SCRUMPALICIOUS!

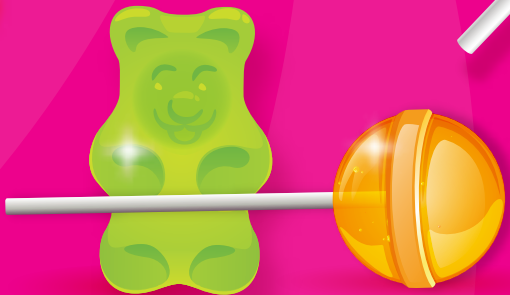
SWEET SHOP

IT'S A WONDERLICIOUS WORLD...

BOOK 1
COOKERY BOOK

SUPER LAB SWEETS

MAKE YOUR OWN JELLY SWEETS, LOLLIPOPS AND COLOURFUL SWEETS!



AVAILABLE ONLINE: FI DK NO SE CZ

www.hamleys.com/explore-SuperSciencelabkits.irs

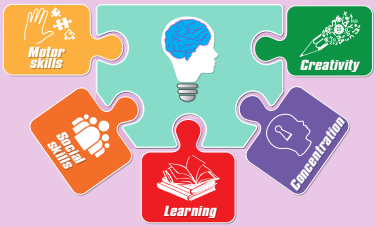
Dear parents and guardians

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 strenghts of our toys. We aim to provide toys which enable children's development of physical, emotional and social skills.

Find out more about the Brain Activator in Science4you toys at:

www.science4youtoys.co.uk/brain-activator

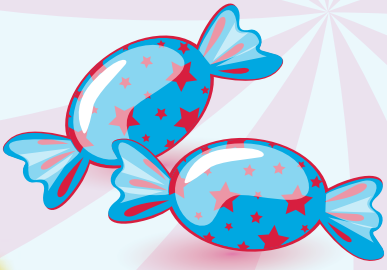
Science4you

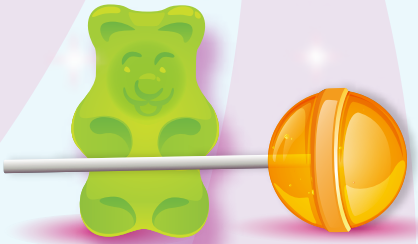
1st Edition, Science4you Ltd.
London, United Kingdom
Author: Flávia Leitão
Co-author: Joana Gomes
Scientific review: Ana Garcia
Revision: Joana Gomes
Project management: Ana Garcia
Product development: Ana Garcia and Flávia Leitão
Design: Joana Gravata and Telma Leitão
Illustrations: Joana Gravata

CURRICULUM GOALS
Key stage 1, 2 and 3

This book was produced in accordance with the following key stages and curriculum goals of subjects:
- Science: KS1 and KS2;
- Chemistry: KS3.

SUPER LAB SWEETS





SUPER LAB SWEETS

Index

SAFETY RULES 5
FIRST AID INFORMATION 5
ADVICE FOR SUPERVISING ADULTS 5
KIT CONTENTS 6
INGREDIENTS LIST 7
1. Experiments and recipes 8
1.1. Kitchen science 8
Experiment 1. Measuring temperatures 8
Experiment 2. Cooked sugar stages 8
1.2. Cooking with science 12
Recipe 1. Heart shaped jelly sweets 13
Recipe 2. Worm shaped jelly sweets 13
Recipe 3. Two flavoured jelly sweets 14
Recipe 4. Juice jelly sweets 15
Recipe 5. Lollipops without moulds 15
Recipe 6. Lollipops with fun shapes 16
Recipe 7. Delicious boiled sweets! 17
Recipe 8. Jelly treats 17
Recipe 9. Tutti-frutti oranges 18
1.3. Recipes for super scientists 18
Super recipe 1. Homemade soft drinks 18
Super recipe 2. Sweet of yogurt 20
Super recipe 3. Marshmallow teacake 20
Super recipe 4. Caramel coverage 22
Super recipe 5. Caramel threads 22
Super recipe 6. Jelly cake 23
Super recipe 7. Jelly sweets frame 24
Super recipe 8. Sweet 'brigadier' of jelly 24
Super recipe 9. Popcorn pops on stick! 25
Super recipe 10. Caramel popcorn cake! 25

SAFETY RULES

- Read these instructions before use, follow them and keep them for reference.
- Keep young children and animals away from the experimental area.
- Store this experimental set out of reach of children under 8 years of age.
- Clean all equipment after use.
- Make sure that all containers are fully closed and properly stored after use.
- Ensure that all empty containers and/or non-reclosable packaging are disposed of properly.
- Wash hands before and 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 smoke in the cooking area.
- Do not replace foodstuffs in original container. Dispose of immediately.
- Make sure the tools are properly clean before you start preparing food.
- Take care while handling with hot water and hot solutions.
- Use only food contact materials in order to develop the recipes and to store the prepared foods.
- All the preparation stages included in the recipes which require the use of the oven, stove, household appliances and knives, should be performed by an adult.
- If you spill any liquid, blot it up immediately in order to avoid slipping.
- Avoid any contact of the ingredients with the eyes.
- Pay special attention when handling hot and sharp and/or cutting tools such as knives.
- Surfaces, liquids and tools may be very hot.

FIRST AID INFORMATION

- **In case of eye contact:** Wash out eye with plenty of water, holding eye open if necessary. Seek immediate medical advice.

Citric acid and gelatine:

- **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. **Shall only apply to citric acid.**
- **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 without delay. Take the chemical and its container with you.
- In case of injury always seek medical advice.

In case of emergency dial:
USA 911 | UK 999 | Australia 000 | Europe 112

ADVICE FOR SUPERVISING ADULTS

- Read and follow these instructions, the safety rules and the first aid information, and keep them for reference.
- **Allergenic products:** this kit has ingredients that contain or may contain gluten, milk and milk-based products (including lactose), nuts, soybeans, mustard seed, peanuts, sulphites, wheat and egg which can cause allergies (see page 6).
- The incorrect use of chemicals can cause injury and damage to health. Only carry out those experiments which are listed in the instructions.
- This experimental set is for use only by children over 8 years.
- 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.
- The supervising adult should discuss the warnings and safety information with the child or children before commencing the experiments.
- 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.

Kit contents

Description:	Quantity:
1. Sachet of strawberry jelly	1
2. Sachet of tutti-frutti jelly	1
3. Silicone mould	1
4. Sachet of citric acid	1
5. Stickers	1
6. Cornflour	1
7. Sachets of gelatine	3
8. Crepe paper sheets	2
9. Satin ribbons	4
10. Small measuring cup	2
11. Measuring spoon	1
12. Sachet of sprinkles	1
13. Straws	6
14. Lollipop sticks	5
15. Thermometer	1

INGREDIENTS LIST

Citric acid CAS # 77-92-9	 **Warning**

Hazard Statement:
H319 Causes serious eye irritation.
Precautionary Statement:
Prevention:
P264 Wash hands thoroughly after handling.
Response:
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/attention.

Cornflour

Strawberry jelly

Ingredients: sugar, gelatin (12%), acidity regulators (E330, E297 and E331), flavourings (contains **sulphites**), salt, colours (E120, E163 and E160aii) and antioxidant (Vitamin C).
May contain gluten, milk, nuts, soy, mustard seeds and peanuts.

Tutti-frutti jelly

Ingredients: sugar, gelatin (12%), acidy regulators (E297, E331 e E330), flavouring (contains **sulphites**), salt, antioxidant (Vitamin C) and colours (E100 and E141ii).
May contain gluten, milk, nuts, soy, mustard seeds and peanuts.

Gelatine
CAS # 9000-70-8

Ingredients: powder gelatine (swine origin).
May contain wheat, milk and egg.

Sprinkles

Ingredients: Sugar, maize starch, maltodextrin, coating agent (E903) and coloring (E100, E120, E133, E171). **May contain gluten, soybeans, milk and nuts.**

Throughout this book, the use of substances or products that can cause food allergies or intolerances, such cereals containing gluten and products thereof; eggs and products thereof; and milk and products thereof, may be suggested.

1. Experiments and recipes

Note: the ingredients and materials included in this kit are labelled with this symbol .

Wash all materials before beginning each experiment or recipe. In between each experiment or recipe, make sure all materials are properly washed too.

1.1. Kitchen science

Experiment 1
Measuring temperatures

What you will need:

- Thermometer
- Ceramic mug (like the one you use to drink milk for breakfast)
- Hot tap water

Steps:

1. Let's start by analysing which is the room temperature: look at your thermometer and see what temperature it indicates. For that, you just need to look at the blue liquid that's inside the thermometer and check the temperature.

2. Now, hold tightly the bottom part of the thermometer with your hand closed. Look at the liquid: you will see that it will starts to rise. Note down the temperature after 60 seconds.

3. Fill in your mug with hot water from the tap. Ask an adult for help so you don't get burned. Carefully, place the thermometer inside the mug and see what happens. The temperature will rise, this is, the liquid will ascend inside the thermometer.

4. You can create a chart to take notes of the different temperatures.

Room temperature	Temperature after 1 minute of hand heating	Temperature after 1 minute in hot water

Explanation:

The liquid inside the thermometer is coloured alcohol (alcohol mixed with dye). When the alcohol is heated, it expands, this is, it occupies more space.

Since the liquid is inside a small cylindrical tube, in the thermometer, when expanding it will have to occupy space inside that tube. As so, it rises.

For a given temperature, the alcohol's expansion is always the same. This way, it was possible to create a numerical scale along the tube that indicates the temperature regarding the alcohol's expansion.

With this knowledge it was possible to create thermometers, so useful for cooking and for many other situations!

Experiment 2
Cooked sugar stages

DID YOU KNOW...

That to make sweets, one of the most important tools is the thermometer? Knowing the temperature of sugar is fundamental to make lollipops and other sweets. The temperature that sugar reaches is responsible for the type of sweets made.

To make sweets or lollipops it's only needed two ingredients: water and sugar. The rise in temperature changes the consistency (texture) of the solution of water and sugar.

In this way, scientists created the 'cooked sugar stages' which refer to the texture that the water and sugar solution gets depending on the temperature it reaches.

ATTENTION: ask an adult for help.

What you will need:

- Thermometer
- Metal spoon
- Pan
- Water
- Sugar
- Teacup (for measurements)

Steps:

1. To make any of these cooked sugar stages, you first have to dissolve sugar in water.

2. With the help of an adult, put 1 teacup of water in the pan and heat it on the cooker.

3. Now, carefully add 1 teacup of sugar to the hot water and stir it.

4. To check the sugar stages you'll need the help of the thermometer. Attention scientist, your water and sugar solution will reach a very high temperature so be careful to not get burnt.

Temperature (°C/°F)	Stage	
106 - 112°C/ 223 - 234°F	Thread	There is still a lot of water left in the syrup and this will form a liquid thread. Used for sugar syrups.
112 - 115°C/ 234 - 240°F	Soft ball	Syrup will form a soft, flexible ball. It can be flatten like pancakes.
116 - 120°C/ 242 - 248°F	Firm ball	It will form a firm ball briefly, remaining malleable and will flatten when squeezed.
122 - 130°C/ 250 - 266°F	Hard ball	Syrup will form a hard, thick ball that keeps its shape but you can still change it by squashing it.
132 - 143°C/ 270 - 290°F	Soft crack	Syrup will solidify into threads that are firm, yet flexible.
146 - 155°C/ 95 - 310°F	Hard crack	Syrup will form stiff threads that break easily when bent.
160°C/320°F	Clear liquid	The water has boiled away and the remaining sugar is now liquid and light amber in colour.
170°C/338°F	Brown liquid (caramel)	The sugar turns brown (carmelization).
177°C/350°F	Burnt sugar	The sugar turns black and must not be eaten.

5. In order to test the different stages of sugar, prepare a bowl with cold water.

6. With the help of a spoon, gradually put a little of your sugar solution in water, when

reaching different temperatures. You'll see that a kind of 'dough', syrup, will be formed. Remove it with your fingers and compare what you feel with the descriptions written in the chart.

Explanation:
In this experiment you dissolved a solid (sugar) in water. This way, you created an aqueous solution. However, when you put a little of this solution in cold water, it turned solid.

In fact, scientists start believing that contrarily to many other materials, sugar does not have a specific **melting point**.

So, what is a melting point?

To understand what this process is, first we'll have to go through the **physical states of matter**.

All matter that exists in nature can be presented in four physical states – solid, liquid, gas or plasma – and each state is normally dependant on **temperature**.

Matter consists of atoms that establish forces with each other, setting the state of each matter. As so, the physical states of matter are characterised by the level of arrangement of their atoms that can be more or less close together, accordingly to temperature and pressure of what matter is at.

If these conditions are changed then it is possible to change the physical state of matter.

Rise in temperature		
	Solid	Molecules are close together and do not move much. It is not easy to change the shape of a solid.
	Liquid	It's the intermediate state between solid and gas. Molecules are more far apart and move more than in a solid. In liquid state, bodies do not have a defined shape, adopting the shape of the container where placed since molecules 'slide' on each other.
	Gas	In this state, matter is very far apart and it's often impossible to see it. In gas, matter does not have volume or shape, also adopting the container's shape. Molecules move freely, more than in the liquid state, in all direction and also are much more distant from each other.
	Plasma	This state occurs when gas is extremely heated and in an ionized form. It's the most common physical state of matter in the universe.

So, we can consider the following transformations of the physical states of matter:

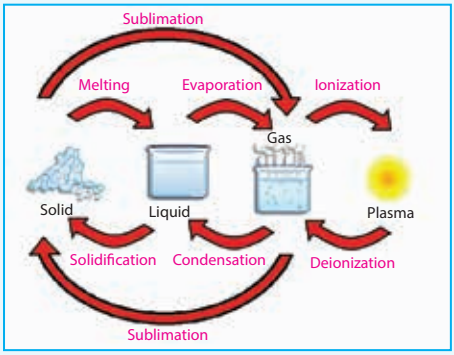


Image 1. Physical states of matter changings.

DID YOU KNOW...
That a scientist called Lavoisier summarised this subject in a law?
The law states that 'Nothing is lost, nothing is created, everything is transformed'.

Image 2. Lavoisier (1743-1794), French chemist, considered the 'father' of modern chemistry.

The **melting point** can be defined as the passage of the solid to the liquid state, this is to say when the temperature rises the substance melts.

However, it was never possible to find out at what temperature sugar 'melted'. Recently scientists figured out that sugar did not 'melt' and instead of that, it **decomposes** when suffering changes in temperature.

DID YOU KNOW...
That such as sugar, other materials, like paper and wood, also are decomposed when heated?
These materials, when heated, do not transform into a liquid. They transform into other compounds such as carbon dioxide.

If sugar is heated immediately, it 'melts' at a higher temperature than if the heating is slow and gradual.

Image 3. Water and sugar solution being heated.

Heat is a type of energy that makes molecules move faster.

At room temperature, sugar molecules, or, sucrose molecules, are stable and are attracted to one another.

When the sugar is heated, the bonds between sucrose molecules, start losing strength,

changing and moving freely. This way, they can shock into each other, forming new bonds (due to the attraction phenomena). These phenomena occur at several temperatures!

Whenever sugar reaches a temperature that allows being transformed into a liquid, its molecules are also breaking down and transforming into caramel.

Sugar can be transformed in caramel without actually being transformed into a liquid. However the more sugar molecules are broken, while sugar is still a solid, the lower will be the temperature needed for it to transform into a liquid.

Yet, when we cool a water and sugar solution, we allow the sugar molecules to be again at room temperature, being this temperature the one that allows sugar to be in the solid state.

1.2. Cooking with science

Have you ever thought about what a recipe is? And what do recipes have to do with science?

Recipes are instructions that must be followed to make a specific dish, such as chocolate cake, bread or roast chicken!

Recipes include the **ingredients** we need and the steps we should follow for their **preparation**.

However scientists also follow special recipes when they are in laboratory and that are called **protocols**.

A protocol is a detailed list of **material** that has to be used and includes the **procedure** to be followed, for the experiment to succeed.

Name:	Recipe	Protocol
What is used:	Ingredients	Materials
How to do it:	Preparation	Procedure
Who does it:	Cook	Scientist

Are you ready to become a scientist and a cook?

If you run out of any of the ingredients, such as flavoured jelly, gelatine or citric acid, do not worry! You can easily find them in a supermarket and continue making your recipes!

We often suggest that you use food colourings and flavourings. Look for these ingredients in your kitchen. If you don't find any, ask an adult to buy them in a supermarket for you to continue making very colourful recipes and experiments!

Note: if you do not have icing sugar, you can use granulated sugar however use only half of the amounts indicated.

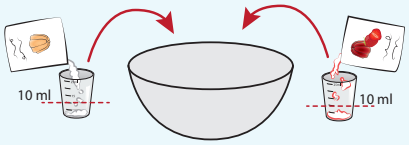
Recipe 1
Heart shaped jelly sweets

ATTENTION: ask an adult for help.

Ingredients and material:
- Silicone mould
- Gelatine
- Flavoured jelly
- Citric acid
- Water
- Icing sugar
- Measuring cup
- Measuring spoon
- 2 Bowls or cups
- Metal spoon

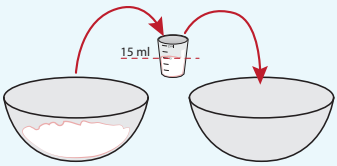
Preparation:

1. Start by preparing in a bowl a mixture of 10 ml of gelatine and 10 ml of flavoured jelly. Use the measuring cup for the correct amounts.



2. With the measuring cup add 60 ml of icing sugar to the mixture. You'll need to make 3 measurements of 20 ml.

3. Mix well and then, again using the measuring cup, collect 15 ml of the mixture and put it in the second bowl.



4. Add to the second bowl 10 ml of warm water (from the tap if you want) and half spoon of citric acid (0.5 g), using the measuring spoon of your kit.

5. Put this mixture in the microwave for 10 seconds.

6. Mix well. You need to assure that you get an homogeneous mixture.

7. Fill in the silicone mould with the help of the metal spoon.

8. Repeat this procedure until the mould is full. You may also choose to use the mixture you've prepared on steps 1 and 2 and use them in recipes 2 and 3.

9. Place the silicone mould in the fridge and wait 1 to 2 hours.

10. Your jelly sweets are made!

To be consumed within 2 days (store in the refrigerator).

Recipe 2
Worm shaped jelly sweets

ATTENTION: ask an adult for help.

Ingredients and material:
- Straws
- Rubber band
- Scissors
- Flavoured jelly
- Gelatine
- Citric acid
- Water
- Icing sugar
- Measuring cup
- Measuring spoon
- Metal spoon
- 2 Bowls or cups

Preparation:

1. Start asking for an adult's help to cut, with the scissors, 3 straws in 3 parts with the same size.

2. Then attach them with a rubber band and place them upright in the cup.

Note: if you still have suficient mixture that you made in experiment 1, you don't need to do the steps 2 and 3 of the experiment.

3. Now, in a bowl prepare a mixture of 10 ml of gelatine and 10 ml of flavoured jelly.

4. With the help of the measuring cup add to the mixture 60 ml of icing sugar. You'll need to make 3 measurements of 20 ml.

5. Mix well and then with the measuring cup collect 30 ml of the mixture and place it in the other bowl. You'll need to do 2 measurements of 15 mL each.

6. Add to the second bowl 20 ml of warm water (it can be from the tap) and 1 measuring spoon of citric acid.

7. Put this mixture in the microwave for 10 seconds and mix it well, until you get a homogeneous mixture.

8. Wash and dry well your measuring cup and then put the straws, vertically, inside of it.

9. With the metal spoon fill in the straws. Make sure all straws are upright and touching the bottom of the cup. This way you are preventing the mixture of coming out from the bottom of the straws.

10. When filled, place them in the fridge for 1 to 2 hours.

11. After this time, you only need to press the straws and start pushing your jelly sweets! You'll see they will really look like worms.

To be consumed within 2 days (store in the refrigerator).

Recipe 3
Two favoured jelly sweets

ATTENTION: ask an adult for help.

Ingredients and material:

- Silicone mould
- Gelatine
- 2 Different flavoured jellies
- Citric acid
- Water
- Icing sugar
- Measuring cup
- Measuring spoon
- Metal spoon
- 4 Bowls or cups

Preparation:

1. Start by preparing in a bowl a mixture of 10 ml of gelatine and 10 ml of flavoured jelly with the measuring cup. Prepare the other bowl exactly in the same way, however with a different flavour.

2. With the measuring cup add to each mixture 60 ml of icing sugar. You'll need to do 3 measurements of 20 ml each.

3. Mix well and remove with the measuring cup 15 ml of each mixture to two new bowls.

4. Measure 10 ml of warm water (from the tap if you want) and half of the measuring spoon with citric acid (0.5g). Add to one of the bowls and then repeat the process for another bowl.

5. Put one of the mixtures in the microwave for 10 seconds.

6. Mix well until all the powder is dissolved.

7. Now fill in the silicone mould. Use the metal spoon to help you pour the mixture in each heart hole. As you want to make two flavoured jelly sweets, fill in the hearts only until half of it's volume.

8. If you want to fill the mould completely, you should repeat the procedure.

9. Now you just have to wait about 30 to 60 minutes.

10. Put the second mixture on the microwave for 10 seconds and mix well dissolving all the powder.

11. Now you can add the mixture over the last one, without them getting mixed. Use the metal spoon to help you out.

12. Place the silicone mould in the fridge and wait 1 to 2 hours.

After this time your two flavoured jelly sweets are made!

To be consumed within 2 days (store in the refrigerator).

Recipe 4
Juice jelly sweets

ATTENTION: ask an adult for help.

Ingredients and material:
- Flavoured jelly
- Gelatine
- Icing sugar
- Orange juice or another flavour you like
- Small measuring cup
- Bowl
- Silicone mould
- Metal spoon

Preparation:

1. In a bowl mix 25 ml of flavoured jelly together with 10 ml of gelatine. Use the measuring cup to help you. Add 25 ml of icing sugar.

2. Ask for an adult's help to heat 50 ml of water in the microwave, in a proper container. Use the measuring cup and make two measurements of 25 ml each.

3. When the water is hot, mix the jelly and stir with a spoon until all the powder is dissolved.

4. Now, add 50 ml of juice and mix well.

5. With the help of the metal spoon put this mixture in the silicone mould and place it in the fridge for at least 2 hours.

6. If after 2 hours the jelly isn't yet solid, wait a little more.

7. When solid, you can take the jellies out of the mould.

8. You can save the jellies by wrapping them still you need to put them in the fridge as they are made from jelly.

To be consumed within 2 days (store in the refrigerator).

Recipe 5
Lollipop without mould

ATTENTION: ask an adult for help.

Ingredients and material:
- Water
- Sugar
- Cornflour
- Food colouring (optional)
- Food flavouring (optional)
- Pan
- Measuring cup
- Tray
- Thermometer
- Lollipop sticks
- Coloured sprinkles
- Metal spoon

Preparation:

1. With your measuring cup, add 100 ml of sugar to the pan. For this, make 5 measurements of 20 ml each.

2. Now add 25 ml of water to the sugar. If you want you can add food colouring and flavouring.

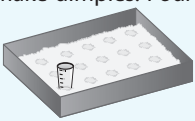
3. Mix well the solution using the metal spoon.

4. Ask an adult to heat the mixture. Use the thermometer and wait until it reaches 150ºC (302ºF). You'll see that in this stage, the liquid will make bubbles and become more viscous.

At 150ºC (302ºF) all the water from the solution evaporates, remaining only sugar. After reaching this temperature, wait 1 or 2 minutes with the mixture still heating. However don't let it reach 160ºC (320ºF), or else you may spoil your lollipops.

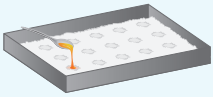
5. While the mixture is heating, put cornflour covering the bottom of the tray.

6. To give shape to your lollipops, use the measuring cup: press the bottom of the cup against the cornflour to make dimples. Pour your mixture into the dimples. You can make other shapes too, with a spoon for example.

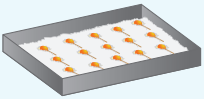


Tip: you must use a tray that allows you to put the cornflour with enough height to make holes with the small measuring cup. However, at the same time, you must be able to put the lollipop sticks horizontally.

7. Now that your lollipop solution is ready you just have to pour it carefully, with the help of an adult (it's hot!) and with a spoon, into the dimples.



8. Finally, add the lollipop sticks.



9. If you want, decorate your lollipops with the coloured sprinkles.

10. Now you just need to wait for them to solidify.

To be consumed within 5 days (store in the refrigerator).

Recipe 6
Lollipops with fun shapes

ATTENTION: ask an adult for help.

Ingredients and material:

- Water
- Sugar
- Cooking oil
- Food colouring (optional)
- Food flavouring (optional)
- Pan
- Measuring cup
- Biscuit moulds
- Lollipop sticks
- Thermometer
- Coloured sprinkles
- Aluminium foil
- Cornflour
- Metal spoon

Preparation:

1. With the measuring cup add 100 ml of sugar to a pan. For this, make 5 measurements of 20 ml each.

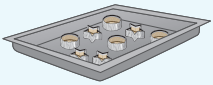
2. Now add 25 ml of water to the sugar. If you want you can add colouring and flavouring.

3. Mix well the solution using the metal spoon.

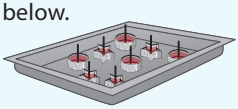
4. Ask an adult to heat the mixture.

5. Use the thermometer and wait until it reaches 150ºC (302ºF). You'll see that in this stage, the liquid will make bubbles and become more viscous.

6. You must also cut pieces of aluminium foil, the same number as the moulds you are going to use. Grease the moulds with a little of cooking oil, use a napkin to help you. Now, use the cornflour to grease the moulds. Finally cover the bottom part of the moulds with aluminium foil, press tightly so the liquid doesn't come out.



7. Now, pour the mixture and immediately place the sticks in the lollipops in a vertical position. See image below.



You also can decorate your lollipops with the coloured sprinkles.

8. Wait until your lollipops are solid and then they will be ready!

9. Finally, remove them gently from the moulds. If necessary, press the sides of the moulds for the lollipops to get loose easier.

Was there any lollipop mixture left in the pan? Well, you can make incredible heart shaped boiled sweets with your silicone moulds!

To be consumed within 5 days (store in the refrigerator).

Recipe 7
Delicious boiled sweets!

ATTENTION: ask an adult for help.

Ingredients and material:
- Water
- Sugar
- Food colouring (optional)
- Juice, the flavour you like the most (optional)
- Pan
- Measuring cup
- Thermometer
- Silicone mould
- Metal spoon

Preparation:

1. With the measuring cup add 100 ml of sugar to a pan. For this, make 5 measurements of 20 ml each.

2. Add 25 ml of water to the sugar. If you want, you can add some drops of food colouring and 25 ml of a juice you like.

3. Mix well the solution using the metal spoon.

4. Ask an adult to heat the mixture. Use the thermometer and wait until it reaches 150ºC (302ºF).

5. Now you just have to add this mixture to your silicone mould.

6. Wait until they are solid and your boiled sweets are made!

To be consumed within 1 week.

Recipe 8
Jelly treats

ATTENTION: ask an adult for help.

Ingredients and material:
- Flavoured jelly
- Gelatine
- Water
- Biscuit moulds
- Aluminium foil
- Spoon
- Measuring spoon
- Tray
- Coloured sprinkles
- 2 Bowls
- Measuring cup
- Citric acid

Preparation:

1. Start by preparing a bowl with 10 ml of gelatine and 10 ml of flavoured jelly. Use the measuring cup.

2. Add 60 ml of icing sugar to the previous mixture. You'll need to make 3 measurements of 20 ml.

3. Mix well and add 2 g of citric acid (2 measuring spoons) and 55 ml of warm water (can be from the tap). To measure this, you need to do 2 measurements of 15 ml and another of 25 ml. Mix it all well once again.

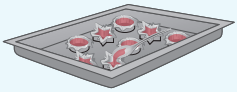
4. Put the mixture in the microwave for 10 seconds and mix it a little more.

5. When all the content of the mixture is well dissolved you may use any type of biscuit mould.

6. You just need to prepare the moulds first: cut some pieces of aluminium foil (considering the amount of sweets you want to make) and cover the bottom of the moulds. Make sure the aluminium foil is well attached to the moulds.

7. Now place all the moulds on a tray that can go in the fridge.

8. Finally, with the help of a spoon, pour your mixture into each mould.



9. If you want, you can decorate the jelly sweets with coloured sprinkles.

10. Now place the tray in the fridge for about 60 to 90 minutes.

11. After this time, your jelly treats will be ready to eat!

Note: if content of the mixture remains, you can fill your silicone mould and make more heart shaped jelly sweets!

Sugestion: you may also do this jelly treats following the recipe 4.

To be consumed within 2 days (store in the refrigerator).

Recipe 9
Tutti-frutti oranges

ATTENTION: ask an adult for help.

Ingredients and material:
- Oranges
- Flavoured jelly
- Water
- Spoons
- Bowl
- Pan
- Plastic cups
- Knife
- Measuring cup

Preparation:

1. To start, cut your oranges in half. For that, ask an adult to help you.

Note: cut half oranges considering the desserts you want to make, this is, if you want to make 6 desserts, cut 3 oranges.

2. Now, remove the interior of each half into a bowl. Use a spoon to help you.

Note: to not waste the oranges content, ask an adult to make orange juice!

3. When all the oranges are clear of content, prepare the jellies: ask an adult to heat 150 ml of water. Use the measuring cup. In this case you will need to do 6 measurements of 25 ml each.

4. When the water is hot, add a jelly sachet to it.

5. Mix until the powder is completely dissolved.

6. Now add 150 ml of cold water and mix well.

7. So that your half oranges don't roll, place each one on a plastic cup (they'll work as a support).

8. Now carefully pour the jelly into the oranges.

9. Finally, place them in the fridge and wait until they solidify.

To be consumed within 2 days (store in the refrigerator).

1.3. Recipes for super scientists

Super recipe 1
Homemade soft drinks

Were you surprised or even frightened with the amount of sugar that a cup of soft drink has?

However you like the sensation of the bubbles (carbon dioxide) in your mouth?

With this recipe you can learn how to make soft drinks that are fun but do not have great amounts of sugar.

ATTENTION: ask an adult for help.

Ingredients and material:
- Blender
- Cups
- Spoon
- 500 ml of sparkling water
- 3 Carrots
- 2 Oranges
- Mint

Preparation:

1. Ask an adult to peel the oranges and carrots.

2. Use the blender to turn the oranges and carrots into a smooth liquid.

3. Add to the juice the sparkling water. Stir well.

4. Add some mint leaves for a fresher flavour.

5. Serve in cups with some ice cubes.

6. Your homemade soft drink is made!

Note: you may use other fruits, such as apple or strawberry, or the ones you like the most. You can also choose other spices such as cinnamon, to give your own special touch to your homemade drinks. This way, you can become a real Chef of these delicious and healthy drinks.

To be consumed in the same day.

Explanation:

As we have already seen, soft drinks consist mainly of sugar and this is easily transformed in fat which can be quite harmful for our organism.

However, soft drinks do not contain alcohol and are not fermented, they are made with sparkling water, fruits and sugar. For that they can be made at home.

Homemade soft drinks are a great option for who likes juices with gas but doesn't want to ingest high amounts of unnecessary sugar.

Sparkling (carbonated) mineral water exists in nature or can be produced by humans.

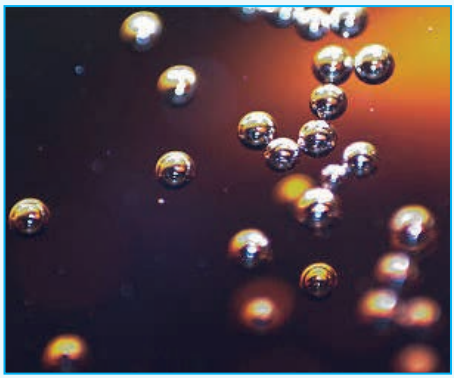


Image 4. Carbon dioxide bubbles in sparkling water.

Mineral water, from mineral springs, can be effervescent, this is to say, the sparkling water as we know it, however it can be produced naturally in nature. **Sparkling water** is water in which carbon dioxide gas has been dissolved under pressure.

Natural sparkling water originates from areas near volcanoes, which cause the heating of underground water. The heat released in these areas breaks the mineral molecules present in water and also cause the release of vapours and incorporation of gases in liquid.

DID YOU KNOW...
That there are natural sources of sparkling (carbonated) water?
Azorean Islands, in Portugal, are volcanic and the water is influenced by the heat from the interior of Earth. It's possible in this region to drink sparkling water directly from thermal springs, for example in Furnas located in São Miguel Island. The locals call this water '**sour water**'!

Image 5. 'Sour water' spring in Furnas, São Miguel Island, Azores.

The single difference between mineral water and sparkling/carbonated water is the presence of carbon dioxide.

Homemade soft drinks present several advantages:

- When using fresh fruit, we can feel its real flavour and obtain its nutrients;

- Preservatives aren't added such as other substances that can alter the drink's flavour and can harm our organism if consumed in excess;

- They are less acidic than 'common' soft drinks.

Super recipe 2
Sweet of yogurt

ATTENTION: ask an adult for help.

Ingredients and material:
- 2 Packages of flavoured jelly
- 2 Natural yogurts
- Bowl
- Blender

Preparation:
1. Prepare the jelly accordingly to the instructions provided on the packages. Attention scientist, ask and adult to help you heat the water.

2. Put the jelly in the fridge until it's slightly solid.

3. Transfer the jelly to the blender and add the yogurts, mix it all until you get a homogeneous mixture.

4. Put this mixture in a large bowl or in individual ones and then place them in the fridge before serving.

To be consumed within 2 days (store in the refrigerator).

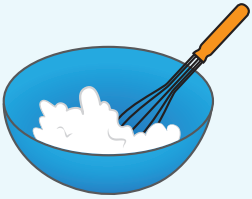
Super recipe 3
Marshmallow teacake

ATTENTION: ask an adult for help.

Ingredients and material:
- 6 Egg whites (the yolks can be cooked)
- 250 g of icing sugar
- 1 Sachet of strawberry jelly
- Dark chocolate
- Bowl
- Container for water bath
- Mixer
- Spatula
- Tray
- Aluminium foil
- Piping bag
- Tablespoon

Preparation:

1. Ask an adult to whisk the egg whites.

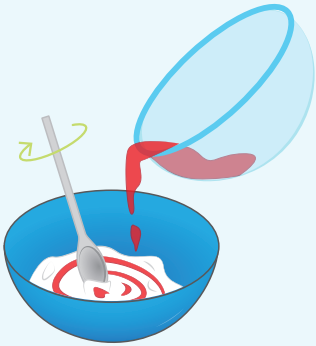


2. Add sugar and ask the adult to continue whisking the egg whites until stiff.

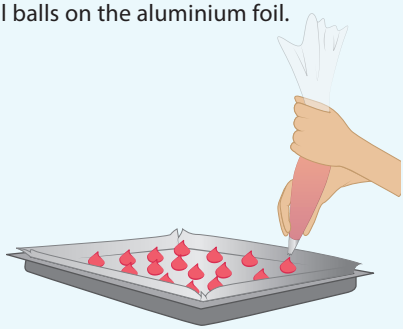
3. Ask an adult to put the bowl in water bath and when the mixture starts boiling, whisk again the egg whites.

4. In another container, dissolve the jelly content in hot water, such as described on the sachet.

5. Add the jelly to the egg whites and with the spatula involve the mixture!



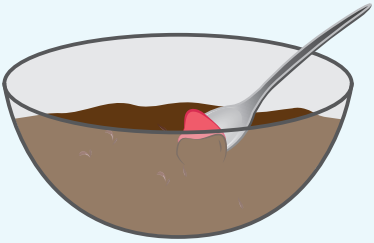
6. Line the tray with the aluminium foil. Put your mixture in the piping bag and make small balls on the aluminium foil.



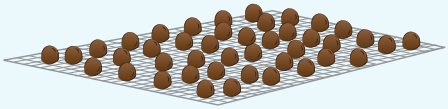
7. Place the tray in the freezer for a day.

8. On the following day, melt the dark chocolate. Put it in a container and mix well.

9. With the help of a spoon dip the small balls in the chocolate.



10. Put them on a aluminium foil to dry.



11. When the chocolate is solidified your marshmallow teacakes are made!

Tip: to fasten the process, place them in the fridge.

To be consumed within 2 days (store in the refrigerator).

Super recipe 4
Caramel coverage

ATTENTION: ask an adult for help.

Ingredients and material:
- Sugar
- Pan
- Spoon
- Tea cup (for measurements)

Preparation:

1. In a pan put a cup of sugar.

2. Ask an adult to put the pan on the cooker, in medium heat, for the sugar to melt slowly.

Note: this method doesn't require water to melt the sugar and as so we call it **dry method**.

3. Mix it gently until all the sugar is dissolved. Attention, you'll see that on the edges of the pan, sugar gains colour more quickly. You must always stir near these edges and drag the sugar, already darker, to the centre of the pan.

4. Now you can use this caramel to make a cake or pour it over a cake that's already made. You can also use it as a topping for ice creams or popcorns!

5. Delight yourself with homemade caramel!

To be consumed within 1 week.

Super recipe 5
Caramel threads

You can make fantastic caramel threads with the previous recipe.

For that you just need to make the caramel as explained in super recipe 4.

ATTENTION: ask an adult for help.

Ingredients and material:
- Everything you have used in super recipe 4
- Cooking oil
- Metal ladle
- Spoon
- Fork
- Thermometer
- Brush or napkin

Preparation:

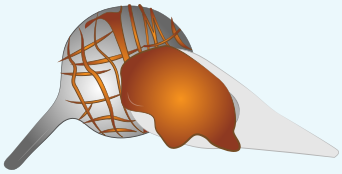
1. Start by preparing the caramel, such as explained in super recipe 4.

2. When all sugar is liquid, you must turn off the cooker and remove the pan of the stove. To carry out this step ask an adult for help.

Use also the thermometer to control temperature. You'll see that at 150ºC (302ºF), all sugar is transformed in caramel.

3. Grease the back part of the ladle with cooking oil. You can use a brush or a napkin.

4. Let it cool a little. Then dip a spoon or a fork in the caramel, still hot, and let the caramel threads fall over the ladle. You must make 'Z' movements to create a mesh on the back part of the ladle.



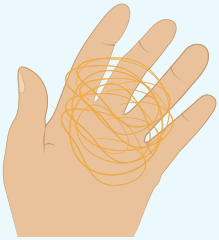
5. Now, carefully, remove the caramel threads from the ladle and you'll have a basket made of caramel.

In the mean time, the caramel started cooling inside the pan and as you can see (with the help of a fork) small threads are forming. What to do?

6. With a fork pull some caramel threads from the pan. Then, you just have to continue pulling. You can pull them with the fork and roll around the lollipop stick or pull them with your fingers.

7. If the threads break easily, heat once again the caramel until it's liquid. Then make the threads with your fingers.

8. If you roll these threads around a lollipop stick you'll make a fantastic **caramel lollipop**! You can also make small balls and decorate a cake. You just need to use your imagination!



If the caramel solidifies inside the pan, you must add water and let it soak for about 24 hours. This way, the caramel that solidified will become loose.

To be consumed within 1 week.

Super recipe 6
Jelly cake

ATTENTION: ask an adult for help.

Ingredients and material:

- 4 Eggs
- 1 Cup of sugar
- 1 Pack of cream
- 2 Cups of flour
- 1 Teaspoon of yeast
- 1 Sachet of jelly of your favourite flavour
- Butter
- Mixer
- Cake mould

Preparation:

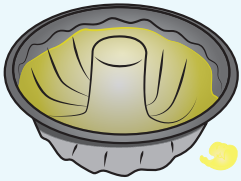
1. First you have to start by whisking the eggs with sugar. Use the mixer if you want and ask an adult to teach you how to use it.

2. When well mixed, add the jelly sachet and continue mixing.

3. Add 1 cup of flour and the cream. Continue mixing. Add the yeast too.

4. When the mixture is homogeneous, add the second cup of flour, but don't stop mixing.

5. Grease the mould with butter, making sure its entire interior is totally covered.



6. Now dredge the mould with flour.

7. Once the mould is ready, pour the mixture into it.

8. Now the dough has to go in the stove. Ask an adult to turn it on at 180ºC (356ºF), for about 80 minutes.

9. Delight yourself with this jelly cake!

To be consumed within 1 week.

Super recipe 7
Jelly sweets frame

ATTENTION: ask an adult for help.

Ingredients and material:
- Everything you have used in super recipe 6
- Square mould for cakes
- Photo or image that you like
- Material to protect the photo or image (you can overlay it with a layer of plastic or another protective material)
- Several jelly sweets (you can use the ones you made in the previous experiments)

Preparation:

1. Start by preparing the cake, such as you've done on super recipe 6, but this time use a square mould for cakes.

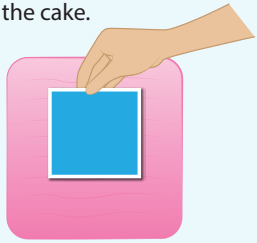
2. While the cake is baking, you can protect your photo or image. For that you can use a laminating machine or transparent adhesive paper (like the one used to protect book covers).

3. When the cake is baked, ask an adult to take it out of the stove and put it on a plate.

4. Let it cool for 5 minutes.

5. See if the top of the cake is plain. If it isn't, ask an adult to cut the upper layer of the cake to become plain, using a knife.

6. Now place the image or photo on the centre of the cake.



7. Fill in the empty space that surrounds the cake with the jelly sweets you've chosen!

8. This cake will be a great success!

You can make any cake recipe you know or like and apply this decoration technique.

To be consumed within 2 days (store in the refrigerator).

Super recipe 8
Sweet 'brigadier' of jelly

ATTENTION: ask an adult for help.

Ingredients and material:
- 1 Condensed milk tin
- 1 Sachet of flavoured jelly
- Butter
- Sugar
- Bowl
- Cupcake wrappers (optional)
- Food colouring (optional)
- Coloured sprinkles

Preparation:

1. Mix the condensed milk and the jelly. Stir well until all the jelly is dissolved.

2. Cover this mixture and then place it in the fridge for about 24 hours.

3. On the next day, you can make your own small balls. Put some butter on your hands and then mould the balls.

4. Finally, when shaped as you like, roll them on sugar and decorate them with coloured sprinkles.

5. If you have the cupcake wrappers, you can place them there.

To be consumed within 2 days (store in the refrigerator).

SUPER SCIENTIST!
Did you know that you can give colour to sugar?
You just need to add some drops of food colouring and mix well. Then, put it over absorbent paper for the colouring that is in excess come off. When it's dry, the coloured sugar is ready to use!

Super recipe 9
Popcorn pops on stick!

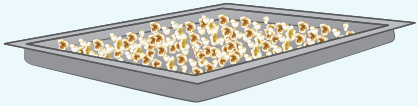
Do you remember how to make the popcorns you've learnt in experiment 2 of the 'Sweet Laboratory' book? Now you will learn how to make a delicious sweet with them!

ATTENTION: ask an adult for help.

Ingredients and material:
- Popcorn (like the ones you made on experiment 2 of the 'Sweet Laboratory' book, but without sugar or salt)
- Marshmallows
- Butter
- Tray
- Pan
- Cake spatula
- Spoon
- Lollipop sticks
- Coloured sprinkles

Preparation:
1. Start by spreading your popcorns (already made) on a tray.

Note: use the popcorns you have already made or repeat experiment 2 from your 'Sweet Laboratory' book.

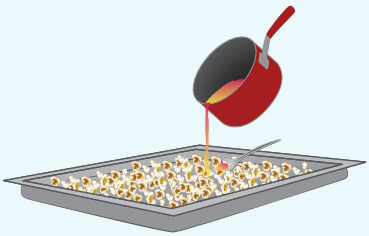


2. Ask an adult to melt butter in a pan. You must only melt enough butter to cover the bottom of the pan.

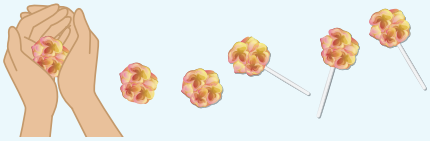
3. When the butter is melted, put the marshmallows in the pan too.

4. Mix it over a low flame, with a cake spatula, until the marshmallows melt as well. You'll see that dough will start forming. In this stage, the mixture is ready.

5. Carefully, you must pour the dough over the popcorns. With a spoon spread and mix the dough together with the popcorn.



6. Now you can make small balls with your hands. When they're made, put the lollipop sticks in them. If you want you can also decorate these lollipops with the coloured sprinkles.



To be consumed within 1 day.

Super recipe 10
Caramel popcorn cake!

ATTENTION: ask an adult for help.

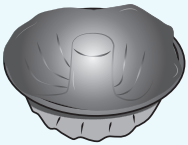
Ingredients and material:
- Popcorn (without sugar or salt)
- Sugar
- Water
- Pan
- Tea cup (for measurements)
- Wooden spoon

- Metal spoon
- Tray
- Cake mould
- Aluminium foil

Preparation:

1. Make popcorn just like you did in experiment 2 of the 'Sweet Laboratory' book.

2. Meanwhile you must cover the mould with aluminium foil.



3. Spread the popcorn on a tray.

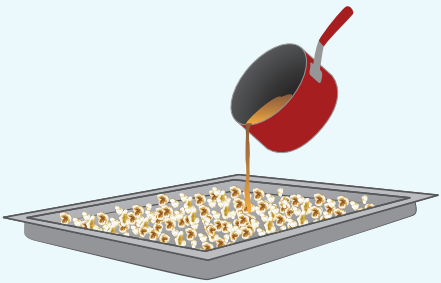
4. Now you must prepare the caramel.

a) In a pan put a cup of sugar and heat it on the cooker over a low flame, so the sugar can melt slowly. Ask an adult for help to use the cooker.

b) When the sugar has a golden colour add half cup of hot water (you can use tap water) and stir with a wooden spoon.

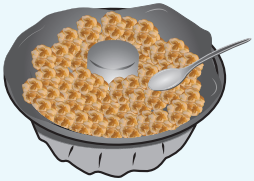
c) Stir it carefully until all sugar is dissolved and you'll obtain a golden liquid – your caramel.

5. Now, you just have to pour the caramel over your popcorn on the tray.



6. Very slowly and carefully (otherwise the popcorn may break) mix the caramel with the popcorn using the metal spoon.

7. When all is well mixed, put the caramel popcorn in the cake mould. With a spoon press them so they get more compact.



8. Finally, put the mould in the fridge for about 1 hour.

9. After this period you can remove the cake. Carefully, pull the foil from the mould and then separate the aluminium foil from the caramel popcorn cake.

To be consumed within 2 days.

You can make this recipe also replacing the caramel by chocolate. For that, ask an adult to melt a chocolate bar that you like (dark, milk or white) in the microwave. Instead of caramel, you should use melted chocolate in all the steps of this recipe.

Curiosities

Do you want to know more about jelly sweets?

Become a real scientist and discover the curiosities we have for you in the following link:

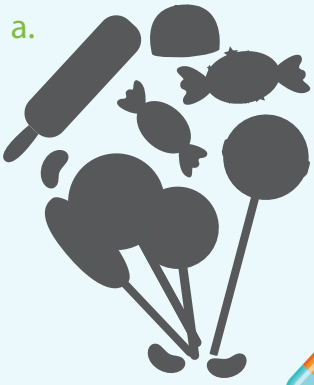
www.science4youtoys.co.uk/super-lab-sweets

Shadows Game

Find out which of the following shadows belongs to the coloured image!

Have fun!

a.



b.

c.

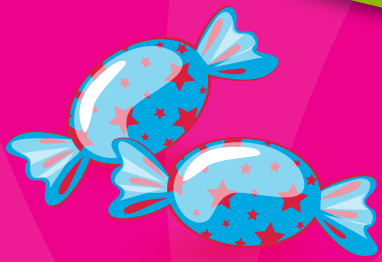
d.

Answer: c.

SCRUMPALICIOUS!

SWEET SHOP

IT'S A WONDERLICIOUS WORLD...



SUPER LAB SWEETS

ISBN 978-989-771-340-8

Science4you