EXPERIMENT MANUAL

KIDS FIRST

BOTANY

EXPERIMENTAL GREENHOUSE

SCIENCE KIT

WARNING.

- Not suitable for children under 5 years.
- For use under adult supervision.
- Read the instructions before use, follow them and keep them for reference.

THAMES & KOSMOS

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››› IMPORTANT INFORMATION

WARNINGS.
Not suitable for children under 3 years. Choking hazard — small parts may be swallowed or inhaled. Strangulation hazard — long cords may become wrapped around the neck.
See page 2 for the declaration for the soil pellets.
Keep the packaging and instructions as they contain important information.

⚠ WARNING:
CHOKING HAZARD — Small parts. Not for children under 3 yrs.

Handling Precautions for Plaster/Gypsum (used in Experiment 26)

Advice for Supervising Adults

››› This chemical toy is not suitable for children under 5 years. For use under adult supervision. Keep this chemical toy set out of reach of children under 5 years old.
››› Read and follow these instructions, the safety rules, and the first aid information and keep them for reference.
››› Incorrect use of chemicals (the plaster, particularly swallowing or inhaling it) can cause injury and damage to health. Only carry out those activities which are listed in the instructions.
››› Because children's abilities vary so much, even within age groups, supervising adults should exercise discretion as to which activities are suitable and safe for them. The instructions should enable supervisors to assess any activity to establish its suitability for a particular child.
››› The supervising adult should discuss the warnings, safety information and the possible hazards with the child or children before commencing the activities.
››› The area surrounding the activity 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. When working with plaster wear suitable clothes that can get dirty.
››› The working area should be cleaned immediately after carrying out the activity.
››› Disposal: Spilled or leftover plaster should be placed in the household trash.

Safety Rules for Handling Plaster

››› Keep younger children under the specified age limit and animals away from the activity area.
››› Store chemical toys out of reach of young children.
››› Wash hands after carrying out activities.
››› Clean all equipment after use.
››› Do not use any equipment which has not been supplied with the set or recommended in the instructions for use.
››› Do not eat, drink or smoke in the activity area.
››› Do not place the material in the mouth.
››› Do not inhale dust or powder.
››› Do not apply to the body.

First Aid Information

››› In case of eye contact: Wash out eye with plenty of water, holding eye open. 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 doubt seek medical advice without delay: Take the chemical and/or product together with the container with you.
››› In case of injury always seek medical advice.

Dear Parents!

This greenhouse science kit offers children five and up a playful way to grow their first plants and learn about botany! They can start their experiments quickly with the carefully selected fast-growing plant varieties included.

Other experiments will require a little more time. Please explain to your child that it can take time and a little bit of patience to grow plants, and that good things come to those who wait.

Each experiment is labeled with the approximate time it will require. This way, you will know how much time to plan or how long it will take to see any results.

Help your child find a well-lit and well-ventilated location for the greenhouse. Your child will also need a workplace that can stand getting a little messy, where he or she can experiment in peace.

The best thing would be a table right against a window, where the greenhouse can simply be left in place, or set it out of the way on a wide window ledge. Cover your table, e.g. with old newspapers. Always keep some paper towels on hand during the experiments, since gardeners are always spilling a little dirt or water.

And just as with real experimental research or gardening, it is always a good idea to wear old clothes that you don't mind getting a little dirty. After experimenting, wash your hands and the equipment thoroughly.

Please be ready to support your little scientist whenever your help might be needed. Completely review the step-by-step instructions together. Please be sure to help your child get the additionally required materials that are not included in the kit.

It's always best to get everything ready before each experiment: The list above each experiment shows you what materials are needed for the experiment.

Even though working with plaster is not particularly dangerous, you should always assist your child when working with plaster. Please read the safety instructions on the inside front cover carefully and explain them to your child.

The plaster work should not be done in the kitchen to avoid being close to food. Containers and utensils that have come into contact with plaster should not be used in the kitchen.

Here's wishing you a lot of fun and a green thumb!

››› KIT CONTENTS

GOOD TO KNOW!
››› If you are missing any parts, please contact Thames & Kosmos customer service.

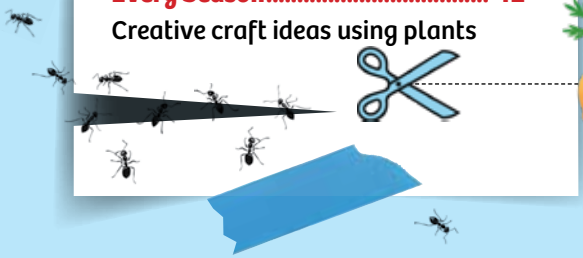
Checklist: Find – Inspect – Check off

✔	No.	Description	Quantity	Item No.
❍	1	Greenhouse base	1	708733
❍	2	Greenhouse domes and molds	1	708734
❍	3	Plant pot	7	705804
❍	4	Measuring cup (100 ml)	2	708166
❍	5	Measuring cup (30 ml)	3	065100
❍	6	Soil pellet	6	773001
❍	7	Cress seed packet	1	705133
❍	8	Zinnia seed packet	1	711561
❍	9	Pea seed packet	1	717945
❍	10	Yarn, 50 cm	1	702751
❍	11	Pipette	2	232134
❍	12	Thermometer	1	721602
❍	13	Wooden spatula	2	000239
❍	14	Plaster gypsum (200 g)	1	771052
❍	15	Die-cut paper sheet	1	775688

Declaration for the soil pellets according to the Fertilizer Ordinance: The growing medium (soil pellet) is made of plant materials from agriculture (coconut material). Contains organic matter.
Salinity (KCl/l): 0.3g/liter;
pH value ($CaCl_2$): 5.0.
Raw materials: 100% plant materials from agriculture (coconut material).
Minor components:
Nitrogen (N): 4mg/l (CAL);
Phosphate (P_2O_5): 20mg/l (CAL);
Potassium (K_2O): 530mg/l (CAL);
Magnesium (Mg): 80mg/l (CAL).
Contains the trace elements boron, copper, and zinc in agronomic relevant quantities.
Use only in out-of-ground, container cultivation. The declared nutrient content pertain to the time of publication and are subject to natural fluctuations.
Weight: 54g (6 x 9g)

Any materials not included in the kit are marked with this symbol + under the "You will need" headings.

››› TABLE OF CONTENTS



Dear Kids!

Allow us to introduce ourselves: We are Peter Pepper, Edgar Eggplant, and Carrie Carrot. The three of us will be guiding you through this manual.

Peter Pepper will explain what is actually going on in the experiments and what you can learn from them.

Edgar Eggplant will be warning you about possible dangers. Whenever you see him, it means "Heads up! Keep your eyes open!" He will also give you a few handy tips.

Carrie Carrot will tell you a lot of fun and interesting things!

Have a good time in the amazing world of plants!

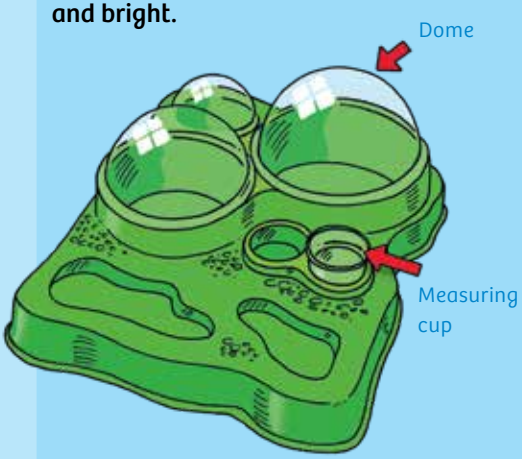
Your friends,
Carrie, Peter & Edgar

You will also need: Paper towels, knife, scissors, colored pencils, tape, watercolor paints, paintbrush, toothpicks, paper, drinking straws, drinking glass, empty yogurt container, shoe box, cardboard, old nylon socks, old wool socks, salt, water, dish liquid, fruits and vegetables (e.g. avocados, lemons, peppers), plant seeds from hardware store or garden center, soil

Assembly

Remove the dome from the plastic sheet. Smooth the edges with a little sandpaper. Have a grown-up help you.

Ideally, place your greenhouse on a window ledge, where it will be warm and bright.



Ventilation

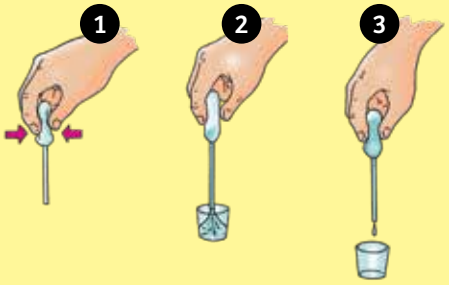
The domes of your greenhouse have ventilation slots that can be opened and closed. Leave the dome closed until you see the first sprouts. That way, the soil won't dry out so quickly. Then, when you see the first little plants, open the ventilation slots to let the plants breathe.

Watering

When you water, you have to be very careful not to wash away the seeds or disturb the seedlings. It's easiest if you use a pipette.

How to use a pipette:

1. Squeeze the top part of the pipette between your thumb and forefinger and dip the pipette in the water.
2. As soon as you loosen the pressure, the liquid will rise up the pipette.
3. Then, by reapplying pressure carefully, you can squeeze the water out drop by drop.



Wouldn't you like to have an automatic watering system? Then take a look at Experiment 9.

Important! Make sure that your young plants always have moist soil! That is very important. To help you remember, you will find little watering cans on the die-cut sheet.

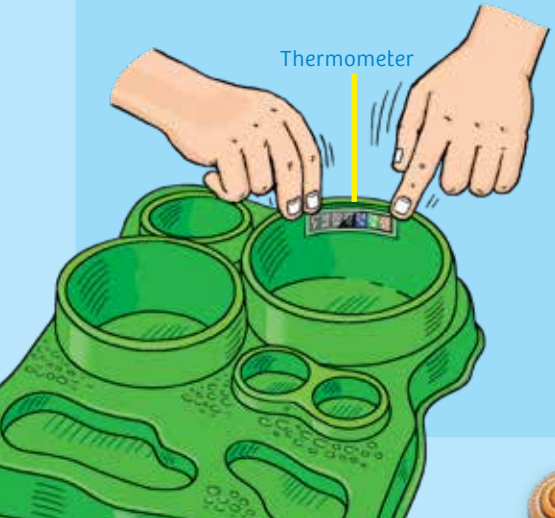
Detach them and tape them in a location where you will often look: on your bedroom door, for example, or the bathroom mirror.

Temperature

Use the thermometer to check the temperature inside your greenhouse.

Attaching the thermometer to the greenhouse base

Peel the protective film off the back of the thermometer and stick the thermometer under the edge of the largest compartment in your greenhouse. You can also peel off the transparent protective film from the front. Now, you can regularly check the temperature in your greenhouse.



Reading the values on the thermometer

The thermometer strip has six steps from 18 to 28 °C (64 to 82 °F).
If two fields are colored, the correct temperature is the mean of both fields (the number in between).
If three fields are colored, the middle field shows you the temperature.
In this example, the temperature is 24 °C (76 °F).

If it gets too hot, open the ventilation slots and/or set the greenhouse in a shadier location. If it's too cool, look for a spot with more sun and close the ventilation slots. You can also compare the temperature under the dome with the temperature outside it.

Growing Your First Plants

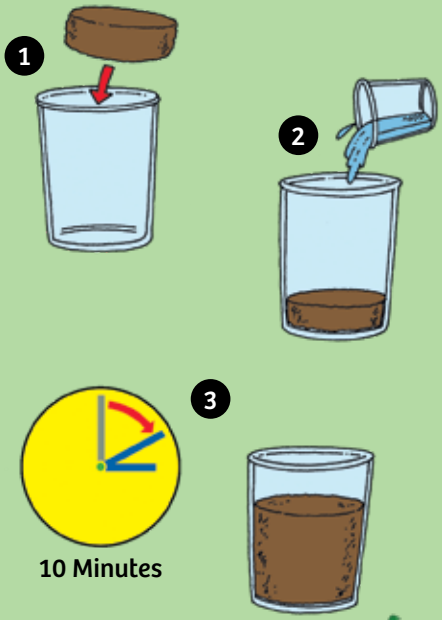
EXPERIMENT 1

10 MINUTES

Soil absorbs water

YOU WILL NEED

+ Water



The soil pellet soaks up water and expands. From the tightly compressed pellet, you get loose soil that you can use for planting. Soil can hold a lot of water!

WHAT'S HAPPENING

Your soil pellets are made of ground and compressed coco fibers. These fibers are extracted from the shells of coconuts.

Most potting soils are made of peat, which comes from raised bogs. These are unique habitats for many rare animal and plant species. Every year, huge quantities of peat are mined, which destroys the raised bogs!

Peat-free potting soils are now widely available. They are made of compost or wood fibers. Help protect the bogs and the animals and plants that live there by using peat-free potting soils.

EXPERIMENT 2

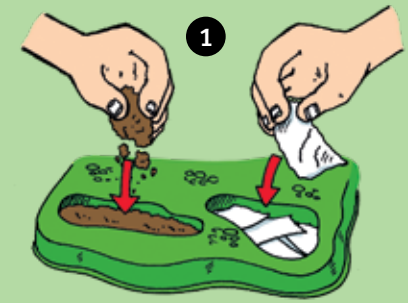
3–6 DAYS

Growing cress

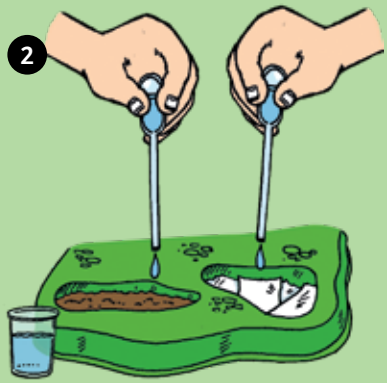
YOU WILL NEED

+ Paper towels
+ Water

3 Pour some of the cress seeds into your hand.



1



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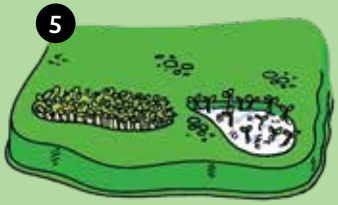


5

It's easy to observe germination and growth with cress plants because they sprout quickly. Seeds contain all of the food, or nutrients, that young plants need for their early growth, so they can also grow on a damp paper towel.

Don't plant the seeds too close together, or they will crowd each other and not grow well. Little plants are also called seedlings.

Plant Profiles

In these profiles, you will find things you should know about the seeds from this kit, as well as a lot of other common plants. This is what the profile symbols mean:

- Plant in the greenhouse
- Plant outside
- Time it takes to sprout
- Ideal growing conditions
- Care instructions
- Harvesting instructions
- Flowers
- Special characteristics

Cress

- Sprinkle onto moist soil and press down lightly.
- March–September
- 3–6 Days
- Germination temperature 10–20 °C (50–68 °F)
- Keep soil moist and in a shady spot
- 2 weeks after sowing
- Stems and leaves are rich in vitamins
  Good in salads or on a sandwich

You will be able to do more cress experiments soon. Take a look at Experiments 11, 13, and 17.

EXPERIMENT 3

1 WEEK

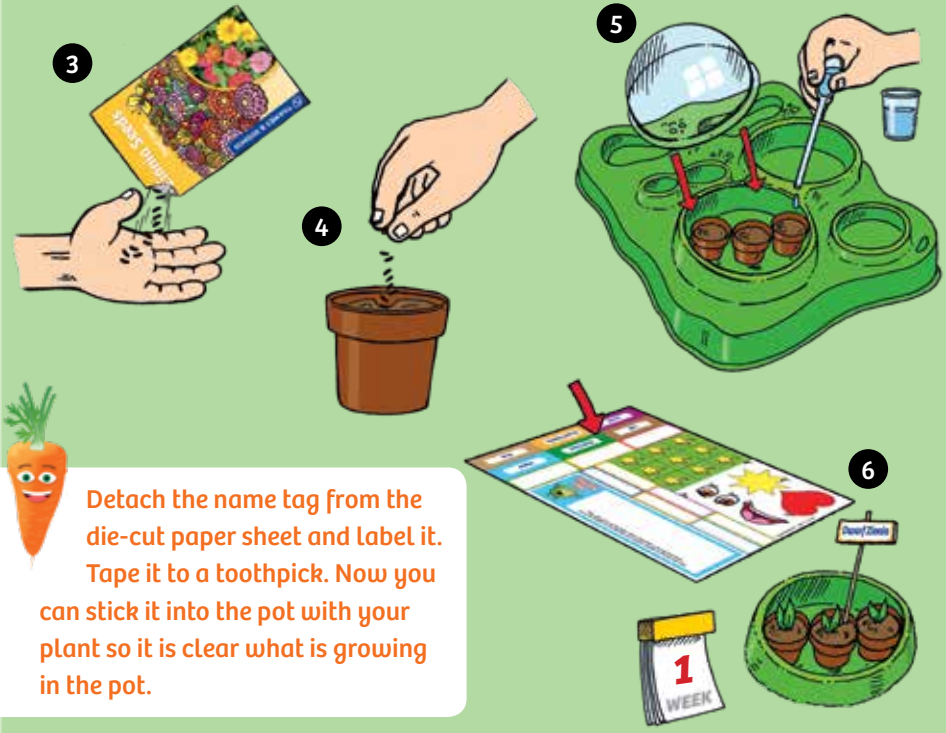
Growing zinnias

YOU WILL NEED

3 x

+ Water
+ Tape
+ Toothpick

Start by planting three pots with zinnia seeds!



Detach the name tag from the die-cut paper sheet and label it. Tape it to a toothpick. Now you can stick it into the pot with your plant so it is clear what is growing in the pot.

Dwarf zinnia

Plant about half a centimeter deep, not too close together, and cover with soil.

From the end of April

8–14 Days

Germination temperature 18–22 °C (65–72 °F)

Very little water and fertilizer

July–September

Re-flowers well and can therefore be cut for indoor arrangements.

It's easy to observe germination and growth with a cress plant, since they need a lot less time to grow than peas. The seed contains all the nutrients that the young plants need for their early growth, so they can also grow on a damp paper towel.

You will be able to do more zinnia experiments soon. Take a look at Experiments 12 and 14.

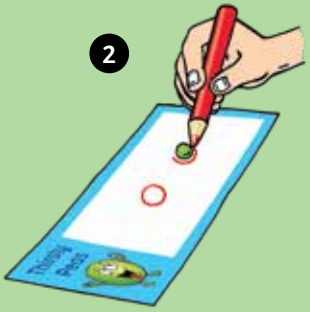
EXPERIMENT 4

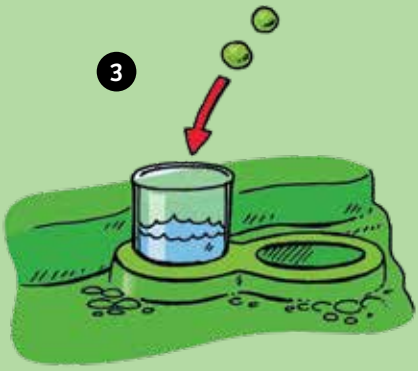
2 DAYS

Thirsty peas

YOU WILL NEED

+ Colored pencils
+ Water





You can see that the peas have grown quite a bit bigger. They have absorbed water and swollen up.

When that happens, their tissue and cell parts expand. The peas become soft, and they are ready to sprout.

Peas

Let the pea seeds swell up with water. Then plant them individually in the soil about 4–5 cm apart. Cover loosely with soil.

Mid-March to mid-April

5 Days at 20 °C (68 °F)

Germination temperature 15–20 °C (59–68 °F)

Water regularly, but do not keep it too moist, as the peas might get moldy.

Blossom from May to June

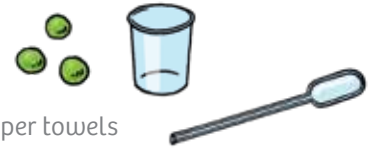
Vitamin- and mineral-rich vegetable

EXPERIMENT 5

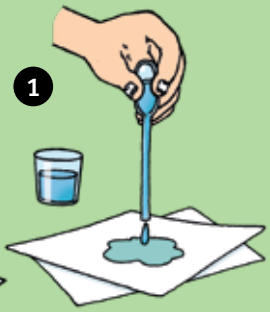
3 DAYS

Root growth

YOU WILL NEED

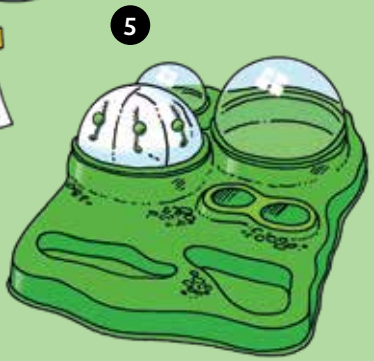


+ Paper towels
+ Water
+ Tape



3x Paper towels, wadded up

Keep the paper towels moist!



After a few days, you will clearly see the roots growing downward. Now, turn the dome upside down so the roots point up. You will observe that the sprouts can tell the difference between up and down, and the roots will soon start growing downward again!

It's easy to observe the peas sprouting through the transparent sides of the dome. After a few days, little roots will make their appearance out of a tiny hole in the side of the pea.

You will be able to do more pea experiments soon. Take a look at Experiment 10.

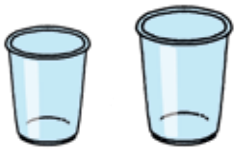
What Your Plants Need to Grow

EXPERIMENT 6

1 DAY

Plants need water

YOU WILL NEED



+ Dandelion stem
+ Water

Note! After you pick the dandelion, a whitish sap will drip out of the stalk. Be careful not to get any on your clothes — the stains are hard to wash out.

1

2

Make a lengthwise cut in the dandelion stalk before placing it in the water. That way, you will get funny-looking curls.

3 Hours

3

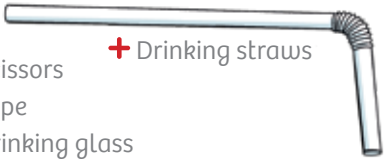
Plants are made of tiny building blocks called cells. Only when plant cells are well supplied with water will they be firm and solid, giving the plant structure and stability. If they don't have water, they will be limp and the plant will collapse.

EXPERIMENT 7

5 MINUTES

How plants drink water

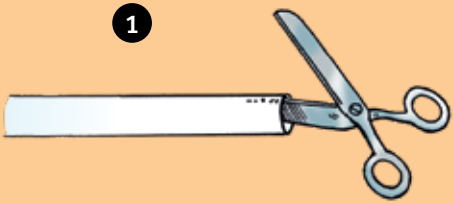
YOU WILL NEED

4 x 

+ Drinking straws
+ Scissors
+ Tape
+ Drinking glass
+ Drinking water

Try this experiment if you have four plastic drinking straws.

1



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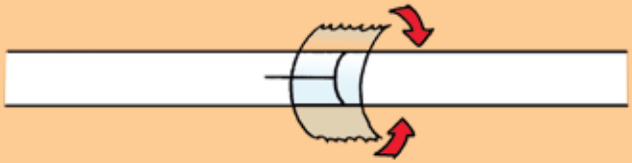


4

You will quickly notice that it gets harder and harder to suck the water upward as the straw gets longer. Trees nevertheless manage to transport water many yards from their roots up to their leaves.

EXPERIMENT 8

1 DAY

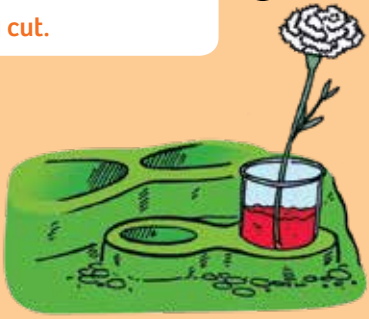
Coloring flowers

YOU WILL NEED

- Water
- Food coloring*
- White flower, such as a carnation

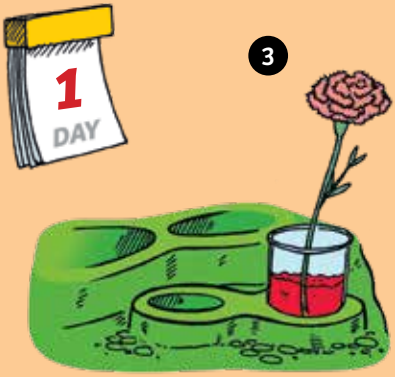
*You can use liquid food coloring, egg dye tablets, or ink.

The flower should be freshly cut.



If you divide the stalk in two and put each half in a cup with a different color, you will get a two-colored flower.

The colored water rises up the flower stalk through narrow tubes to the flower petals. You can clearly see the veins as they take up the dye. The dye allows you to see not only that the flower sucks up water, but also how fast the water travels.



EXPERIMENT 9

ABOUT 3 DAYS

Automatic watering system

YOU WILL NEED

+ Scissors
+ Water

You can use the zinnia seedlings from Experiment 3.

1

2

The yarn consists of many individual fibers with small spaces between them that allow it soak up water like a sponge. In time, the volume of water becomes too much for the yarn the hold and the water drips from the lower end into the soil in the flowerpot. The wool yarn then sucks up more fresh water from the measuring cup.

In this way, the plant in the pot is supplied with fresh water as long as there is water in the cup.

EXPERIMENT 10

10 DAYS

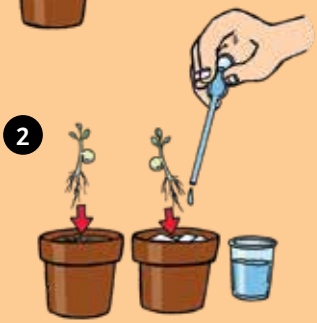
Plants need nutrients

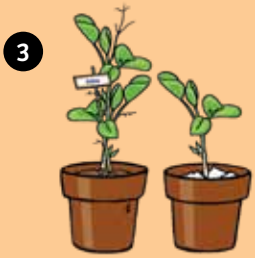
YOU WILL NEED

2 x

- Paper towels
- Water
- Tape
- Toothpick

Use the sprouted peas from Experiment 5!





WHAT'S HAPPENING?

Most plants are green! And there is a very important reason for that. The leaves use this green coloring to capture sunlight and produce sugar and oxygen from water and air (more precisely, the gas carbon dioxide in the air).

This process is known as photosynthesis. It's a hard word to pronounce, but the process is very important for plants and for us humans too. The plants are able to make new leaves with the sugar. And we humans need the oxygen to breathe!

To germinate, all that peas need is the food contained inside them. But when they grow bigger, they need additional nutrients. They get those nutrients from the soil, but not from the damp paper towel. That is why over a long period of time the pea plant will grow better in the soil-filled pot.

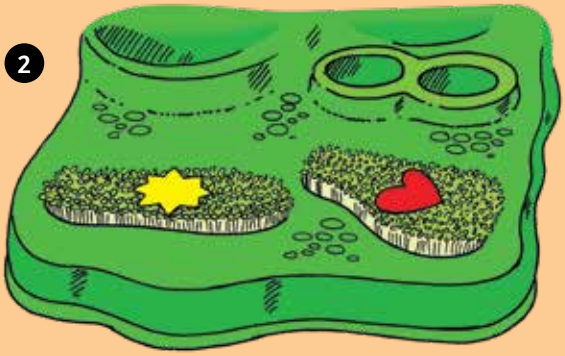
EXPERIMENT 11

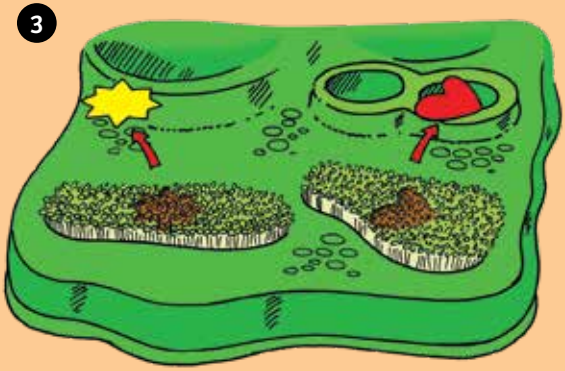
3 DAYS

Plants need light

YOU WILL NEED

Sprouted cress





The cress beneath the cardboard shapes doesn't get any light. It stops producing green coloring and turns quite pale. Over time, it will die. Plants need light in order to live and grow!

EXPERIMENT 12

1 WEEK

Plants need warmth

YOU WILL NEED

2 x

+ Water

You can use the zinnia seedlings from Experiment 3.

1

External conditions are very important when growing plants. In order to thrive, they need nutrients, as you found out in Experiment 10. They also need water, warmth, and air. Under the dome, the warmed air isn't carried away as easily as outside, which is why they grow faster there than if they don't have a roof over their head. You can buy vegetables from supermarkets even in the winter, thanks to large-scale greenhouses. It would be too cold in many parts of the country to grow plants outside during the winter, but in a greenhouse it is warm even in winter.

The Young Botanist

EXPERIMENT 13

3 DAYS

Contaminated soil

YOU WILL NEED

3 x

Sprouted cress

3 x

+ Water
+ Salt
+ Dish soap
+ Tape

1

2

3

The cress doesn't like the new watering liquid. The test samples shrivel because salt and dish soap have a harmful effect on plants.

But maybe the dish soap you have at home is biodegradable! In that case, the cress plants can recover if you start giving them plain water again after three days. Try it!

4

EXPERIMENT 14

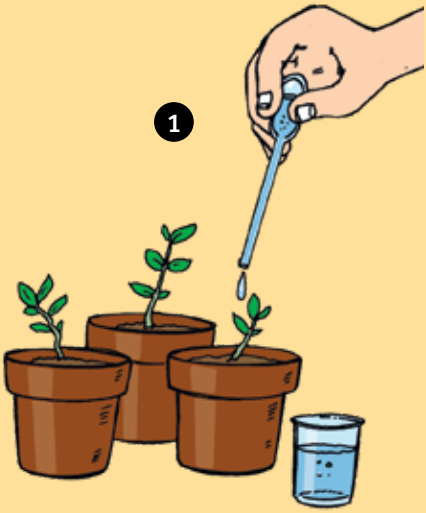
2 HOURS

Sweaty plants

YOU WILL NEED

3 x   

+ Water 



You can perform the same experiment with a larger potted plant or a tree outside in the garden.

Place a plastic bag over a twig with leaves on it and tie it tightly closed with a piece of string. After a little while, you will see droplets of water on the inside of the bag.

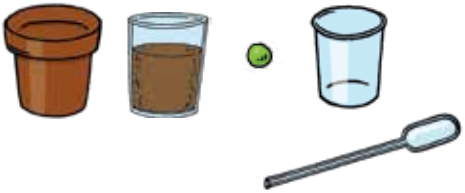
Plants take up water and nutrients from the ground with their roots. They release excess water through tiny openings on the underside of their leaves. The water vapor condenses, meaning it turns to liquid again, which is visible as little droplets on the dome. If you open the ventilation slots, some of the moisture can evaporate to the outside again and the dome won't fog up so easily.

EXPERIMENT 15

2 WEEKS

Pea labyrinth

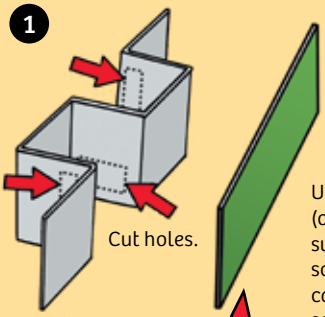
YOU WILL NEED



- Scissors
- Clean, empty yogurt cup
- Water
- Cotton wadding
- Shoe box (ideally with flip-up top)
- Extra cardboard

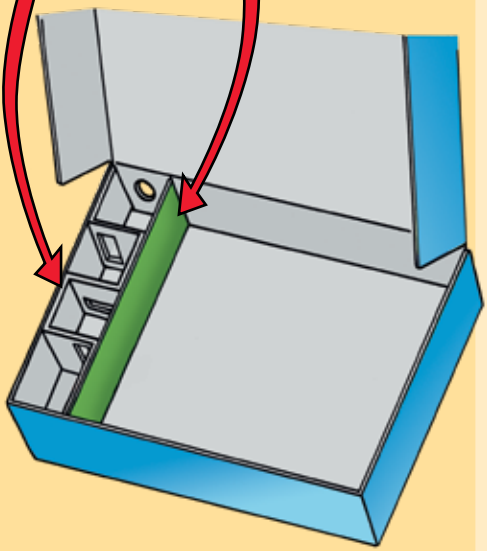
An adult can help you make the cardboard pea maze!

1



Cut holes.

Use a shoe box (or another suitable box), some pieces of cardboard, and some tape to assemble a pea maze as shown here.



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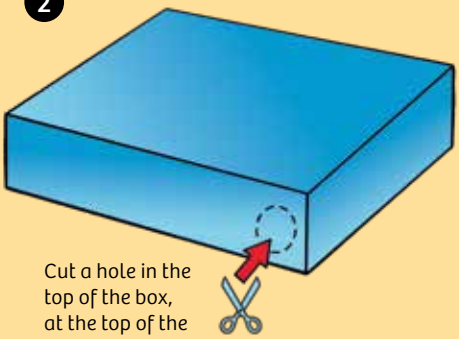
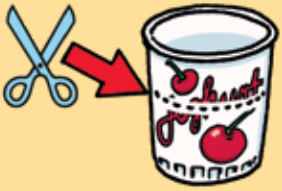
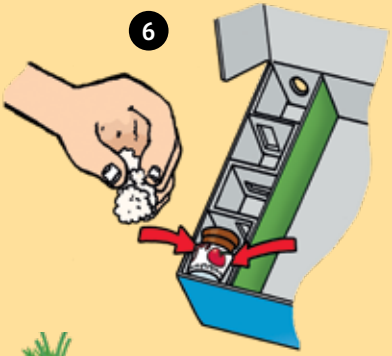
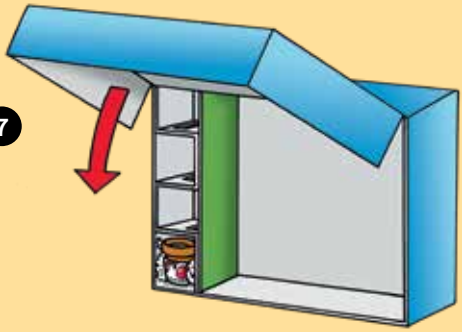


Cut a hole in the top of the box, at the top of the pea maze. Make sure that light can enter the box only through this hole.

3







Check the pot often to make sure the soil is moist. Open the box very carefully so you do not disturb the plant or pot. After watering, close the box carefully.

Your plant senses the direction the light is coming from and grows toward it. It can even wind its way through a maze over the course of a few weeks! This works because the side of the stem that is darker grows faster, so the stem bends toward the light.

EXPERIMENT 16

Ghost peas

YOU WILL NEED

- Dried peas (from the supermarket)
- Water
- Clean empty aluminum can (optional)

The peas soak up water. When they do this, they get bigger and need more room. The peas at the very top are pushed off by the ones underneath and fall from the cup onto the floor of the greenhouse. Each time that happens you hear a clicking sound, which can seem a little spooky when there's nobody around to be making the sound!

You can also put the cup with peas and water inside a tin can, and then set the can in a kitchen cupboard. Who do you think you might be able to spook that way?

1

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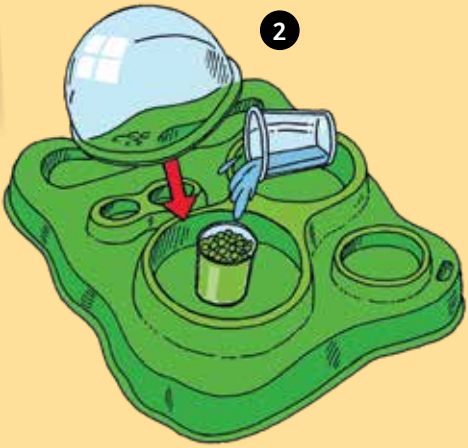


4 Hours

3

EXPERIMENT 17

1 WEEK

Cress and grass

YOU WILL NEED

Sprouted cress

+ Small patch of living grass sod
+ Scissors

Ask a grown-up to cut a little section of grass sod from the yard or park.

After you cut the tops off, the grass grows back and it will soon look the way it did before you cut it, while the cress does not grow back. That is because of the so-called growth point of the plant. The growth point is the point at which the plant starts to grow. With grass, this point lies just above the ground. Even when you cut the grass, the growth point is not removed, and the grass can grow back. The cress growth point lies much higher, right under the green top. So if it gets cut off, the cress can't grow anymore.

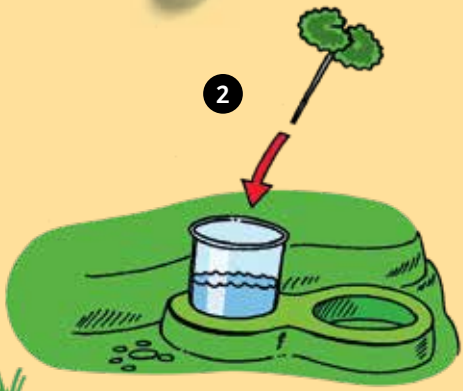
EXPERIMENT 18

Plant cuttings

YOU WILL NEED

+ Cuttings from suitable plants*
+ Water

*Not all plants are suitable for growing from cuttings. Try it with geraniums, spider plants, rosemary, lavender, roses, philodendron, or begonias. Watch out for thorns!



Also try cutting a dandelion stem into little pieces and placing them on a damp paper towel. You will be astounded to see how new plants can grow out of these little plant pieces too.

In addition to growing from seeds as you saw in previous experiments, plants can also grow from cuttings. Each cutting should have at least one bud or leaf above it. In water, roots will form, and the new plant can then be planted in fresh soil.

EXPERIMENT 19

10 MINUTES

The water lily

YOU WILL NEED

+ Water
+ Scissors

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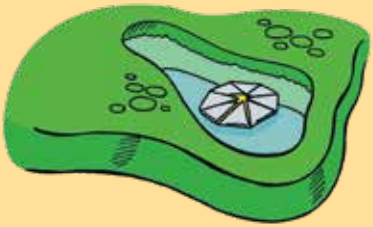
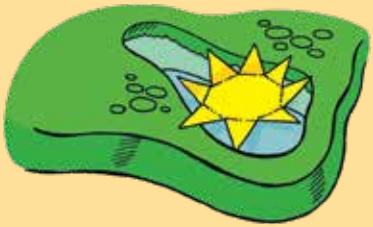


10 Minutes

The paper absorbs water, which pushes into tiny spaces in the paper fibers. As the paper swells up and the folds expand, the flower gradually opens, mimicking how a water lily flower opens up in the sunshine.

5



EXPERIMENT 20

The green carrot

YOU WILL NEED

- Carrot with part of stem
- Knife
- Water

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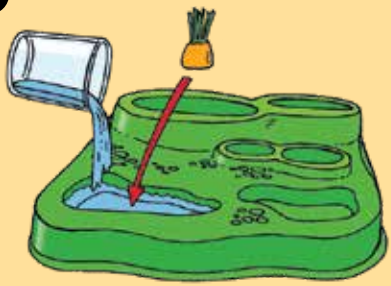
2



3

A carrot has the ability to grow a whole new plant out of some of its parts. All you have to do is provide favorable growing conditions (enough light, air, and moisture).

Do you see the nice green young shoots growing out of my head?

Green Thumb Gardening

EXPERIMENT 21

8–14 DAYS

My herb garden

YOU WILL NEED

- Soil*
- Small scoop or old spoon
- Herb seeds
- Water
- Tape
- Toothpicks

*Use a high-quality potting soil, as normal potting soil often contains too much fertilizer. Always water the soil so that it is only slightly damp. Make sure the soil is not sopping wet.

Use the blank plant labels from the die-cut paper sheet to label the herbs in your garden.

You can also use your greenhouse as an herb garden. You're already an expert at growing cress. Now you can try your hand with parsley, chives, dill, and a variety of other herbs.

Chives

Sow in rows, cover with just a little soil, and press down.

Starting mid-May

8–14 Days

Germination temperature 10–20 °C (50–68 °F), sunny or semi-shady location, sandy soil with lime or bone meal

Water liberally and harvest often.

June / July

Outside starting in May, then continuously

High in vitamins A and C

Parsley

Cover seeds well with soil, as they prefer to sprout in the dark, and keep moist.

April–August

8–14 Days

Germination temperature 15–20 °C (59–68 °F) Loose, fertile soil, sun to half-shade

Regularly loosen the soil and do not water too much, because parsley can't stand waterlogged soil.

June / July

The whole year, as soon as the plants are big enough

The roots are winter-hardy, and will send out new shoots early in the year.

EXPERIMENT 22

4 WEEKS

Avocado plant

YOU WILL NEED

- Avocado pit
- Water
- 3 Toothpicks

Important! The brown coating on the avocado pit inhibits sprouting, so it has to be removed. It's easiest if the avocado pit is already wet. Take it out of the water, remove the coating, and suspend it in fresh water again. The avocado pit can't take direct sun.

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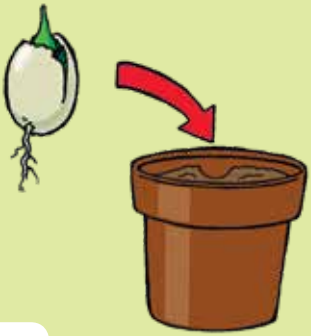


Of course, you can also try growing other types of fruit plants in your greenhouse. Try sprouting a lemon seed. Then be sure to set the pot under the greenhouse dome, so you can have the best germination conditions for your little fruit orchard.

4

Avocado

Remove the pit from the fruit and suspend it in water with toothpicks.

2 Weeks – 4 Months

Germination temperature 20–25 °C (68–77 °F)

Refill the water as it evaporates from the glass. When the roots are 3–4 cm long, carefully re-pot into a flowerpot with potting soil. Give it plenty of sun, warmth, and adequate water.

Due to its shape and green, wrinkly outer peel, the avocado is also known as an **alligator pear.**

EXPERIMENT 23

2 WEEKS

My vegetable garden

YOU WILL NEED

- Red pepper
- Knife
- Saucer
- Water

An adult should help you remove the seeds from the pepper with a knife.

1

2

3

4

5

Place the pot under the greenhouse dome.

When your plants grow larger, you will have to plant them in a larger pot and give them a little stake or pole to cling to.

You can also grow other types of vegetables in your greenhouse. Try growing peppers, zucchinis, or tomatoes. Replant them outside or in larger pots as soon as they start to outgrow the greenhouse.

Pepper

Soak dried seeds for 2 days and let them swell up or use fresh seeds right from a pepper. Plant the seeds about 1 cm deep in the soil and press down firmly. Seeds should be planted about 2 cm apart.

Middle to end of May

5–14 Days

Germination temperature 28–32 °C (82–90 °F)

Water regularly, but don't let the soil get too wet. Fertilize regularly and support the plants with a stake.

July – September/October

Originally from South America, the pepper is one of the very oldest cultivated plants.

Zucchini

Space seeds far apart or plant in individual pots, cover with some soil, and press down.

From mid-May

7–14 Days

Germination temperature 15–25 °C (59–77 °F)

Water well and fertilize regularly.

From end of June to October for zucchini of about 15–20 cm, which taste the best

Zucchini can grow to be huge; the largest one ever harvested was 2.3 m long and weighed almost 30 kg.

Tomato

Plant seeds about 1 cm deep in the soil, keep warm and evenly moist until germination.

Mid-May

8–14 Days

Germination temperature 20–22 °C (68–72 °F)
In a sunny location

Water and fertilize regularly. If 4–5 flowering stalks are present, regularly remove any side shoots or suckers.

Starting in July

You will usually need a stake for the plants to cling to.

EXPERIMENT 24

8–25 DAYS

My sea of flowers

YOU WILL NEED

- Soil
- Small scoop or old spoon
- Flower seeds
- Tape
- Toothpick

The zinnias from Experiment 3 will go really well in the sea of flowers, too! The chocolate cosmos is a really cool plant. It gives off a delicious chocolaty smell!

Cosmos and sweet peas work well here. You can start them in your little pots and then replant them into balcony planters or large flowerpots. You will have to provide your flowers with plenty of water.

Cosmos

- Cover seeds with a layer of soil 0.5 cm deep, press down, and water.
- Starting in May
- 14–20 Days
- Germination temperature 15–20 °C (59–68 °F), full sun
- Always keep soil moist
- July–October
- Attracts butterflies

Sweet peas

- Plant a seed in the soil every 5 cm, 4–5 cm deep.
- March–April
- 14–21 Days
- Germination temperature about 15 °C (59 °F), full sun
- Water liberally and fertilize occasionally
- June to September
- The more often you cut them, the better they will bloom.

Chocolate cosmos

Plant the seeds about 0.5 cm deep and water carefully.

April–May

20–25 Days

Germination temperature 18–20 °C (64–68 °F), full sun

Water amply, loosening the soil regularly to prevent it from getting waterlogged.

July–October

Its sweet chocolate-like smell attracts bees, bumblebees, and butterflies.

In the summer, you can set your flowers on the terrace or balcony. Maybe you'll get a visit from a butterfly. The cosmos flowers, in particular, provide a lot of nutrition with their pollen and nectar.

Natural Crafts for Every Season

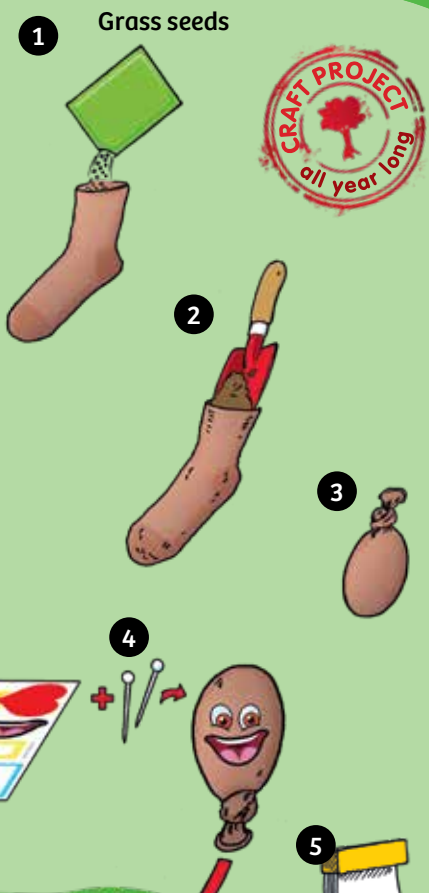
EXPERIMENT 25

2 WEEKS

Grass head

YOU WILL NEED

- Old nylon stocking
- Grass seeds (from a home center)
- Soil
- Small scoop or old spoon
- Pins
- Water



As the grass seeds germinate, they grow out through the sock. Green hairs start to sprout on the head and then grow longer and longer.

When the grass is long enough, you can give Grass Head a haircut. How would he look with a ponytail or mohawk?

EXPERIMENT 26

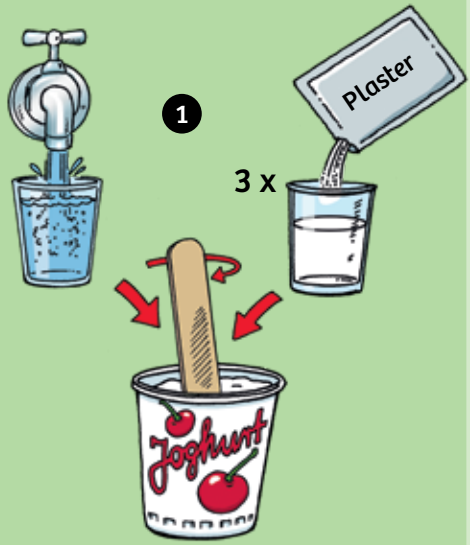
1 DAY

Beetle and snail

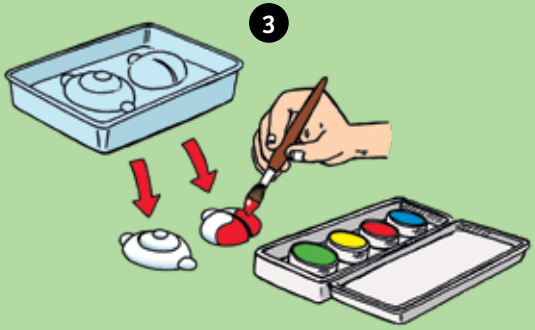
Warning! Before you start, be sure to read the safety advice on the inside front cover of this manual.

YOU WILL NEED

- Water
- Clean, empty yogurt cup
- Paint brush
- Paints in various colors



CRAFT PROJECT all year long



You can use the plaster molds over and over again and make many different molded shapes to paint in different colors.

The beetle and the snail are guaranteed not to eat your plants, so feel free to decorate your greenhouse with them.

EXPERIMENT 27

2 WEEKS

Summer sock garden

YOU WILL NEED

- Sunny meadow in summer
- Old wool socks
- Soil
- Small scoop or old spoon

The seeds get caught in your socks and remain stuck there. They start growing in the soil and, before long, you will have a surprise sock garden in your flowerpot.

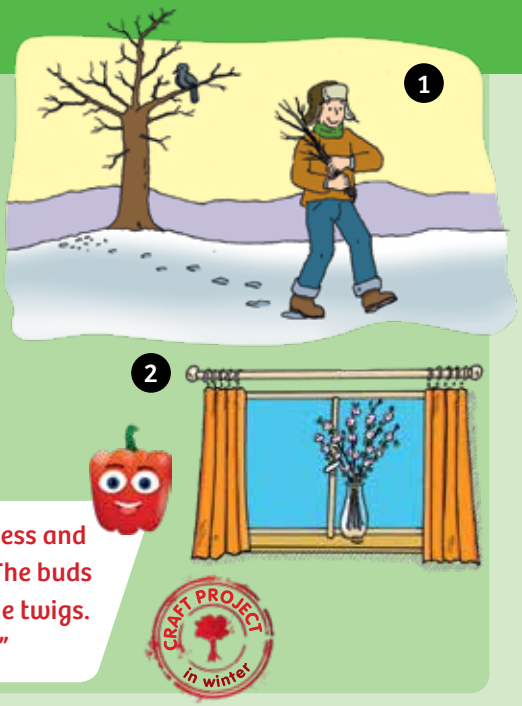
EXPERIMENT 28

3 WEEKS

Forcing branches

YOU WILL NEED

- Cherry tree or forsythia branches
- Vase
- Knife or clippers



If you put the branches inside, the brightness and heat will send the signal that it's spring. The buds will bloom and leaves will sprout from the twigs. Doing this is called "forcing the branches."

EXPERIMENT 29

2 WEEKS

From tiny acorns...

YOU WILL NEED

+ Acorn
+ Water

Make sure the acorn is only halfway in the water! Leave your little oak tree inside the house until springtime.

After a few days, the acorn's shell will split and a thick root will grow down into the water. On the other side of the acorn, a tender shoot will grow toward the sky.

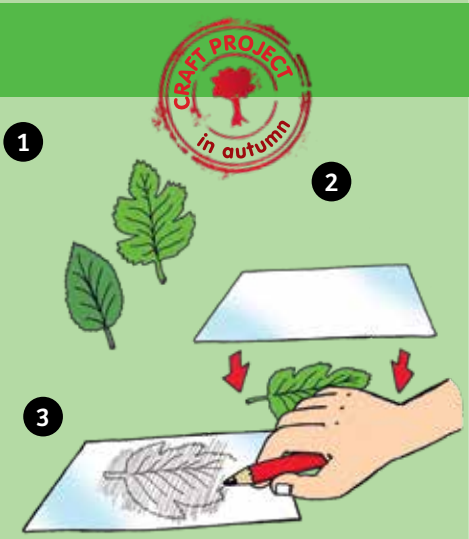
EXPERIMENT 30

15–30 MINUTES

Leaf rubbings

YOU WILL NEED

+ Different leaves
+ Paper
+ Soft crayons or pencils



With the rubbing technique, you will not only be able to see the exact shape of the leaf, but the pattern of veins as well.

Also try tree bark! Hold the paper against a tree trunk and rub softly over it. You will be amazed how many different patterns of tree bark there are.

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