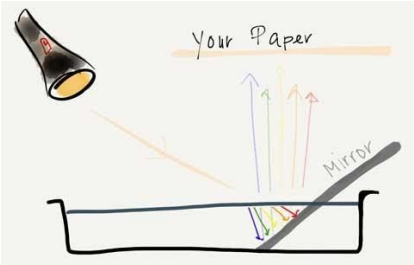
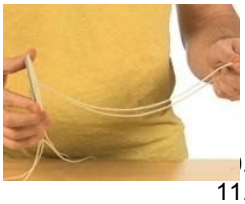
Rainbow Autumn Training 2014
Making science come alive in the Rainbow programme
Experiment notes

LOOK

Activity	Science
Sound **Blow out a tea light using sound**  Cut the bottom end (base) from the plastic bottle. Cut a piece from the plastic bag to cover the bottom of the bottle. Stretch and fit the piece of plastic tightly over the end of the bottle. Place the elastic band over the plastic bag to secure it. Light the tea-light candle. Point the top end of the bottle to face the tea-light candle, about 2.5cm (1 in.) away from the candle. Tap the piece of plastic bag with your fingertips.	Sound is invisible. You can see and feel the way it makes the air vibrate as it travels. When the piece of plastic is tapped, tiny particles in the air beside it vibrate. These vibrations make the particles beside them vibrate as well. The vibration travels through the bottle and the flame is blown out.
Activity	Science
Rainbow colours **Make a Rainbow**  Fill the shallow pan about half way full with water. Place the mirror in the water at an angle. Shine the light into the water where the mirror is under water (or, using the sunlight) Hold the white paper above the mirror; adjust the angle until you see the rainbow appear!	When you shine the white light of the torch (or the white light coming from the sun) into the water, the light bends. As white light isn't just one colour (it's a combination of all the visible colours) when it bends, all of its components (red, orange, yellow, green, blue, and indigo light) also bend. Each of these colours bends at a different angle because each colour travels at a different speed inside water or glass. When you reflect the light back out of the water using the mirror, you're reflecting the white light that has been broken up (from refraction) into the full rainbow of colours, and a rainbow appears!
Activity	Science
Rainbow colours **Make a Rainbow Spinner** Use a ruler and pencil to divide a circle of card/paper into 6 even sections. Colour each of the 6 sections a different colour using your felt pens/Sharpies. Glue to a similar sized piece of cardboard Poke two small holes through the wheel, near the centre of the circle. Cut a 36" piece of string. Feed the string through both holes and tie the ends together.	Where do the colours go? Well… they're all there, they've just mixed together. The rapid spinning of the Colour Wheel causes the colours to "blend" into each other. This blending creates the illusion that they're actually white!

Wind the string by moving the wheel in a motion similar to a skipping rope.
Pull the string tight to get the wheel spinning.


11.
2. As the wheel spins, what do you notice about the colours?

How does that happen?

Light is all of the colours in one: white. When the wheel spins up to the right speed, the colours blend into a near-recreation of white light. This "white" wheel is created because your eyes cannot keep up with the rapid rate at which the individual colours are spinning!

Make a Colour Mixer

Using technique above but colour as below

Trace 3 smaller circles on the cardboard disc. Try to make each of the circles equal in width.
Draw a single line through the middle of the disc that spans the entire diameter of the disc. Each of the three circles in the disc should now be divided in half.
Colour half of the smallest circle blue and the other half yellow.
Colour the middle circle half red and half yellow.
Colour the largest circle half blue and half red.



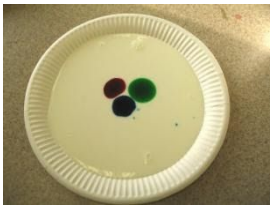
Make a Colour Wheel
Each Rainbow has a plate with a blob of red, blue and yellow paint around the edge and a blob of white in the centre.
Get girls to mix some red & blue, some blue & yellow and some yellow & red to create a circle round the plate of red, purple, blue, green, yellow, orange.
Then mix some of the six colours with the white to make a paler circle towards the centre of the plate.

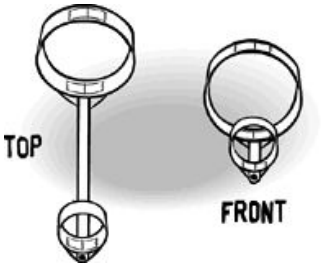
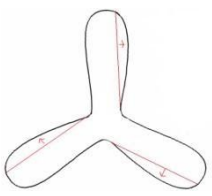
The colours on the Colour Mixer are the three primary colours: red, blue, and yellow.
When you combine two primary colours you get the secondary colours: green, purple, and orange.

Obviously, the individual colours on the wheel are not mixing. The colour mixing that happens is due to the speed at which the wheel is spinning as the string twists it. The colours are spinning at such a rate that your brain is unable to process them as the individual colours that are on the wheel. Instead, your brain takes a shortcut and creates the secondary colours.

Mixing primary colours of red, blue, and yellow.
to get the secondary colours: green, purple, and orange and looking at how white makes colour paler.

Activity	Science
Colour Changing Milk Pour enough milk onto a dinner plate to completely cover the bottom to the depth of about 1/4 inch. Allow the milk to settle. Add one drop of each of the chosen colours of food colouring (red, yellow, blue, and green) to the milk. Keep the drops close together in the centre of the plate of milk. Touch the tip of the cotton bud in the centre of the milk. It's important not to stir the mix. Did anything happen?	Milk is mostly water but it also contains vitamins, minerals, proteins, and tiny droplets of fat suspended in solution. Fats and proteins are sensitive to changes in the surrounding solution (the milk). The secret of the bursting colours is the chemistry of that tiny drop of washing up liquid which weakens the chemical bonds that hold the proteins and fats in solution. The molecules of fat bend, roll, twist, and contort in all directions as the soap molecules race

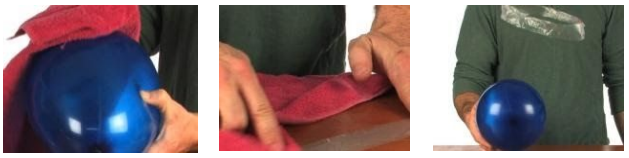
Now place a drop of washing up liquid on the other end of the cotton bud. Place the soapy end of the cotton bud back in the middle of the milk and hold it there for 10 to 15 seconds. Look at that burst of Add another drop of soap to the tip of the cotton swab and try it again. Experiment with placing the cotton swab at different places in the milk. Notice that the colours in the milk continue to move even when the cotton swab is removed. What makes the food colouring in the milk move?  	around to join up with the fat molecules. During all of this fat molecule gymnastics, the food colouring molecules are bumped and shoved everywhere, providing an easy way to observe all the invisible activity. As the soap becomes evenly mixed with the milk, the action slows down and eventually stops. Try adding another drop of soap to see if there's any more movement. If so, you discovered there are still more fat molecules that haven't found a partner at the big colour dance. Colours also explode because milk is mostly water and it has surface tension much like water. Adding soap destroys surface tension by destroying bonds between water molecules. This causes colour to move and then move some more.
Activity	Science
Air **Let's look at air** Push an empty bottle under water. As water rushes in the bubbles of air rush out. Screw a paper tissue into a ball and out it into the bottom of a glass. Turn the glass upside down and quickly place it under the water in a bowl. Have you kept the tissue dry? **Hot Air** Hold a piece of tissue paper above a radiator Make a **spinning snake** and hang up above a radiator **Power of Air Pressure** Lay a ruler on a table so 1/3 of it lies over the edge. Spread a large piece of paper over the ruler. Now hit the ruler and try to make the paper fly into the air. Stand on a chair and drop a flat piece and a crumpled piece of paper. Do they reach the ground together as they weigh the same?	We breathe in air every day and the oxygen in it keeps us alive but most of the time we hardly notice it. We can see the air bubbles escaping We can see the air in the glass that is stopping the water getting in and keeping the tissue dry Warm air is lighter than cold air so air rises as it get warm. This causes currents of air to move inside and outside. So the tissue will move upwards and the snake will spin Air is all around us and in fact is pressing on us (1Kg air on every cm of skin- however we do not notice it as we are used to it Because the sheet of paper has a large surface area there is a lot of air pressing down on it and this is enough to stop the paper and the ruler from moving Not to do with weight. The flat paper has a bigger surface area so more air presses up on it and slows it down.
Activity	Science
Fly Through The Air Investigate streamlining by * throwing a flat piece of paper * throwing a piece of paper squashed into a ball * throwing a paper dart **Paper airplanes** Make a paper dart/aeroplane (as instructions) or design your own	Paper darts have a smooth, slim, streamlined shape to help them move rapidly. Air can flow easily over their bodywork and does not hold them back. When the 'seed', air pushes up against the blades, bending them up just a little. When air pushes upward

How far will it fly? Try curving up the wings, adding flaps at the back of the wings and weighting the nose with a paperclip. **Make a sycamore seed** Cut out shape as shown. Lift up two pieces marked with an asterix and attach a paper clip.  Throw into the air. Watch it spin to the ground. **Make a Hoopster** Make a small and large circle (2cm width) from card/stiff paper. Attach to either end of a strong non-bendy straw. Hold the hoopster in the middle of the straw with the small hoop in front and throw it like a spear.  Try adding a paper clip at the bottom of the small hoop. Try different shapes (triangle, square) and different straw lengths **Parachutes** Cut out a large square from your plastic bag or material. Attach 4 pieces of string of the same length to each corner. Tie the pieces of string to the object you are using as a weight. Use a chair or find a high spot to drop your parachute and test how well it worked, remember that you want it to drop as slow as possible. Try making an octagon shape and add 8 strings Try cutting a small hole in the middle of the parachute to allow air to slowly pass through it rather than spilling out over one side, this should help the parachute fall straighter.	on the slanted blade, some of that thrust becomes a sideways, or horizontal, push.Each blade gets the same push, but in opposite directions. The two opposing thrusts work together to cause the toy to spin. As a parachute falls (gravity pulls it down) air is trapped inside the 'umbrella' part. The air is squashed (compressed) so it has a greater pushing power than the air around. It presses up from under the parachute and pushes it upwards. The push is not strong enough to stop the parachute falling but it does slow it down.
Activity	Science
Boomerang The easiest type of boomerang to make and throw for kids is the three-arm style. It can be made of light cardboard such as poster board, a cereal box, or heavy card.  Carefully cut out your boomerang from the cardboard	This is too complicated for me and Rainbows - Returning boomerangs work by a combination of aerodynamic and gyroscopic effects. Our boomerang is essentially a rotating wing with three aerofoil-shaped blades

and trim away any rough edges. Fold the edges down where the red lines are on the template. This forms the airfoils. Only bend them down slightly; otherwise, your boomerang won't fly properly. Decorate your boomerang with the stickers, paint, or markers. Don't glue on heavy decorations that may weigh it down. Give your boomerang a test flight. You throw a boomerang similar to how you throw a frisbee. Grasp the boomerang by one of the arms on the side that doesn't have the airfoils. Twist your wrist towards your body then flick it out, flinging the boomerang. It may not come back to you on its first flight. You may need to bend the three arms down slightly and then try again. If it still doesn't work, try bending them up instead. Everyone throws a little differently, so what works for one person may not for another.	

LEARN

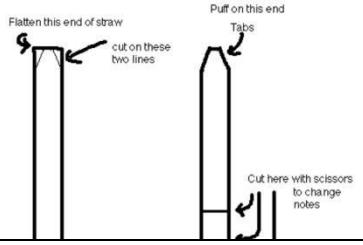
Activity	Science
Human Body - **Locate organs inside the body**. In small groups draw around one Rainbow on wall/lining paper. Then get Rainbows to draw where they think various parts are - brain, lungs, heart, stomach, intestines, liver, kidneys	Use bodies to start a chat about what each part does: Brain -Is protected by a hard bony case (skull) and controls the whole body. It stores masses of information and helps you think & learn Lungs - These help you breathe. They are two large spongy bags inside the chest. They get bigger to take in air (oxygen) and shrink to let it (carbon dioxide) out. Heart -is a big muscle about the size of your fist which pumps (squeezes hard to push) blood around your body. It beats more than 100,000 times a day. Stomach -is an elastic storage sack which churns up food you eat into a sticky, slushy mush. It can make you feel hungry or full up. Intestines -break down food and take out the goodness for your body before push the food waste along and out of your body. Liver - is like a chemical factory as it helps clean your blood and makes bile to help break down your food Kidneys - help keep the blood clean as things that the body doesn't need are filtered out by the kidneys
Activity	Science
Static electricity experiments (work best on a dry day) **Using balloons** 2 inflated balloons with string attached Fabric Your hair Aluminium can	Static electricity is produced when some materials are rubbed together. Static electricity is the result of an imbalance between negative and positive charges in an object. When you rub the balloon against your hair or the fabric you are adding surplus electrons so they become

Plastic comb Tissue paper (1) Rub the 2 balloons one by one against the fabric, then try moving the balloons together, do they want to or are they unattracted to each other? (2) Rub balloon against your jumper. Now hold it against your jumper. Is it stuck on you? (3) Rub a balloon back and forth on your hair then slowly it pull it away, ask someone nearby what they can see or if there's nobody else around try looking in a mirror. (4) Put the aluminium can on its side on a table, after rubbing the balloon on your hair again hold the balloon close to the can and watch as it rolls towards it, slowly move the balloon away from the can and it will follow. (5) Cut up some small pieces of tissue paper. Charge up the balloon/comb by rubbing it against a jumper/sweater. Hold the balloon/comb over the small pieces of tissue paper. Watch them rise Even more impressive is (6)**The Flying Bag** Use a pair of scissors to cut a strip from the open end of the produce bag. Once the strip is cut, you should have a plastic band or ring. Blow up a balloon to its full size and tie off the end. Rub the cotton towel over the surface of the balloon for 30-45 seconds. Flatten the plastic band on a hard surface and gently rub the towel on the band for 30-45 seconds. Hold the plastic band about one foot over the balloon and release it.... the plastic band is levitating! (7) **Bending water** Rub the plastic comb/balloon against your jumper Turn the tap on so that it has a slow, steady stream of water. Place the comb/balloon close to the water (don't let the comb/balloon touch the water). (8) Make you own spark Show the girls this one Press a lump of plasticine onto a metal tray to make a handle. Hold the plasticine and rub the tray round and round on top of a thick plastic bag. Hold something metal near the corner of the tray. Watch a spark jump away!	negatively charged, they have taken some of the electrons from the hair/fabric and left them positively charged (with more protons). In the first experiment both the balloons were negatively charged after rubbing them against the fabric, because of this they were unattracted to each other They say opposites attract and that is certainly the case in these experiments. The balloon becomes a negative charge and the jumper becomes a positive charge Your positively charged hair is attracted to the negatively charged balloon and starts to rise up to meet it. This is similar to the aluminium can which is drawn to the negatively charged balloon as the area near it becomes positively charged, once again opposites attract. When you bring a charged balloon/comb near pieces of tissue paper, the paper is attracted to the negative charge on the balloon/comb. Rubbing the towel against the balloon and the plastic band transfers a negative charge to both objects. The band floats above the balloon because the like charges repel one another.  The water bends toward the comb/balloon because the comb has been charged and pulls on the water; which is uncharged
Activity	Science
Water **Try water divining/dowsing** Make some diving rods from wire coat hangers. Hold both rods out in front of you with metal dipping slight away from you. Walk across an open space. The rods should cross and shake when you are above water hidden underground.	Not sure there is any!

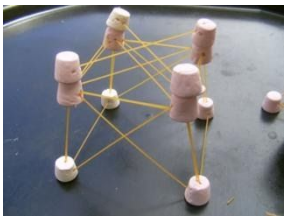
Activity	Science
Water **Make a magic flower** Draw and colour in with crayons a flower with petals on paper. Cut out the flower and fold the petals in one by one. Put the flower (petal side up) in water and watch.     	Paper is made up of lots of tiny fibres. By folding the paper you squash these fibres on the inside of the fold. When the paper comes into contact with the water capillary action draws water into the tinny spaces in the paper. The fibres get wet and expand and start to push outwards. This pushing force will cause the paper flower to slowly unfold.
Activity	Science
Gravity and Balance **Investigate falling** Choose objects that are same size but different weight. **Make a balancing parrot or clown** Colour/decorate and cut out your parrot or clown. Add coin(s). Will then balance on claw or nose.	Use die and sugar cube, full and empty tin, sponge ball and tennis ball They will land together. Gravity pulls them down to earth at same speed (as as same area the resistance is the same) All objects have a point where they are held in balance by the force of gravity. The balancing point is called the centre of gravity
Activity	Science
Penny Cleaning  Make up containers of 'cleaning products' including water; salt&vinegar and lemon juice Put dull penny into each container and count to 20. Take out the pennies and rinse them out in some water. Admire their shininess!	Everything around you is made up of tiny particles called atoms. Some things are made up of just one kind of atom. The copper of a penny, for example, is made up of copper atoms. But sometimes atoms of different kinds join to make molecules. Copper atoms can combine with oxygen atoms from the air to make a molecule called copper oxide. The pennies looked dull and dirty because they were covered with copper oxide. Copper oxide dissolves in a mixture of weak acid. Salt & vinegar and lemon juice are acids but water is not.
Activity	Science
Outrageous ooze Put newspaper down on your table top. Put 1 cup of cornflour (or custard powder) into the bowl. You can colour this if you like. Add ½ cup of	Your Ooze is made up of tiny, solid particles of cornflour (cornstarch) suspended in water. Chemists call this type of mixture a *colloid*.

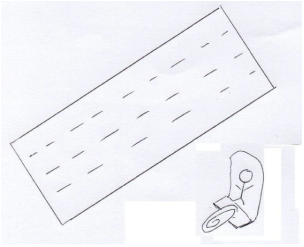
water slowly, mixing the cornflour and water with your fingers until all the powder is wet. Keep adding water until the Ooze feels like a liquid when you're mixing it slowly. Then try tapping on the surface with your finger or a spoon. When Ooze is just right, it won't splash--it will feel solid. If you Ooze is too powdery, add a little more water. If it's too wet, add more cornflour. Play around with your Ooze!  • Pick up a handful and squeeze it. Stop squeezing and it will drip through your fingers. • Rest your fingers on the surface of the Ooze. Let them sink down to the bottom of the bowl. Then try to pull them out fast. What happens? • Take a blob and roll it between your hands to make a ball. Then stop rolling. The Ooze will trickle away between your fingers. • Put a small plastic toy on the surface. Does it stay there or does it sink?	This colloid behaves strangely. When you bang on it with a spoon or quickly squeeze a handful of Ooze, it freezes in place, acting like a solid. The harder you push, the thicker the Ooze becomes. But when you open your hand and let your Ooze ooze, it drips like a liquid. Try to stir the Ooze quickly with a finger, and it will resist your movement. Stir it slowly, and it will flow around your finger easily. Most liquids don't act like this. Ooze is *non-Newtonian fluid* as is ketchup, blood and quicksand. Sometimes they act as a liquid, sometimes as a solid as its viscosity varies according to the applied stress

LAUGH

Activity	Science
Noise **Make a water whistle** Cut **partially** through the straw 1/3 of the way down the straw. Bend the straw into a right angle at the cut. Fill a cup or glass 3/4 full with water. Slide the longer section of straw into the water. Keeping the straw at a 90 degree angle, place your lips on the shorter end of the straw and blow with a light, constant breath. What do you hear? Once you've got your Water Whistle making a constant, steady sound, trying raising or lowering the straw within the water. What happens to the pitch of your Water Whistle when you do this?     Variations are: Make a tweeter 	The Water Whistle actual works through the vibration of air itself and, more specifically, the column of air inside the straw. The longer segment of straw that you have partially submerged in water is full of air and water (the amount of each depends on how deep you have your straw in the water). When you blow the air across the top of of the longer straw segment, you are causing the column of air to vibrate. This vibrating column of air creates the whistling sound you hear. The pitch of the whistling is dependent on how much air you allow to be inside the straw. The more air that is inside of the straw, the lower the pitch of the whistle. Less air is going to create a higher pitch. As above the air in the straw produces the sound. The tabs on the straw act like the reeds on an oboe to make the air column vibrate. The longer the straw the lower the pitch of the note.

Make a straw oboe	
Activity	Science
Noise **Make a drum**  Use a box or any hollow contai Make your drum skin from a piece of plastic bag. Stretch it over container and attach. Try using different materials for the drum skin - balloons, fabric Add some rice on the top of the drum. What happens to it when you strike the drum? Make a drumstick - use different materials. What sound do you like best?	Instruments that make a sound when they are hit are called percussion instrument. The tighter the drum skin the faster the vibrations and the higher the note made. The rice dances because of the vibrations
Activity	Science
Noise **Make pan pipes** Attach straws of varying lengths to a piece of card of lollystick  	You can create a musical note by blowing across the top of each straw as the vibrating air gives out a sound. You should be able to hear different notes. The shorter the straw the small amount of air vibrates quickly and makes a high note. More air vibrates more slowly and creates a lower note.
Activity	Science
Mirrors Have fun looking in the mirror - perhaps drawing what you see. Do some mirror miming. Investigate different types of mirrors using mirror cards to bend the mirror * plane - flat * converging/concave - bows inwards at centre * diverging/convex - bulges outwards at centre * double reflection	Mirrors reflect back an image. In the daytime, light reflects off your body in all directions. That's why you can see yourself and other people can see you. Stand in front of a mirror and some of this light from your body will stream in straight lines toward it. Rays of light shoot through the glass and hit the silver coating behind it. The silver atoms behind the glass absorb the photons of incoming light energy and become excited. But that makes them unstable, so they try to become stable again by getting rid of the extra energy—and they do that by giving off some more photons. The photons that come out of the mirror are pretty much the same as the ones that go into it.

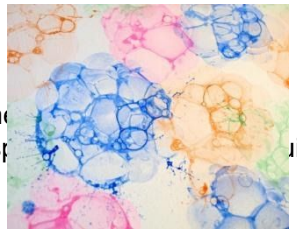
Try some mirror drawing or follow a mirror maze Instructions: Draw a simple shape like a star or heart. Place the mirror upright behind your drawing so that you can see it in the mirror. Try drawing over your shape whilst looking into the mirror (keeping your eyes on the mirror all the time and not your paper).When looking in the mirror, the top of your picture becomes the bottom. This makes it very difficult to copy your drawing (especially when the lines change direction).	If the surface of a mirror is perfectly flat (what's known as a **plane mirror**), what you see in the glass is a reasonable approximation to what's really there—but with one crucial difference: the image *appears* to be shifted from left to right (we say it's mirrored, but scientists say it's "laterally inverted"). If the mirror bows inward at the centre (known as a **converging mirror** or **concave mirror**), light rays will appear to come from in front of the mirror, the reflection will be nearer to you, and reflections will appear bigger than they really are. That's why a converging mirror magnifies. In a mirror that bulges outward at the centre (a **diverging mirror** or **convex mirror**), the opposite happens. Light rays seem to come from behind the mirror and reflections will appear smaller and further away than they would in a plane mirror (this is what happens with the back of a spoon). Sometimes we see ourselves upside down (in the bowl of a spoon) This is because the bowl reflections your reflection twice - effectively flipping it
Activity	Science
Construction **Spaghetti & Marshmallow tower** (or use fruit pastilles and cocktail sticks) Have some fun 	The science here (compression and tension) is a bit complicated for Rainbows but try and get them to create geometric shapes in their building - square, rectangles, triangles. Triangles (esp. those pointing down) are stronger than squares so try and get them to add trusses/supports in the squares.
Activity	Science
Construction **Concrete** Concrete is a substantial material in the construction of many buildings.  	Concrete is made up of: Aggregate (which consists of large chunks of material generally a coarse gravel or crushed rocks such as limestone, or granite, along with finer materials such as sand) and Cement which is then mixed with Water to produce a semi-liquid that workers can shape before it solidifies and hardens through a chemical process called hydration. The water reacts with the

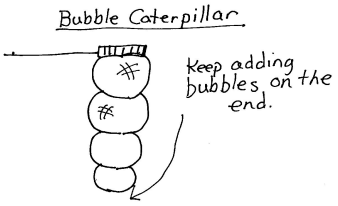
Rocky road bars represent concrete quite well! Recipe at http://www.bbc.co.uk/food/recipes/rockyroadcrunchbars_87104	cement, which bonds the other components together, creating a robust stone-like material.
Activity	Science
Construction **Keep your "train" on the tracks** Challenge the Rainbows in pairs to roll a cotton reel or half a kitchen roll tube with a piece of card fixed to each end along a set of tracks. The tracks could be two length of string or wool, or two bamboo canes. Try this as a relay race in teams to roll your "train" from one end to the other.	When building new railways or modifying existing ones, it is essential that the tracks are laid parallel so that the trains stay on them.
Activity	Science
Magnetic Racing Draw lanes on a large sheet of wallpaper and balance this between 2 tables/chairs. Make a racer and attach a paperclip.  Rainbows go underneath the paper and race their piece using a magnet to attract their paperclip racer.	Magnets are usually made of the metal iron, or another material that has lots of iron in it and they have the ability to pull things (made of iron or that contain iron) towards themselves. This invisible force is called magnetism. Magnets have invisible magnetic fields which mean they can attract other magnets (or other magnetic materials) at a distance, invisibly and through other materials (the wallpaper as well as cardboard, glass, plastic, wood & water).

LOVE

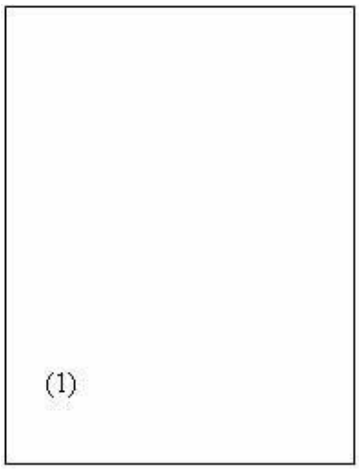
Activity	Science

Fruit & Veg - Loads of activities - what about ● Fruit & Veg Identification or Kims game ● Close Up picture identification (have a go) ● Fruit Tasting ● Make a fruit kebab or a fruit smoothie ● Play Fruit Salad or Vegetable Stew game ● Read Handa's Surprise and do some paint printing Relate to the 5-10 A Day campaign	 Talk about why we should eat fruit & veg ● Vitamin A & C ● Minerals - potassium ● Fibre ● Low in fat & calories ● Help stop diseases Then discuss the idea of eating 5 portions a day for good health Need to eat 5 different ones - think about fruit/veg by colour
Activity	Science
Experiments with fruit **Dancing Raisins** Fill a glass with soda/lemonade Add several raisins Watch them dance	Fruit experiments **Dancing Raisins** Since the surface of the raisins is rough, tiny bubbles of carbon dioxide gas are attracted to it. Since the raisins now have a greater volume, they displace more water, causing the fluid to exert a greater buoyant force. The buoyant force of the surrounding fluid is what pushes the raisins to the top. The bubbles that attach themselves to the raisins are like little life jackets that make the raisins more buoyant by increasing their volume. Once the raisins reach the top, the bubbles pop upon exposure to the air. This makes the raisins more dense, causing them to sink.
Activity	Science
Floating or Sinking Oranges Fill a bowl with water. Put the orange in the water and watch what happens. Peel the rind from the orange and try again, what happens this time?	**Floating or Sinking Oranges** The rind of an orange is full of tiny air pockets which help give it a lower density than water, making it float to the surface. Removing the rind (and all the air pockets) from the orange increases its density higher than that of water, making it sink. Density is the mass of an object relative to its volume. Objects with a lot of matter in a certain volume have a high density, while objects with a small amount of matter in the same volume have a low density.
Activity	Activity
WHAT FRUIT?	**Fruit Salad Game**

Draw a line to match the picture number to the right fruit. 1 peach 2 cherries 3 banana 4 strawberry 5 kiwi fruit 6 apple 7 orange 8 pineapple	Name 4 corners of hall - banana, orange, kiwi, strawberry Rainbows run to a corner. Leader picks a fruit card abd all those in that corner are out/have had their 5 a day Continue until only 1 Rainbow left **Vegetable Stew game** Rainbows on chairs with 1 standing in middle. Name Rainbows as vegetables - parsnips, carrots, turnips, leeks Leader calls out a vegetable and all these Rainbows change places. Rainbow in middle tries to get a seat.
Activity	Science
Human Body - We all love Eating Divide Rainbows into 6 groups called teeth, mouth & oesophagus, stomach, liver, small intestine, large intestine. Explain what each group does and get them to make up an action (biting/swallowing/churning/splahing/sucking/pushing) Act out the Passage of a Sandwich Rainbows stand in a line in group order. YL is the (choose a food) and she is passed through each group. At the end all the Rainbows shout OUT and she is pushed out of the line.	1. Teeth Bite off food 2. Mouth & Oesophagus Spit added to food which begins to digest (break down) as it moves down the tube 3. Stomach Churns up food and mixes it with stomach juice. It now looks like a thick soup 4. Liver Produces a greenish yellow bile to help break down the food 5. Small intestine This finishes digesting the food and goodness it passed through the tube wall into the blood. 6. Large intestine. Leftover food is pushed through and out when you go to the toilet
Activity	Science
Bubbles **Colour Bubble Painting**  In a cup add two tablespoons of one tablespoon of water and two tablespoons liquid. Mix the solution Put the straw into the mixture and blow bubbles until the cup overflows. Carefully lay the paper on top of the bubbles to make the prints. Repeat for different layers of colour. Let dry	Similar to the way we perceive the colours in a rainbow or an oil slick, we see the colours in a bubble through the reflection and the refraction of light waves off the inner and outer surfaces of the bubble wall.

If you do not want to blow bubbles you could use shaving foam and do some marbling. Add saving foam to a tray and level off. Add drops of food colouring or poster paint and use cocktail sticks to to make a swirly pattern. Lay sheet of card/stiff paper onto the foam and press down to transfer the pattern.	You can't colour a bubble since its wall is only a few millionths of an inch thick. A bubble reflects colour from its surroundings. The water in the bubble holds the paint and transfers it to the paper. The bubbles remain clear.
Activity	Science
Bubbles Make your own bubble mixtures. 1/2 cup of washing up liquid 5 cups water (soft water is best - if your water is very hard consider using distilled or bottled water) 2 tablespoons glycerine Have fun blowing bubbles - use different size/shape loops. **Make a bubble caterpillar** You will need bubble mix, a bubble wand and a straw.  Blow a single bubble, catch it on your wand and hold it upside down Dip your straw into the bubble mix and use it to blow a bubble underneath the previous bubble Keep adding bubbles to create a long caterpillar. **Balloons and Balls**	Why the recipe works? **Water** molecule are really tiny - there are around 1,390,000,000,000,000,000,000 molecules in a single drop of water! These water molecules are attracted to each other which causes something called surface tension, this creates a sort of skin on top of the surface of water. This is how pond skaters can sit on top of ponds and how you can balance a paper clip on top of water. We add **washing up liquid** to water to lower the surface tension. It makes the water stretchy and wibbly-wobbly so that you can blow bubbles. **Glycerine** stops bubbles from drying out so they don't pop as quickly So bubbles have a tight skin made of soap and water and are full of air. Balloons are really a bubble of air with a tight rubber skin. Balls are bubbles with strong plastic skins
Activity	Science
Make sherbert What you need: • 2 tsp citric acid crystals • 1 tsp bicarbonate of soda • 6 tsp icing sugar • Clean Mixing bowl • Spoon *You may need to play around with the ratio to get the best sherbert* How to**:** 1. Mix the citric acid crystals and bicarbonate of soda. 2. Bash the mixture to a fine powder with a spoon. 3. Mix the icing sugar with the citric acid crystals and bicarbonate of soda. Try a bit of sherbet! What does it taste like? Does it feel fizzy on your tongue?	You have just created an acid-base reaction in your mouth. When you combine an acid (in this activity the citric acid) and an alkaline (the bicarbonate soda) with saliva they mix together to create a gas in the form of lots of tiny bubbles. This is called an acid-based reaction and it's what gives sherbet its fizz. You are actually feeling the sensation of carbon dioxide bubbles on your tongue. These are the same bubbles that are in fizzy drinks. The icing sugar is needed to add sweetness as the citric acid and bicarbonate soda are quite sour.

	Don't eat too much sherbet too quickly. You could end up with a lot of carbon dioxide in your stomach, which could be uncomfortable!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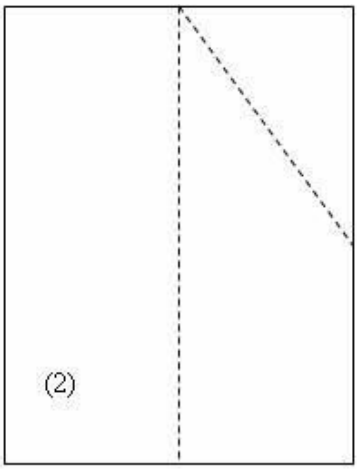
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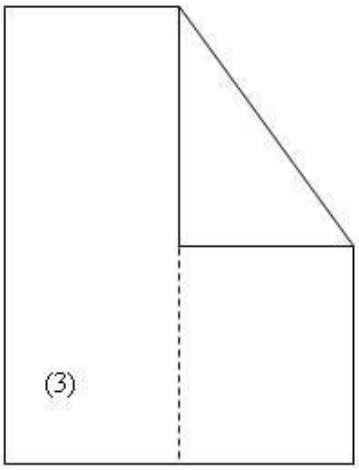
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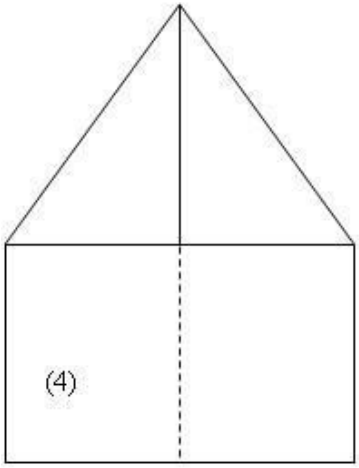
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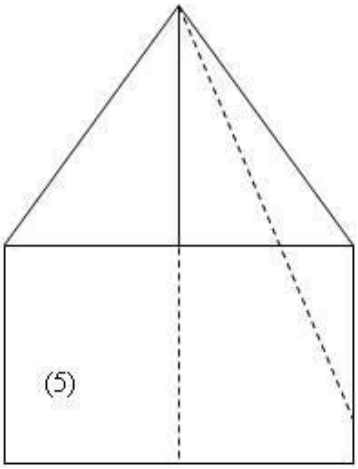
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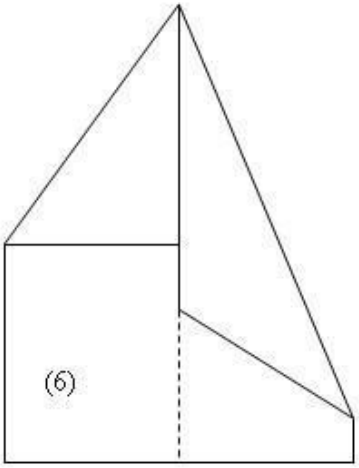
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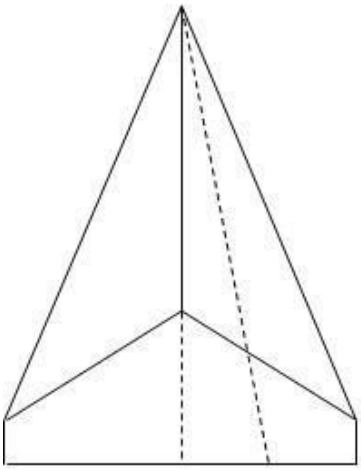
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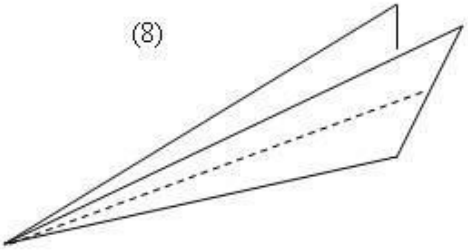
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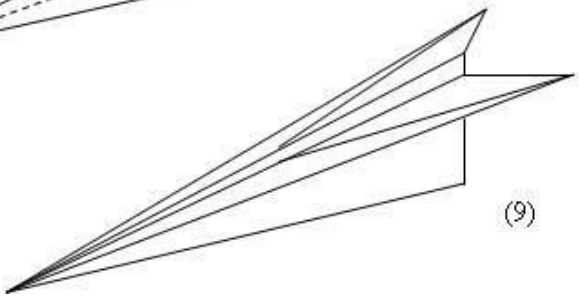
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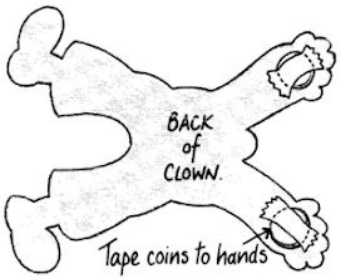
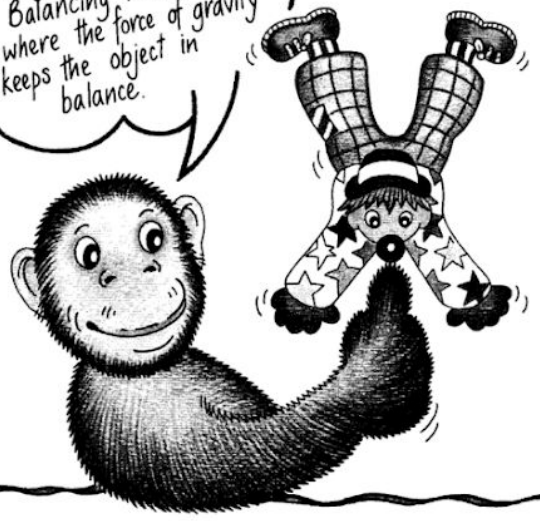
A Balancing Clown

What you need :-
Thin white cardboard.
Scissors.
Glue.
Adhesive tape
Felt tip pens or crayons.
A pencil.
2 coins of the same value.



1. Draw two clown shapes on to the cardboard and cut them out. These will be the front and back of the clown.
2. Use felt tip pens or crayons to give your clown a costume.
3. Using adhesive tape, stick one coin on to the back of each hand.
4. Glue the two halves of the clown together and leave to dry.
5. Stand the clown on its nose on the rim of a glass or on your finger and watch how it balances.

Science Fact :-
All objects have a Balancing Point. This is where the force of gravity keeps the object in balance.



SCIENCE FACTS

All objects have a BALANCING POINT. Thi GRAVITY keeps the object in balance.

The clown balances on its nose because the attached to the clown's hands keeps the BAL its nose.

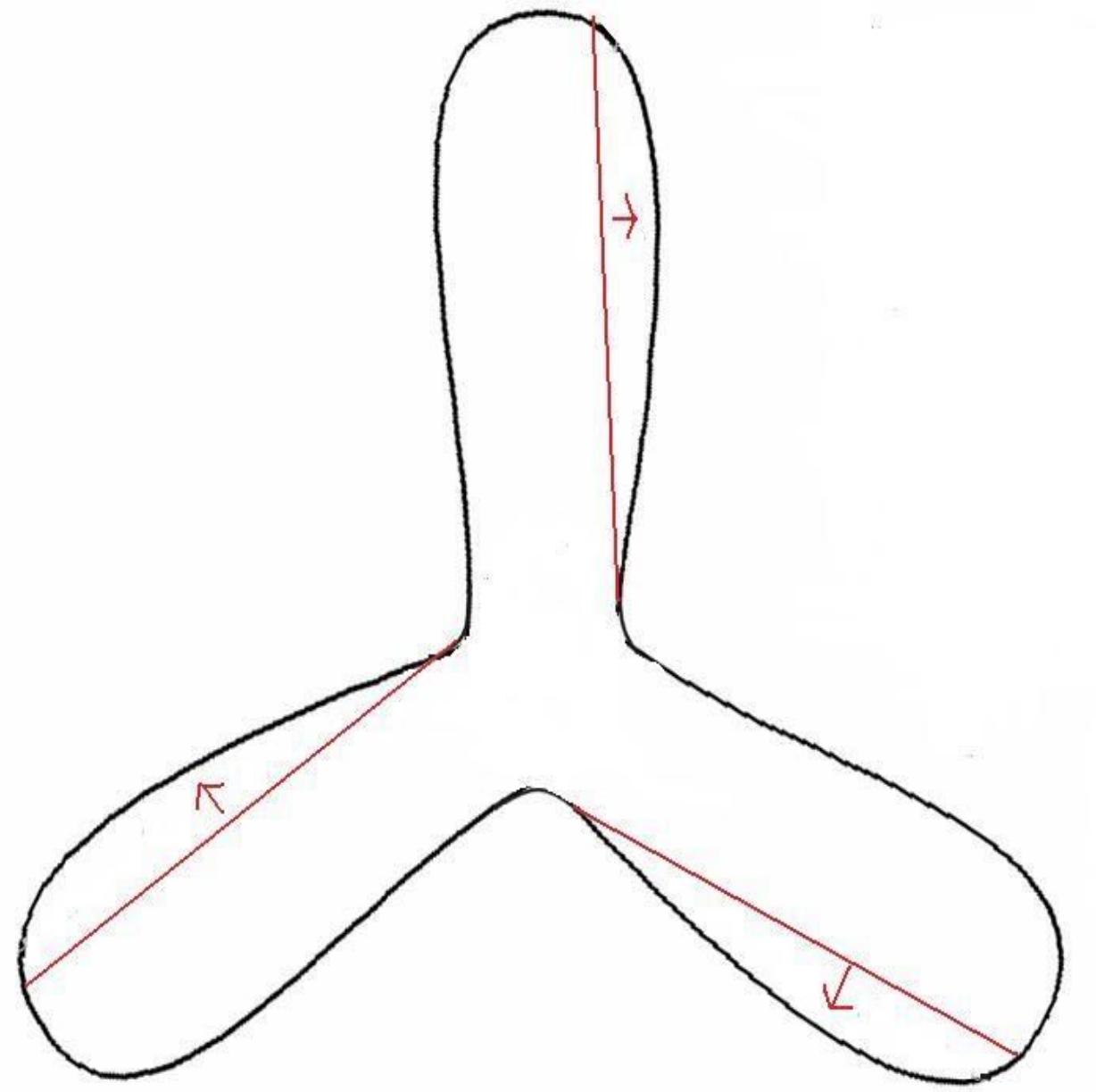
From *Crafty Ideas from Science,* Myrna Daitz

BALANCING PARROTS

1) Cut out the parrot and decorate it using bright colours - you can do both sides if you want to.

2) Attach a penny to the parrot's tail using sticky tape.

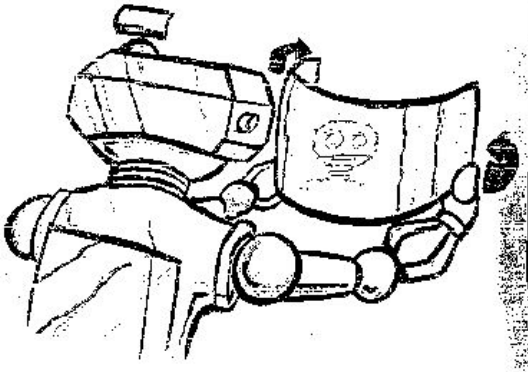
3) Try balancing it on a pencil or on the edge of a table



DISTORTED IMAGES

WHEN A MIRROR IS CURVED IN A CERTAIN DIRECTION IT CREATES A DISTORTED IMAGE OF THE OBJECT THE MIRROR IS REFLECTING. HERE ARE SOME EXAMPLES FOR YOU TO TRY USING YOUR ACTIVITY MIRROR STRIP MARKED 'DISTORTED IMAGES'

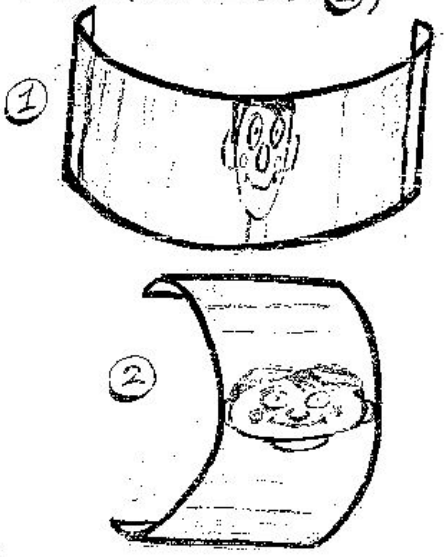
FIRST, HOLD YOUR MIRROR STRIP IN FRONT OF YOUR FACE SO YOU CAN SEE YOUR REFLECTION CLEARLY. NOW BEND THE STRIP AWAY FROM YOU



THIS ACTION SQUASHES YOUR HEAD AND MAKES IT LOOK THINNER (SEE PICTURE 1)

(YOUR HEAD WILL ALSO BECOME THINNER WHEN YOU BEND YOUR MIRROR STRIP THE OTHER WAY FOR 'HAVE YOU LOST YOUR HEAD' ON THE NEXT PAGE)

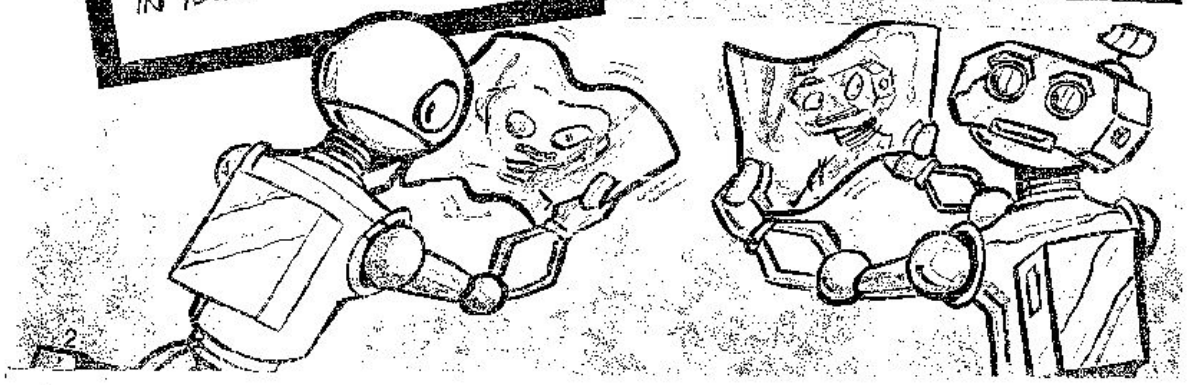
NOW TURN YOUR MIRROR STRIP UPRIGHT, REMEMBER TO KEEP YOUR STRIP BENT. THIS TIME YOUR HEAD HAS BECOME SHORTER AND FATTER (SEE PICTURE 2)



HAVE SOME FUN WITH YOUR MIRROR STRIP

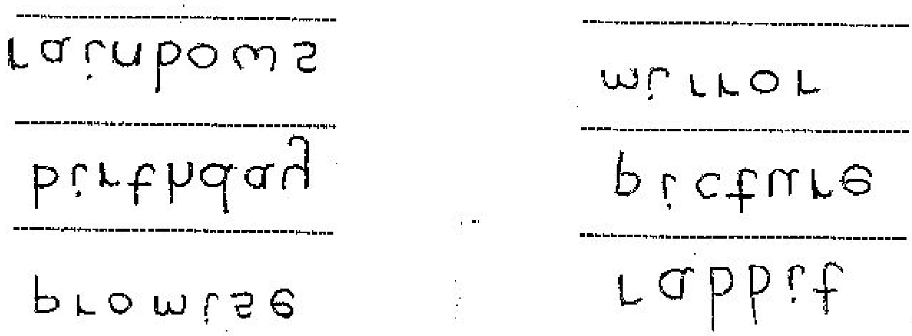
BEND IT IN ANY DIRECTION YOU LIKE AND SEE WHAT HAPPENS TO YOUR REFLECTION

TRY DISTORTING OTHER OBJECTS IN YOUR MIRROR STRIP



MIRROR WRITING

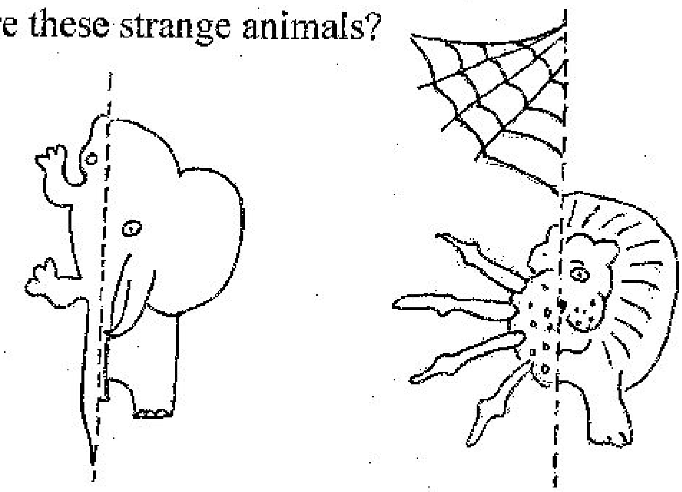
These words are written in mirror writing. What are they?



Write your name in this box.

Now copy it in mirror writing.

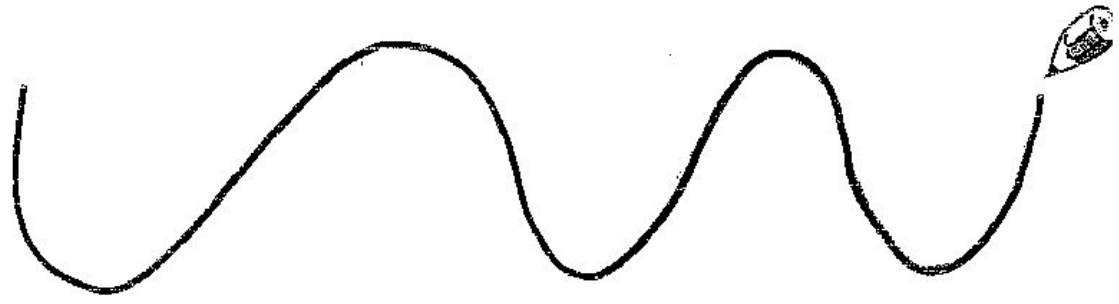
What are these strange animals?



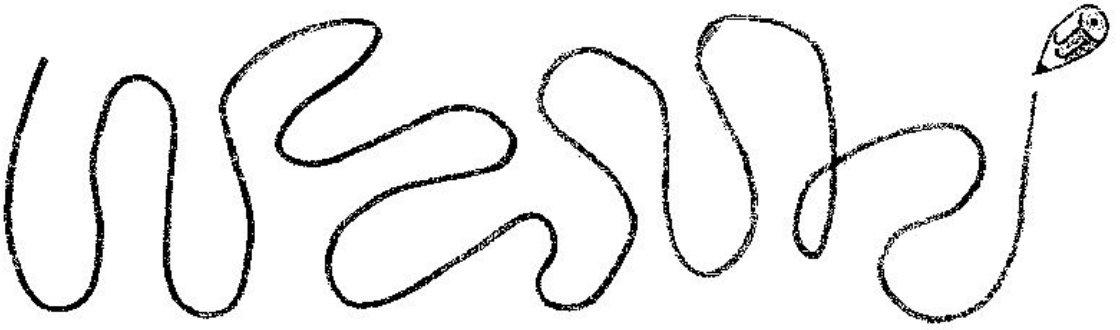
MIRROR MAZES

PLACE MIRROR EDGE ON HERE

PLACE MIRROR EDGE ON HERE



PLACE MIRROR EDGE ON HERE



PLACE MIRROR EDGE ON HERE