

Foaming Fizz

Learning Outcome:

Investigate chemical reactions.

Resources:

- Empty jar
- White vinegar
- Food colouring
- Glitter
- Washing up liquid
- Bicarbonate of soda



What happens?

When the vinegar and bicarbonate of soda mix they form gas bubbles. These churn up the washing up liquid and create the foam that is created.

Foaming Fizz

What to do:

1. Half fill the glass jar with white vinegar and add several drops of food colouring.
2. Sprinkle glitter on top of the vinegar and food colouring solution.
3. Add washing up liquid to the jar and gently stir until all is mixed together.
4. Place the jar in the middle of a large baking tray or wash basin.
5. Add a heaped teaspoon of bicarbonate of soda.
6. Watch as the chemical reaction takes place.

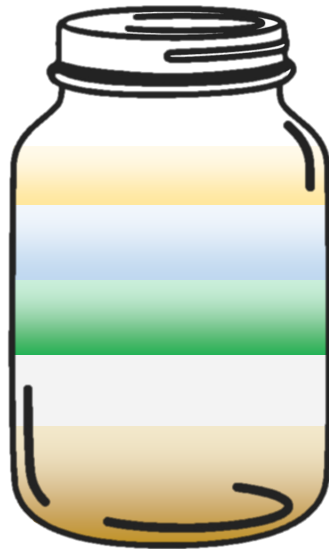
Layered Liquids

Learning Outcome:

Investigate the density of different liquids.

Resources:

- Empty jar
- Honey or syrup
- Milk
- Vegetable oil
- Water
- Washing up liquid
- Measuring jug
- Cups



What happens?

This experiment looks at density. Density refers to the number of molecules packed into a space. The more molecules the denser the liquid. Denser liquids (i.e. honey) allow lighter liquids (i.e. water) to sit on top of them.

Image source: https://www.pclipart.com/pindetail/mTJJb_mason-jar-rubber-stamp-transparent-mason-jar-clip/

Layered Liquids

What to do:

1. Measure out an equal amount of each liquid (30ml—50ml) into different cups.
2. In this order slowly pour each cup into the empty jar:
 - Honey
 - Milk
 - Washing up liquid
 - Water
 - Vegetable oil
3. Be careful not to let the liquid touch the sides of the jar as it is poured in and allow each layer to set before pouring in the next.
4. Observe as the density of each liquid prevents them from mixing



Raincloud in a Jar

Resources:

- Empty jar
- Shaving foam
- Blue food colouring
- Water
- Dropper/pipette/baster



What happens?

As the shaving foam cloud is saturated with the food colouring the droplets become heavier and pull the cloud down into the water.

Image source: <https://webstockreview.net/explore/jar-clipart-mason-jar/>



Raincloud in a Jar

What to do:

1. Fill the jar with water.
2. Spray shaving foam onto the top of the water to act as a cloud.
3. Place droplets of blue food colouring on top of the shaving foam.
4. Watch as this falls through and spreads in the water.
5. Add more droplets of food colouring for heavier rain.



Fireworks in a Jar

Learning Outcome:

Investigate the density of different liquids.

Resources:

- Empty jar
- Warm water
- Food colouring
- Vegetable oil
- Droplet/pipette/baster



What happens?

This experiment looks at density. Density refers to the number of molecules packed into a space. The more molecules the denser the liquid. On this occasion the denser liquid is water. This allows the oil to sit on top. Oil and water do not mix therefore the water based food colouring sinks through the layer of oil. This then spreads through the water creating a 'firework' effect.

Image source: <https://webstockreview.net/explore/jar-clipart-mason-jar/>



Fireworks in a Jar

What to do:

1. Fill the jar 3/4 full of warm water.
2. Add a layer of vegetable oil to the top of the water.
3. Drop small amounts of food colouring onto the oil.
4. Watch as the food colouring works through the oil and bursts into colour as it hits the water beneath.

Fingerprint Detectives

Learning Outcome:

Identify and describe fingerprints.

Resources:

- Clean and dry paintbrush
- Chalk
- Paper plate
- Sticky tape
- White paper



What happens?

The oil in skin causes imprints of prints to be left on surfaces. These patterns are easily seen on smooth surfaces. Powders such as chalk can be used to take copies of these patterns.

Fingerprint Detectives

What to do:

1. Press an index finger or thumb against a mirror or other glass surface.
2. Using a pair of scissors scrape the chalk so that it crumbles onto a paper plate to create chalk powder.
3. Dip the dry paint brush into the chalk powder.
4. Lightly blow on the end of the brush to remove excess powder.
5. Dust the brush lightly over the fingerprint on the glass.
6. Press the sticky side of the tape against the fingerprint to collect a copy.
7. Stick this onto a piece of white paper to see the fingerprint.



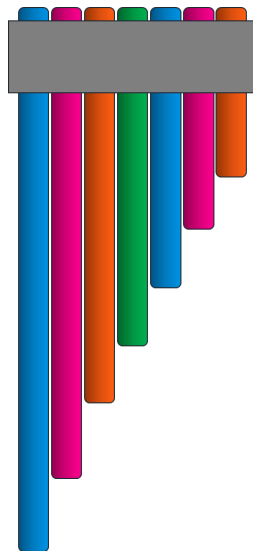
Straw Panpipes

Learning Outcome:

Investigate and demonstrate changes in pitch.

Resources:

- Sticky tape/glue
- Straws
- Scissors
- Ruler
- Card



What happens?

Sound can be made higher or lower in pitch by changing the length, width, or thickness of the straw. By changing the length of each pipe you can hear that shorter pipes have a high pitch and longer pipes have a lower pitch.



Straw Panpipes

What to do:

1. Select 7 straws and using a ruler measure and cut them to the following lengths:
 - 12cm
 - 10.5cm
 - 8cm
 - 6.5cm
 - 5cm
 - 3.5cm
 - 2cm
2. Line up the straws from longest to shortest.
3. Cut a strip of card and stick to straws to hold them together.
4. Blow into top of straws and listen to the difference in pitch from longest to shortest.

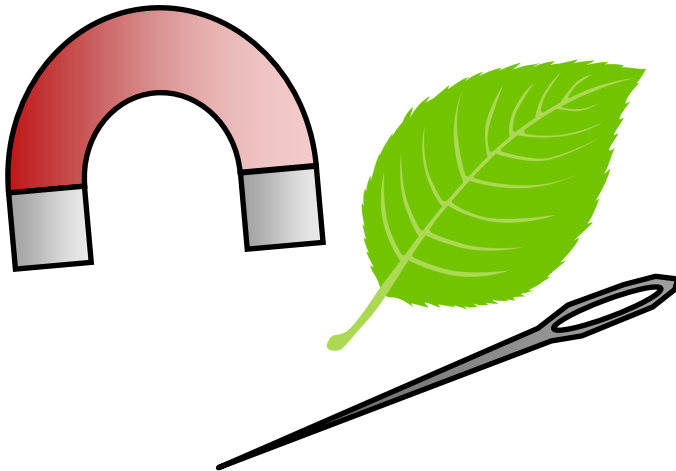
DIY Compass

Learning Outcome:

Describe and demonstrate how magnets repel and attract.

Resources:

- Bowl
- Leaf
- Needle
- Magnet



What happens?

The needle is being affected by the Earth's magnetic field. One end points towards magnetic north and the other end points south.

DIY Compass

What to do:

1. Fill the bowl with water and place the leaf on top so that it floats.
2. Ensure that the leaf has enough room to spin 360°.
3. Take the needle and rub the magnet along the full length 50 times. Make sure that magnet is only run along the needle in one direction.
4. Place the needle carefully on the leaf.
5. The needle will turn but eventually come to a complete stop.
6. The needle will now be facing magnetic north.



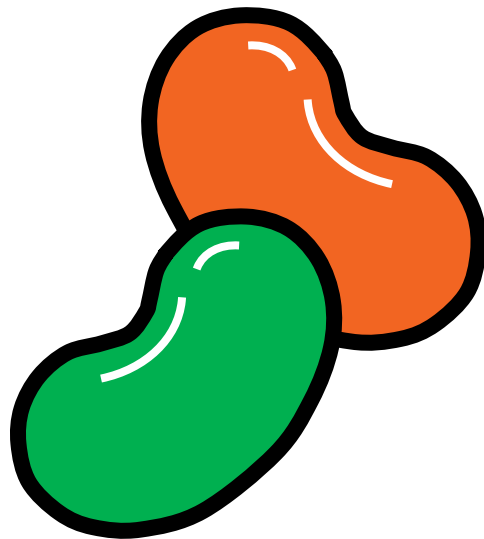
Jellybean Structures

Learning Outcome:

Construct a bridge that can hold a weight using various materials.

Resources:

- Jellybeans
- Toothpicks
- Weights
- Tables/chairs



What happens?

Triangular structures are difficult to distort from their original shape because of their fixed angles and ability to distribute force evenly to the other sides. This even distribution allows triangular structures to withstand more weight than other shapes. This is why triangles are often used in skyscrapers and bridges.



Jellybean Structures

What to do:

1. Place two tables or two chairs 50cm apart.
2. Construct a triangle out of toothpicks and join the ends together using jellybeans.
3. Repeat this and join the triangles together using more toothpicks.
4. Continue until the structure is large enough to reach across the 50cm gap.
5. Test the structure by placing a weight on top.
6. Adapt and alter until successful.
7. Increase weight.



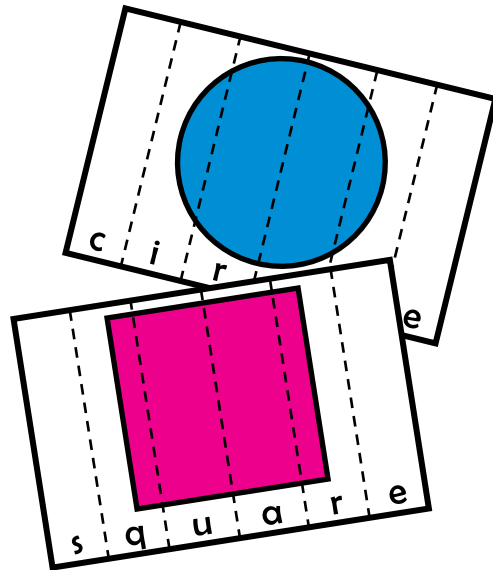
Shape Puzzles

Learning Outcome:

Recognises and describes different common shapes.

Resources:

- Card
- Pencils/pens
- Scissors
- Laminator (suggested)



What happens?

This activity looks at a shape and pattern. Learners should be able to recognise, describe and sort common 2D shapes.



Shape Puzzles

What to do:

1. Draw various shapes on paper and at the bottom of each write the name of the shape.
2. Cut the images into strips ensuring that 1 letter is on each strip.
3. Laminate each of the strips (if available) to make them last longer.
4. Mix the strips up.
5. Piece back together to solve the puzzle.