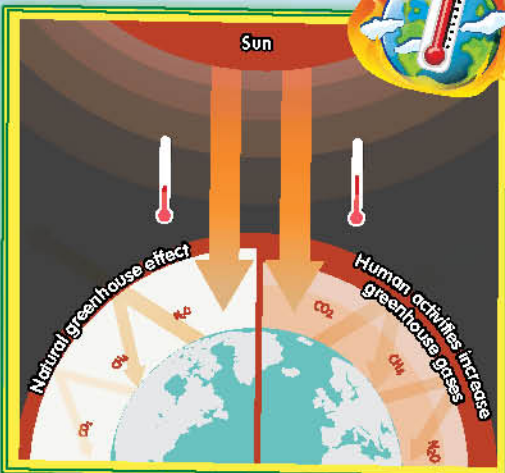
Global warming

Heat waves up to 104°F, soil degradation, strong hurricanes, storms, melting ice caps... are some examples that prove that our planet is changing. But why is it changing?

There is a type of layer made of various gases (including carbon dioxide) around our planet that keeps the temperature stable — which we call the **greenhouse effect**! But the problem is that in recent years we have sent too much carbon dioxide into the atmosphere that is creating the greenhouse effect, making the Earth warmer. We call this phenomenon **global warming**!

DID YOU KNOW...

According to scientists, the average global surface temperature of the Earth has increased by about 60.8°F in the last 100 years!



EFFECTS



SOLUTIONS



Ecological Tip

Eco-Scientist, if you want to keep your crops at a stable temperature, you can create a home-made mini greenhouse by reusing materials you have at home. **Check out these ideas:**



EXPERIMENT 2

The effect of air pollution on plants: acid rain

What you will need:
Material included in the kit:

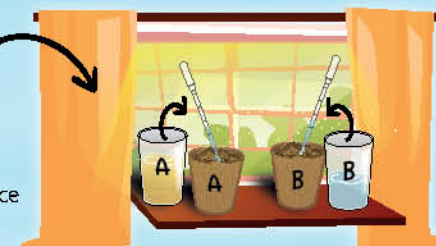
- Biodegradable flower pots
- Soil
- Green bean seeds
- Wooden stick
- Extra items you will need:
• Water • 2 Cups • Vinegar • Colored markers • Notebook • Pencil

How to make it:

1. Put some soil in each flower pot and then add 1 bean seed to each one. The seeds should be covered with about 1/2 inch of soil. Use the wooden stick to help you cover the seeds.
2. Prepare the **acid rain**: in one cup mix the same amount of water and vinegar and in another cup put only water.
3. Place the flower pots near a window exposed to direct sunlight, one of them will be pot A and the other pot B. Mark them each with a colored marker.

4. Mark each cup as shown in the diagram to the right. Flower pot A will be watered with the water and vinegar mixture, while flower pot B will be watered only with water.

5. Keep recording your observations! What do you conclude? After 5 days, do you notice any difference between the 2 flower pots? And after 10 days? Does acid rain influence plant growth?



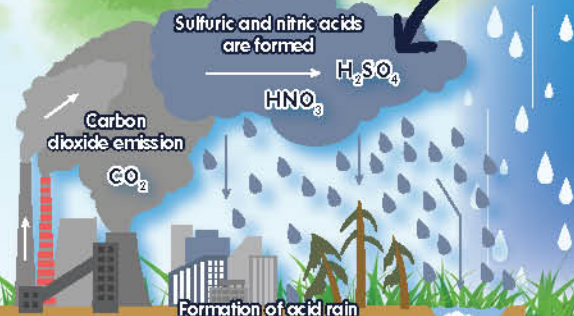
ATTENTION: when you finish the experiment, throw away all used food.

What happens?

Plants that are watered only with water should grow normally, as opposed to plants that have been subjected to **acid rain** where the germination level is expected to be reduced. In this case, those plants will have very shallow roots and poorly developed leaves and stems.

What is acid rain?

Acid rains are formed by the release of pollutants from human activity, which upon contact with atmospheric water, form acids and precipitate. This precipitation may occur in the form of rain, snow or hail. Also gases released by natural processes, such as those released in volcanic eruptions, can lead to the formation of acid rain. This has serious and negative consequences, affecting human health, farming (crops and soil), water and buildings.



Eco-Scientist, perform next page's activity before this experiment

DID YOU KNOW...
NASA scientists are studying plant growth in space with culture media similar to what you will create in this part of the experiment! The challenge is to grow sustainable plants without gravity!

EXPERIMENT 3

Other culture media: How can plants be grown in space

What you will need:
Material included in the kit:



• Watercress seeds

Extra items you will need:

• Gelatin • Deep dish • Transparent cup
• Water • Measuring cup • Spoon

4. Place the culture medium you have prepared in a deep dish and wait for it to cool without completely solidifying.

6. Place the deep dish near a window exposed to direct sunlight.

ATTENTION: when you finish the experiment, throw away all used food.

Now you have to be patient and wait for the seed to begin to germinate! Over the days you should be able to see several changes.

Observe the progress of your plant!

Eco-Scientist, with a pencil and a notebook, record the daily changes you see in your seeds! Draw everything you observe. Do not forget to write the date of each observation.

Most flowering plants consist of root, stem, leaves, flowers, fruits and seeds:

How to make it:

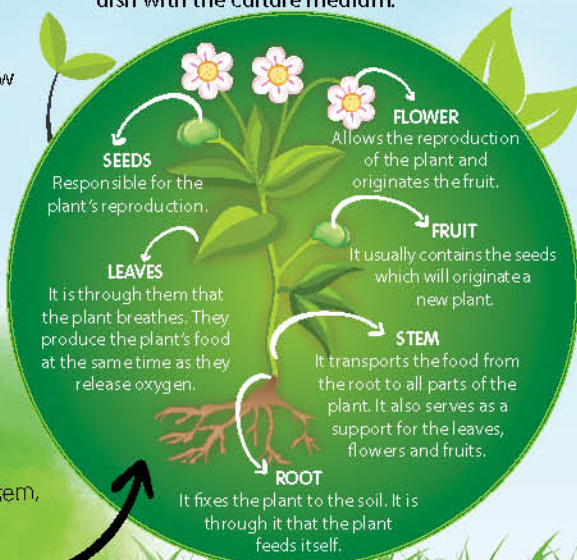
1. With the measuring cup, measure 100 milliliters (ml) of water.

2. Ask an adult to heat this water. Carefully pour hot water into the transparent cup.

3. Now pour the contents of a plain gelatin packet (about 10 - 12 grams [g]) into the cup and stir well using a spoon.



5. Then, put some watercress seeds into the dish with the culture medium.



2.2. Mission: Reuse and Learn Science

Scientist, let's reuse some materials you have around the house to make toys packed with science, are you ready?

Before you start... you can be anything you want!

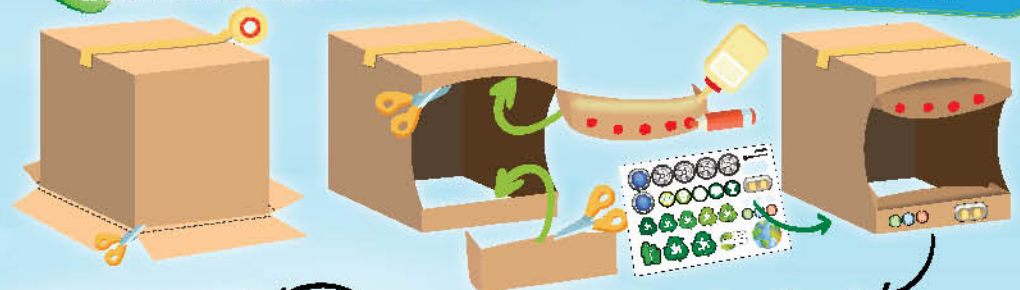
Extra material to reuse:

Big cardboard boxes

Let's take any cardboard boxes you have around the house and turn them into an amazing **astronaut helmet**! You can use it later in Experiment 3 and also in Experiment 12 to launch a super space rocket!

How to make it:

1. Become an ecological astronaut!



2. Become a robot!

What more can you do with cardboard boxes? Free your imagination and build whatever you want!



3. Become a television!



Ecology studies everything that changes the habitats of living beings, the effects this may have on the species' representation and the impact on its populations/communities.

a) Renewable energies – the sun, wind and water

What are they?

Renewable energies come from natural resources that are forms of energy available on the planet which can be used by humans over and over without running out.

Compared to **non-renewable** resources (natural gas, oil, coal and nuclear fuels), renewable energy is less polluting and more sustainable.

Renewable energy sources.

Non-renewable energy sources.



What happens?

The solar oven you build collects and concentrates the sun's rays are then transformed into thermal energy (heat), which allows the temperature inside the box to rise, cooking the food (in this case, baking).

Can pizza boxes be recycled?

If dirty, then it should not be recycled to avoid contamination between packages.



If the box is clean, it can and should be recycled! Put it in your recycling container.

Solar energy

The sun is the main source of energy on earth. If we used only its energy, it would supply our entire planet! Its energy can be turned into heat for water heating by solar thermal panels or electricity by photovoltaic panels!



EXPERIMENT 4

Solar oven

What you will need:
Material included in the kit:

• Decorative stickers

Extra items you will need:

• Aluminium foil • Adhesive tape • Ruler
• Plate • Scissors • Marshmallows • Pizza box

Extra material to reuse:
Pizza box

Always ask an adult for help!

How to make it:

1. Close the box and cut a flap at the top of the box, leaving about a 2-inch border on the sides and front.
2. Cover the inside of the box and the flap with aluminium foil and secure with tape. Use the decorative stickers to decorate your solar oven!



3. Put the marshmallows on a plate and place it inside the solar oven.

4. Using a ruler, open the box flap so that the sun's rays can be reflected into the solar oven.



5. Wait while the marshmallows are cooking. Depending on the time of day and temperature, it may take 1 hour or longer.

6. When you see that the marshmallows are ready, ask an adult to remove them from the oven! Be careful, it may still be hot!



EXPERIMENT 5

Windmill

What you will need:
Material included in the kit:

- Paper straw
- Craft wire

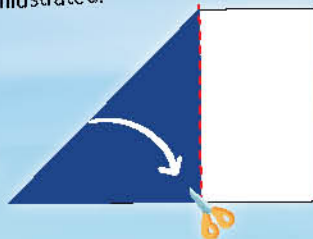
Extra items you will need:
• Scissors • Magazine



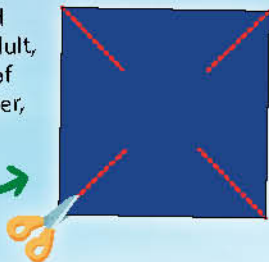
Always ask an adult to help you!

How to make it:

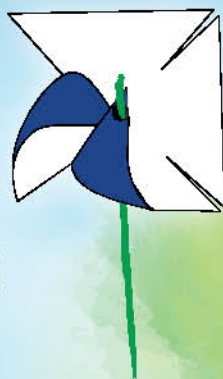
1. Start by turning the sheet of paper into a square, as illustrated.



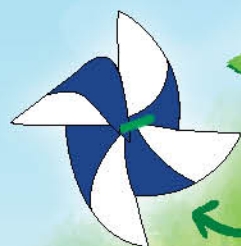
2. With scissors and the help of an adult, cut the corners of the sheet of paper, as illustrated.



3. Carefully pierce the middle of the sheet with the craft wire.



4. Take the sheet and fold half of each edge (always the same side) toward the hole in the middle. Pierce one hole in the corner of each folded edge and pass the craft wire through each one.



5. Wrap the other side of the craft wire around the straw, as illustrated. But beware, don't leave the straw too close to the windmill, otherwise it won't be able to spin!



The windmill is ready! Blow on it and watch it spin!

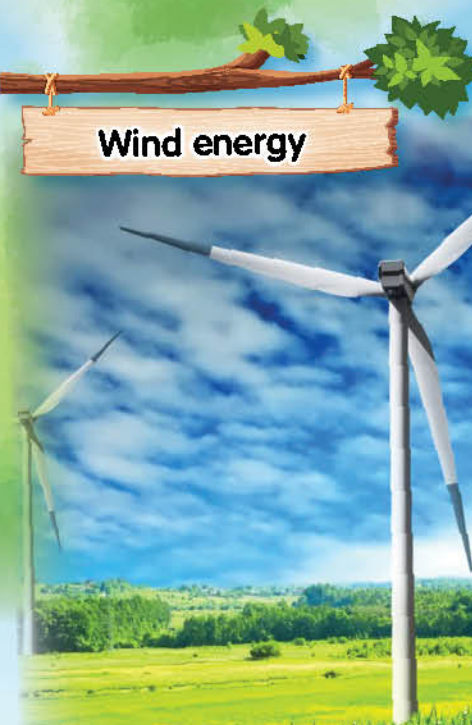


What happens?

When you blow, you can rotate the windmill blades as if it were the wind doing it! The wind is the moving air: sometimes it moves slowly, in a light breeze, sometimes very fast, like in thunderstorms, tornadoes and hurricanes. Wind is a natural and renewable resource whose force produces energy — wind energy.

Wind energy

Wind energy is obtained by harnessing the power of the wind, and is one of the most abundant resources on planet Earth. Wind forms when one area of the atmosphere is heated by the sun more than another. The different temperatures cause air movement, forming the wind. Nowadays wind energy is harnessed to produce electricity through wind turbines or wind generators that are placed all over the country in high windy areas!



ECO-Challenge

Wind energy has been used by humans for a long time... in mills that turned grain into flour or even by boats that harnessed the power of the wind to sail!

Make an old windmill!

Use a paper fastener, a cardboard tube from a roll of toilet paper and cardboard boxes to create a mill like this.



EXPERIMENT 6

Paddle boat

What you will need:
Material included in the kit:

• Rubber band

Extra items you will need:

- Ruler • Scissors • Stapler • Adhesive tape
- Box cutter or utility knife

Extra material
you can reuse:



Always ask an
adult for help!

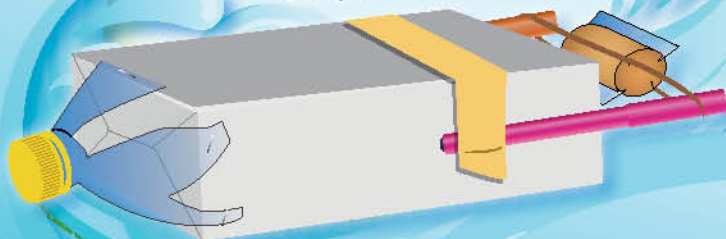


How to make it:

1. Make sure the milk/juice carton is well washed inside and out.
2. Using tape, attach one marker to each side of the container.
3. Ask an adult to help you cut the bottom off the bottle, and then cut out two 3 cm squares of plastic from the rest of the bottle, about the same length as the cork.
4. Ask an adult to use the box cutter or utility knife to cut 4 slits along the length of the cork at equal depths from each other.
5. Insert the two plastic squares (boat paddles) into two opposite slits of the cork and press the rubber band into the other two slits, as shown.
6. Stretch the rubber band with the cork and paddles around the edge of the markers.
7. Have an adult cut the top of the plastic bottle to fit the front of the boat and staple it.
8. Rotate the paddles until the elastic is rolled up and tight enough, then place the boat in the water before releasing it.

You can decorate your boat
as you like! Use collages of
old materials!

Can you move the boat?



What happens?

When you roll up the elastic band you are storing energy. So when you put the boat in the water, the elastic as it unwinds, releases the stored energy and rotates the paddles that in turn move the boat.

DID YOU KNOW...

A drop of oil pollutes
hundreds of gallons of
drinking water?



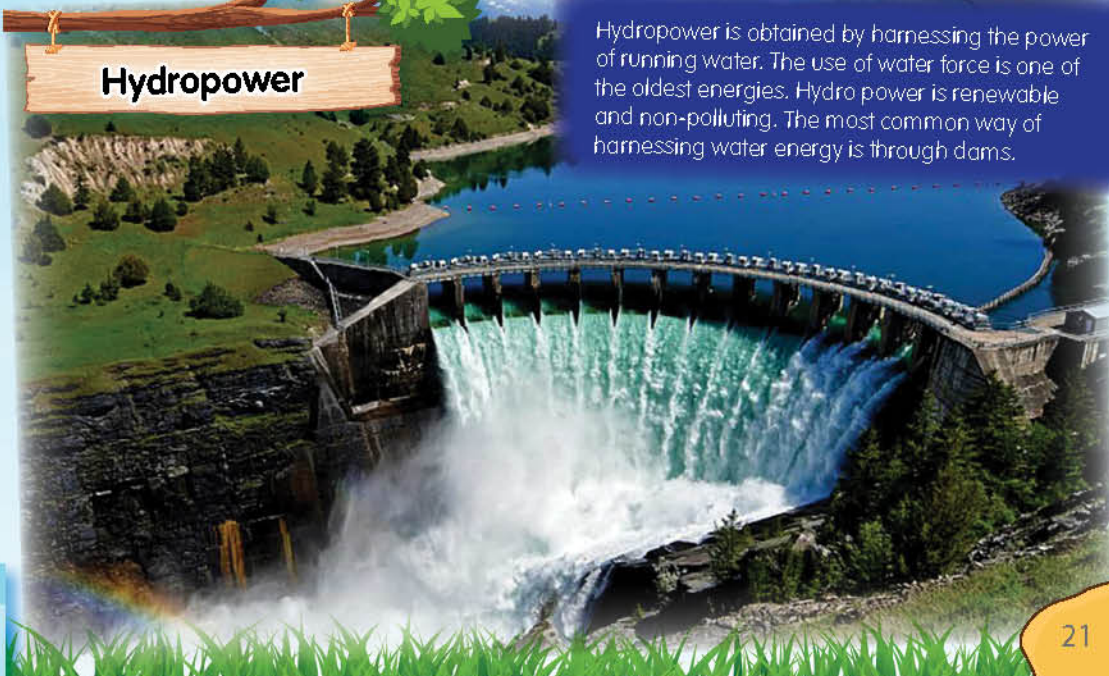
Ecological Tip

Water is essential to life,
so you should save it and
collect rainwater to water
your garden and plants!



Hydropower

Hydropower is obtained by harnessing the power of running water. The use of water force is one of the oldest energies. Hydro power is renewable and non-polluting. The most common way of harnessing water energy is through dams.



b) Ecological toys

EXPERIMENT 7

Hovercraft

What you will need:

Extra items you will need:
• Hot glue • Balloon

Extra material you can reuse:
CD
Pop-up, detergent bottle lid

ATTENTION: ask an adult to help you.

How to make it:

1. Ask an adult to glue the lid in the middle of the CD over the hole. Make sure it is securely glued around the edge so air can't escape.

3. Inflate the balloon, blowing through the hole on the other side of the CD. Then quickly press the lid closed.

4. Place the hovercraft on a flat smooth surface and "open" the lid.

Watch it move!

What happens?

When you open the lid, air is forced out from under the CD. As the air flows out evenly from all "sides" of the CD, its passage causes the formation of an "air mattress" that prevents the CD from contacting the ground and making it move.

The hovercraft is propelled by air that is expelled through the hole in the CD, just like a normal hovercraft.



Hovercraft

Where to dispose of balloons?

Please dispose of balloons in your household waste. The vast majority of balloons are made of latex, a natural rubber.

Where to dispose of CDs?

CDs and DVDs, as well as their cases, cannot be recycled. But if they are in a good condition they could be reused by taking them to a resale shop. You can also take them to community recycling centers.

DID YOU KNOW...

Balloons are biodegradable? Unfortunately their fragments are easily mistaken for food by birds, turtles, dolphins and whales, which endangers them.

EXPERIMENT 8

Bouncy animals

What you will need:
Material included in the kit:

• Card with graphic elements - box planification

Extra items you will need:
• Adhesive tape • Pencil • Washable markers

Extra material to reuse:
Magazine pages or old printer paper

Always ask an adult for help!

How to make it:

1. With the help of an adult, cut out the cardboard planification from the sheet of graphic elements.

2. Then, with a pencil, trace this planification onto a magazine page or other paper to reuse.

3. Decorate your planification and cut it out. Now, draw your favorite animal over and over!

4. With tape, assemble the box as shown. Do not forget to place the marbles inside before sealing it.

Shall we test it?

5. Place it on a sloping surface and watch!

What happens?

As you place the box on a sloping surface, it begins to turn somersaults! The marbles move to the bottom of the box as it slides, causing the box to flip and turn again and again.

Marbles = Force

Try racing on different types of surfaces! What is the surface that makes the box move and flip the fastest?

ECO - Challenge

Reuse your broken crayons!

Put unwrapped pieces in a silicone form and bake in the oven, preheated to 225°F, for 10 to 15 minutes, or until completely melted. Then place the form in the freezer for 30 minutes when hard. Pop them out and your new crayons are ready!



EXPERIMENT 9

Moving car

What you will need:
Material included in the kit:

- Paper straw
- Wooden sticks

- Decorative stickers - wheels

Extra items you will need:

- Ruler • Balloon • Adhesive tape
- Scissors • Pencil

Extra material to reuse:
Matchbox
4 Plastic bottle lids

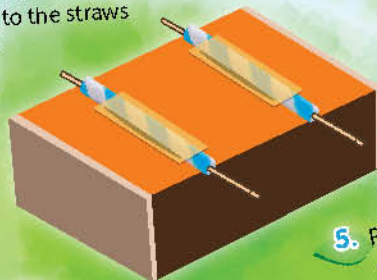
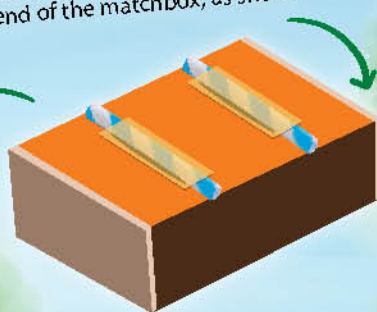
Always ask an adult for help!

How to make it:

1. Measure and cut two 2-1/4 inch segments of the straw; ask an adult for help with scissors.



2. Use the tape to attach each segment of straw to each end of the matchbox, as shown.

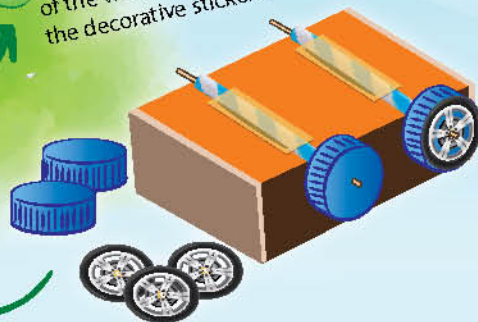


3. Ask an adult to cut 2 pieces of wooden stick to 3 inches each. Then, slide the pieces of wooden stick into the straws of the balloon car.

4. Ask an adult to help poke a hole through the four plastic lids. These will be the wheels of the car.



5. Place a bottle lid on each end of the wooden sticks. Then attach the decorative stickers.

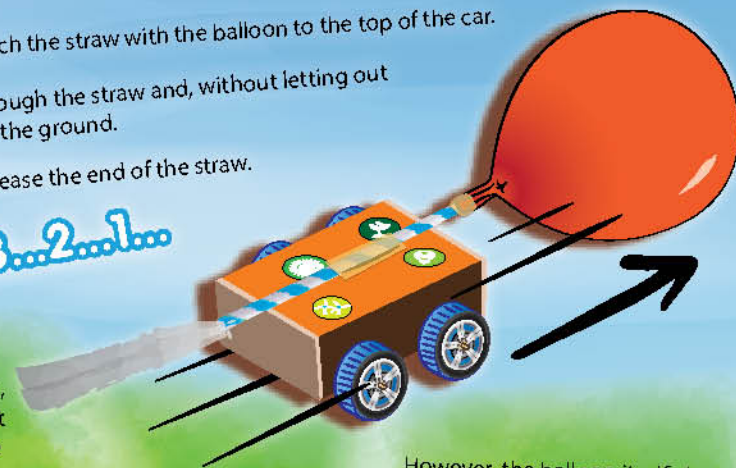


6. Place the leftover piece of straw in the balloon opening and secure with a lot of tape. To make sure the air does not escape, inflate the balloon through the straw and then hold the end of the straw to keep it closed. If the balloon loses air, add more tape.



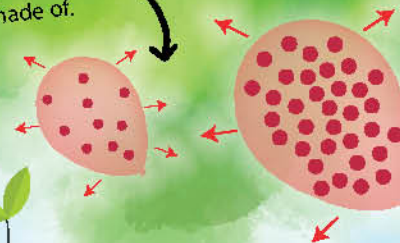
7. With the tape, now attach the straw with the balloon to the top of the car.
8. Inflate the balloon through the straw and, without letting out any air, put the car on the ground.
9. Count down and release the end of the straw.

3...2...1...



What happens?

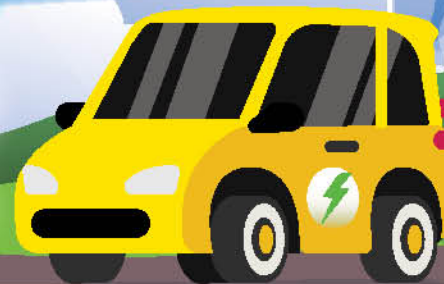
When inflating the balloon, air molecules press against its walls. It is this pressure that allows the balloon to increase in size by stretching the rubber it is made of.



However, the balloon itself also exerts pressure in the opposite direction, against the force of air - **propulsion phenomenon**. When you release the straw, the air inside the balloon exits through its nozzle. Thus, the car is forced to move in the opposite direction to the air outlet.

Environmentally friendly cars

Electric cars are powered by batteries and not fossil fuels! They have to be charged often, but they pollute much less!



EXPERIMENT 10

Catapult - shoot and hit

What you will need:
Material included in the kit:



• Wooden stirrers • Rubber bands

Extra items you will need:
• White glue • Washable markers



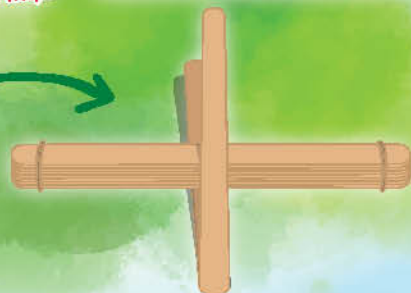
Always ask an adult for help!

How to make it:

1. Stack 8 wooden stirrers and use 2 rubber bands to secure them, one at each end.



2. Attach 2 more stirrers to the stack you just made, as shown.



3. Use a rubber band to fasten the stirrers where they meet, as shown. Use another rubber band to secure the whole stack in the middle. Make sure the stirrers are secure.

4. Finally, with the help of an adult, glue a bottle lid onto the indicated wooden spatula, as shown.

The catapult is ready!
Let's try it out.

Use pieces of newspaper to make little balls to launch with your catapult! Also make a target with different levels to test your aim!

Place a paper ball in the bottle lid, press down the stirrer a little, and then release it.

What happens?

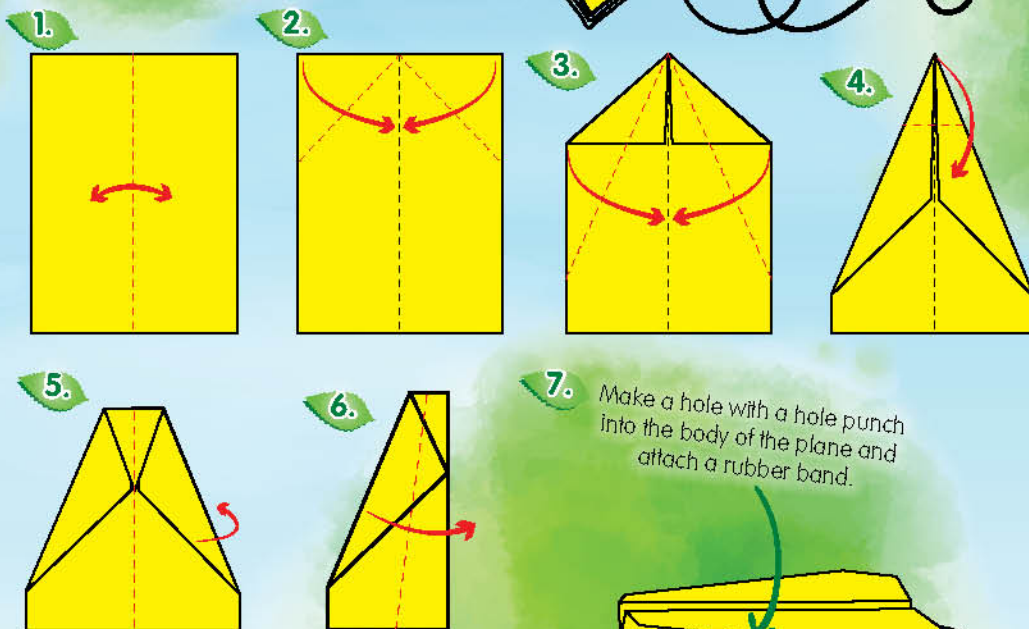
When you press down the spatula, you are charging the catapult launcher with energy (elastic potential energy). Thus, when released, this energy is liberated and converted into motion energy (kinetic energy), most of which is transferred to the paper ball that flies through the air at a certain speed.

ECO - Challenge

Slingshot - airplane

Fold an 8.5" x 11" piece of paper or an old catalog or magazine page as shown below to build a paper airplane!

Fold and unfold
Fold in this direction



Slingshot - airplane

Then use a wooden stirrer or pencil as a launcher — put the rubber band at the top of the pencil, pull the plane back with one hand and release to let it fly!

EXPERIMENT 11

The hungry frog

What you will need:
Material included in the kit:

- Card with graphic elements - Eyes, legs and fly
- Yarn

Extra items you will need:

- Ruler • Stapler • White glue • Scissors
- Colored markers or washable paint

Extra material you can reuse:



Toilet paper tube

ATTENTION: ask an adult to help you.

How to make it:

1. Start by coloring or painting the toilet paper tube. This will be the body of your frog!
2. Cut about 12 inches of yarn with scissors. Ask an adult for help.

3. Tie a knot at one end of the yarn. Then place the yarn through the opposite end of the tube and staple it at one end, as illustrated.

4. Cut out the body parts and fly circles from the card with graphic elements and tape them to your frog, as shown. Glue the flies together onto the end of the yarn so it is attached.

5. Let's play! Hold the frog at the bottom and try to flip the fly into its mouth. Test it with different weights, you can put a little bit of clay or tape a penny on the fly, to increase the weight.

Let's play!

Flip the fly in the frog's mouth!

ECO-Challenge

Make bird feeders for your garden! Reuse plastic bottles and some wooden spoons to make perches and feeders.



Endangered biodiversity

All over the world there are animals and plants threatened with **extinction** (permanent disappearance of a species) and they need our help!

Corals (marine animals)

Where do they live: Tropical oceans.

Why they need help: Due to the temperature rise in the ocean, the corals release algae living within them, losing a valuable source of food. They are the habitat of many marine species.

How can you help? Do not dump oils and other waste into the plumbing and do not put cotton swabs, wipes among others in the toilet.

Bees and other pollinating insects

Where do they live: All over the world.

Why they need help: More than 40% of these insects (mainly bees and butterflies) are threatened with extinction due to habitat destruction, intensive farming or climate change. Bees are primarily responsible for pollination, the process on which most plants rely to reproduce.

How can you help? At school or at home, plant flowers that attract these insects. When the heat is intense, you can also place a cup of water with some corks, so that the bees can drink water.

EXPERIMENT 12

Surprise animals

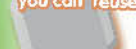
What you will need:
Material included in the kit:

- Clothes pin

Extra items you will need:

- White glue • Scissors • Pencil
- Washable markers

Extra material you can reuse:

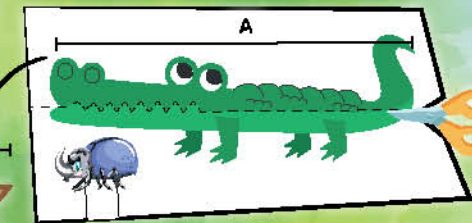


Cardboard (cereal boxes)

Always ask an adult for help!

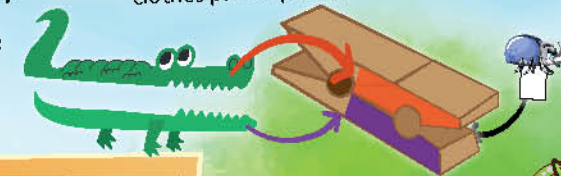
How to make it:

1. Cut open a cereal box and draw any big-mouthed animal on the inside. It can be a shark, a hippo or even a lion! Measure the clothes pin to make sure your animal is large enough. Also, draw a straight line where you will cut the animal's mouth.

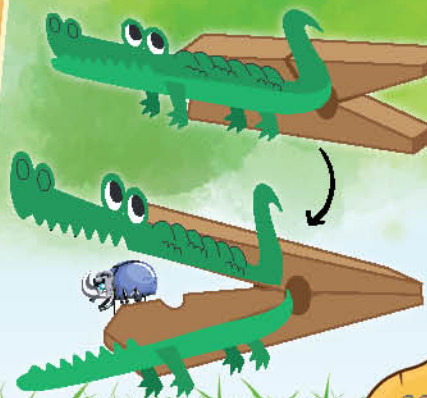


2. Draw a smaller creature (like a bug) to hide in the mouth of the larger animal.
3. Ask an adult to help you cut out your drawings. Don't forget to cut the animal's mouth on the dashed line.
4. With the help of an adult, glue the 2 parts of the animal to the end of clothes pin that opens. Make sure the opening of the animal's mouth fits when you open and close the pin.

5. Again with the help of an adult, glue the surprise animal to the back of the base of the animal's mouth, so that creature will lurk when the clothes pin is opened.



The surprise animal is ready! Surprise your friends!



EXPERIMENT 13

Parachute

What you will need:
Material included in the kit:

- Paper clips
- Yarn
- Craft wires

Extra items you will need:

- Scissors • Adhesive tape • Ruler • Marker

Extra material you can reuse:

Plastic grocery bag

Always ask an adult for help!

How to make it:

1. Cut 4 pieces of yarn about 8 inches each.
2. With the scissors, marker and ruler, cut a square of plastic from the plastic bag about 8 inches on each side.

3. Using a paper clip, poke a hole at each corner of the plastic square and tie a piece of yarn through each hole. If necessary, reinforce with tape, so that the bag does not tear at the edges.

4. Join the loose yarn ends together and tie them to the paper clips. With the craft wire, create a skydiver!

5. Toss the parachute into the air and watch it float down for a safe landing!

You can make a plastic, fabric or paper parachute! Try parachuting different materials, different shapes and weights! What changes the fall time? What do you observe?

DID YOU KNOW...

Every year, 8 million tons of plastic reach the oceans? 80% of this total originates from land, being dragged by rivers and canals!

Plastic in marine ecosystems

The oceans produce about 70% of the oxygen we breathe and are home to a multitude of animal and plant species! But, plastic invaded our daily lives and a large amount ends up in the ocean!

Marine animals confuse plastic with food, and as it breaks down, it turns into small fragments that are very difficult to detect, but are entering our food chain.

DID YOU KNOW...

In the middle of the Pacific Ocean we can find the largest garbage dump in the world? It is twice the size of Germany and is known as the Great Pacific Garbage Patch!

How long does waste last at sea?



EXPERIMENT 14

Space rocket

What you will need:
Material included in the kit:



- Decorative stickers
- Extra items you will need:
 - Scissors • Utility knife • Water
 - Air pump adapter for balls • Bicycle air pump
 - Adhesive tape • Corkscrew



ATTENTION: ask an adult to help you.



Attention: This experiment must be performed outdoors.

How to make it:

- Ask an adult to cut 4 pieces of cardboard (i.e. from a cereal box) with the utility knife, so that they fit the bottle as you can see in the illustration here.
- Now use the cardboard to make a cone for the rocket's "nose," and place it on the bottom of the plastic bottle. Use the tape to stick all the cardboard pieces securely to the bottle.
- Fill the bottle about 1/4 full. Put the cork tightly in place and connect it to the pump. The cork should be tightly fitted to the bottle without air or liquid leaking out.

- Ask an adult to drill a hole through the cork with the corkscrew so that the air pump adapter fits tightly. If the adapter is shorter than the cork, ask an adult to cut the cork in half.

- Use the decorative stickers to decorate your rocket.

- Get a support for your rocket so you can pump air into it with the bottle facing down.

What happens?

The space rocket is propelled into the air. The more you pump, the more air gets into the bottle which in turn increases the air pressure inside the bottle (as water and cork prevent air from escaping).

When the air pressure inside the bottle becomes greater than the force holding the cork in the bottleneck, the cork collapses and the air, under pressure, escapes at a great speed through the bottleneck. The bottle then moves because air and water, when expelled from it, generate a pushing force that causes the bottle to be fired in the opposite direction like a rocket.

Attention: keep clear of the bottle and before pumping make sure no one is too close to the bottle.

- Place the bottle cap-side down and pump. What happens?

In a real rocket, propulsion is created by combustion.



DID YOU KNOW...

Nowadays, around 400 million tons of waste are produced each year worldwide. To give you an idea, each of us produces an average of a half pound of waste a day!

EXPERIMENT 15

In the right place - recycling

What you will need:
Material included in the kit:

- Card with graphic elements - recycling container plan and elements

Extra items you will need:

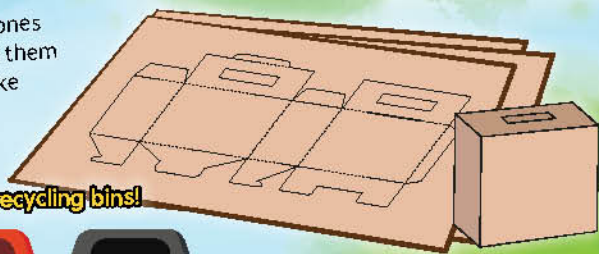
- Sticky tape or glue • Colored markers
- Scissors • Utility knife

Extra material to reuse:
Cardboard boxes (cereal boxes)

Always ask an adult for help!

How to make it:

1. With the help of an adult and scissors, cut out the recycling container plan and elements from the card with the graphic elements.



There are many different kinds of recycling bins!



Time to sort out the waste and put it in the right place!

But don't forget to sort out the waste at home and at school too!



EXTRA ACTIVITY

How to become truly environmentally friendly?

What you will need:
Material included in the kit:

- Green Science Puzzle

- Elements to recycle (experiment 15)

Extra items you will need:

- Washable markers or paint

How to make it:

1. Put your puzzle together to find out how you can make the world greener.
2. Color the recycling containers to match the color where you live. Then color the wind generators, solar panels, bikes and the sun!



Tip: match the elements to recycle with the recycling containers you color in the puzzle!

Have fun learning!



Check out more COOL
experiments!



Science4you



Find out more at www.playmonster.com



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