

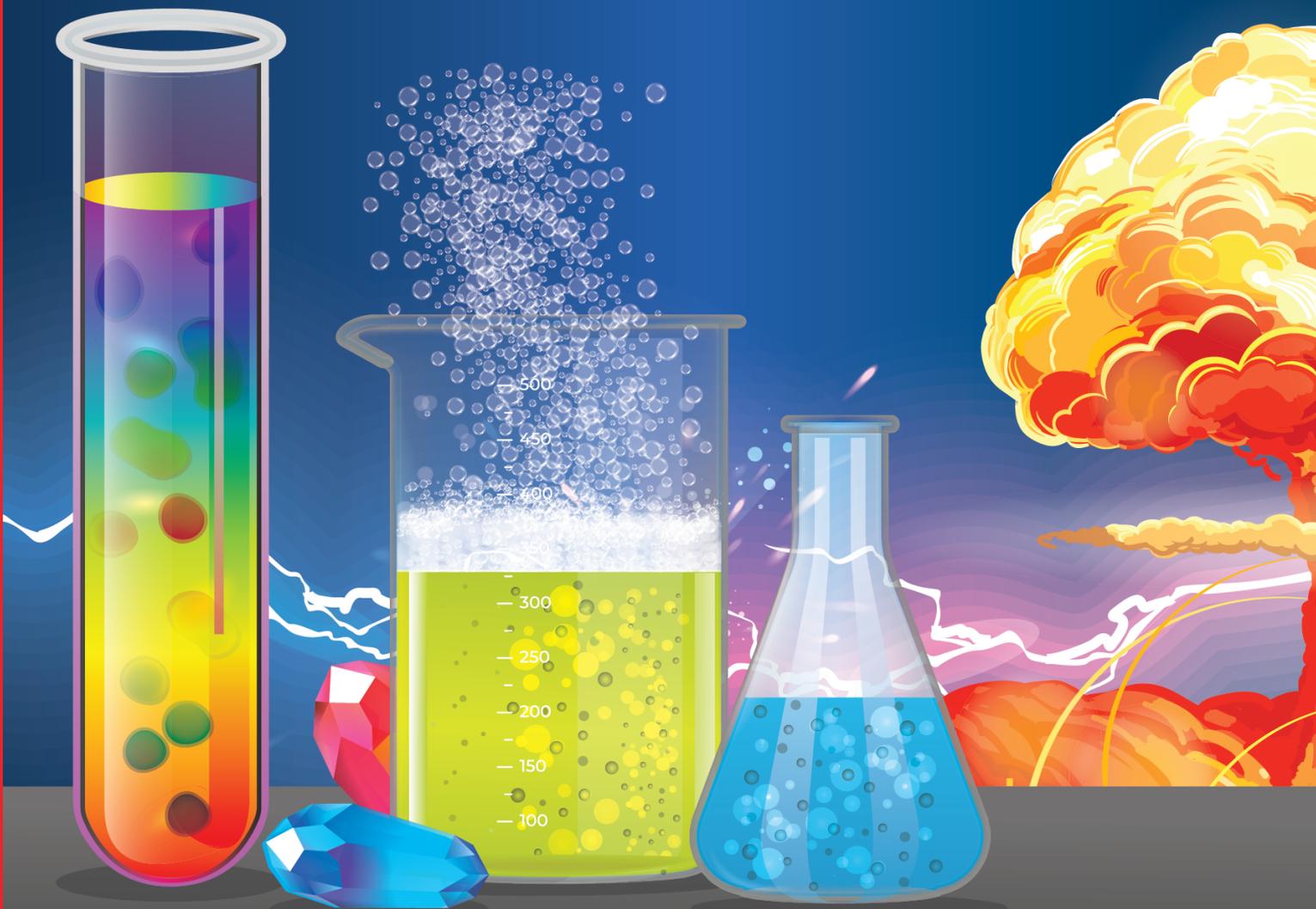


ULTIMATE

SCIENCE KIT

36 BONUS EXPERIMENTS

Using Home Materials



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Experiment #1

VINEGAR EXPLOSION

EXPLOSIVE SCIENCE



5
MINS

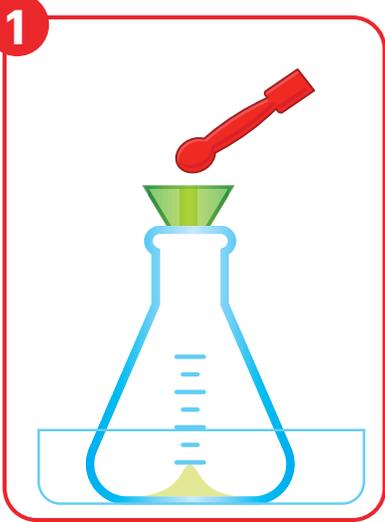
EQUIPMENT

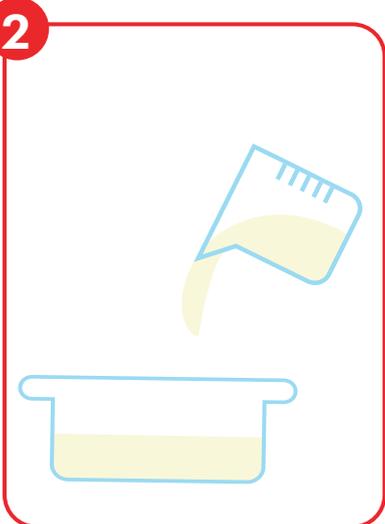
- Measuring Cylinder
- Conical Flask
- Spatula
- Funnel
- Tray
- Cup

MATERIALS NEEDED

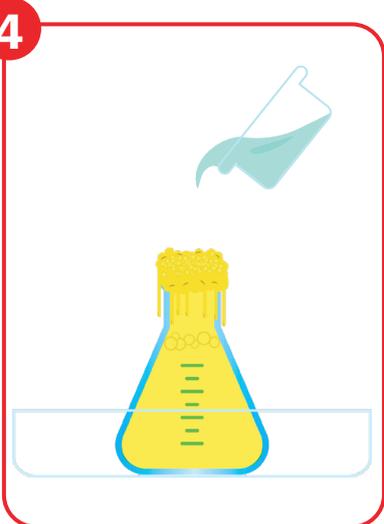
- Yellow Colour
- Baking Soda
- Vinegar
- Water

INSTRUCTIONS

- 

Take the conical flask and put it on the tray. Add 1 scoop of baking soda into the flask using the funnel. Gently tap the funnel if the chemical gets stuck.
- 

Add 20 ml vinegar to a cup using the measuring cylinder.
- 

Then, add 15 ml of water and 10 drops of yellow colour. Mix well.
- 

Remove the funnel. Then, pour the contents of the cup into the flask.

DID YOU SEE?

Did you see a blast of lava coming out of the volcano?

SCIENCE BEHIND THIS

When baking soda and vinegar are mixed together, a chemical reaction takes place. The fizz that we saw are bubbles of carbon dioxide gas being released. This same kind of fizz can be observed when a soda bottle is opened.

Experiment #2

LEMON VOLCANO

EXPLOSIVE SCIENCE



EQUIPMENT

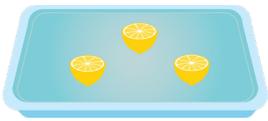
- Spatula
- Tray

MATERIALS NEEDED

- Baking Soda
- Blue Colour
- Red Colour
- 3 Lemons
- Yellow Colour

INSTRUCTIONS

1



Ask an adult to cut the lemons in half. Place one half of each lemon in the tray. Ensure that the lemons are not cold.

4



Squish the baking soda into the lemons using the spatula.

2



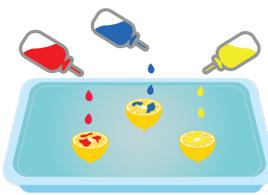
Use the spatula to mash the insides of the lemons. Add 1 scoop of baking soda to each of them.

5



Squeeze the remaining half of the lemons over the mashed ones.

3



Add 3 drops of red, blue and yellow colour to the first, second, and third lemon, respectively.

DID YOU SEE?

What happened when you squeezed lemon juice over the mashed lemons?

SCIENCE BEHIND THIS

When you mix lemon juice and baking soda, a chemical reaction produces carbon dioxide gas. This reaction is exothermic, which means it releases heat. It is also very fast, so bubbles form almost immediately as the gas is produced. The resulting mixture is often used as a natural cleaning solution.

Experiment #3

BUBBLE ERUPTION

EXPLOSIVE SCIENCE



10
MINS

EQUIPMENT

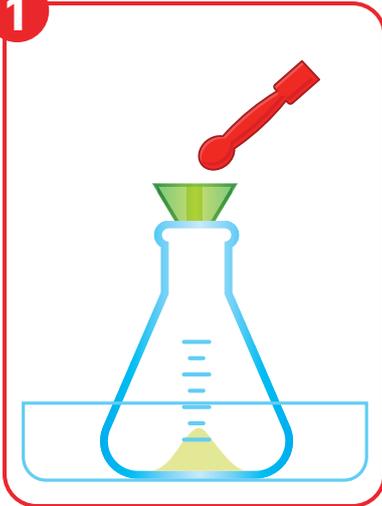
- Measuring Cylinder
- Conical Flask
- Funnel
- Spatula
- Tray
- Cup

MATERIALS NEEDED

- Liquid Soap or Dishwashing Soap
- Baking Soda
- Red Colour
- Vinegar
- Water

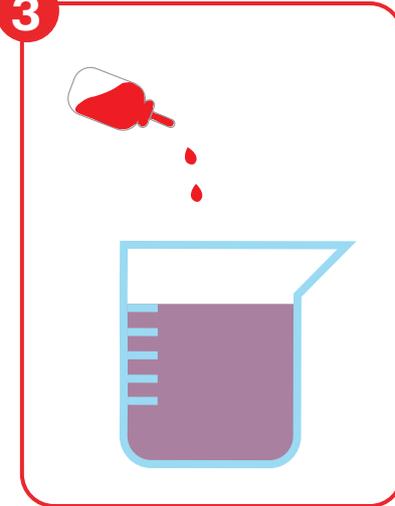
INSTRUCTIONS

1



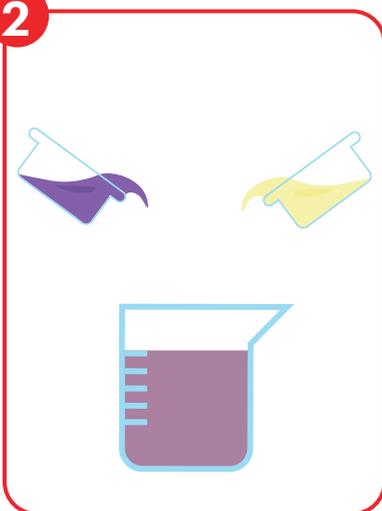
Put the conical flask on the tray and place the funnel on top of it. Then add 3 scoops of baking soda into the cup.

3



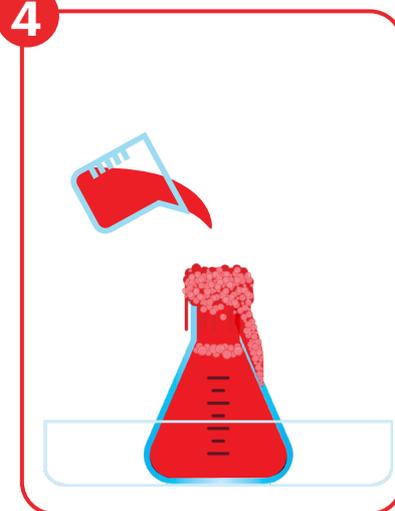
Add 5 drops of red colour to the mixture. Mix them well to create a red soap solution.

2



Add 5 ml liquid soap, 5ml water and 15 ml vinegar into the measuring cylinder.

4



Remove the funnel. Then pour the solution into conical flask all at once.

DID YOU SEE?

When you poured the soap solution into the conical flask, did you see bubbly lava coming out of the volcano?

Did the explosion last for a long time?

SCIENCE BEHIND THIS

In this experiment, carbon dioxide gas is released with the mixture of baking soda and vinegar. But the soap solution traps the releasing gas. This slows down the reaction, creates more bubbles, and increases the duration of the volcano blast.

Experiment #4

MULTI-COLOURS VOLCANO

EXPLOSIVE SCIENCE



10
MINS

EQUIPMENT

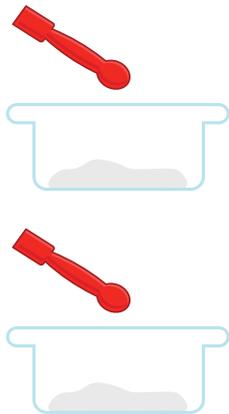
- 2 Cups
- Measuring Cylinder
- Stirring Stick
- Spatula
- Tray

MATERIALS NEEDED

- Baking Soda
- Citric Acid
- Blue Colour
- Yellow Colour
- Glass Tumbler
- Water
- Liquid Soap

INSTRUCTIONS

1



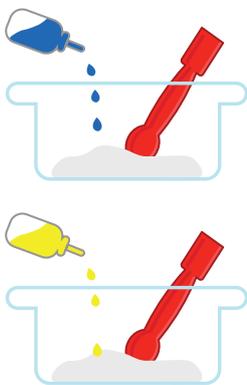
Take 2 cups. Add 1 scoop of baking soda to each cup.

3



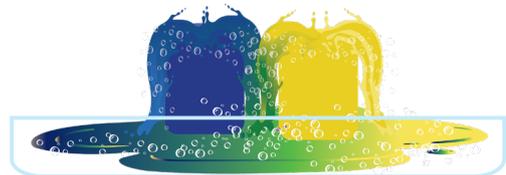
Take the glass tumbler. Mix 2 scoops of citric acid, 5 ml of liquid soap and 100 ml of water in it.

2



Add 10 drops of blue colour to the first cup and 10 drops of yellow colour to the second cup. Mix the contents of both cups using the spatula.

4



Place the 2 cups in the tray. Then, pour the contents of the tumbler into the cups.

DID YOU SEE?

Did the contents of the two cups rise after you added the mixture in the glass tumbler?

SCIENCE BEHIND THIS

This is a reaction between baking soda, vinegar and liquid soap. The reaction is similar to the one shown in the experiments before where carbon dioxide gas bubbles are released. The presence of soap slows down the reaction and increases the duration of the blast.

Experiment #5

SNOW IN A JAR

EXPLOSIVE SCIENCE



5
MINS

EQUIPMENT

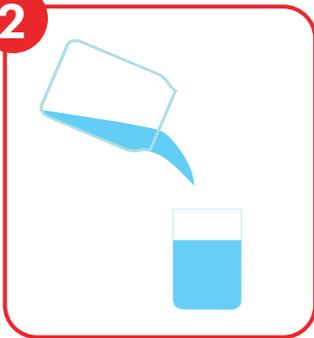
- Spatula
- Tray
- Stirring Stick

MATERIALS NEEDED

- Glass Tumbler
- Cooking Oil/ Baby Oil
- Small Glass Jar
- White Paint
- Water
- Citric Acid
- Baking Soda

INSTRUCTIONS

- 

Take a small glass jar and fill 1/4th with water.
- 

Pour water from the jar into the glass tumbler.
- 

Mix 4-5 drops of white paint into the tumbler.
- 

Place the glass jar in the tray and fill 3/4th with oil. Then, pour the contents of the tumbler into the jar.
- 

Add 2 scoops of baking soda to the jar. Then, add 1 scoop of citric acid and observe.

DID YOU SEE?

Did you see snow-like bubbles form when you dropped the scoop of citric acid into the jar?

SCIENCE BEHIND THIS

When citric acid is added to the jar, it reacts with the baking soda, creating carbon dioxide gas bubbles. These bubbles carry the white-painted water to the top of the jar. Then, once the carbon dioxide is released at the surface, the white water bubbles fall, resembling snowfall.

Experiment #6

MARbled OObleck

MATERIAL SCIENCE



EQUIPMENT

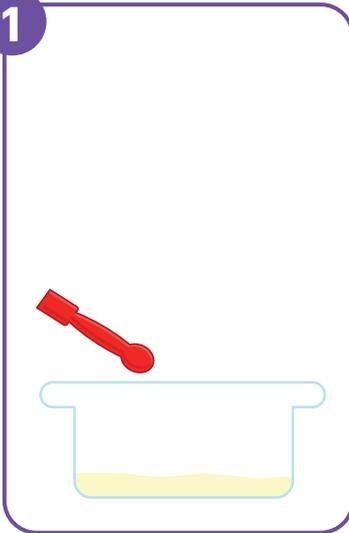
- Stiring Stick
- Spatula
- Cup

MATERIALS NEEDED

- Colours
- Cornstarch
- Water

INSTRUCTIONS

1

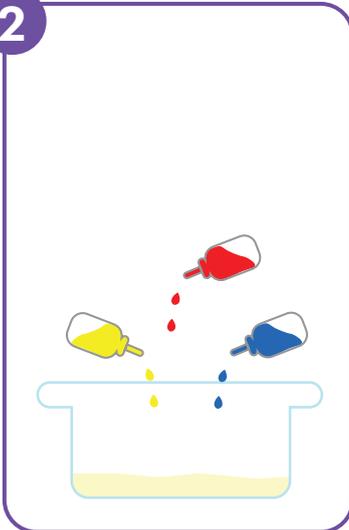


Add 4 scoops of cornstarch and 2 scoops of water to a cup. Mix them well to make oobleck.

3



2



Add 2 drops of red, yellow and blue colours each to the cup on separate sides.

Try spreading the colours on the oobleck using a stirring stick, then tilt the cup slightly.

DID YOU SEE?

What happened when you tried to mix the colours with the stirring stick?

What happened when you tilted the cup instead?

SCIENCE BEHIND THIS

Oobleck is a non-Newtonian fluid as it can act both as a liquid or a solid, based on application of pressure. The mixture feels solid when mixing the colours with the stirring stick as pressure is applied. But once you stop mixing and tilt the cup, it starts to flow like liquid giving a marbled effect.

Experiment #7

FLUFFY DOUGH

MATERIAL SCIENCE



EQUIPMENT

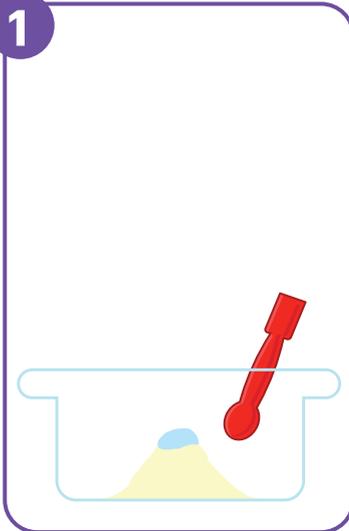
- Cup
- Spatula

MATERIALS NEEDED

- Cornstarch
- Colour
- Liquid Soap
- Cooking Oil/Baby Oil

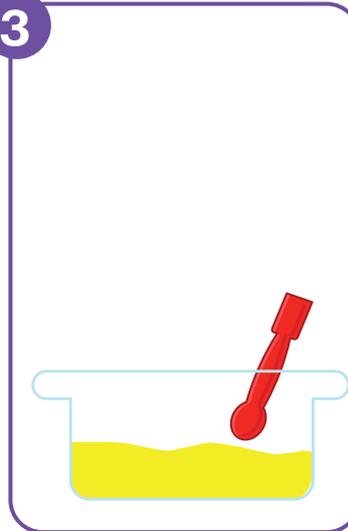
INSTRUCTIONS

1



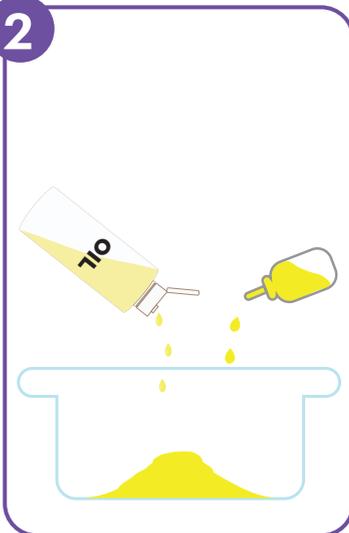
Add 3 scoops of cornstarch and 1 scoop of liquid soap to a cup. Mix well.

3



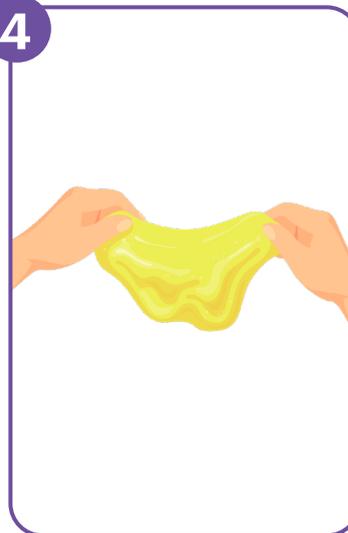
Mix the contents of the cup thoroughly. Add a few more drops of oil if the mixture is breaking apart.

2



Add 6 drops of any colour of your choice, and 15 drops of oil to the cup.

4



Rub a few drops of oil on your palms and knead the dough. Try stretching it with your hands.

DID YOU SEE?

How did the dough feel when you tried to stretch it?

SCIENCE BEHIND THIS

This mixture is called a suspension. In a suspension, tiny particles of one substance are scattered throughout another without dissolving. When soap is added, it allows the cornstarch particles to scatter more easily, creating a fluffier mixture.

Experiment #8

FUN CLAY

MATERIAL SCIENCE



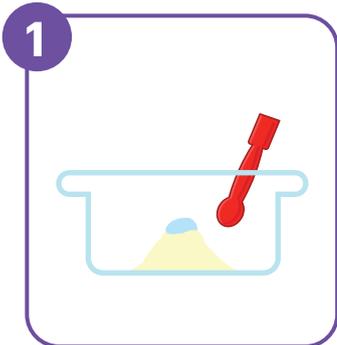
EQUIPMENT

- Cup
- Measuring Cylinder
- Spatula
- Stirring Stick

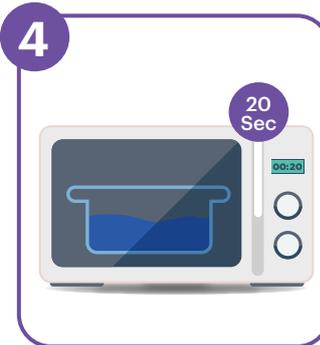
MATERIALS NEEDED

- Colour
- Cooking Oil/ Baby Oil
- Water
- Baking Soda
- Cornstarch

INSTRUCTIONS



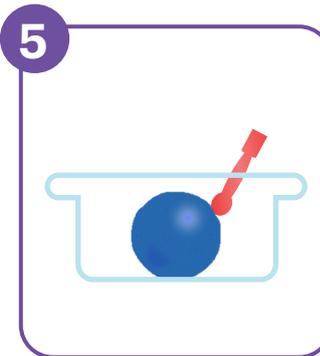
1 Add 2 scoops of baking soda and 1 scoop of cornstarch to a cup. Mix very well.



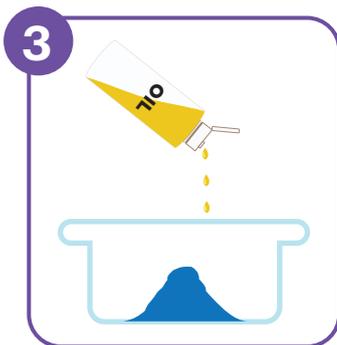
4 Ask an adult to heat the mixture in a microwave for 15-20 seconds.



2 Add 5 ml of water to the cup. Next, add 2 drops of any colour of your choice to it.



5 Once heated, immediately use the spatula to stir the contents till they combine to form a ball. Let this ball cool down for about 3 minutes.



3 Add 5 drops of oil to the cup and mix all the contents well.



6 Rub a few drops of oil on your palms and knead the ball with your hands.

DID YOU SEE?

What happened when you kneaded the mixture in your palms?

SCIENCE BEHIND THIS

Cornstarch consists of long chain-like molecules. When it is combined with water and heated, these molecules stick together to form a clay-like substance. Baking soda releases bubbles to make this mixture fluffier.

Experiment #9

MANGO CLAY

MATERIAL SCIENCE



EQUIPMENT

- Cup
- Measuring Cylinder
- Spatula
- Stirring Stick

MATERIALS NEEDED

- Yellow Colour
- Cooking Oil/ Baby Oil
- Mango Essence
- Baking Soda
- Cornstarch
- Water

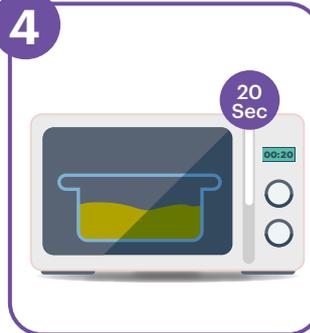
INSTRUCTIONS

1



Add 2 scoops of baking soda and 1 scoop of cornstarch to a cup. Mix very well.

4



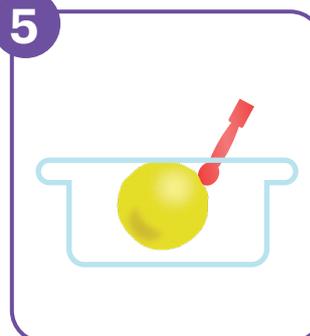
Ask an adult to heat the mixture in a microwave for 15-20 seconds.

2



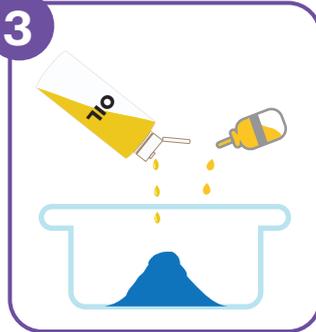
Add 5 ml of water to the cup. Next, add 2 drops of yellow colour to it.

5



Once heated, immediately use the spatula to stir the contents till they combine to form a ball. Let this ball cool down for about 3 minutes.

3



Add 5 drops of oil and 5 drops of mango essence to the cup and mix all the contents well.

6



Rub a few drops of oil on your palms and knead the ball with your hands.

DID YOU SEE?

Did you notice that your clay smells like mango now?

SCIENCE BEHIND THIS

Similar to previous experiment, when cornstarch is combined with water and heated, a clay-like substance is formed. The addition of baking soda and mango essence turns the mixture into a fluffy substance that has the smell of mangoes.

Experiment #10

CLAY ANIMAL

MATERIAL SCIENCE



15
MINS

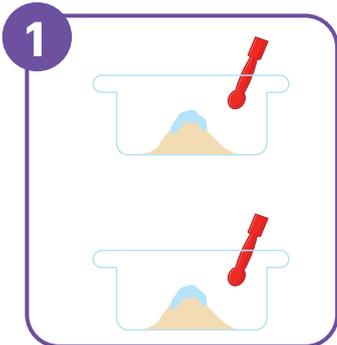
EQUIPMENT

- 2 Cups
- Stirring Stick
- Tray
- Spatula
- Measuring Cylinder

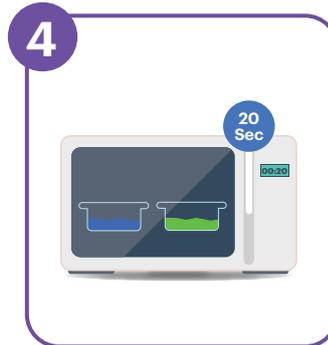
MATERIALS NEEDED

- Cornstarch
- Baking Soda
- Colours
- Water

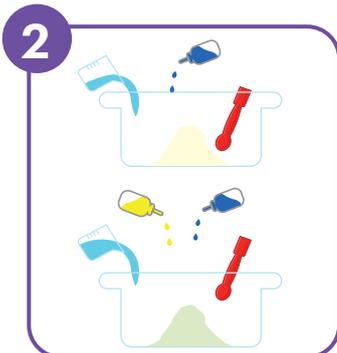
INSTRUCTIONS



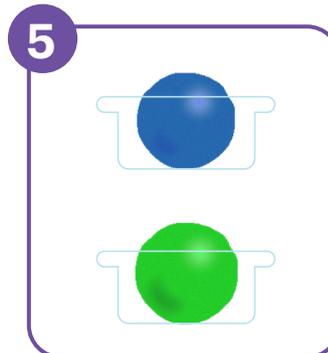
1 Add 2 scoops of baking soda, 1 scoop of cornstarch, and 5 ml of water each to both cups. Mix very well.



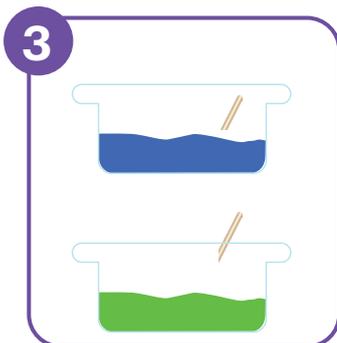
4 Ask an adult to heat both cups for 15-20 seconds.



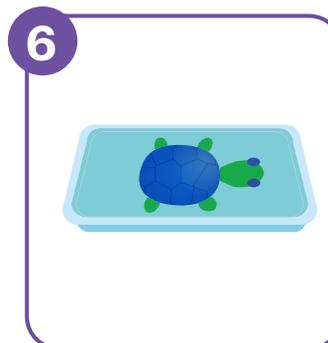
2 Next, add 4 drops of blue colour to the first cup. Add 2 drops of blue, and 6 drops of yellow colour to the second cup.



5 Once heated, immediately use the spatula to stir the contents of the cups into balls. Let them cool down for about 3 minutes.



3 Mix the contents of both cups very well using the stirring stick.



6 Knead both doughs and use them to make a model on the tray, as shown.

DID YOU SEE?

Could you identify the model on the tray?
Which animal was it?

SCIENCE BEHIND THIS

Similar to previous experiments, when baking soda and cornstarch are mixed and heated, they form a dough-like substance. This dough is very malleable, allowing it to be moulded into various shapes. You can make doughs of various colours and create many other models with them.

Experiment #11

MAKING GLUE AT HOME

MATERIAL SCIENCE



20
MINS

EQUIPMENT

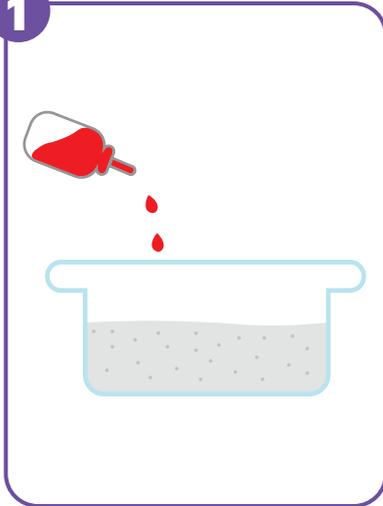
- Spatula
- Cup

MATERIALS NEEDED

- All Purpose Flour
- Colour
- Water

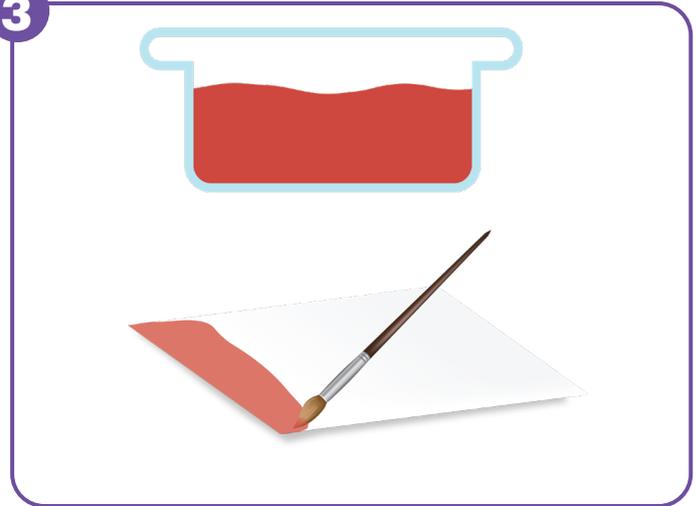
INSTRUCTIONS

1



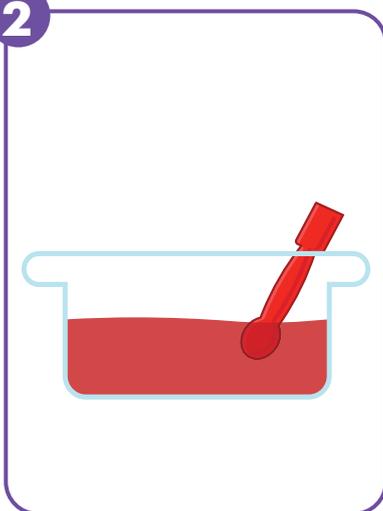
Fill 1/4th of a cup with flour and add 2 drops of colour to it.

3



Your glue is now ready to be applied!

2



Mix water with the mixture using the spatula until a thin paste is created.

DID YOU SEE?

Did the mixture have adhesive properties similar to glue?

SCIENCE BEHIND THIS

When flour mixes with water, the flour particles stick together, forming a sticky and thick substance. When we push or squeeze it, this mixture becomes cohesive and clings to objects.

Experiment #12

MINI VORTEX

WATER SCIENCE



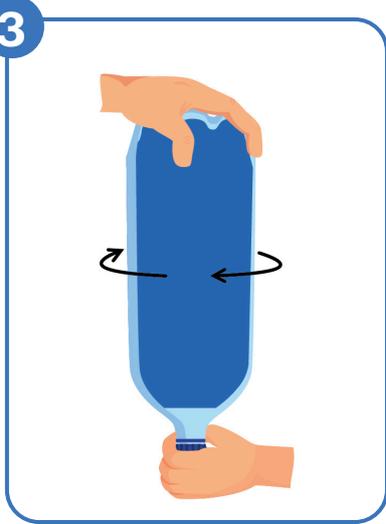
MATERIALS NEEDED

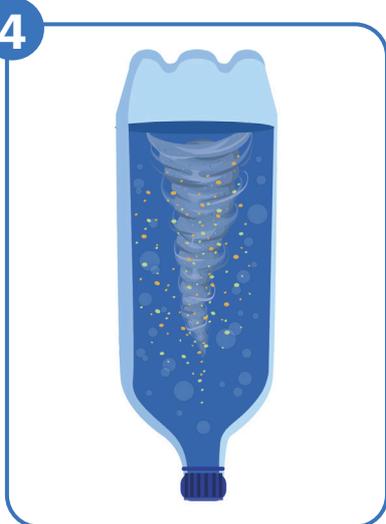
- Clear Plastic Bottle With Cap
- Blue colour
- Liquid soap
- Cooking Oil
- Glitter
- Water

INSTRUCTIONS

- 

Take the plastic bottle and fill it with water.
- 

Add 3 drops of blue colour, 1 drop of oil, 1 drop of liquid soap and some glitter into the bottle. Then close the cap tightly.
- 

Flip the bottle and shake it fast in a circular motion.
- 

Bring the bottle near a light source and observe.

DID YOU SEE?

Did you see a spinning tower inside the bottle?

SCIENCE BEHIND THIS

This experiment simulates a hurricane inside a bottle. The hurricane in the bottle is caused by centripetal force, which is an inward-moving force that moves towards the centre of its circular path. It is created by the water spinning towards the centre of the bottle.

Experiment #13

VORTEX TUBE

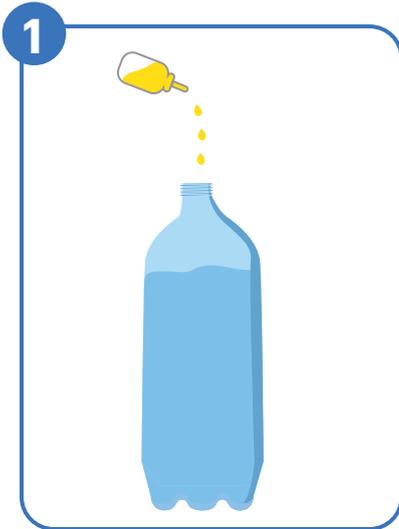
WATER SCIENCE



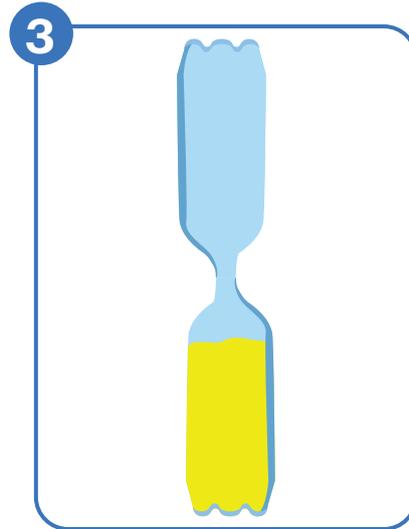
MATERIALS NEEDED

- 2 Similar, Clear Plastic Bottles
- Colour
- Water
- Tape
- Glue

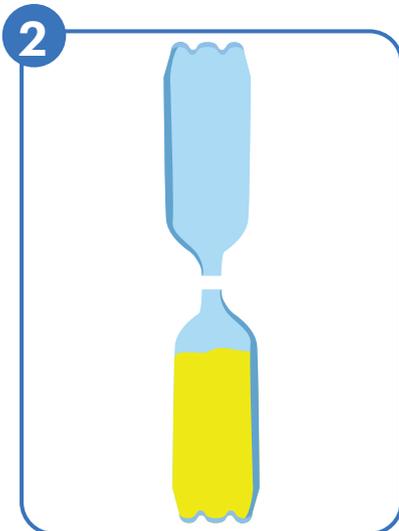
INSTRUCTIONS



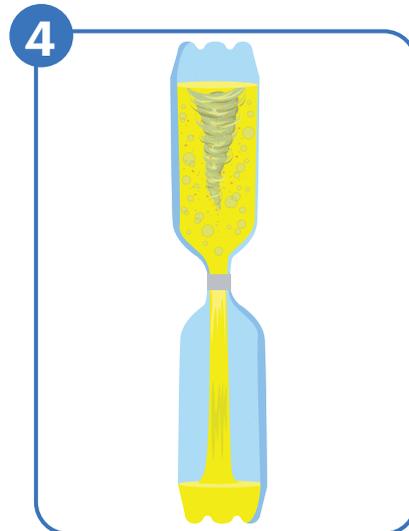
1 Fill one bottle with water. Add 3 drops of colour to it.



3 Fix both the openings of the bottles with glue and secure the openings with tape to create the tube.



2 Place the empty bottle upside down over the first bottle.



4 Flip the tube and shake it in a circular motion.

DID YOU SEE?

Did you see a spinning whirlpool being formed inside the top bottle as it is being emptied?

SCIENCE BEHIND THIS

This experiment emulates a cyclone. Similar to the Mini Vortex experiment, the centripetal force causes the vortex to form inside the bottle at the top as it is being emptied.

Experiment #14

DEAD SEA

WATER SCIENCE



EQUIPMENT

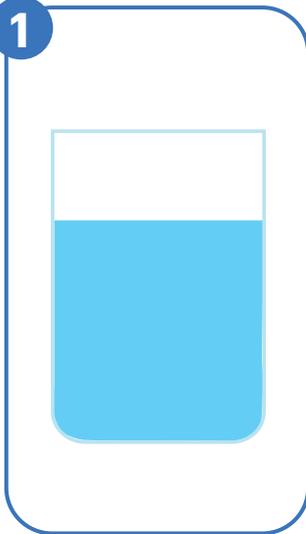
- Measuring Cylinder
- Spatula

MATERIALS NEEDED

- Glass Tumbler
- Salt
- Water
- Blue Colour

INSTRUCTIONS

1



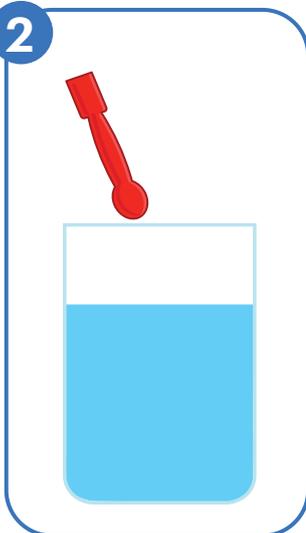
Take a glass tumbler and fill it up to 3/4th with cold water.

3



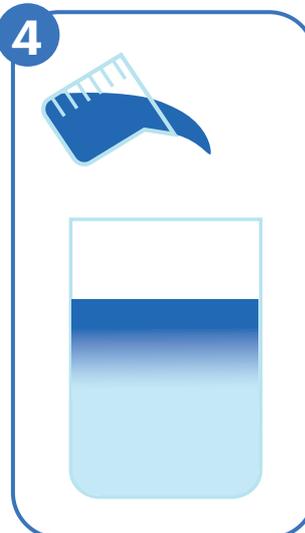
Measure 10ml of water in the measuring cylinder. Then add 2 drops of blue colour and mix well.

2



Add 6 scoops of salt in the glass tumbler and mix the contents well.

4



Gently pour the blue water into the glass tumbler from the measuring cylinder.

DID YOU SEE?

Did you see the blue coloured water stay at the top when you view the glass tumbler from the side?

SCIENCE BEHIND THIS

Salt water has a higher density than freshwater. This is the reason the freshwater stays on top. The Dead Sea near Israel is a lake with such a high salt content that it is impossible to drown in it. This is due to its high density preventing anyone from sinking below.

Experiment #15

SALTWATER DESALINATION

WATER SCIENCE



2
HRS

EQUIPMENT

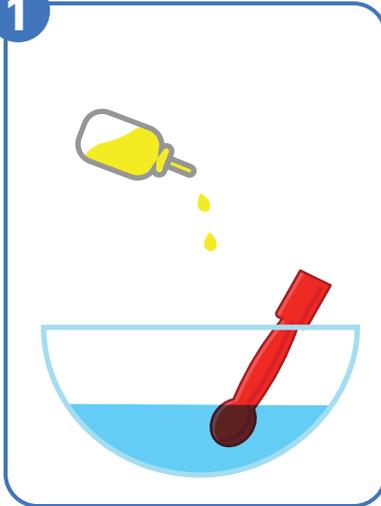
- Spatula
- Stirring Stick

MATERIALS NEEDED

- Small Container
- Yellow Colour
- Rubber Band
- Plastic Wrap
- Large Bowl
- Water
- Coins
- Salt

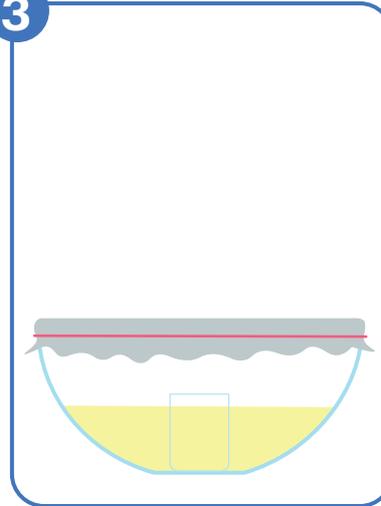
INSTRUCTIONS

1



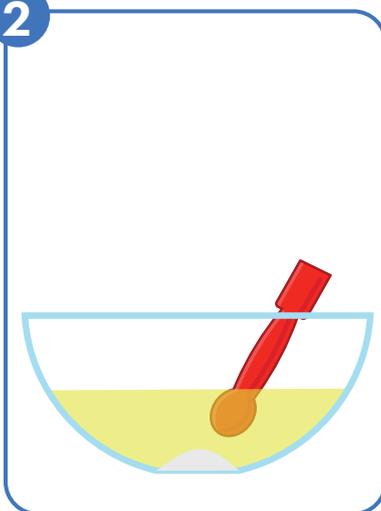
Fill half of a large bowl with drinking water. Add 2-3 drops of yellow colour and mix well.

3



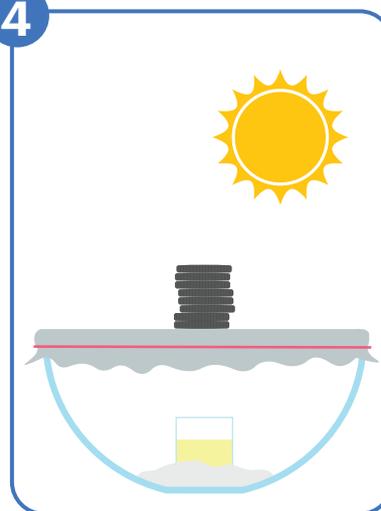
Cover the bowl with plastic wrap. Carefully tie a rubber band around the bowl to hold the plastic wrap.

2



Mix salt in the bowl until no more can be dissolved. Then place a small container in the middle of the bowl. Ensure the mouth of the container is above the water level in the bowl.

4



Place a stack of coins on the plastic wrap and put the bowl under the sun for 2 hours.

DID YOU SEE?

Did you find water in the small container after 2 hours?

Take a sip from the small container. Did it taste fresh and not salty?

SCIENCE BEHIND THIS

This experiment shows the process of evaporation and condensation. Have you noticed that ocean water tastes salty but rainwater is not salty? This happens when ocean water evaporates, it leaves the salt behind. The evaporated water then condenses into small container as fresh water.

Experiment #16

WALKING RAINBOW

WATER SCIENCE



EQUIPMENT

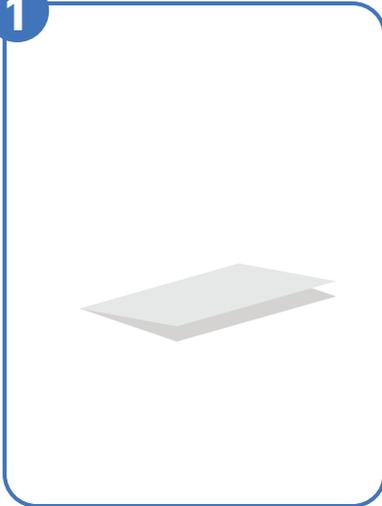
- 2 Cups

MATERIALS NEEDED

- Paper Napkin
- Colours
- Water

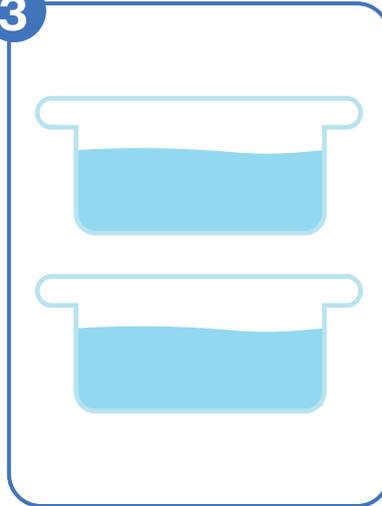
INSTRUCTIONS

1



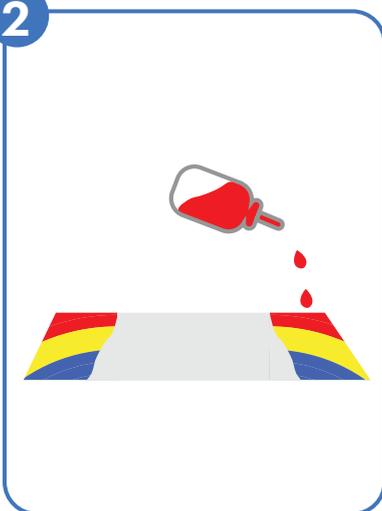
Take a paper napkin and fold it in half.

3



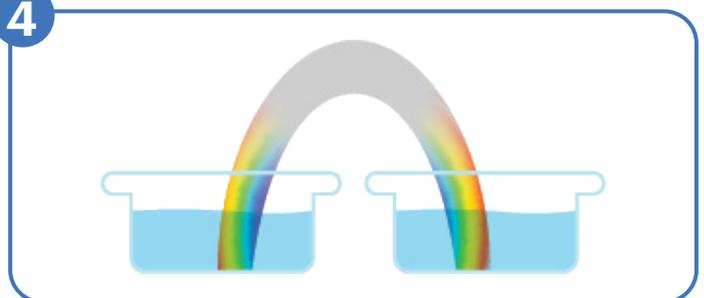
Take 2 cups and fill them with water.

2



Apply red, yellow and blue colours on both ends of the folded napkin.

4



Dip the coloured ends of the paper napkin inside the cups.

DID YOU SEE?

Did the colours travel upwards after coming in contact with water?

SCIENCE BEHIND THIS

The water soaks into the paper napkin and carries the colours with it due to capillary action. Capillary action is the movement of a liquid along another material against an opposing force.

Experiment #17

MAGICAL TREE

WATER SCIENCE



10
MINS

EQUIPMENT

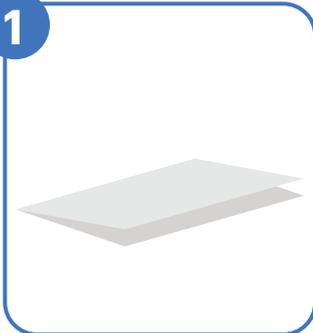
- Tray

MATERIALS NEEDED

- Paper Napkin
- Coloured Marker Pens
- Water

INSTRUCTIONS

1



Take a paper napkin and fold it in half.

2



Draw a tree on the outer fold using the black marker pen.

3



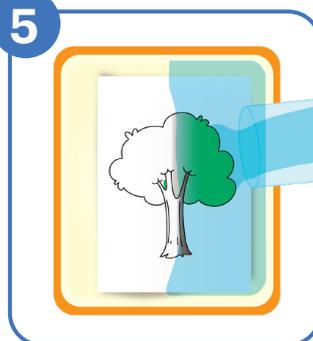
Lift the fold. You should see the outlines of the tree on the inner fold.

4



Colour the tree on the inner fold using the coloured marker pens. Then, close the fold.

5



Place the napkin on the tray and pour water over it. Observe.

DID YOU SEE?

Did the colours appear on the outer fold of the napkin when water was poured over it?

SCIENCE BEHIND THIS

The water seeps through and carries the colours from the inner fold to the outer fold of the paper napkin, making it appear on the top.

Experiment #18

TOOTHPICK STARS

WATER SCIENCE



EQUIPMENT

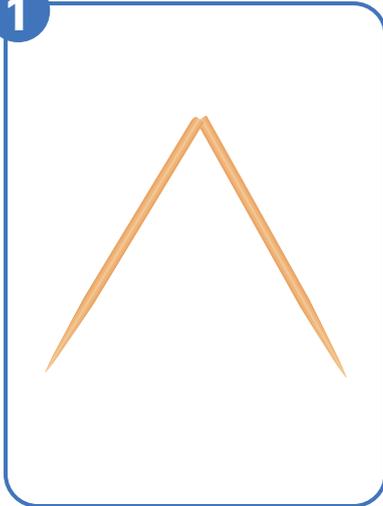
- Measuring Cylinder

MATERIALS NEEDED

- 5 Toothpicks
- Water
- Plate
- Colours

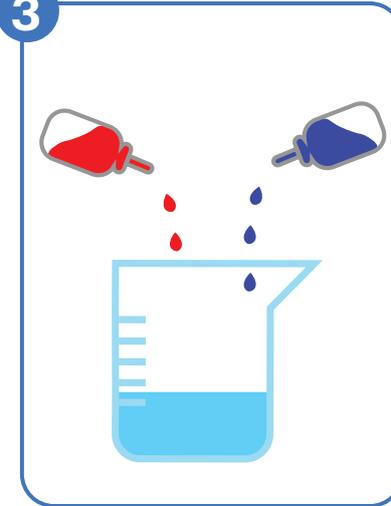
INSTRUCTIONS

1



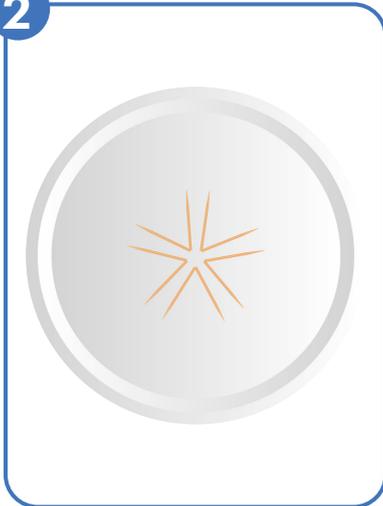
Take 5 toothpicks and bend each of them at the centre without completely breaking them off.

3



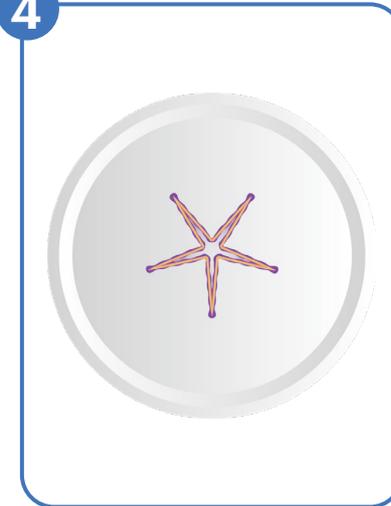
Fill 5 ml of water in the measuring cylinder. Mix 2 drops of red and 3 drops of blue colour into it.

2



Arrange them in a plate as shown.

4



Gently pour the water from the measuring cylinder into the centre of the formation and observe.

DID YOU SEE?

Did the toothpicks take the shape of a star when you poured water?

SCIENCE BEHIND THIS

When water comes in contact with the toothpick, the wood absorbs the water and swells up. This causes the ends of the toothpicks to come closer and join together.

Experiment #19

FLOATING FLOWER

WATER SCIENCE



EQUIPMENT

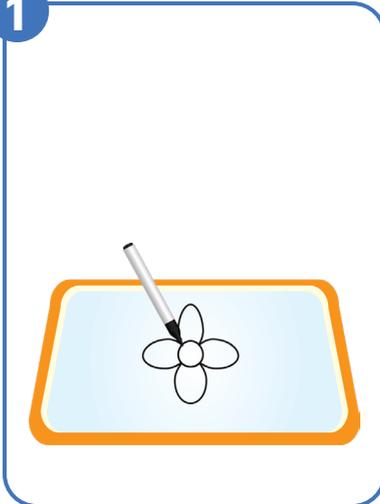
- Tray

MATERIALS NEEDED

- Whiteboard Marker
- Water

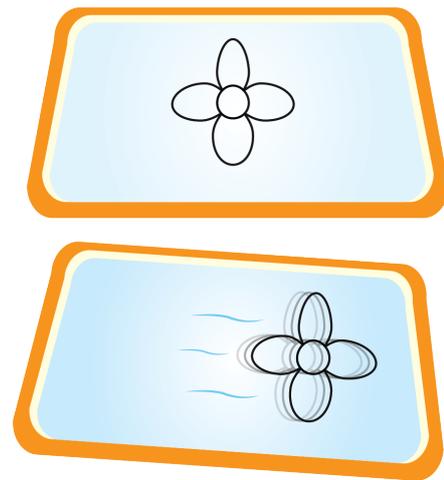
INSTRUCTIONS

1



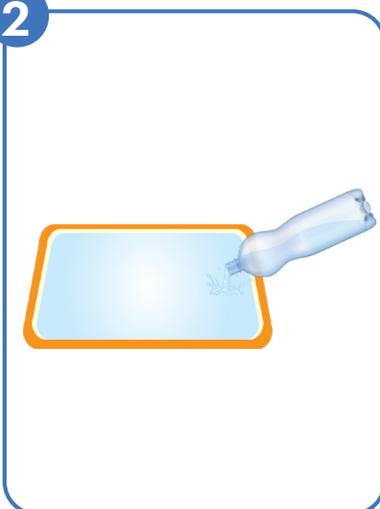
Take a tray and draw a flower on it using the marker pen.

3



Tilt the tray from side to side and observe.

2



Gently pour water into the plate from the side, to cover the flower completely.

DID YOU SEE?

Did you notice the flower walking along with the water?

SCIENCE BEHIND THIS

The ink in markers can't dissolve in water and is lighter than water. So the water pushes the drawing up and makes it float because the ink is not sticky enough to hold on.

Experiment #20

MAGICAL STRAINER

WATER SCIENCE



EQUIPMENT

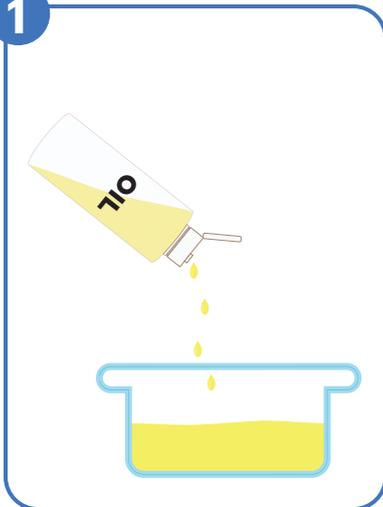
- Cup

MATERIALS NEEDED

- Cooking Oil/ Baby Oil
- Glass Tumbler
- Milk Strainer
- Water

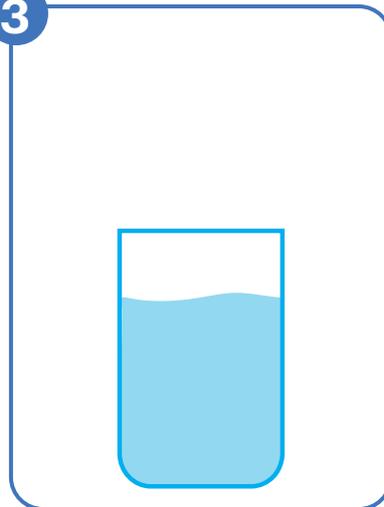
INSTRUCTIONS

1



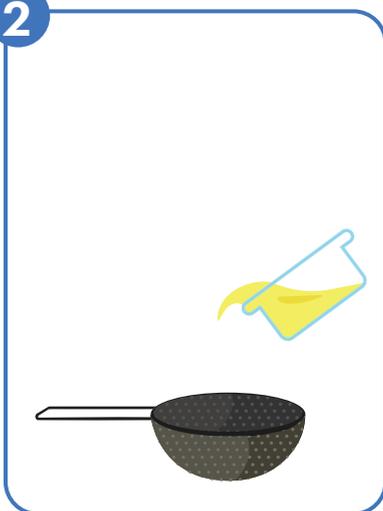
Take a cup and pour oil into it.

3



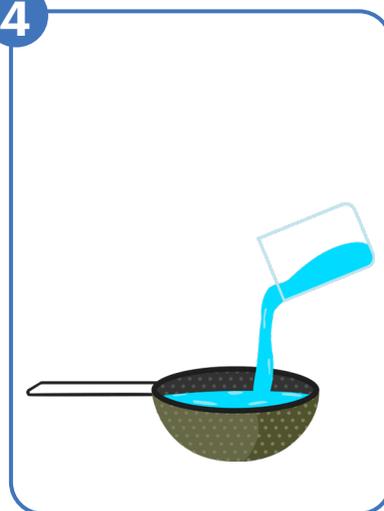
Take the glass tumbler and fill it with water.

2



Coat the inner part of the strainer by splashing oil over the wire mesh.

4



Slowly pour the water into the strainer and observe.

DID YOU SEE?

Did you see the oil on the wire mesh prevent the water from flowing down through the strainer?

SCIENCE BEHIND THIS

In this experiment, when the water is poured from the tumbler, it stops flowing through the strainer. The oil covers the wire mesh of the strainer and closes the tiny spaces between the wires. This increases the surface tension of the water and prevents it from slipping out.

Experiment #21

CLEANING GERMS

WATER SCIENCE



5
MINS

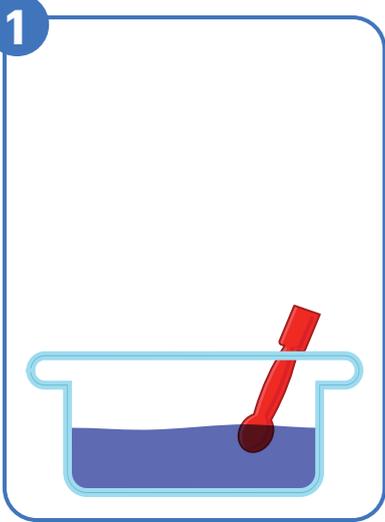
EQUIPMENT

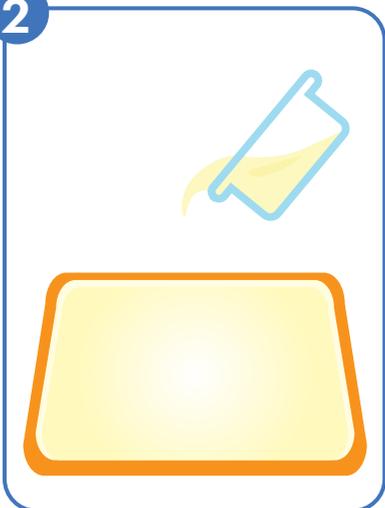
- Tray
- Spatula
- Cup

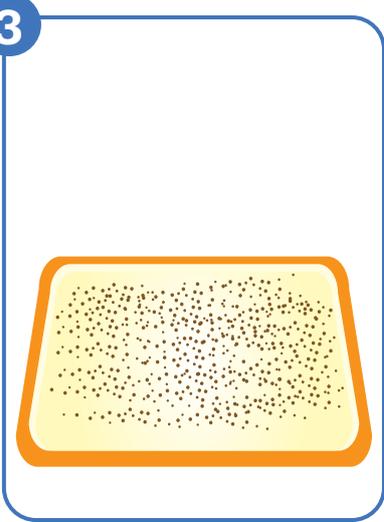
MATERIALS NEEDED

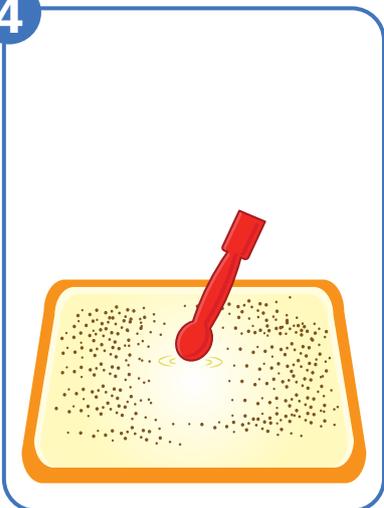
- Black Pepper
- Liquid Soap
- Milk
- Water

INSTRUCTIONS

- 

1 Fill the cup with water and add a few drops of liquid soap to it. Mix well to make a soap solution.
- 

2 Fill the tray with milk.
- 

3 Sprinkle a pinch of black pepper on top of the tray. Assume them to be germs.
- 

4 Dip the spatula into the soap solution & then insert it into the tray.

DID YOU SEE?

Did you see the pepper germs spread away from the point where the spatula touched the water?

SCIENCE BEHIND THIS

This experiment simulates the use of soap in removing germs. The soap molecules move around to attach themselves to these particles. This causes a lot of motion which results in the germs on the surface to spread away.

Experiment #22

CANDY EROSION

WATER SCIENCE



10
MINS

EQUIPMENT

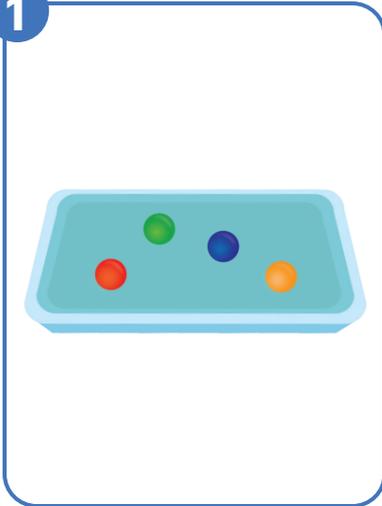
- Tray
- Spatula

MATERIALS NEEDED

- Colour Coated Candies (like M&Ms)
- Water

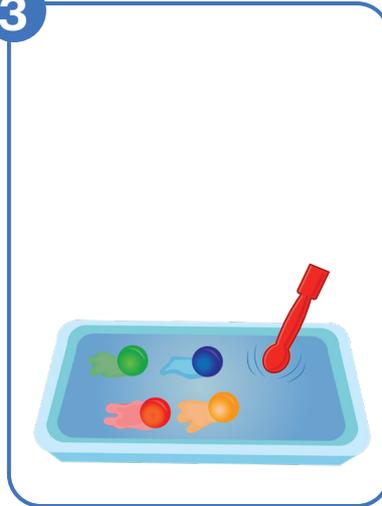
INSTRUCTIONS

1



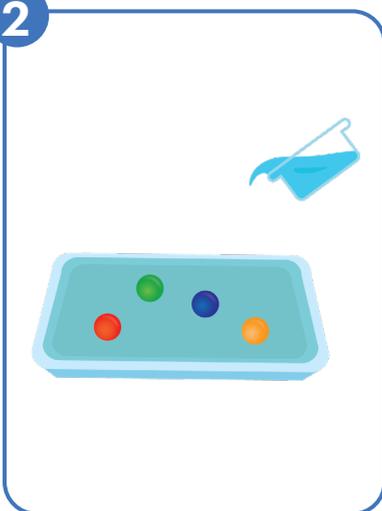
Take a tray and place some candies inside it.

3



Take the spatula and dip it in the water to make waves.

2



Pour some water into the tray and let the candies rest for 5 minutes.

DID YOU SEE?

When the water is poured on top of the candies, did you see colour flowing out of them?

SCIENCE BEHIND THIS

The water erodes the top layer of the candy. When the water is disturbed the colours are also displaced by the waves, similar to how rivers and oceans carry soil particles away from their point of origin.

Experiment #23

EARTHQUAKE ZONES

EARTH SCIENCE

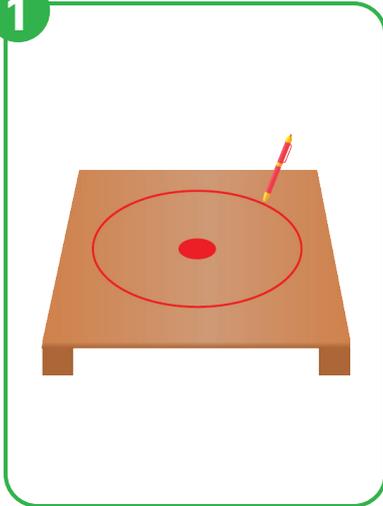


MATERIALS NEEDED

- A Piece of 10" x 10" Cardboard
- Sugar Cubes
- 2 Blocks of Wood
- Pen

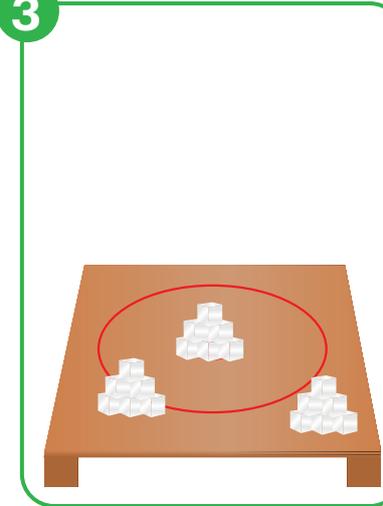
INSTRUCTIONS

1



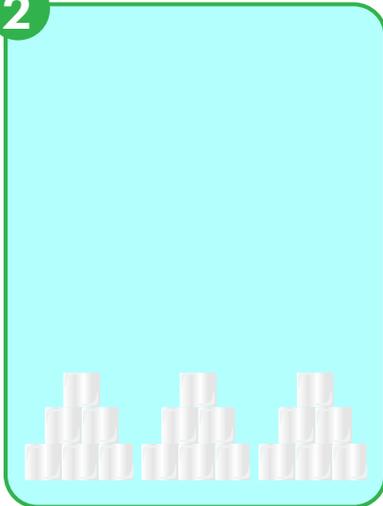
Mark the middle point of the cardboard with a pen and draw a large ring around it. Then place the cardboard on top of the blocks.

3



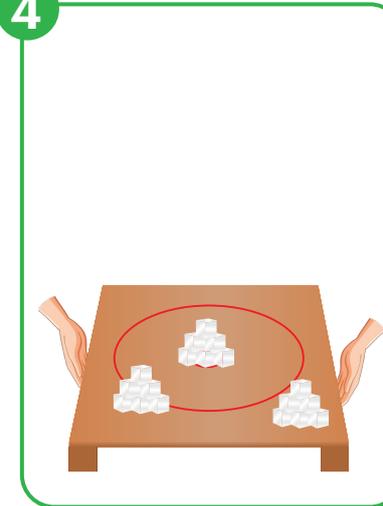
Place the first building on the mid-point, the second on the ring, and the third at the edge of the cardboard.

2



Make 3 small sugar cube buildings with 3 cubes at the bottom, 2 cubes in the middle and 1 cube on the top.

4



Start tapping the cardboard from both sides of board and observe.

DID YOU SEE?

Did you see how the buildings were differently affected by the tapping of cardboard?

SCIENCE BEHIND THIS

The sugar cube buildings fall apart one after another as the tapping continues from the bottom. However, the building at the centre falls first, while the other buildings follow subsequently because the impact of the tapping is the strongest at the centre similar to how an earthquake's impact is the greatest near the epicentre.

Experiment #24

EARTHQUAKE-PROOF BUILDINGS

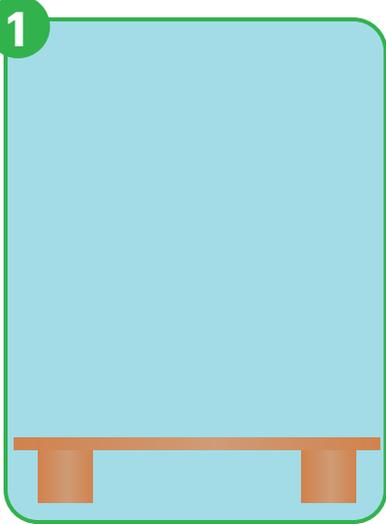
EARTH SCIENCE

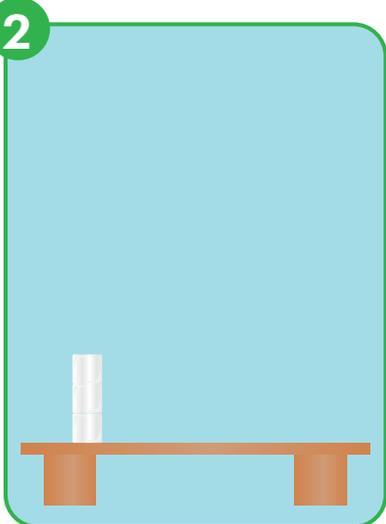


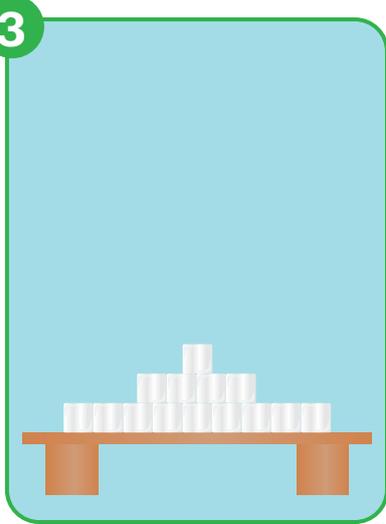
MATERIALS NEEDED

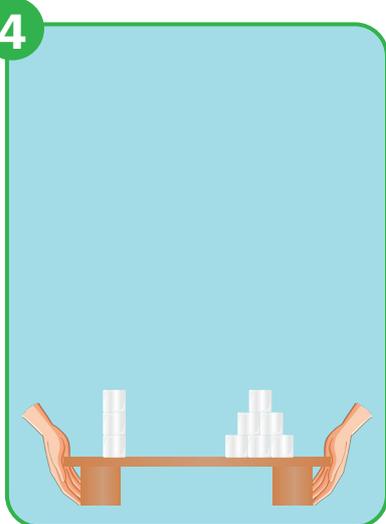
- A Piece of 10" x 10" Cardboard
- Sugar Cubes
- Wooden Blocks

INSTRUCTIONS

- 

Place the cardboard on top of the two wooden blocks.
- 

Take 3 sugar cubes and make a tower by stacking them vertically on one end of the cardboard.
- 

Create another tower on the cardboard with 9 cubes at the bottom, 4 cubes in the middle and 1 cube on the top to resemble a pyramid.
- 

Gently shake the cardboard and observe.

DID YOU SEE?

When the cardboard was shaken, did you see the tower fall before the pyramid?

SCIENCE BEHIND THIS

The sugar cube tower falls apart before the pyramid. The wider base of the pyramid provides greater resistance to the shaking base compared to the narrow tower. This shows how buildings with wider bases can withstand earthquakes better.

Experiment #25

ROCK WEATHERING

EARTH SCIENCE



EQUIPMENT

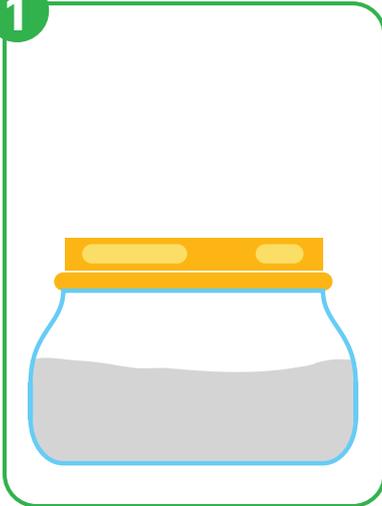
- Cup

MATERIALS NEEDED

- Small Container
- Coloured Chalk
- Salt

INSTRUCTIONS

1



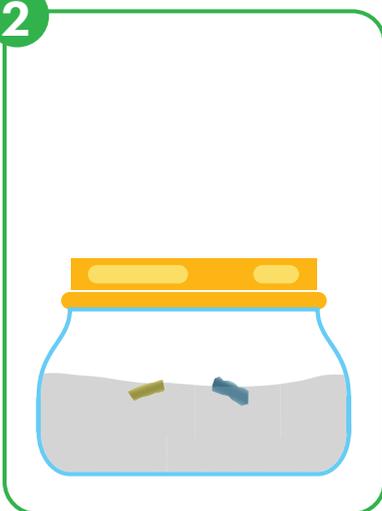
Take the container and fill half of it with salt.

3



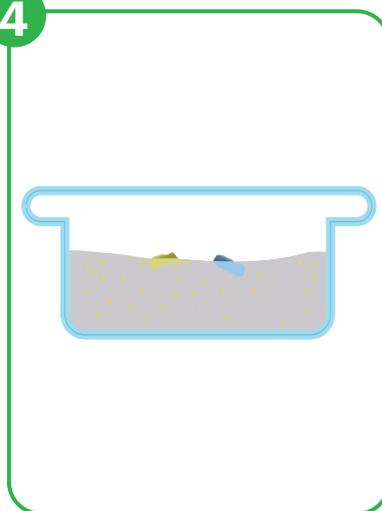
Close the lid and give the jar a hard shake for 30 seconds.

2



Put some pieces of coloured chalk into the container.

4



Pour the contents into the cup and observe.

DID YOU SEE?

When you poured the contents into the cup, did you see the coloured chalk break down into smaller fragments?

SCIENCE BEHIND THIS

When the container is shaken, the salt comes in contact with the chalk, breaking it down. Similarly, rocks also break down over time when they come in contact with natural elements such as air and water. This process is called weathering.

Experiment #26

BEACH EROSION

EARTH SCIENCE



10
MINS

EQUIPMENT

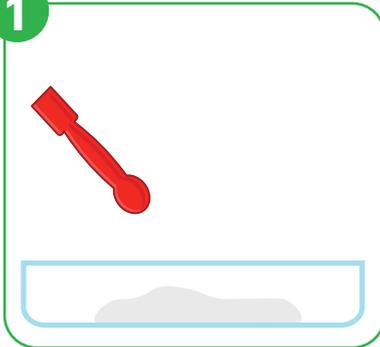
- Measuring Cylinder
- Cups
- Tray
- Spatula

MATERIALS NEEDED

- Crystal Powder
- Salt
- Colours
- Water

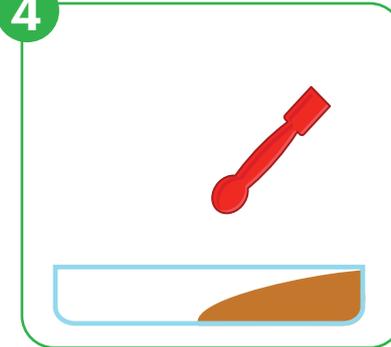
INSTRUCTIONS

1



Take a tray and add 2 scoops of crystal powder to it.

4



Once the crystals are ready, stack them on one side of the tray using the spatula.

2



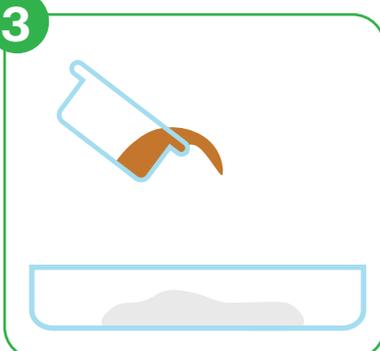
Pour 50 ml of water in the cup with the help of the measuring cylinder. Then, add 2 drops of red, 3 drops of yellow and 1 drop of blue colour in the cup and mix well.

5



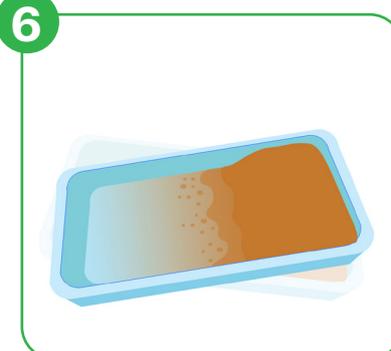
Fill a cup with water and add 1 scoop of salt in it. Mix them well to create a salt solution. Then, pour this solution into the empty side of the tray.

3



Pour the solution into the tray and let the crystals develop.

6



Gently tilt the tray from side to side and observe. Make sure that the water doesn't fall out of the tray.

DID YOU SEE?

Did you see the brown crystals reduce in size after coming in contact with salt water?

SCIENCE BEHIND THIS

This experiment simulates how increased water levels can erode a beach. Water levels can increase due to weather phenomena like cyclones, tsunamis, etc. When water levels rise, the waves that crash on the beach take more and more sand offshore. This reduces the size of the overall beach.

Experiment #27

MAKING CRATERS

EARTH SCIENCE



EQUIPMENT

- Tray

MATERIALS NEEDED

- All Purpose Flour
- Cocoa Powder
- An Average Sized Stone

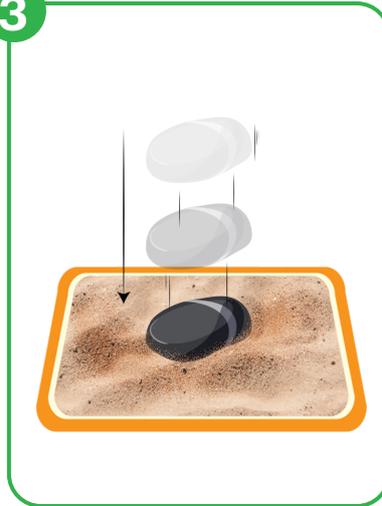
INSTRUCTIONS

1



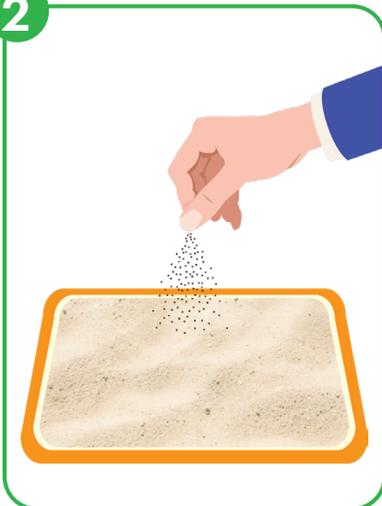
Take a tray and fill half of it with flour.

3



Take the stone and hold it over the tray. Then drop the stone in the tray.

2



Cover the flour by sprinkling cocoa powder over it.

DID YOU SEE?

Did the stone make a big dent on the mixture?

SCIENCE BEHIND THIS

Upon impact, the kinetic energy of the stone is transferred onto the mixture of flour and cocoa powder, causing it to displace and form a dent or a crater in the tray.

Experiment #28

LAYERS OF THE SOIL

EARTH SCIENCE



30
MINS

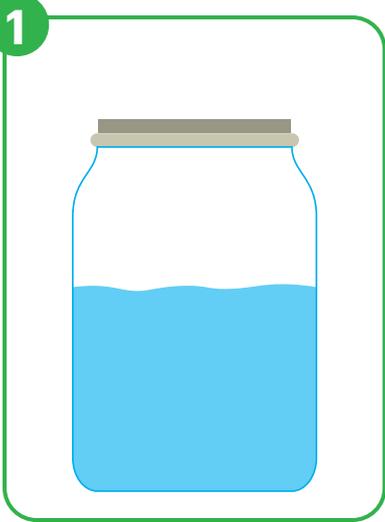
EQUIPMENT

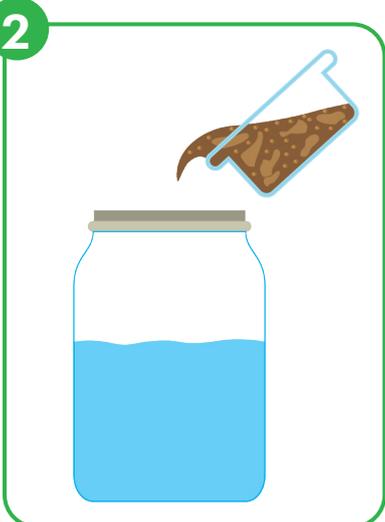
- Cup

MATERIALS NEEDED

- Small Jar With a Lid
- Soil
- Water

INSTRUCTIONS

- 

1 Fill half of the jar with water.
- 

2 Collect some soil in a cup. Then add the soil into the jar.
- 

3 Close the lid of the jar and shake well.
- 

4 Let the jar rest for 30 minutes and observe.

DID YOU SEE?

When the jar is kept undisturbed, did you see different layers of the soil?

SCIENCE BEHIND THIS

Different layers of the soil can be seen once the contents in the jar have settled down. Sand and gravel will settle at the bottom, while the lighter & finer particles such as silt & clay will rest in the middle. The lightest soil particles floating on the top are called humus. This is called Sedimentation.

Experiment #29

RICE FRICTION

PHYSICAL SCIENCE



EQUIPMENT

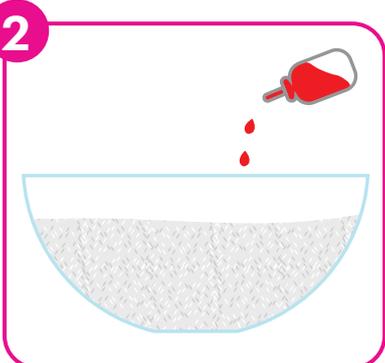
- Funnel
- Spatula

MATERIALS NEEDED

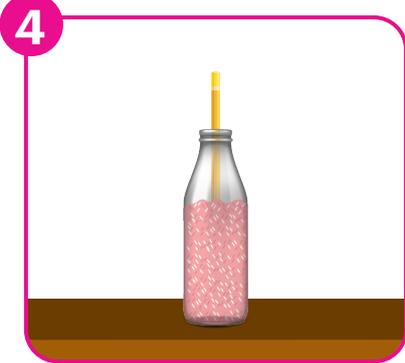
- Rice
- Plastic Bottle
- Pencil
- Bowl
- Colour

INSTRUCTIONS

- 

Take a bottle and fill 3/4th of it with rice with the help of a funnel.
- 

Take out the rice in a bowl and add 5-6 drops of colour to it. Mix the contents of the bowl until the rice turns colourful.
- 

Add the rice back into the bottle.
- 

Push the pencil inside the bottle. Then, pull it up. Then add more rice. Repeat this until the rice is packed very tightly.
- 

When the rice is completely packed, pull the pencil towards yourself.

DID YOU SEE?

Were you able to lift the bottle by pulling the pencil?

SCIENCE BEHIND THIS

Pushing and pulling the pencil repeatedly makes the rice stick together tightly. When you pull the pencil forcefully, the sticky rice creates friction, enabling you to move the bottle.

Experiment #30

MAGNETIC PENCIL

PHYSICAL SCIENCE



MATERIALS NEEDED

- Plastic Bottle
- Pencil
- Balloon

INSTRUCTIONS

- 

Take a small plastic bottle with a flat cap and place it on a flat surface.
- 

Take a pencil with a pointed tip and place it horizontally over the lid of the bottle.
- 

Blow up a balloon and rub it against your hair for some time.
- 

Move the balloon towards the pointed side of the pencil and observe.

DID YOU SEE?

Did the pencil move towards the balloon?

SCIENCE BEHIND THIS

The charged balloon attracts the electrons in the pencil, causing them to move away from the balloon and towards the pencil. This is called electrostatic attraction.

Experiment #31

MAGIC POP

PHYSICAL SCIENCE



EQUIPMENT

- Cup

MATERIALS NEEDED

- Balloon
- Petroleum

INSTRUCTIONS

1



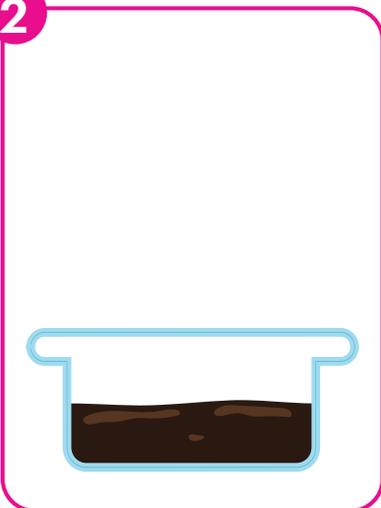
Blow air into a balloon to inflate it. Tie a knot to prevent the air from escaping.

3



Ask an adult to dip their finger into the petroleum. Then, have them gently touch the balloon with the same finger and observe.

2



Take a cup and fill it with petroleum.

DID YOU SEE?

When the finger touched the balloon, did it pop?

SCIENCE BEHIND THIS

Petroleum and the rubber used for the balloon are hydrocarbons. Both the hydrocarbons react and dissolve the balloon membrane and makes it thinner. This results in the popping of the balloon when the finger dipped in petroleum touches it.

Experiment #32

ELECTROACTIVE OOBLECK

PHYSICAL SCIENCE



5
MINS

EQUIPMENT

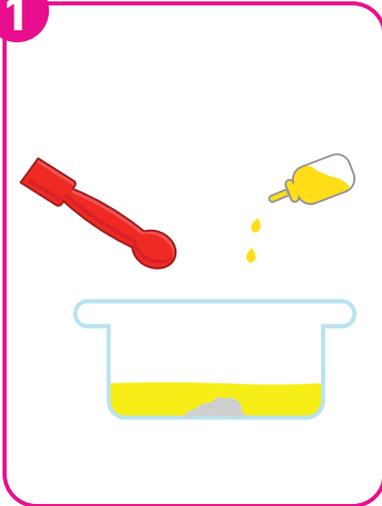
- Cup
- Spatula

MATERIALS NEEDED

- Cornstarch
- Yellow Colour
- Balloon
- Water

INSTRUCTIONS

1



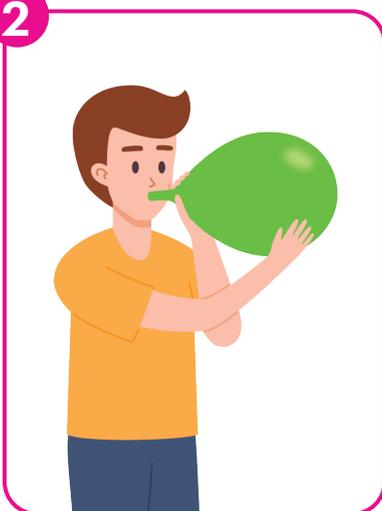
Mix 2 scoops of cornstarch, 1 scoop of water and 5 drops of yellow colour in a cup, to make an oobleck.

3



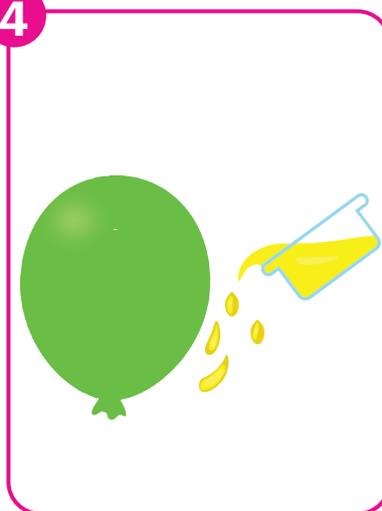
Rub the balloon against your hair for some time. Then, hold up the balloon.

2



Now, ask an adult to blow up a balloon and tie a knot.

4



Bring the cup near to the balloon and slowly pour the oobleck beside the balloon.

DID YOU SEE?

Did the oobleck pull itself towards the balloon?

SCIENCE BEHIND THIS

The balloon and oobleck have opposite charges, like magnets. That's why they pull towards each other, making the oobleck move and stick to the balloon.

Experiment #33

MAGICAL BLOWUP

PHYSICAL SCIENCE



EQUIPMENT

- Funnel
- Spatula

MATERIALS NEEDED

- Balloon
- Filled Soda Bottle
- Salt

INSTRUCTIONS

- 

Take a balloon and add 2 scoops of salt to it with the help of the funnel.
- 

Take a filled soda pop bottle and fit the balloon over the mouth of the bottle. Ensure that the salt does not fall into the bottle.
- 

Lift the balloon to allow the salt to fall into the bottle.

DID YOU SEE?

Did you notice the balloon blowing up after salt fell into the bottle?

SCIENCE BEHIND THIS

The salt reacts with the soda, creating bubbles of carbon dioxide gas. The gas takes up space and creates pressure inside the balloon, causing it to expand.

Experiment #34

MAKING A SUNDIAL

PHYSICAL SCIENCE



2
HRS

EQUIPMENT

- Stirring Stick

MATERIALS NEEDED

- Paper Plate
- Pushpins
- Pen

INSTRUCTIONS

1



Take the paper plate & put it upside down on a flat surface.

4



At noon, place the sundial outside under sunlight. Ensure the shadow cast from the stick is falling on number 12 on the sundial.

2



Write numbers 1-12 on it as they appear on a clock.

5



Keep an eye on the sundial to see the time throughout the day.

3



Ask an adult to punch a hole in the centre of the plate. Then, push the stirring stick inside the hole.

DID YOU SEE?

Did the sundial let you know the different times of the day?

SCIENCE BEHIND THIS

The shadow changes as the sun moves across the sky, helping us tell the time by following the shadow's movement on the paper dial.

Experiment #35

MAGIC INK PAINTING

PHYSICAL SCIENCE



40
MINS

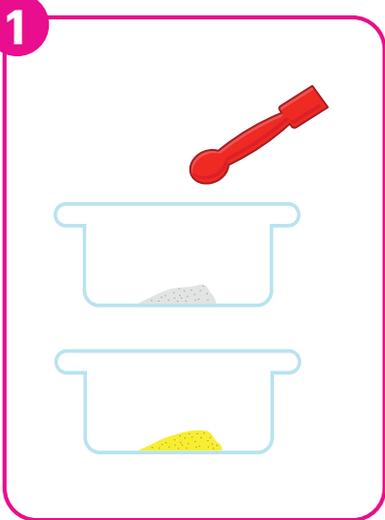
EQUIPMENT

- 2 Cups
- Spatula
- Measuring Cylinder

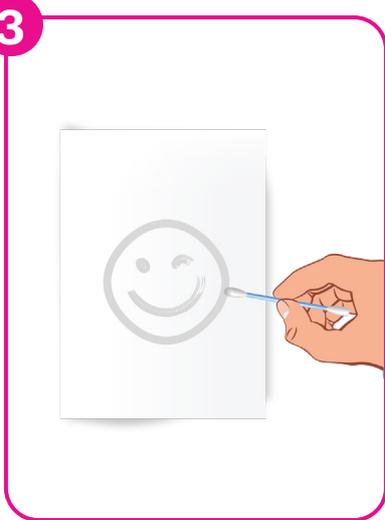
MATERIALS NEEDED

- Paintbrush
- Cotton Swab
- Blank Sheet Of Paper
- Water
- Turmeric Powder
- Baking Soda

INSTRUCTIONS

- 

Take 2 cups. Add 1 scoop of baking soda to the first cup and 2 scoops of turmeric powder to the second cup.
- 

Add water to both cups until the mixture forms a thin paste.
- 

Dip the cotton swab into the first cup & draw a smiley on the paper. Leave it for 30 minutes.
- 

Once dry, apply turmeric solution all over the paper using the paintbrush.

DID YOU SEE?

Did the smiley appear when you applied the turmeric solution?

SCIENCE BEHIND THIS

Turmeric contains a compound called curcumin. When curcumin reacts with baking soda, a chemical reaction happens, changing the colour to a reddish-brown or orange hue.

Experiment #36

GROWING SMILEY

PHYSICAL SCIENCE

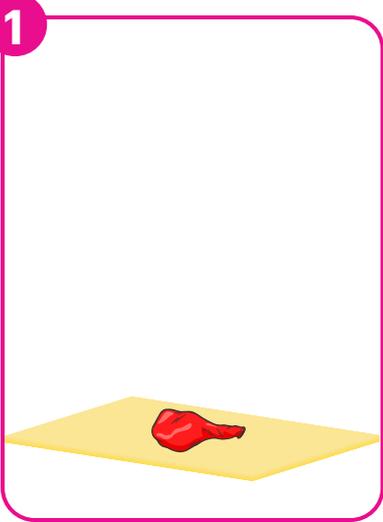


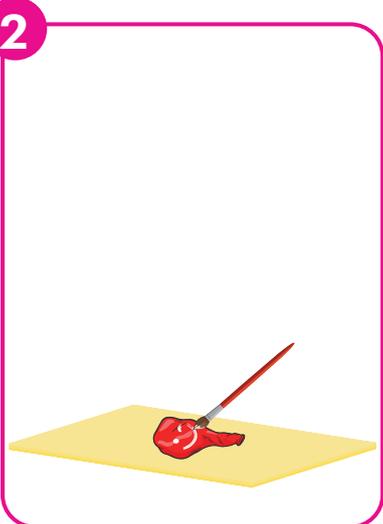
10
MINS

MATERIALS NEEDED

- Acrylic Paint
- Paint Brush
- Balloon

INSTRUCTIONS

- 

Take a deflated balloon and lay it on a flat surface.
- 

Paint a smiley on the surface of the balloon using acrylic paint. Let the paint dry.
- 

Inflate the balloon by blowing air into it. Then, tie the end to prevent the air from escaping.
- 

Observe the balloon.

DID YOU SEE?

Did you see the smiley growing in size once air was blown into the balloon?

SCIENCE BEHIND THIS

When air is blown into the balloon, it inflates and grows in size. This makes the smiley on the balloon's surface stretch out and simultaneously grow in size.