

## Science experiments

### **Candle in a saucer of water**

Have a candle ready, standing in a saucer of water. Light the candle and place a glass over the top of it. Water will rise in the turned up glass. Why? As the oxygen in the glass is burned the air pressure falls. The air pressure outside the glass then pushes the water into the glass until the pressure inside and outside is equalised.

### **Balloon and string**

Thread a drinking straw onto a length of string and tie the string between two chairs. Blow up a balloon and tape it to the straw. Let the balloon go. It travels across the string with the straw. Why? The air in the balloon is at a greater pressure than the air outside. When you open the neck of the balloon the differential in pressure forces air out of the balloon. As it comes out the increased pressure at the back of the balloon pushes it forward.

### **Charmed threads**

You will need a balloon, a ball of wool and short lengths of silk or nylon threads. Do this experiment on a dry day. Blow up a balloon. Create an electrical charge by briskly rubbing the balloon with the wool. Slowly move the charged surface of the balloon towards the silk and nylon threads and watch them wiggle and jump. Why does this happen? The surface of the balloon has acquired a negative charge. The balloon has received extra electrons from the wool.

### **Five cent coins in a full glass of water**

Carefully place the coins in the glass one at a time and see how many will fit before the water spills out. Get the Joeys to guess the number beforehand.

### **Matches in water**

Place four matches in a bowl of water in a star pattern. Get a drinking straw with some soap on the end and place it in the middle of the matches, touching the water. The matches will spread very quickly. Why? Surface tension is broken by the soap.

### **Floating objects**

Find out what will float or sink in a large bowl of water. Try a big rock, then a little one. Next use a potato. What happens if you put holes in the potato? Try a small log and a match, and then fasten a nail to the match. What about a golf ball and a ping pong ball? Lastly, try some plasticine in a ball. It will sink. See if the Joeys can think of something to do to the plasticine to make it float. Make a boat, then put holes in it. What happens?

**Goop:** Put  $\frac{1}{4}$  cup water into each Ziploc bag and add a few drops of food colouring. Seal bag and shake to mix. Add a little corn starch to each bag and seal to mix. Add more corn starch as needed so that it is runny but hard when squeezed. Let the Joeys put some in their hand and see what they can do. Leader explains that corn starch and water mix to make goop that is runny and hard at the same time.

**Rainbow Milk:** Fill container  $\frac{2}{3}$  full with milk. Drop one drop of food colour in each corner of the tray. Using the medicine dropper, add a drop of dish soap to each drop of food colouring. Watch the milk turn rainbow colours. Leader explains that the food colouring allows us to see the action.

**Slime:** 1 part PVA 1 part water Add bit by bit solution from 200ml water with 1 teaspoon Borax.

**Water Bugs:** Fill jar  $\frac{2}{3}$  with soft drink. Add raisins and watch them "dance" Leader explains how the bubbles get lifted up by the bubbles, then the bubbles burst at the top and the raisins fall again.

**Blue Ooze:** Fill Jar  $\frac{2}{3}$  full of water. Add blue food colouring. Put the lid on and shake so colour is evenly distributed. Add oil until jar is almost full. Secure the lid on tightly and shake to try to mix the oil and water. Watch as the layers always separate out no matter how hard they shake. Explain that water and oil do not mix. The oil always floats to the top because it is lighter. Add a few drops of dish washing liquid. Replace the lid and shake again. This time they oil and water do mix as the soap allows the two layers to mix. This is how we do the dishes – water alone will not remove oil or fat from the dishes.

**Alka Seltzer Rockets:** Put on those safety goggles and head outside as the film canister really flies. Break the antacid tablet in half. Remove the lid from the film canister and put a teaspoon (5 ml) of water into the canister.

Do the next 2 steps quickly. Drop the tablet half into the canister and snap the cap onto the canister (make sure that it snaps on tightly.) Quickly put the canister on the ground CAP SIDE DOWN and STEP BACK at least 2 meters. About 10 seconds later, you will hear a POP! and the film canister will launch into the air! **Caution:** If it does not launch, wait at least 30 second before examining the canister. Usually the cap is not on tight enough and the build up of gas leaked out.

Bubble Cups: Joeys outside to blow bubbles using a polystyrene cup, chux square over the top help with elastic band, hole in the bottom. Joeys dip chux in bubble blowing mix and blow through hole.

Sherbet: Joeys mix 2 t citric acid, 1t bi carb and 6t icing sugar in zip lock bags. Eat with a musk stick.

Fizz Inflator: Carefully pour ½ cup vinegar into the bottle. Loosen up the balloon by stretching it a few times and then use the funnel to fill it a bit more than half way with baking soda. Now carefully put the neck of the balloon all the way over the neck of the bottle without letting any baking soda into the bottle. Lift the balloon up so that the baking soda falls from the balloon into the bottle and mixes with the vinegar. Watch the fizz-inflator at work!

The Exploding Lunch Bag: Go outside. Put 1/4 cup of pretty warm water into a Ziploc bag. Add 1/2 cup of vinegar to the water in the bag. Put 3 teaspoons of baking soda into the middle of the tissue. Wrap the baking soda up in the tissue by folding the tissue around it. You will have to work fast now – partially zip the bag closed but leave enough space to add the baking soda packet. Put the tissue with the baking soda into the bag and quickly zip the bag completely closed. Put the bag on the ground (outside) and step back. The bag will start to expand, and expand, and if all goes well...POP!

## **BLOOD AND GUTS**

Base 1: Hearts: Look at heart from butcher

Look under tongue at arteries(RED) and veins(BLUE) using mirror.

Tennis ball squeeze- similar to the force needed to squeeze blood out of the heart. (70x/minute)

Stethoscope to listen to heart.

Base 2: Bones: X rays of hand, foot, shoulder, skull, spine

Look at bones from lamb with joint.

Toe touching against wall. Stand with back against the wall. (put a pillow or cushion in front). Bend down to touch toes.

Base 3: Senses: Look at pupils with torch

Lines and shapes on sheet

Coathanger ears

Smell containers