nickelodeon

USER MANUAL

SCIENTISTS / KIDS = FUN!

EXPERImake

CREATED BY SCIENTISTS. FUN FOR KIDS!

WARNING

Not suitable for children under 8 years. For use under adult supervision. Contains some chemicals which present a hazard to health. Read the instructions before use, follow them and keep them for reference. Do not allow chemicals to come into contact with any part of the body, particularly the mouth and eyes. Keep small children and animals away from experiments. Keep the experimental set out of reach of children under 8 years. **Warning**. Children under eight years can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once. It is advisable to wash the balloons before using them and to use an air pump to fill them. Warning. Balloons are made of natural rubber latex.

FUN FACTS INSIDE

THE WONDERS OF WATER

Addo Play Ltd. Bucks, HP10 8EG, UK. Tel: +44 (0) 1494 917250

Addo

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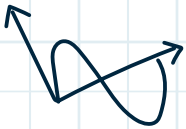
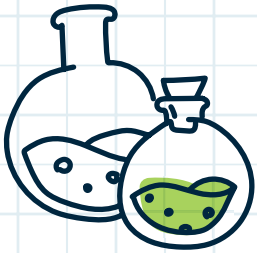


Advice for Supervising Adults



- Read and follow these instructions, the safety rules and the first aid information, and keep them for reference.
- 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 by children over 8 years.
- Because children's abilities vary so much, even within age groups, supervising adults should exercise discretion as to which experiments are suitable and safe for them. The instructions should enable supervisors to assess any experiment to establish its suitability for a particular child.
- The supervising adult should discuss the warnings and safety information with the child or children before commencing the experiments. Particular attention should be paid to the safe handling of acids, alkalis and flammable liquids.
- 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.
- Substances in non-reclosable packaging should be used up (completely) during the course of one experiment i.e. after opening the package.
- This set contains colourings which can stain. Keep away from objects and delicate fabrics.

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 and surfaces before and after use.
- Make sure that all containers are fully closed and properly stored after use.
- Ensure that all empty containers are disposed of properly.
- Wash hands 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 eat or drink in the experimental area.
- Do not allow chemicals to come into contact with the eyes or mouth.
- Do not replace foodstuffs in the original containers. Dispose of immediately.

Contents

Bottle with bubble solution (60ml)
Blue food colouring (10 ml)
Soap bubble hoop
Small measuring cup
Petri dish
Pipette
2 syringes
7 straws
Elastic band
Plastic tube
3 balloons

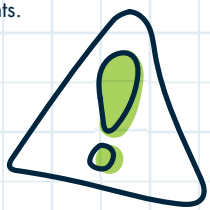
Chemicals Supplied and Warnings

Keep all containers tightly closed. Store in a cool, dry place.

Substance/ID	Hazard and Precautionary Statements
Blue Food colouring (E133)	Do not ingest. Avoid contact with eyes.
CAS # 3844-45-9	Use only in accordance with instruction.

Disposal of Used Chemicals and Packaging

When you need to dispose of chemical substances, it is necessary to refer to the national and/or local regulations. Never throw chemicals into sewers and garbage. For more details please refer to a competent authority. For disposal of packaging make use of the specific collection points.
Please recycle all packaging where possible.

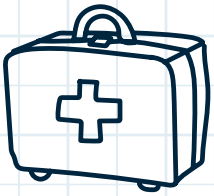


General First Aid Information

- **In case of eye contact:** Wash out eye with plenty of water, holding eye open if necessary. Seek immediate medical advice.
- **If swallowed:** Wash out mouth with water, drink some fresh water. Do not induce vomiting. Seek immediate medical advice.
- **In case of inhalation:** Remove person to fresh air.
- **In case of skin contact and burns:** Wash affected area with plenty of water for at least 10 minutes.
- In case of doubt, seek medical advice without delay. Take the chemical and its container with you.
- In case of injury always seek medical advice.

In case of emergency dial:

UK 999 • **Europe** 112
USA 911 • **Australia** 000



Write the telephone number of the national poison information centre or local hospital below.

They may provide you with information about measures to take in case of intoxication.

Welcome to the Wonderful World of Science!

EXPERIMAKE science sets have been designed by scientists to encourage **learning** through **play**.

Science, Technology, Engineering & Maths (STEM) education is important and each set will enable the development of at least two of these skills.

The **skills** and **knowledge** gained are essential for children's learning.

EXPERIMAKE sets not only support education but are fun and enjoyable for parents too.

When having fun, or making discoveries, a neurotransmitter called **dopamine** is released. Dopamine helps control the brain's **reward centre**.

When we have a positive experience and dopamine is released, we are more likely to remember it.

So, if learning is a positive experience it will stimulate the brain to help develop various skills.

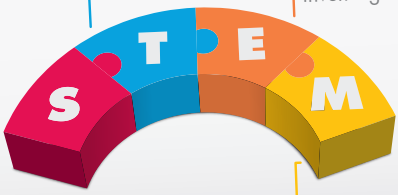
EXPERIMAKE sets are **educational toys** that combine **science** and **creativity** by fostering curiosity and experimentation.

We hope you enjoy exploring the wonderful world of science through our EXPERIMAKE range.

Inventive, creative and imaginative, STEM toys are educational, teaching new skills and knowledge and are (most importantly) lots of fun!

Technology
Encouraging problem solving and methodology skills.

Engineering
Encouraging design, building, and inventing skills.



Science
Encouraging a curiosity for the world around us.

Maths
Exploring different ways of getting children to think about numbers.

Why not share your results with us?

@AddoPlay AddoPlay hello@addoplay.com

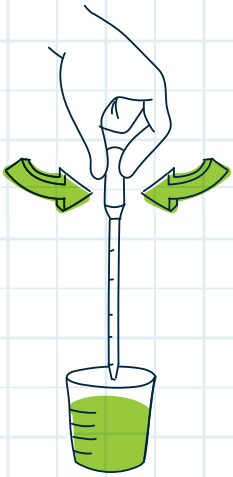
Before You Start...

How to Use Your Pipette

A pipette is used to collect liquid in small amounts and move from one container into another. It lets you control the amount of liquid you are adding by releasing a drop at a time. Before you begin with the experiments, you should practice using a pipette. The soft and squidgy end is called the **bulb** and the other end is called the **tip**.

1. Fill a small container with water, squeeze the bulb and place the tip into the water.
2. Slowly release the bulb until you see water filling up the tube.
3. Now that you have collected the liquid you can release it again in small drops. To do this, remove the pipette tip from the liquid and press the bulb lightly. You will see the drops come out one by one.

1.



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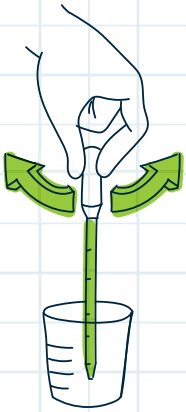

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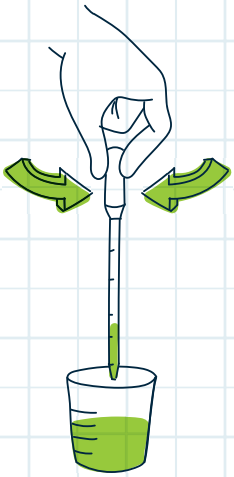


Tip: To avoid contamination, always use the same pipette for the same solution.

Please note, the blue food colouring has been supplied to make your experiments even more exciting. However, please use with care as colouring can stain. All the experiments can be completed with or without the colouring.

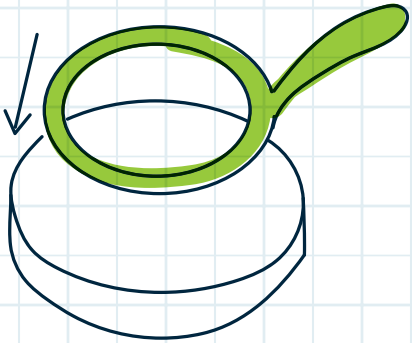
1. Giant Bubbles

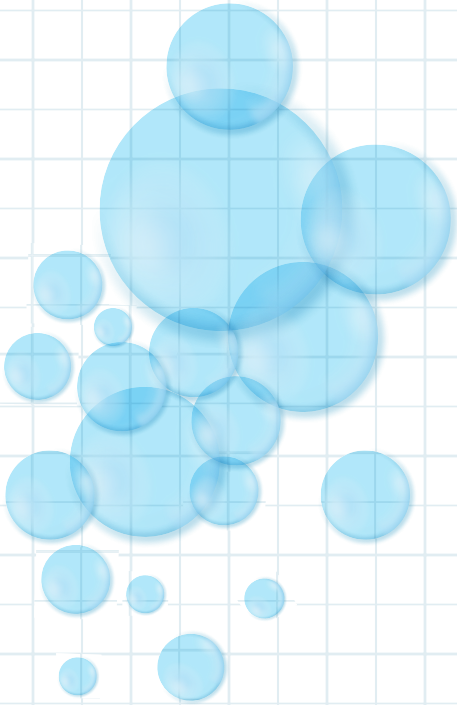
You will need

Petri dish, bottle with bubble solution, bubble hoop.

Steps

1. Pour some bubble solution into the Petri dish.
2. Dip the bubble hoop into the solution and either wave the hoop around or blow gently into the hoop.
3. Observe the results.





Explanation

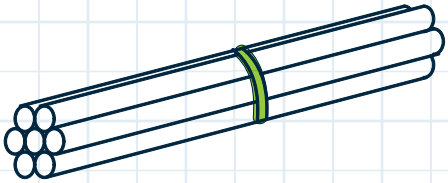
The outside of a soap bubble consists of 3 very thin layers: soap, water and another layer of soap. This 'sandwich' on the outer part of the bubble is called soap film. The bubble bursts when the layer of water, stuck between the two soap layers, bursts.

Glycerine makes the soap layer thicker and stronger. This prevents the water from evaporating quickly and therefore the bubbles can last longer and can be blown bigger because they are stronger.

2. Bundles of Bubbles

You will need

6 straws, elastic band, bottle with bubble solution, Petri dish.

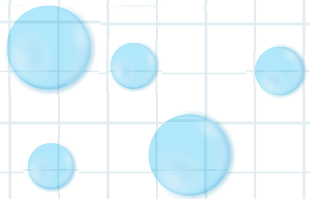


Steps

1. Use the elastic band to hold 6 straws together.
2. Pour a little bit of the bubble solution into the Petri dish until the bottom is completely covered.
3. Dip the tip of the straws in the liquid.
4. Blow through the other end of the straws.

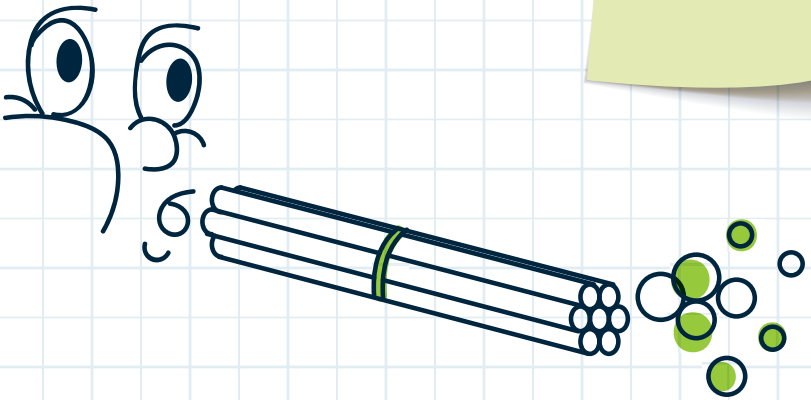
Note: Only blow through the straws. Be careful not to inhale.

5. Observe the results.
6. Repeat this process and try to blow more bubbles each time.



Explanation

When you blow through the straws, the air you exhale will expand the solution and help to create the bubbles you see.



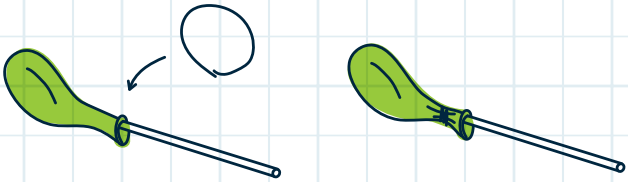
3. Bubble Falls

You will need

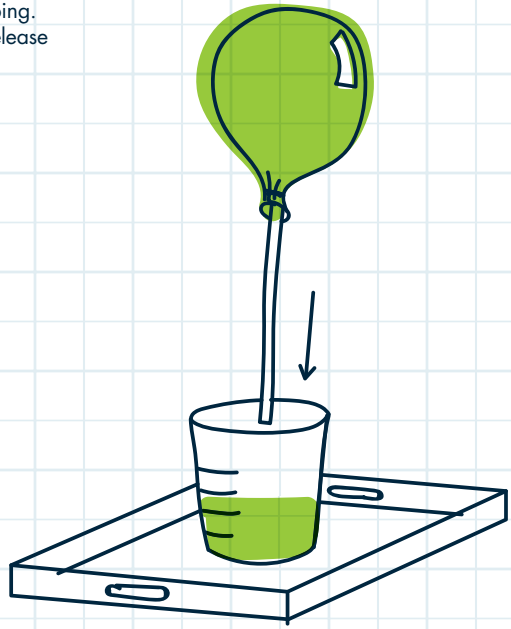
Balloon, straw, elastic band, bottle with bubble solution, tall glass (not included), large plate or tray (not included), water (not included).

Steps

1. Insert the straw into the balloon and use the elastic band to secure.



2. Fill the tall glass with water and place it on the plate or tray because the water might spill.
3. Add some bubble solution to the water.
4. Use the straw to blow up the balloon and pinch the neck of the balloon to prevent the air from escaping.
5. Insert the straw into the tall glass of water and release the neck of the balloon.
6. Observe the results.



Explanation

In this experiment, you will observe similar results to the previous experiment. However, in this case, the air to create the bubbles comes from the balloon.

4. The Water That Does Not Spill

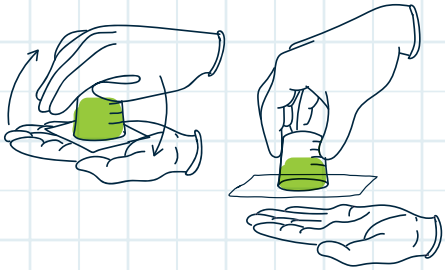
You will need

Small measuring cup, cardboard (use inner tray), scissors (not included), water (not included).

Steps

1. Ask an adult to help you cut a square from the inner tray, approximately 5x5cm. Ensure the cardboard square cut is bigger than the top of the cup.
2. Put 20ml of water in the small measuring cup.
3. Hold the cup in one hand and place the piece of cardboard on top of the small measuring cup. Gently hold it in place.
4. Perform this next step over a sink or bowl. Turn the cup upside down whilst holding the cardboard gently in place.
5. Carefully remove the hand holding the cardboard in place.
6. Observe the results.

If you've done the experiment correctly, the force from the air below counteracts the force from the water above and the card stays in place. There are two separate effects that make the water stay in the cup.



Explanation

Everything in air, even people, have pressure applied in all directions due to colliding air molecules. This air pressure is known as atmospheric pressure and is 1 "atmosphere" at sea level. The card transfers the force of air pressure upward to the water so there is 1 atmosphere pushing up on the water from below. There is also pressure from the air inside the cup pushing down on the water. This air pressure was 1 atmosphere when the cardboard was placed over the cup however, when the cup is turned upside down the card bulges slightly which increases the space for the air in the cup. This means these air molecules have more space and therefore the pressure these molecules apply is reduced. This makes the force of the air pushing down on the water less than the force of the air pushing up so the card stays in position.

Water molecules have a strong attractive force known as cohesion which causes surface tension. The pressure difference required to keep the water in the glass is less than if there were no cohesive forces. Water molecules like to stick together!

5. Water Flume

You will need

Syringe, plastic tube,
water (not included),
bowl (not included),
empty bottle (not included).

Explanation

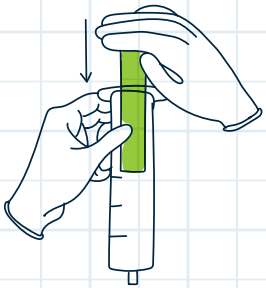
As you pull the syringe plunger to suck up the water, the air that is inside the tube is transferred to the syringe and water is sucked up into the tube, filling the space.

When you remove the syringe from the tube, the pressure at this free end is lower than the pressure at the end of the tube in the bottle of water. This difference in pressure forces the water to continue to flow from the bottle through the tube, and into the bowl. This is called a syphon.

Steps

1. Pour water into the bottle until it is almost full.
2. Remove all the air that might be inside the syringe by pushing the plunger completely down.
3. Insert the tip of the syringe into the plastic tube and make sure you hold it firmly.

2.



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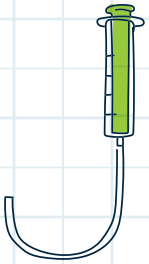
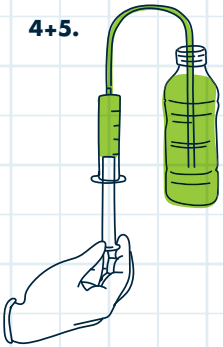


4. Place the other tip of the tube inside the bottle of water. Perform the next steps with a bowl below the syringe.
5. Pull the syringe plunger to suck up the water.
6. Now, remove the syringe tip from the tube.
7. Observe the results.

4+5.



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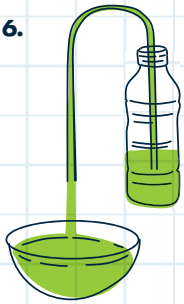


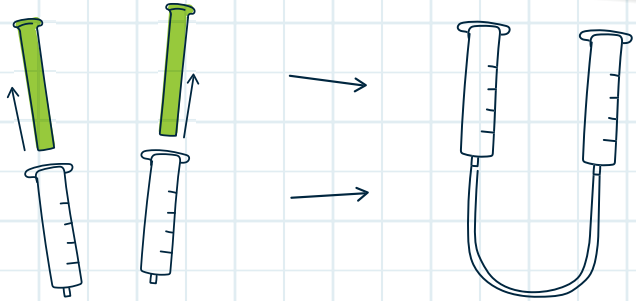
6. Under Pressure

You will need

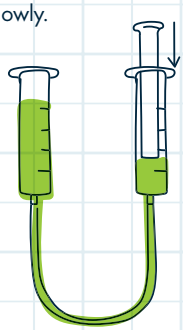
2 Syringes, plastic tube,
small measuring cup, water (not included).

Steps

1. Remove the plungers from both syringes.
2. Insert the tips of the syringes into the ends of the tube.
3. Fill one syringe with water.
4. Observe the results.



5. Carefully raise the syringe in your right hand. Observe the result.
6. Lower the syringe in your right hand and raise the syringe in your left hand. Observe the results.
7. Insert the plunger into one of the syringes and start pushing the water until the other syringe is completely filled.
8. Insert the other plunger into the full syringe and press down slowly.
9. Observe the results.



Explanation

When you pour water into one of the syringes the atmospheric pressure makes the water pass into the other syringe to equalize the water level and pressure on both sides.

Explanation

You have created a closed system and you will observe when you apply pressure to one syringe, it will cause the water to rise in the other syringe. This is because water is an incompressible liquid and therefore the force applied to one syringe is transferred to the other syringe. Liquids are used in many kinds of machines to carry force through pipes. This is a hydraulic system.

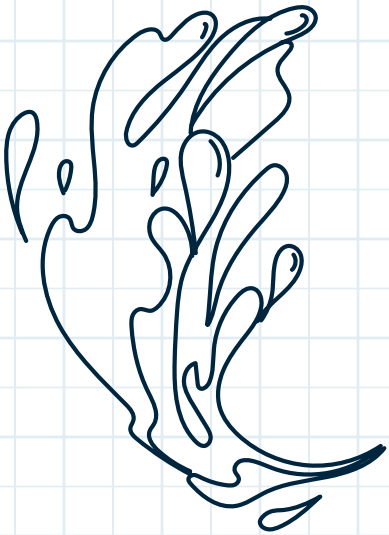
7. The Fish That Does Not Get Wet

You will need

Small measuring cup, fish template from booklet, bowl (not included), water (not included).

Steps

1. Ask an adult to help cut out the fish from the booklet (see page 14).
2. Place the fish into the end of the small measuring cup, making sure it does not fall down.
3. Fill a bowl with water (enough water to cover the cup).
4. Turn the cup upside down and place it into the centre of the bowl, keeping hold of the cup at all times.
5. Observe the result.
6. Now, quickly and vertically remove the cup from the water.
7. Observe the results.



Explanation

When removing the cup from the bowl, you will see that the fish is still dry.

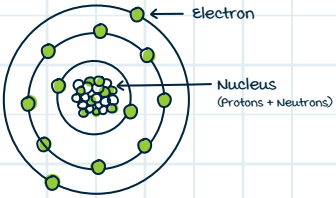
This happens because the cup isn't totally empty, even though it seems like it is.

When placing the cup in the bowl of water, the air inside it remains there. This prevents the water from entering the cup and getting the fish wet.

FUN FACTS

Atoms and molecules

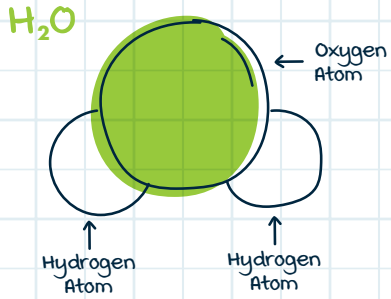
Everything around us in made up of tiny particles called **atoms**. Each atom is composed of a **nucleus**, formed by protons and neutrons, and also by electrons that spin around the nucleus, forming a cloud of electrons known as an electron cloud.



Protons have a positive charge, **electrons** have a negative charge, and **neutrons** have no charge at all. When atoms bond together, through chemical connections, molecules are formed.

These molecules can be very simple or complex. For example, water molecules are formed by two atoms of hydrogen bound to one atom of oxygen (H_2O). There are millions of water molecules in a single drop.

Chemical elements are substances formed by only one type of atom, such as iron or gold. However, **chemical compounds** are chemical substances formed by atoms of different types of elements, such as water.



Water is the only substance that exists naturally in all three physical states of matter. Under small changes in temperature, water can be observed in its solid, liquid or gaseous state.

EXPERIMAKE

TOKEN

Congratulations! You are on your way to achieving your **experimake certificate.**

To claim your certificate collect **3** of these tokens and send them to us.

Potable water is the water that we can drink and use in our everyday life. Water is always subjected to a purification process (filtration, sterilization, precipitation and decantation) to eliminate the impurities.

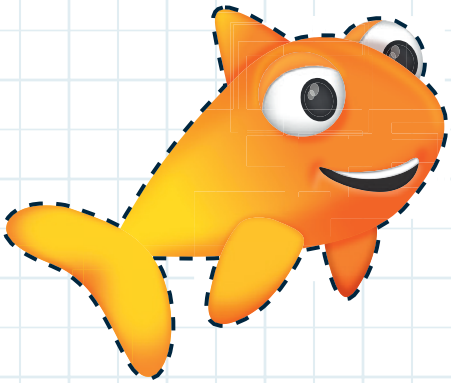
To be considered potable (safe to drink) water must be:

- Odourless (have no smell)
- Colourless (have no colour, be clear)
- Insipid (have no flavour)

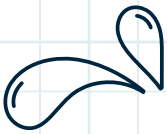
Our planet is commonly known as the Big Blue Marble because over 70% of its surface is covered by water; 97% of that water is seawater, while only 3% is fresh water.

The water that circulates on our planet is always the same. Earth is a closed system and it rarely gains or loses extra matter. The same water that existed millions of years ago is the same that continues to exist today.

This means that the water dinosaurs drunk and used is exactly the same that we use and consume today!



70% of our body is made of water. Our muscles contain 75% water and our cells don't work without it.



FUN FACTS

Please ask your parent or guardian to complete:

Name _____ **Age** _____

Home Address _____

_____

Email Address _____

Please send **3** tokens to Addo to receive your **experimake certificate**

Send to: Addo Play Ltd. Bucks, HP10 8EG, UK

We confirm that information disclosed to Addo Play will be held in accordance with our privacy policy, a copy of which is available on our website www.addoplay.com

319-10114N

Also Available...

*Subject to Availability

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