Activity: Foaming Fizz

Today we are going to look at chemical reactions. By adding a few different ingredients together we can create colourful foaming fizz that looks like potions!

What you need:

1. *An empty Jar*
2. *Clear Vinegar*
3. *Food Colouring*
4. *Glitter*
5. *Washing up liquid*
6. *Bicarbonate of soda*

The Science Bit!

The foam that pours out of the jar is formed by a simple chemical reaction. When the vinegar and Bicarbonate of soda mix they make lots of tiny gas bubbles. Thes chrun up the washing up liquid making lots of foam

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Step 1

Half fill a glass jar with clear vinegar. Add several drops of food colouring (whatever colour you want your potion). Then sprinkle a little glitter over the top of the vinegar.

Step 2

Add a good squeeze of washing up liquid to the gar and then gently stir the mixture with a metal spoon the mix it all together.

Step 3

Put the jar in the middle of a large baking tray or wash basin (to contain the mess). Add a heaped teaspoon of bicarbonate of soda to the jar and see what happens!

Activity: Layered Liquids

For this activity we are going to look at different liquids and their density. We are going to pour them one at a time into a jar and see if they mix or if they just sit on top of one another.

What you need:

1. *An empty Jar*
2. *Honey or syrup*
3. *Vegetable Oil*
4. *Water*
5. *Food Colouring*

The Science Bit!

Once you've finished the steps on the opposite side of the page you will see 3 layers of liquids inside your jar. Oil is the least dense so it floats on top of the water and doesn't mix. Syrup is the mosst dense so it sinks to the bottom.

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Step 1

Half fill a glass with cold water and add a few drops of food colouring (any colour you want but blue/green and purple work best). Stir the mixture together with a teaspoon.

Step 2

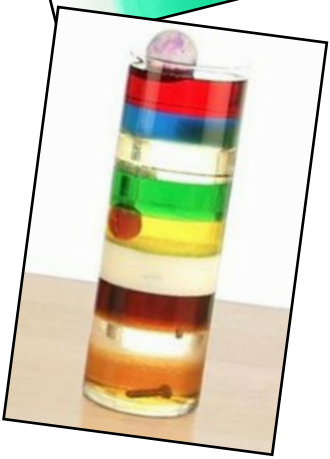
Take your empty jar and spoon in 4 table spoons of vegetable oil. Then slowly add 4 table spoons of the dyed water. A hint is to try and add the water down the side of the jar.

Step 3

Slowly add 4 tablespoons of syrup and then watch to see what happens.

Step 4

You will see that the liquids have changed order from the way you put them in. Empty the jar out and try putting them in in and different order. Are the results different?



Activity: Fireworks in a Jar

For this activity you are going to add a few different ingredients to warm water and then watch them react and create some mesmerising colours that look like Fireworks in a Jar.

What you need:

1. *An empty Jar*
2. *Warm Water*
3. *Kitchen Oil*
4. *Food Colouring (3 - 4 colours)*
5. *Bowl*
6. *Fork*

The Science Bit!

Food coloring dissolves in water but not in oil. This is because the oil is less dense than the water, it will float at the top.The colored droplets will begin to sink because they are heavier than the oil. Once they sink into the water, they will begin dissolving into the water (which looks like a tiny explosion).

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Step 1

Fill your jar ¾ full with some warm water

Step 2

On a separate bowl or plate put 3 - 4 tablespoons of oil and about 16 drops of different coloured food colouring.

Step 3

Mix the oil and food colouring together with a fork

Step 4

Gently pour the mixture into the warm water in the jar from step 1.

Step 5

Watch as the Oil sits on top of the water and the food colouring slows sinks and expands, merging with the other colours.

Activity: Fingerprint Detective work

For this activity we are going to look at our finger-prints. Every finger print is different. This means that they can be used to catch criminals. Forensic scientists lift prints from crime scenes and then check them against criminal records.

What you need:

1. *Chalk (any colour)*
2. *Clear Sticky Tape*
3. *Paper plate*
4. *A small clean and dry paint brush*

The Science Bit!

The skin on the end of your fingers has tiny ridges in it. This forms patterns that you can see when you make a fingerprint. The most common 3 prints can be seen below.

Whorl Arch Loop

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Step 1

First lets take some prints from our own fingers. This will let us practice using the brush. Press your index finger or thumb against a mirror or other glass surface. This will leave behind a print.

Step 2

Hold a pair of scissors with the blades together. Scrape this down a piece of chalk over a plate or piece of newspaper. Try to collect as much of the chalk powder as you can.

Step 3

Dip a small, dry and clean brush into the powder. Hold the brush up to your mouth and gently blow any extra powder off. Dust the brush over the fingerprint you left.

Step 4

To lift the fingerprint off, carefully lay a piece of stick tape onto the print and press the tape flat. Then peel off. Go around the classroom and see if you can find any other fingerprints.

Activity: Straw Panpipe

Technology is using any scientific knowledge in a practical way. It does not always need to involved an electronic device. Therefore this challenge focuses on practically making your own instrument!

What you need:

1. *Ruler*
2. *8 - 10 straws*
3. *Sellotape*
4. *Card*
5. *Scissors*

The Science Bit!

When you blow into the end of a staw or a tube the air inside vibrates making different sounds. The note (sound) is determined by that number of vibrations per second. Shorter straws have more vibrations so they produce high notes. Longer straws produce less vibrations so they create lower notes.

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Step 1

Firstly, cut the the top off of each straw off with a pair of scissors. Make sure you also cut the bend off. You should now have 8 - 10 straight straws all the same length.

Step 2

Using a ruler make cut 2 straws to a length of 10cm, another 2 straws to a length of 8cm, the next 2 straws to a length of 6cm and the last 2 straws to a length of 4cm.

Step 3

Cut a long piece of sellotape and stick them all together in a line (in order of height)

Step 4

Cut two strips of card and glue them onto the straws. Now blow into the top and make some sounds!

Activity: DIY Compass

This is a great activity that teaches you about the basics of Earths magnetic field. You will use a few simple objects from your house and garden to build a compass that actually works!

What you need:

1. *A bowl*
2. *A leaf*
3. *Needle*
4. *Magnet*

The Science Bit!

The Earth is a magnet that can interact with other magnets. This is why the magnetic needle of a compass moves. The 'north' end of the compass spins to align with the North Pole. If the needle points north we can work out where East, South and West are. This can help us if we get lost or are trying to find somewhere.

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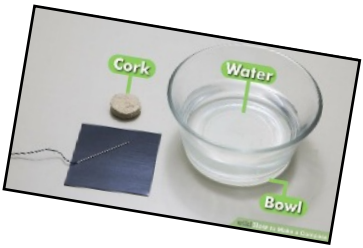
Step 1

Pour some still water into the bowl. The water needs to be still with no ripples or movement.

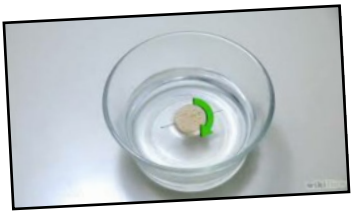


Step 2

Place the leaf/cork on the surface of the water and let it float. Do not get the top wet or sink it.

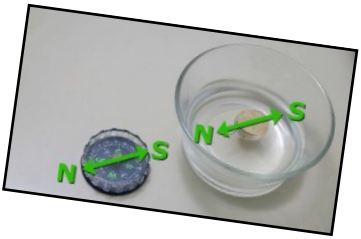
Step 3

To magnetize the needle run the magnet in one direction along the needles length. You don't have to fun it along the full length just one half will do.



Step 4

Place the needle gently on the leaf and the needle should spin the leaf until it is facing north. The end of the needle that you magnetized will point north.



Activity: Jelly Bean Structures

For this activity you are going to use toothpicks and jelly beans to create different structures. There are a few introductory challenges but then what you build is up to you!

What you need:

1. *Toothpicks*
2. *Jelly Beans (or Jelly Babies)*

The Science Bit!

This activity focuses on problem solving and critical thinking skills. Learn the difference between 2D and 3D shapes and challenge yourself to build the tallest tower that you can!

This is a great activity when looking at different ma terials. Notice that the jelly beans begin soft but the longer they are left out the harder and more stable they get.

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Step 1

Find a clear space to work and gather together a packet of toothpicks and a bag of jelly beans (or jelly babies)

Step 2

Stick the toothpicks into the jelly beans to create a basic 2D square. Do this again and create a triangle and a pentagon.

Step 3

With your hands put a little pressure on each of the shapes which one is strongest?

Step 4

Using more toothpick and jelly beans begin to create some 3D shapes. Either stack the shapes on top of one another or keep adding onto one shape. How high can you build your tower?

Step 5

Leave your structure to dry for a couple of days and watch as is becomes a more solid structure.

Activity: Shape Puzzles

For this activity learners are going to use their knowledge of shapes and letters to piece together a series of shape puzzles. Sliding together one puzzle piece at a time, young mathematicians magically make each shape appear.

What you need:

1. *Card*
2. *Pen or Pencils*
3. *Scissors (adults only)*
4. *Laminator (suggested)*

The Maths Bit!

This activity is great for early years learners as they are encouraged to use their exisitng knowledge of shapes and colour to solve each of the puzzles. It also introduces them to the names of the shapes in writing.

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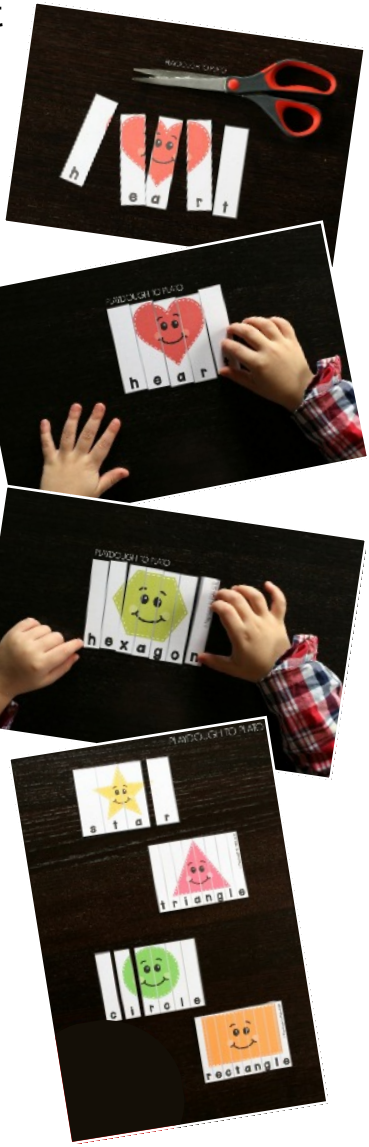
Step 1

You first have to make up the cards. You can either find images of shapes on the Internet and print them out or you can draw them by hand. Don't forget to write the names of the shapes at the bottom!



Step 2

If available laminate each of the cards (this will make them last longer)

Step 3

With a pair of scissors cut up each of the cards into strips.

Step 4

Mix them all together and challenge the learner to solve each puzzle!