



Scientist Badge

To complete your badge you must complete a further 3 experiments from the list on the front page and bring them in to show to a leader. You must be able to explain how you did the experiment and a little about how and why it 'worked'.

- Rocket Launch
- Holding Water In
- Balancing Clowns
- Divers
- Helicopters
- Snake Spirals
- Fizzing Up
- Constellations
- Microscope
- Toy Tanks
- Other:
- Other:
- Other:
- Other:
- Other:

Bring this in to be marked and completed by Baggy.

.....

completed their Scientist Badge

on

Signed



Scientist Badge

Requirements

The Cub Scout must complete six activities, three from Part A and three from Part B.

They must explain to and/or show a Leader what they have done, explaining any conclusions they have made.

Part A - The Physical World

1. Make a simple switch from household items. Show how it could be used to control a light bulb powered by a battery.
2. Show how electrical currents produce magnetic, chemical and heating effects, and explain what happens.
3. Show that hot air rises.
4. Make an artificial rainbow by splitting up a beam of white light.
5. Make a pin-hole camera and understand the principles of operation, e.g. size of hole.
6. Keep simple weather records over a month, e.g. rainfall, temperature, cloud cover, wind direction.
7. Make a simple compass and show the effects of metallic and magnetic materials upon it.
8. Make a simple periscope.
9. Show how to recover dissolved substances from a water solution.
10. Recognise three different constellations.
11. Make a model to show how the Earth orbits the Sun.

Part B - The Living World

1. Make some yoghurt and find out how living creatures are involved in the process.
2. Grow cress (or a similar plant) and investigate what happens when light and water are excluded from it.
3. Use a net and jar to find out how many different creatures live in the water and mud at the edge of a pond.
4. Set up a wormery or ant colony and record their activity over a few weeks.
5. Grow a bean or pea. When the root and shoot are visible investigate what happens when the seed is turned upside down and left to continue growing.
6. Collect seeds from various plants and discover how these are protected and dispersed.
7. Grow or make crystals or make crystal shapes from paper.
8. Investigate what happens to their pulse rate before during and after exercise.

Other experiments of a comparable standard are acceptable if agreed with a Leader beforehand. A Cub Scout who has qualified for any of the Bronze Awards of the BA Young Investigator Club qualifies automatically for this Badge.

DANCING RAISINS

Equipment

A jar of clear fizzy drink, e.g. 7-UP or soda water (freshly-opened: must be very fizzy)

A handful of raisins

Preparation

None

Background Information

The raisins are heavier than the drink so they sink to the bottom. There they collect bubbles of carbon dioxide and now the 'raisins + bubbles' are lighter than the drink so they rise to the surface. When they reach the surface the gas bubbles burst and the raisins sink; then they collect more gas bubbles etc. This will continue as long as the drink is quite fizzy.

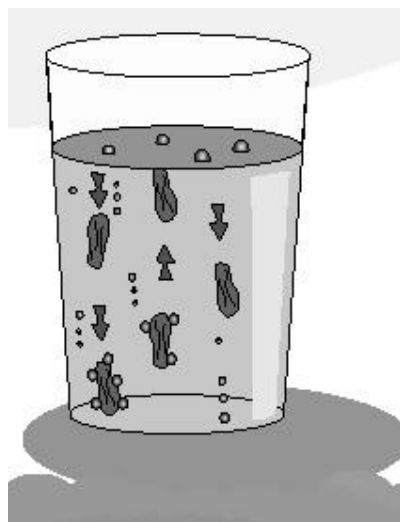
Activity

Drop a handful of raisins into a jar of freshly opened fizzy drink.

After a while the raisins will rise to the surface, sink, rise again, etc. thus dancing up and down.

Safety

Care with liquids



WATER FOUNTAIN

Equipment

A small plastic 500 ml bottle with a screw top lid

Awl

A large jug or deep bowl or bucket of hot water (A thermos flask is useful here)

A strong plastic drinking straw

Blu-tack or plasticine

Drawing pin

Food colouring, dropper

Sink, newspaper, plastic sheet

Preparation

Using the awl, make a hole in the lid of the bottle, just the right size to fit the drinking straw. This is a wet activity so do it in a waterproof area e.g. at a sink, over newspapers or on a plastic sheet. This is best done as a demonstration by an adult.

Background Information

Air expands as it is heated. When the bottle is put into hot water the air inside the bottle expands and pushes the coloured water into the straw and out the top like a fountain.

Activity

Put some water in the bottle until it is about half full.

Add a few drops of food colouring.

Screw the lid very tight on the bottle and push the straw through the hole in the lid until it is below the surface of the water.

Press some Blu-tack or plasticine round the straw to seal the hole in the lid.

Put a small piece of Blu-tack or plasticine in the end of the straw and plug it with the drawing pin.

Put the bottle carefully into the jug/deep bowl of hot water and remove the plug (pin and Blu-tack).

Safety

Make sure an adult supervises

Care with hot water.

Be careful that no faces are directly above the 'fountain'. This is a wet activity – to be done at a sink, over newspaper or on a plastic sheet.

