



MY FIRST SCIENCE KIT

STARTER SERIES

BONUS MANUAL



WARNING:

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

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1 LAVA LAMP

5
MINS

Equipment

- Spatula
- Stirring Stick

Materials Needed

- Vinegar
- Flashlight
- Baking Soda
- Food Colours
- Tall Glass Tumbler
- Baby Oil/Cooking Oil

INSTRUCTIONS

- 1 Take a tall glass tumbler. Fill 1/3rd with vinegar.
- 2 Add 1 drop of blue and 3 drops of yellow food colour to the tumbler and mix well.
- 3 Add oil to the glass tumbler so it becomes 3/4th full.
- 4 Place a lit flashlight behind the tumbler. Then add 2 scoops of baking soda.



The Science Behind This

The carbon dioxide bubbles created by the reaction travel up the oil layer carrying coloured water. This illuminated by the torch light gives the effect of a lava lamp.



What Did You See?

Did you see coloured gas bubbles form and rise up above the vinegar and travel through the oil layer?



2

CHROMA ILLUSION

5
MINS

Equipment

- Beaker
- Stirring Stick
- Cup

Materials Needed

- Water
- Food Colours

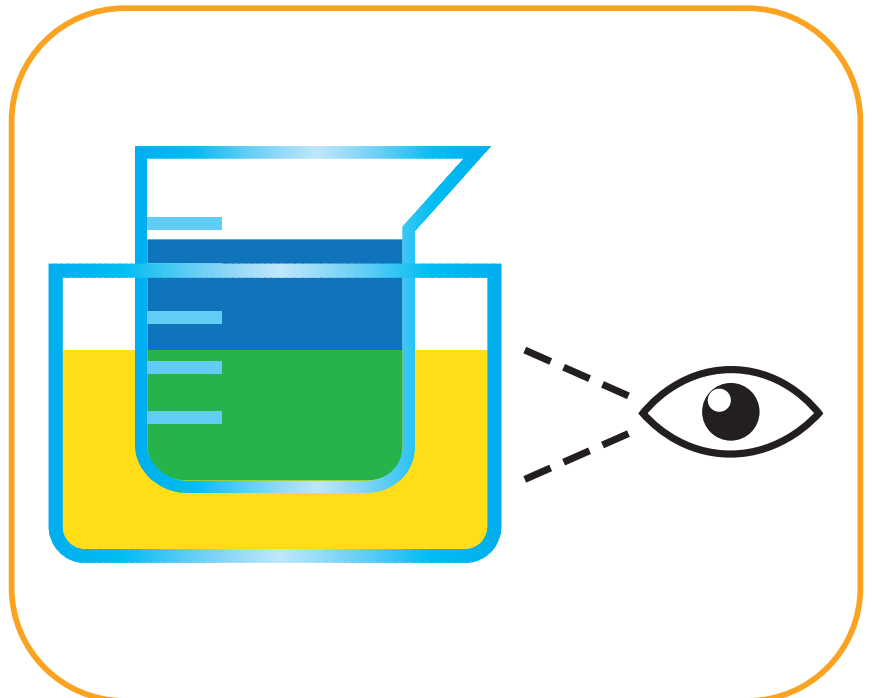
INSTRUCTIONS

- 1 Fill the beaker with water.
- 2 Add 1 drop of blue food colour. Mix well.
- 3 Fill half a cup with water. Add 4 drops of yellow food colour and mix well.
- 4 Dip the beaker vertically into the cup. Observe the lower part of the beaker through the yellow food colour of the cup.



The Science Behind This

In your line of sight both the colours appear mixed. This is why we see new colours in the area where both the colours overlap.



What Did You See?

Did you see the colour of the beaker change when looking through the filled part of the cup? What colour did you see?

3

POMEGRANATE FACE MASK

5
MINS

Equipment

- Cup
- Beaker
- Stirring Stick

Materials Needed

- Water
- Facemask Tablet
- Pomegranate Juice

INSTRUCTIONS

- 1 Add 10 ml of water to a cup.
- 2 Mix 5 drops of pomegranate juice.
- 3 Drop a face mask tablet into the cup.
- 4 Place the mask on your face and enjoy.



Please perform a patch test on your hand before applying the face mask.



For Smooth Skin

Pomegranates contain a substance called puniic acid. This helps to lock the moisture into the skin, giving it a smooth and soft texture.

4 CANDY GOOP

10
MINS

Equipment

- Cup
- Spatula
- Stirring Stick

Materials Needed

- Cornstarch
- Liquid Soap
- Food Colours

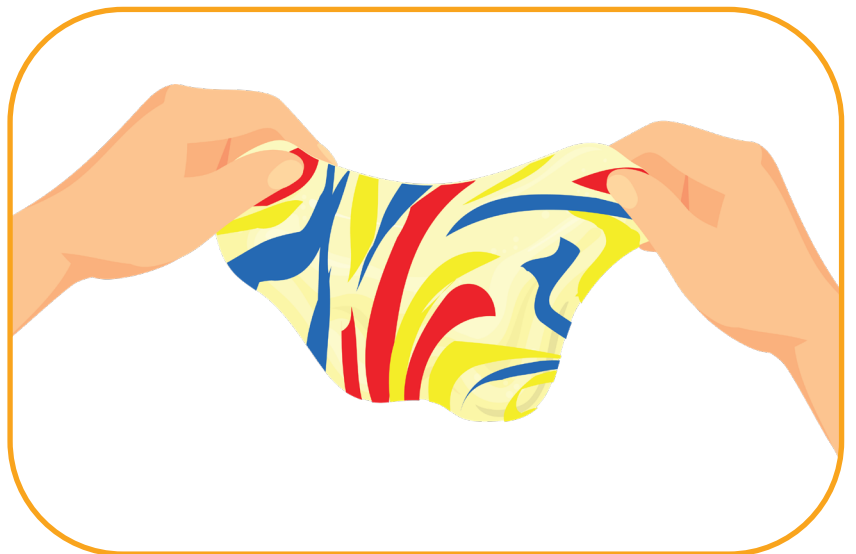
INSTRUCTIONS

- 1 Take a cup and add 2 scoops of cornstarch to it.
- 2 Add 6 drops of different food colours and 1 scoop of liquid soap to the cup.
- 3 Mix the contents of the cup. Add cornstarch if the mixture is too pasty and liquid soap if it is too dry.
- 4 Knead the mixture into a ball with the help of the spatula.
- 5 The goop is ready to be stretched and moulded into any shape!



The Science Behind This

Similar to the oobleck, the mixture of cornstarch and liquid soap is a non-Newtonian fluid that displays the properties of a fluid when at rest but behaves like a mouldable and stretchable solid when force is applied to it.



What Did You See?

Did you notice the coloured mixture has slime-like properties?



5 MANGO GOOP

10
MINS

Equipment

- Cup
- Spatula
- Stirring Stick

Materials Needed

- Cornstarch
- Liquid Soap
- Yellow Food Colour
- Mango Food Essence

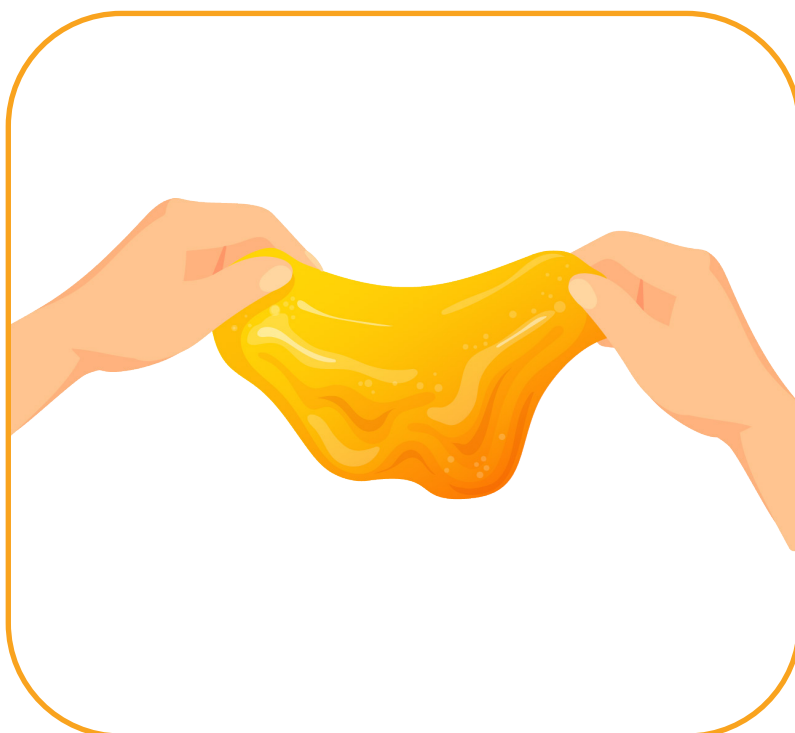


The Science Behind This

This goop is made of cornstarch, which is a porous substance and can trap scents of other substances with strong fragrances.

INSTRUCTIONS

- 1 Take a cup and add 2 scoops of cornstarch to it.
- 2 Add 2 drops of yellow food colour, 6 drops of mango food essence and 1 scoop of liquid soap to the cup.
- 3 Mix the contents of the cup. Add cornstarch if the mixture is too pasty and liquid soap if it is too dry.
- 4 Knead the mixture into a ball with the help of the spatula.
- 5 The mango goop is ready to be stretched and moulded into any shape!



What Did You See?

Did you notice that the goop smelled like mangoes?



Materials Needed

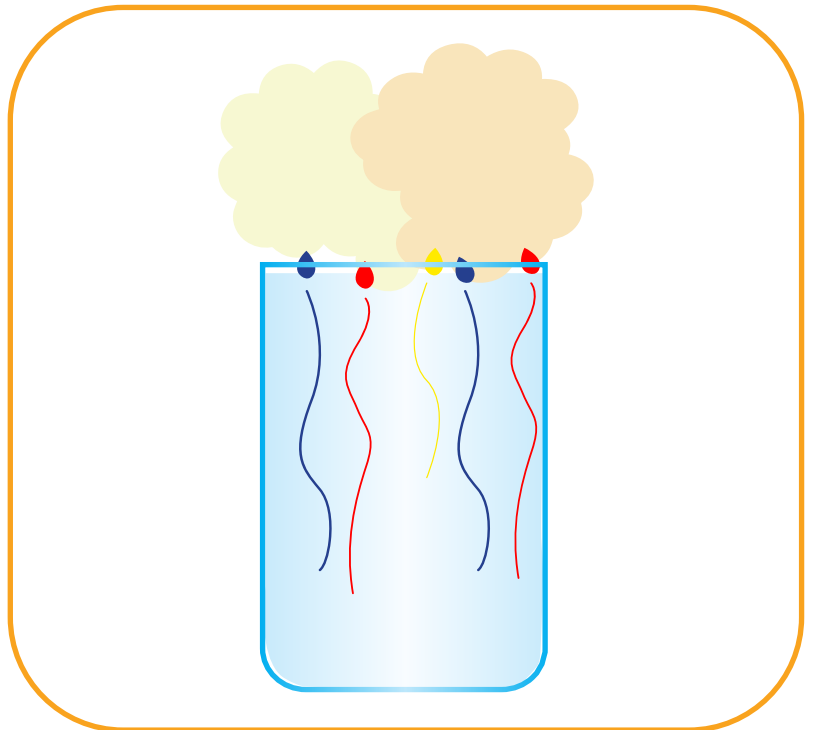
- Water
- Food Colours
- Glass Tumbler
- Shaving Foam

INSTRUCTIONS

- 1 Fill the glass tumbler with water almost to the brim.
- 2 Spray some shaving foam over the top layer on the water.
- 3 Put several drops of different colours over the foam.
- 4 Observe for 10 minutes.

**The Science Behind This**

The paint droplets go through the foam and fall down. This is similar to water droplets in the clouds falling down due to the force of gravity.

**What Did You See?**

Did you see coloured drops start to fall through the foam and into the glass tumbler?



Materials Needed

- Water
- Food Colours
- Glass Tumbler
- Fresh White Flower

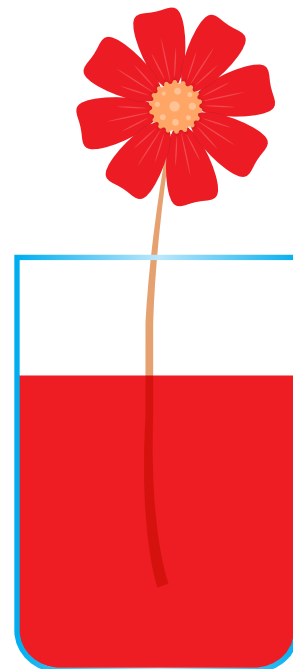
INSTRUCTIONS

- 1 Take a glass tumbler. Fill it 3/4th with water.
- 2 Add 4-5 drops of red or blue food colour to the water.
- 3 Cut the stem of a fresh white flower and put it in the tumbler. The flower should be above the rim.
- 4 Leave the tumbler overnight.



The Science Behind This

The coloured water moves up the stem and reaches the petals. This property of water moving up narrow spaces against gravity is called capillary action.



What Did You See?

Did you see the petals of the flower change colour?

Materials Needed

- Food Colours
- 3 Glass Tumblers
- Metal Spoon
- Water

INSTRUCTIONS

- 1 Place the tumblers in a line on a flat surface. Tap each of them with a metal spoon and notice the sounds they make.
- 2 Add different amounts of water to each of the 3 tumblers.
- 3 Add different food colours to each of the tumblers to differentiate between them.
- 4 Tap the tumblers again with the same metal spoon and pay attention to their sounds.

**The Science Behind This**

When the metal spoon taps the glass, the glass particles vibrate, creating a sound wave. When we add different amounts of water, the vibrations change, thereby giving different sound waves.

**What Did You See?**

Did the tumblers make different sounds after water was added to them?

Equipment

- Spatula
- Stirring Stick

Materials Needed

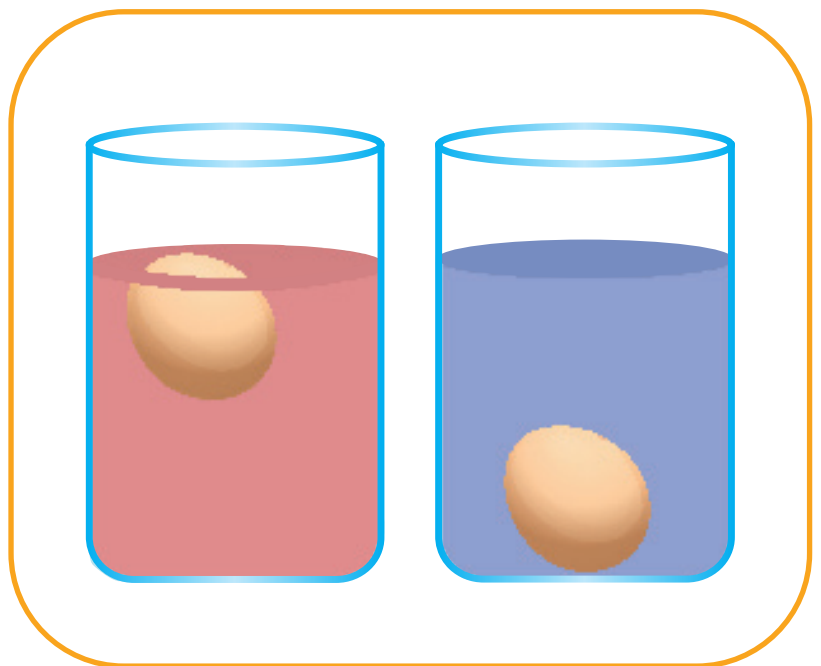
- Food Colours
- Water
- Eggs
- Salt
- 2 Glass Tumblers

INSTRUCTIONS

- 1 Take the glass tumblers and fill them up to 3/4th with water.
- 2 Add 2 drops of red food colour to the first and 2 drops of blue food colour to the second tumbler. Mix well.
- 3 Mix salt into the first tumbler until more cannot be mixed.
- 4 Drop an egg inside each of the tumblers and observe.

**The Science Behind This**

Salt increases the density of water. Therefore, the salt water has more density than the normal water. This causes the egg to float in saltwater.

**What Did You See?**

Did you notice that the egg in the red solution was floating?



10 RICE FRICTION

10
MINS

Equipment

- Funnel

Materials Needed

- Pencil
- Rice Grains
- Small Plastic Bottle

INSTRUCTIONS

- 1 Take a small bottle and fill it up with raw rice grains with the help of a funnel.
- 2 Take a pencil and use the flat end to press on the rice to compress it tightly.
- 3 When the rice feels completely packed, insert the pencil's pointy end deep down till the bottom of the bottle. Grab and lift the pencil up slowly.



The Science Behind This

The friction between the packed rice and the pencil is greater than the gravitational pull acting on the rice and the bottle. This allows us to pick up the bottle along with the pencil.



What Did You See?

Were you able to lift the bottle when you lifted the pencil?

Materials Needed

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

INSTRUCTIONS

- 1 Take a milk strainer and a glass tumbler of water.
- 2 Apply oil on the inner surface of the strainer.
- 3 Now, pour the water into the strainer.

**The Science Behind This**

When we rub oil on the inside of a milk strainer, it creates a thin layer that repels water. This prevents the water from passing through the tiny holes of the strainer.

**What Did You See?**

Did the water pass through the strainer?

12 FLOATING OR SINKING

10
MINS

Equipment

- Cups

Materials Needed

- Marbles
- Water
- Clay
- Glass Tumbler

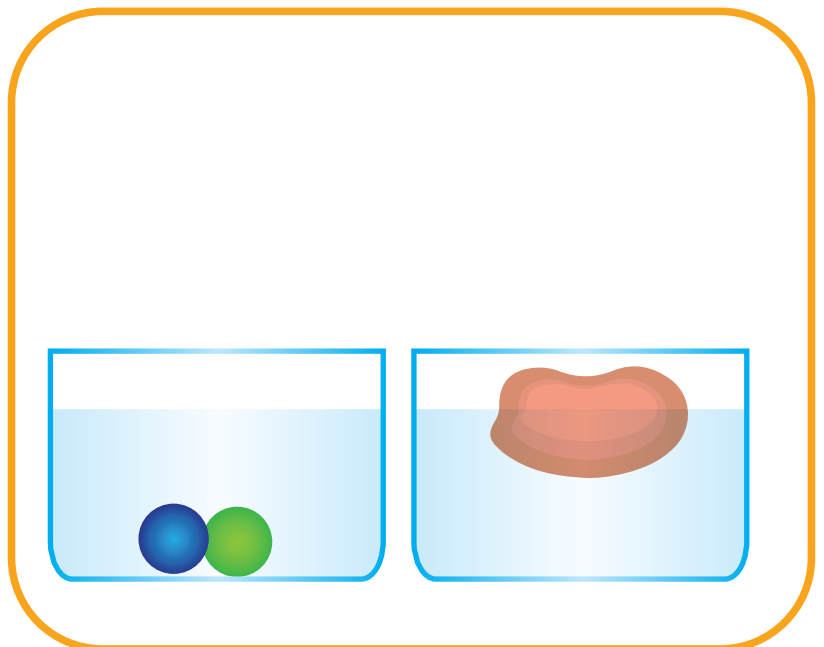
INSTRUCTIONS

- 1 Take 2 cups and fill them with water.
- 2 Take 2 marbles and drop them into the first cup.
- 3 Take a small piece of clay. Mould it into a boat.
- 4 Place the clay boat in the second cup.



The Science Behind This

The clay boat floats because it displaces more water than the marble balls. The more water is displaced, more force gets applied by the water against the object, allowing it to float. Try dropping various objects into water to see if they float or sink.



What Did You See?

Did you see the marbles sinking to the bottom?
Did you see the clay boat floating instead of sinking?

13 BLOOMING FLOWER

10
MINS

Equipment

- Tray

Materials Needed

- Water
- Sheet of Paper
- Pencil
- Colours
- Scissors

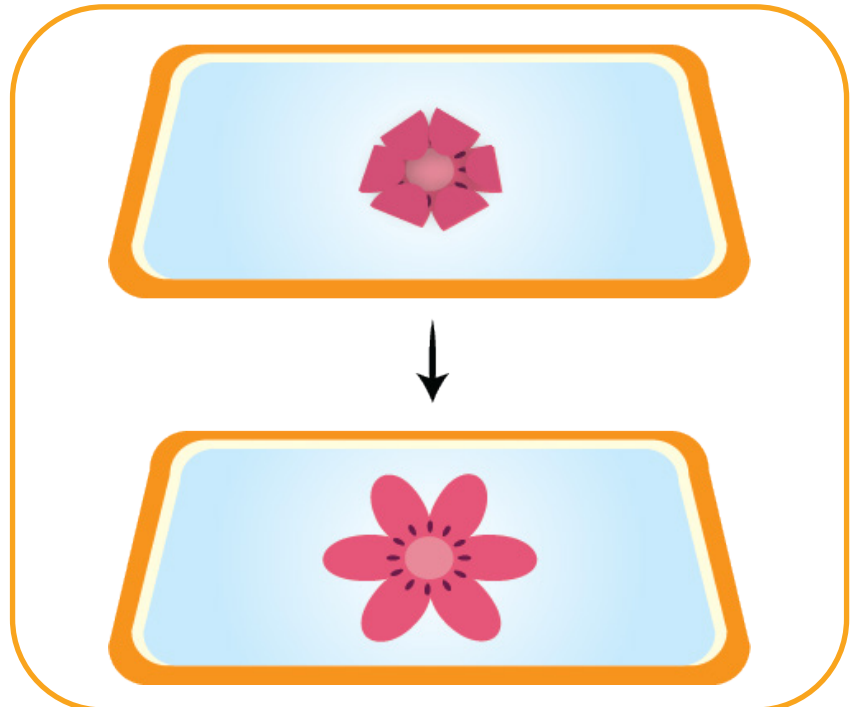
INSTRUCTIONS

- 1 Draw a flower on a blank sheet of paper. Then, colour the flower to make it visually appealing.
- 2 Ask an adult to cut out the flower using scissors.
- 3 Fold all the flower petals towards the centre.
- 4 Take the tray and fill it with water.
- 5 Take the flower and place it on top of the water.



The Science Behind This

When the flower is placed in the tray, water gets absorbed by the paper and spreads throughout the flower due to capillary action. This causes the creases to flatten out and the petals to unfold to emulate the blooming of a flower.



What Did You See?

Did you notice the petals unfolding once the flower was placed on top of the water?

Equipment

- 2 Cups
- Beaker

Materials Needed

- Flowerpot
- Water

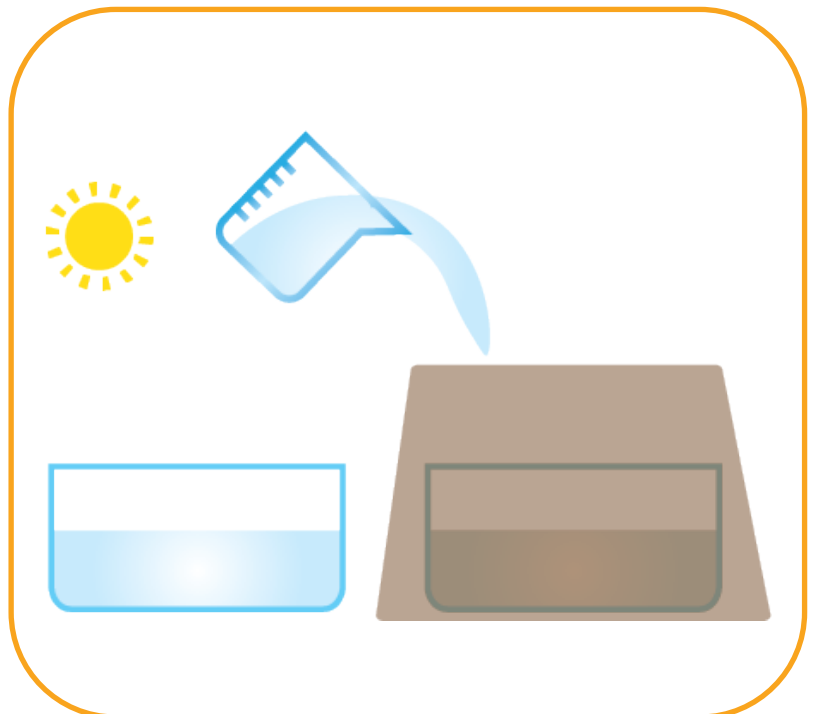
INSTRUCTIONS

- 1 Take 2 cup and pour 50 ml of water into each of them.
- 2 Place both the cups under the sun. Then, cover one of the cups with a flower pot.
- 3 Pour cold water over the flower pot until it is soaked. Then, keep pouring water to prevent it from drying out.
- 4 Compare the temperature of the water in both cups after 1 hour.



The Science Behind This

When water evaporates, it absorbs heat from surroundings. As the water on the flowerpot evaporates, it absorbs heat from inside keeping the water in the cup cool.



What Did You See?

Did you see the water under the flowerpot is cooler?



Equipment

- Stirring Stick
- Spatula
- Beaker

Materials Needed

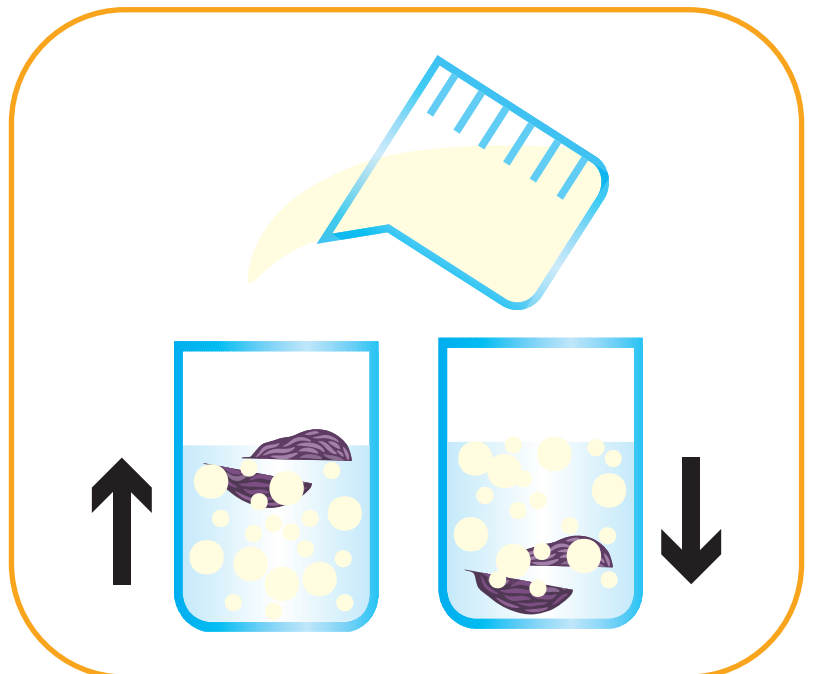
- Baking Soda
- Water
- Raisins
- Glass Tumbler
- Vinegar

INSTRUCTIONS

- 1 Take a glass tumbler. Fill 1/3rd with water.
- 2 Add half a scoop of baking soda. Mix until it dissolves in the water.
- 3 Break a raisin into two pieces and put them in the glass tumbler.
- 4 Fill half of the beaker with vinegar and pour it very slowly into the glass tumbler. Wait and watch.

**The Science Behind This**

The air bubbles made by the chemical reaction stick to the raisin and make its density lighter than water. But when the bubbles pop at the surface, the raisin drops down again.

**What Did You See?**

Did you see that after a bit of time, the raisin goes up & down in the water?

16 RISING WATER

5
MINS

Equipment

- Tray

Materials Needed

- Thin Candle
- Water
- Glass tumbler

INSTRUCTIONS

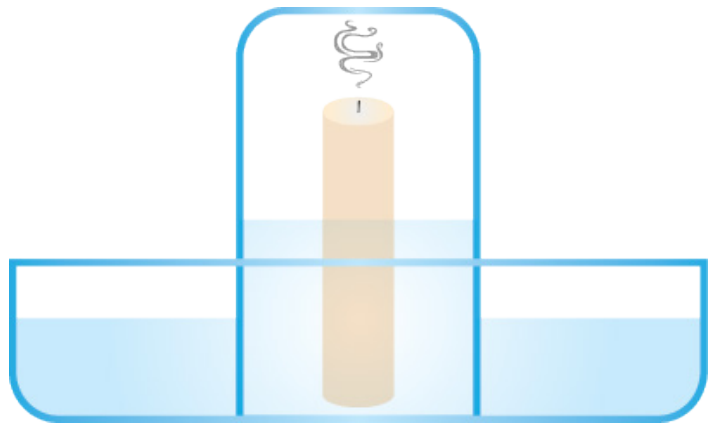
- 1 Fill half of the tray with water.
- 2 Place the candle at the centre of the tray.
- 3 Ask an adult to light the candle.
- 4 Place the glass tumbler upside down over the lit candle. Observe.



The Science Behind This

The candle flame uses the oxygen in the air inside the glass tumbler.

The water level rises to fill the vacuum. The flame also goes out as there is no oxygen left in the tumbler.



What Did You See?

Did you see the water rising after the tumbler was placed on top?

Materials Needed

- Thick Sheet Of Paper
- Glass Tumbler
- Water

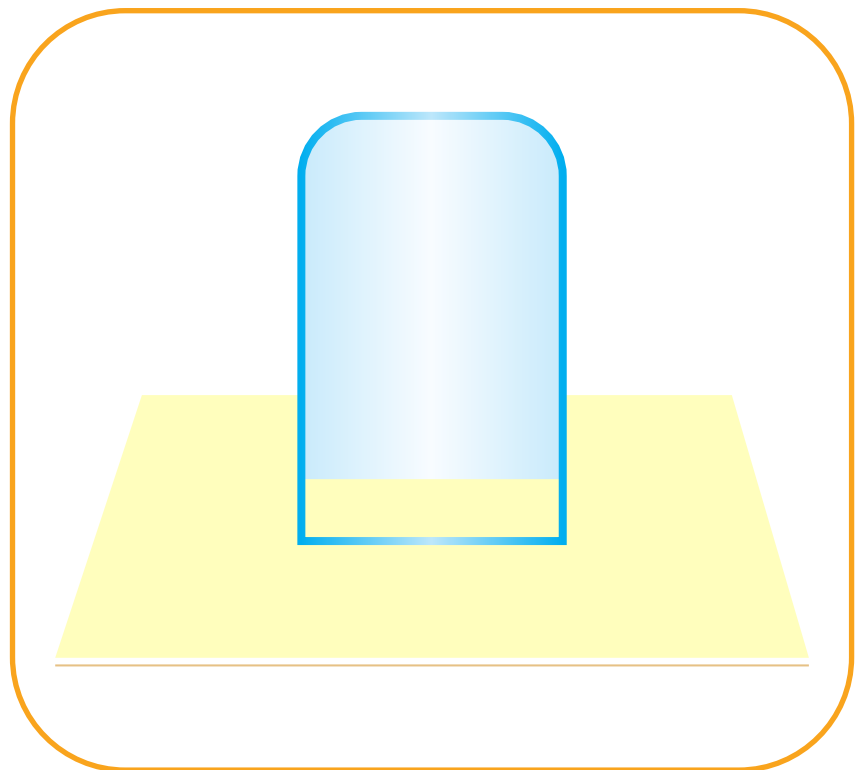
INSTRUCTIONS

- 1 Take a small glass tumbler and place it on a flat surface.
- 2 Fill the tumbler with water up to the brim. Then, place the sheet of paper on top of it.
- 3 Gently place your hand on the paper and flip over the tumbler.
- 4 Remove your hand from the paper and observe.



The Science Behind This

Air pressure forces the paper upwards, against the tumbler. The pressure is strong enough to stop the weight of the water pushing the paper away.



What Did You See?

Did the paper prevent the water from falling?



Equipment

- Funnel

Materials Needed

- Ice
- Plastic Bottle
- Warm Water
- Cold Water
- Large Plastic Bowl

INSTRUCTIONS

- 1 Ask an adult to fill 1/4th of the bottle with warm water using the funnel.
- 2 Leave the bottle open for 2-3 minutes and then screw in the cap.
- 3 Place the bottle down horizontally in a large bowl. Then, pour ice and cold water over it.
- 4 Pick the bottle and place it the bowl in an upright manner.

**The Science Behind This**

The air inside the bottle cools down and air pressure drops very quickly due to the cold water. Once the air pressure outside the bottle is higher, the air pressure causes the bottle to collapse.

**What Did You See?**

Did you see the bottle collapsing after coming into contact with cold water?



19 HEAT CONDUCTORS

10
MINS

Materials Needed

- Beads
- Hot Water
- Metal Spoon
- Butter
- Plastic Spoon
- 2 Glass Tumblers

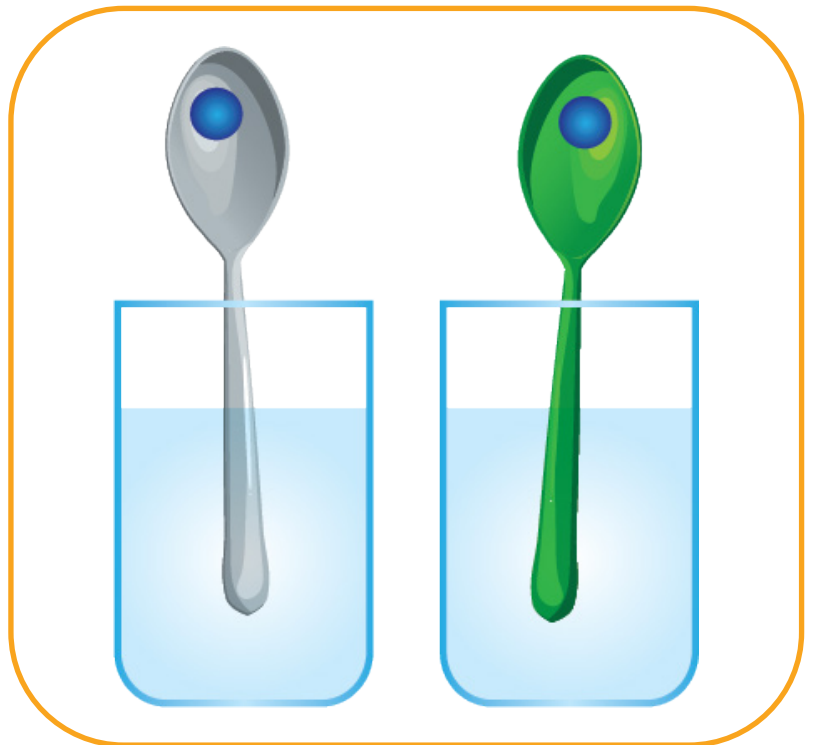
INSTRUCTIONS

- 1 Take the glass tumblers and place them on a flat surface.
- 2 Place the metal spoon in the first tumbler and place the plastic spoon in the second tumbler respectively.
- 3 Take the beads and stick them to the heads of both the spoons using butter.
- 4 Ask an adult to pour equal amounts of hot water in both the tumblers.



The Science Behind This

Metal is a better conductor of heat than plastic. This means the metal spoon heats up faster than the plastic spoon. Butter on the metal spoon melts faster and the bead falls down.



What Did You See?

Did the bead on the metal spoon fall first?



Equipment

- Stirring sticks
- Spatula

Materials Needed

- Salt
- 2 Glass Tumblers
- Water

INSTRUCTIONS

- 1 Take a glass tumbler and fill it with plain water.
- 2 Ask an adult to heat water and then, ask them to pour it into the other tumbler.
- 3 Add 2 scoops of salt in both the tumblers.
- 4 Ask an adult to start mixing the salt in the tumbler with warm water at the same time you start mixing the salt in the other tumbler.



The Science Behind This

The salt in warm water dissolves faster because warm water has more room between the water molecules, allowing more salt to fit. Cold water molecules are tighter together and do not allow much salt to dissolve.



What Did You See?

Did you notice the salt dissolve faster in warm water compared to plain water?



Equipment

- Cup
- Tray
- Beaker
- Spatula

Materials Needed

- Milk
- Water
- Liquid Soap
- Black Pepper

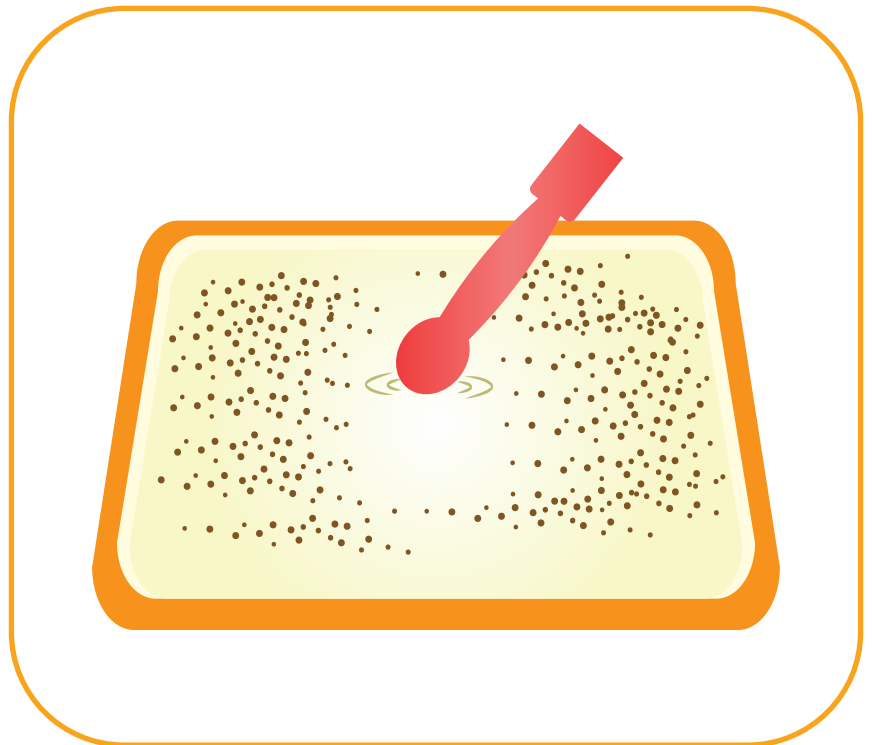
INSTRUCTIONS

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



The Science Behind This

This experiment simulates the use of soap in removing germs, in which the black pepper particles represent the 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.



What Did You See?

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

