BRIGHTER BULBS

Age Range: Y5/Y6; age 9 – 11 years

Theme: Excellent Electricity

Objectives:

To know, find out how the brightness of a bulb can be varied.

Resources:

Bulbs, batteries and wires.

Activity Notes:

Set up a circuit up that comprises of one bulb, wires and two batteries. Provide the children with extra wires, batteries and bulbs.

The first part of the activity card encourages children to explore ways of changing the brightness of the bulb and to consider the reasons for that change.

Most children will add extra batteries to make the bulb brighter. The rest of the activity card then tries to extend their thinking so that they have to make the bulb dimmer without changing the batteries.

Key Questions:

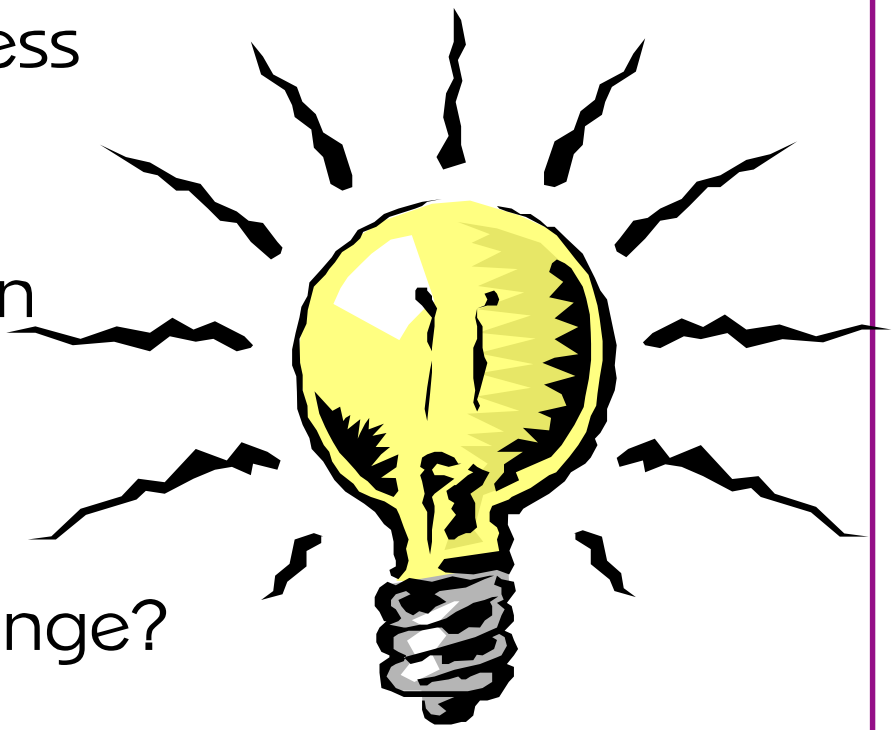
Parents may also like to try out this activity. Questions that they could ask to help the children with this activity could be: How did you make the bulb brighter/dimmer? How can you make it brighter or dimmer without changing the battery? Why do you think the bulb got brighter or dimmer?

Recording Opportunities:

Children could record their changes using circuit diagrams.

BRIGHTER BULBS

- Try to change the brightness of the bulb in this circuit.
- Use any of the materials on the table.
- How can you make the brightness of the bulb change?



- Why does it get brighter or dimmer?
- See if you can make the bulb dimmer without changing the batteries?
- What makes the brightness of the bulb change?

BRILLIANT BOATS

Age Range: KS2; age 7 – 11 years

Theme: Magic Materials

Objectives:

To find out how properties of materials affect how materials are used.

Resources:

Variety of different cards and papers; paper towels; tin foil; cellophane; acetates; sellotape.
Wax crayons, paint with small amount of PVA added.
Instructions for making a boat.
Large bowl and water for testing boats.

Activity Notes:

Children use their knowledge of different materials to select those that they think would be suitable for making a boat. They then use the instructions to make a boat and test which boat will float the best, finding out that those materials that soak up the water would not be suitable for a boat.

Asking the children how they could use the wax crayons or paint to improve their boat, could extend them to think about waterproofing. Children might need reminding that the paint will have to dry before they can test their boat, so should be encouraged not to apply it too thickly.

Some parents might like to have a go at making and testing their own boats. They could also be involved in the activity by asking questions.

Key Questions:

Why did you choose that material to make your boat?

Why don't you think that this material will be as good?

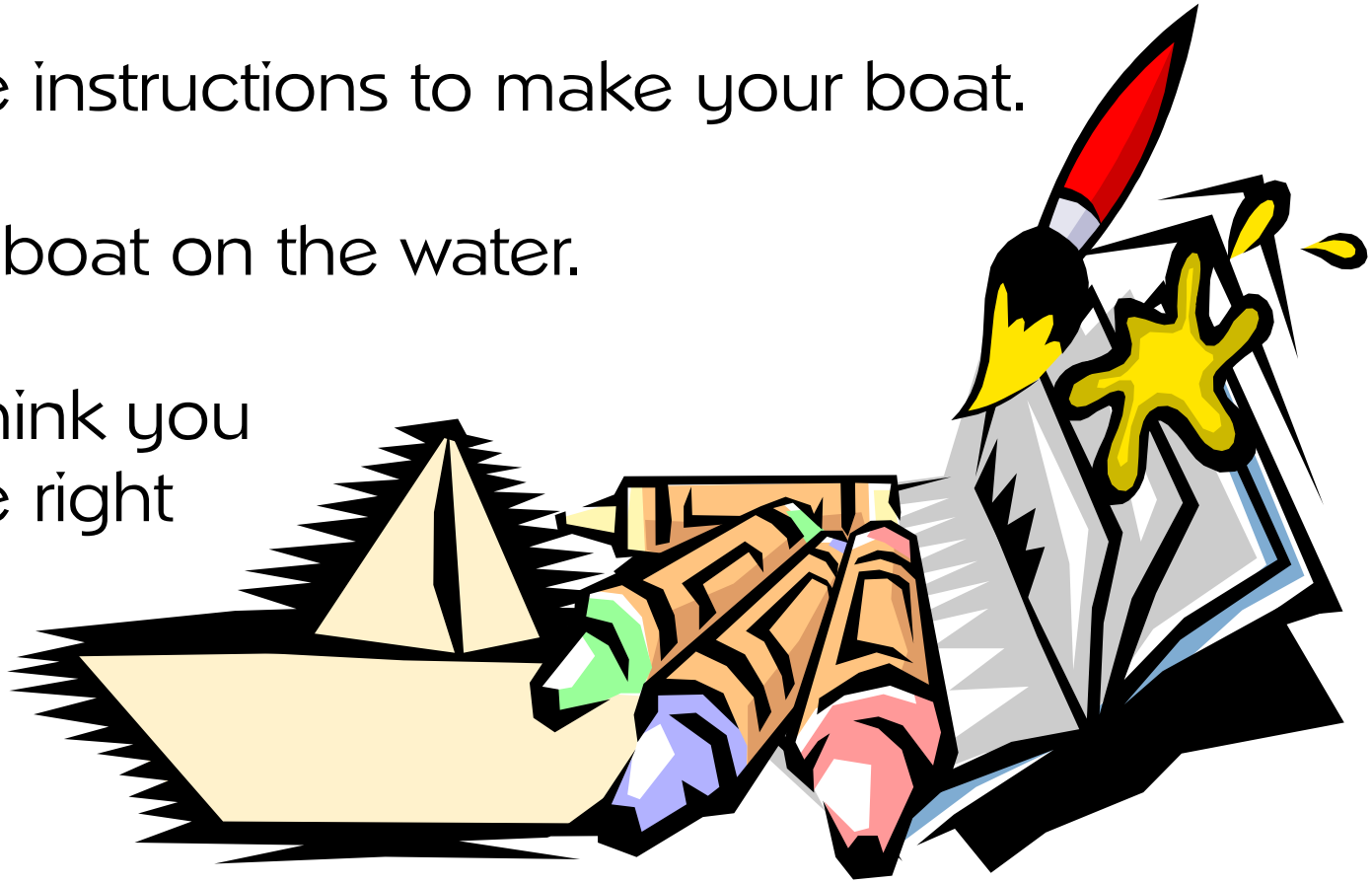
How could you use the paint or wax crayon to make your boat even better?

Recording Opportunities:

Children could draw diagrams of their boats, with explanations of why they chose that material.
These could be displayed, with any boats that survived.

BRILLIANT BOATS

- Choose one of the materials on the table to make a boat.
- Why did you choose that material?
- Follow the instructions to make your boat.
- Test your boat on the water.
- Do you think you chose the right material?



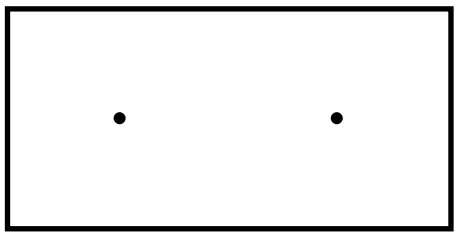
Paper boats

Instructions for making simple paper boats

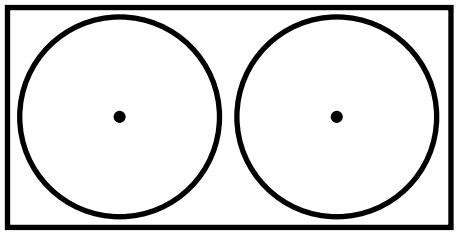
The procedure used to make these boats is always the same. But different size circles will result in a variety of boats. You will draw, cut, fold, then glue.

- **Draw:**

  Mark 2 dots on card stock paper (or standard paper).

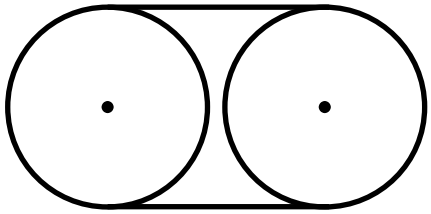


- Use each dot as a center and draw a circle, lightly, around each dot. The size of the circles may be different or the same.

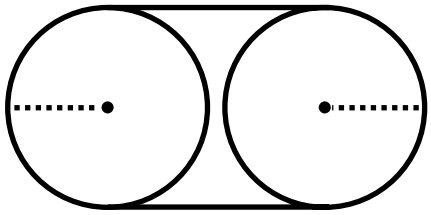


- Draw 2 tangent lines between the circles.

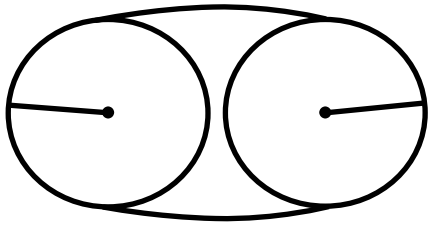
  Cut: Cut out boat.



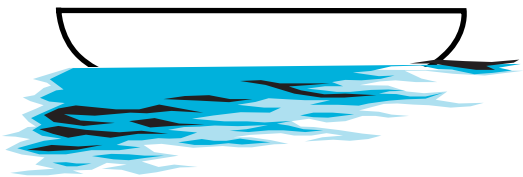
- Clip outer edge of each circle to it's own center.



- **Fold:** Fold straight edges over lightly. (This will form sides of boat.)



- **Glue:** Apply glue to one side of the radius cut. Overlap other side of the radius cut and hold until it dries.
- **Repeat:** apply glue to one side of the radius cut, overlap, and hold until it dries.
- **The boat floats.....!**



COFFEE TIME

Age Range: KS2; age 7 – 11 years

Theme: Magic Materials

Objectives:

To find out which materials are good conductors and which are good insulators of heat.

Resources:

4 cups of warm (not hot) coffee, all but one of the cups should have a different material wrapped around it, e.g. thin cloth, bubble wrap, furry material.
Large piece of paper with 4 columns, one for each of the mugs, with names of materials as headings.
Thermometer (**NOT MERCURY FILLED).** (Data Logging equipment if available).

Activity Notes:

This activity is to encourage children to make predictions and to think about the insulation properties of different materials. The activity card explains that the children are to write their name under the cup they think will cool down quickest. It then asks them to think about why they predicted that cup of coffee.

At the end of the Science Fair you could review which children made the right prediction.

This activity should be set up on a table with **"THE ICE MAN IS HERE!"**, as they both deal with heat insulation. The predictions for both activities could be discussed together at the end of the fair.

Safety – The cup of coffee should only be hand hot, also care should be taken with glass thermometers. NOT mercury filled.

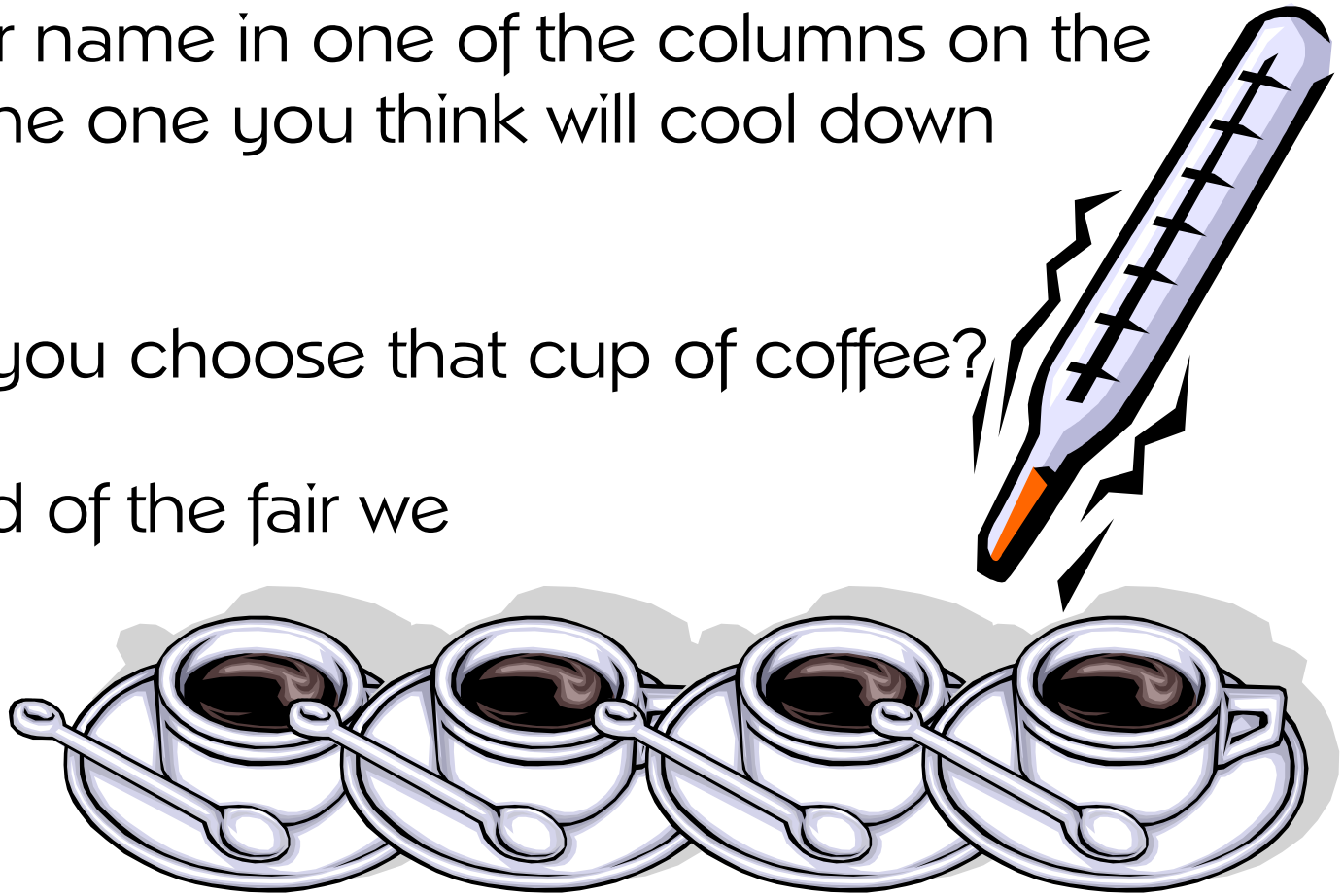
Recording Opportunities:

Children record their predictions on the chart. By setting up axes for a graph and recording the temperature of the drinks at regular intervals, a class line graph could be drawn up as the Science Fair progresses.

If data logging equipment is available for temperature a sensor could be placed in the cups, and the computer set to plot the graph in real time.

COFFEE TIME

- Some people have left their cups of coffee out.
- Which one will cool down quickest?
- Write your name in one of the columns on the table for the one you think will cool down quickest.
- Why did you choose that cup of coffee?
- At the end of the fair we will see who is right.



DOG DOORBELL

Age Range: Y5/Y6; age 9 – 11 years

Theme: Excellent Electricity

Objectives:

To use knowledge of circuits, conductors and insulators to solve a problem.

Resources:

Aluminium foil, card and paper; paper clips.

Wires, batteries and buzzers. (By using bulbs, this activity could be adapted to make a light to alert the owner.).

Activity Notes:

Children use their knowledge of circuits and the equipment given to design a doorbell that will alert the owner that their dog needs letting in. The children then record their designs using circuit symbols on the paper provided.

Some parents might like to have a go at designing a doorbell themselves. They could also be involved in the activity by asking questions.

Key Questions:

Why have you used those materials? How would the dog set the doorbell off?

Recording Opportunities:

Encourage children to record their designs using correct circuit symbols.

DOG DOORBELL

- Use the equipment on the table to make a model of a doorbell for dogs, that lets the owner know when the dog needs letting in.
- Draw a circuit diagram of your design on a sheet of paper.
- Try to use the correct symbols for a circuit.

FEEL THE ATTRACTION

Age Range: KS2; age 7 – 11 years

Theme: Fabulous Forces

Objectives:

To explore magnetism and to understand how two magnets react to each other.

Resources:

Racetrack drawn on A2 card or paper.
Magnet strong enough to move a paper clip through a table.
Bar magnets (preferably with different coloured poles).
Table with two columns, “Name” and “Time”, for recording scores.
Stopwatch.

Activity Notes:

Place the race track on a table and place the paper clip on the start position. Try it out first so that you are sure the magnet is strong enough to work through the table. In this activity children have to move the paper clip around the race track. They use the stopwatch to time how long it took to make the paper clip reach the finish line, and record their time on the table. There could be a small reward for the winner if you want. The activity card encourages the children to explain how the game works.

On the same table have a number of bar magnets so that the children can explore what happens when you put together the same, and different poles, of the magnets.

Parents might also like to have a go at these activities and could ask questions that would help the children to explain what they see happening.

Key Questions:

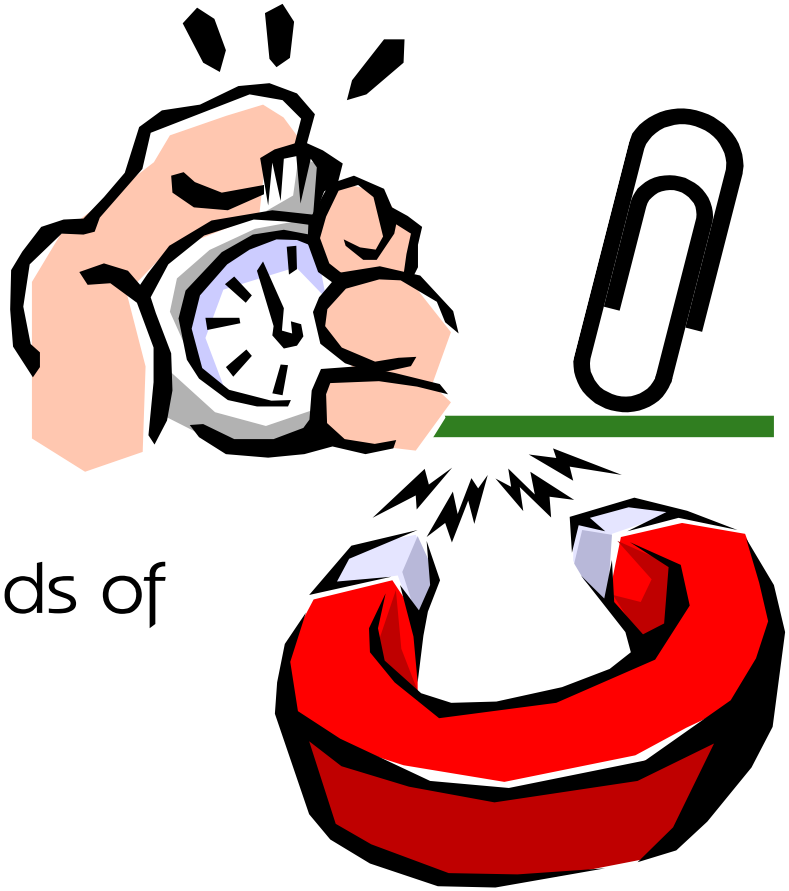
What happens when you push the same ends of a magnet together? What happens when you push different ends of a magnet together? Why do you think this happens?

Recording Opportunities:

The observations children make during this activity do not need to be recorded.

FEEL THE ATTRACTION

- Use the magnet under the table to move the paper clip around the race track.
- Time your go and record your time on the table.
- How does this game work?
- What happens when you push the same coloured ends of a magnet together?
- Is it the same for different ends of the magnet?



HAPPY HOVERCRAFTS

Age Range: Y5/Y6; age 9 – 11 years

Theme: Fabulous Forces

Objectives:

To know that friction is a force acting between two surfaces.

To find out that friction will slow down a moving object.

Resources:

3 tops of *2 litre* fizzy drink bottles. (Cut off just below neck, so they are about 2-3 inches high. They need to be cut straight so they fit flat to the table with no gaps round the edge. Leave the caps on.)
A packet of round balloons – **Attention needs to be given to hygiene if children are blowing up balloons**; balloon pump (optional); smooth surface, e.g. table top.

Activity Notes:

In this activity the children push the bottles along the table first to see how friction stops them being moved easily. They are asked by the activity card why this is. The next step is to blow the balloon up and to put it over the cap of the bottle, without letting all the air out. Some children may need help with this stage. The air will be forced out of the balloon, through the cap and create a cushion of air between the bottle and the table. The bottle can then be pushed around easily like a hovercraft as the amount of friction is reduced greatly.

Setting up instructions:

1. Cut the bottle tops as explained in the resources. **Make sure the edges are not sharp.**
2. Make a small hole in the cap of the bottle (a hot darning needle would be the right size). If it is too big the air will rush out too fast making the hovercraft lift off, rather than creating a cushion of air.

Once the holes in the caps are made the children can blow up the balloons.
It is worth trying this out first to ensure that the hole is the correct size and that the hovercraft works.

Key Questions:

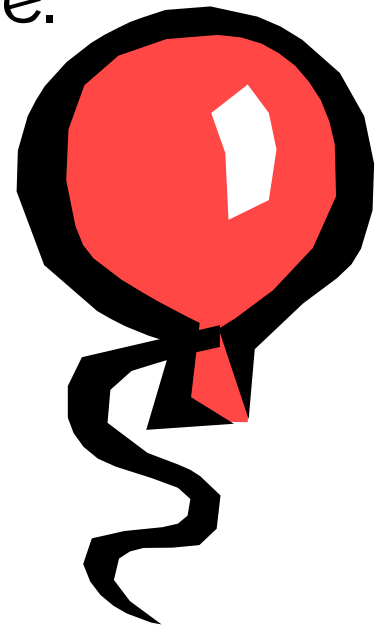
Why is the bottle top hard to move around?
What is the force slowing it down?
Why does the hovercraft move more easily?

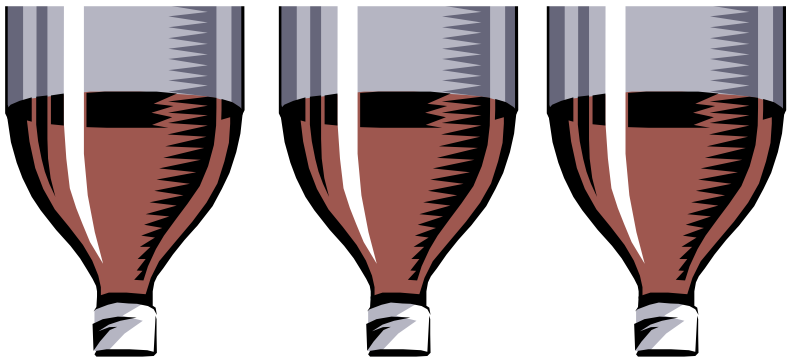
Recording Opportunities:

Children can draw diagrams of the bottle top and the hovercraft showing the direction of the forces. These could be displayed with the hovercrafts.

HAPPY HOVERCRAFTS

- Try pushing the bottle top along the table. Does it move easily?
- If it doesn't, what force is stopping it moving easily?
- Now blow up the balloon and place it over the bottle top.
- Be careful not to let too much air out.
- What happens when you push it around this time? Can you think why this happens?





HOT CROSS CHALLENGE

Age Range: KS2; age 7 – 11 years

Theme: Superb Sound

Objectives:

To know sound is caused by vibration.

To explore how to change the pitch of a sound.

Resources:

Milk bottles.
Jug of water.
Plastic drum beater

Activity Notes:

In this activity children use the apparatus given to play Hot Cross Buns (or another tune that they know) on the milk bottles. You could listen to the best attempt at the tune at the end of the session. The activity card encourages the children to think about how the sound is made and how to vary the pitch of the sound. By using different amounts of water they should establish the following facts:

1 The more water in a bottle the lower the sound it will produce, when struck with a beater.
2 The less water in a bottle the higher the sound it will produce, when struck with a beater.

This is the case when the part of the bottle containing the water is struck. The opposite is true when the part of the bottle containing air is struck, as it is the **air** that vibrates.
The children could find this out during the activity. Please note that if children blow across the bottle the air will vibrate, so a lesser amount of **air** will produce a higher sound.

Safety – This activity may need supervising all the time, as glass bottles are used.

Parents may enjoy the challenge of making the tune and could help the children to understand how the sounds are made.

Key Questions:

How does the milk bottle and water make the sound?

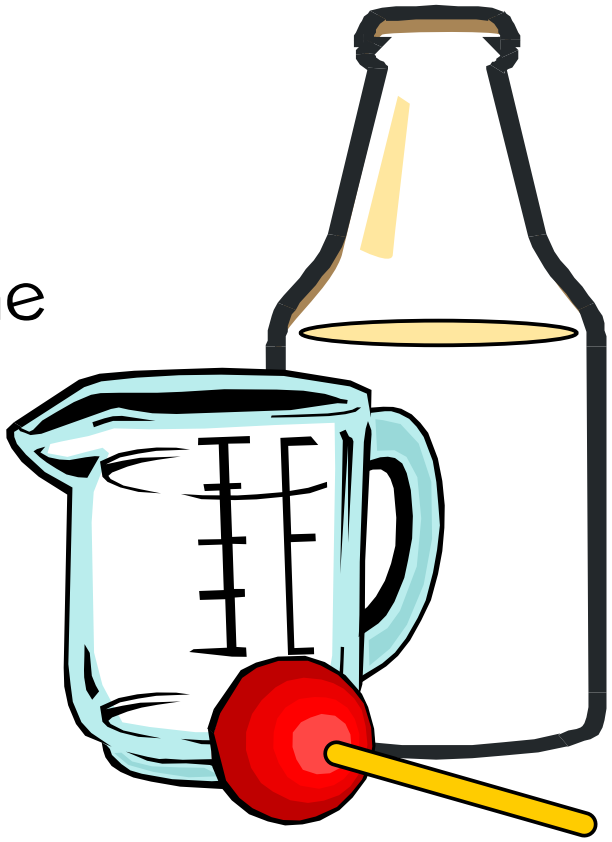
How did you change the pitch of the sound?

Recording Opportunities:

Children could draw a diagram of the milk bottles, showing the amount of water they had in them. If they draw them in the order they play them, it would be like recording their own composition, so it could be played again.

HOT CROSS CHALLENGE

- Put different amounts of water into the milk bottles and try to play Hot Cross Buns using the beater.
- You may need to change the amounts of water you use.
- How is the sound made?
- How did you make the pitch of the sound higher and lower?
- Have you noticed a pattern?



ICE MAN IS HERE!

Age Range: KS2; age 7 – 11 years

Theme: Magic Materials

Objectives:

To find out which materials are good conductors and insulators of heat.

Resources:

Four rubber gloves that have been filled with water and tied with a rubber band, then frozen.
Different materials to wrap around frozen hands, e.g. thin cloth, bubble wrap, furry material.
Large piece of paper with 4 columns, one for each hand, with names of materials as headings.

Activity Notes:

This is a great activity that involves a little preparation but is well worth it as children find it very motivating. It encourages children to make predictions and to think about the insulation properties of different materials. It challenges the common misconception, amongst children, that if you wrap something cold in a good insulator it will melt more quickly.

The activity card explains that the children are to write their name on the table under the hand they think will melt quickest. It then asks them to think about why they predicted that hand. At the end of the Science Fair you could review which children made the right prediction.

This activity should be set up on a table with "COFFEE TIME", as they both deal with heat insulation. The predictions for both activities could be discussed together at the end of the fair.

Setting up

1 Allow long enough for all the gloves to freeze completely.

2 Remove the frozen gloves from the freezer and run under warm water, so the gloves will come away from the ice easier.

3 Carefully peel the gloves from the ice. Don't worry if some of the fingers get damaged.

4 Wrap three of the hands in the materials and leave one unwrapped.

5 Place them on a tray.

Recording Opportunities:

Children record their predictions on the chart and these predictions are reviewed at the end.

ICE MAN IS HERE!

- Ice Man has left his spare hands in school.
- Unfortunately they are starting to melt.
- Which do you think will melt first?
- Write your name in one of the columns on the table for the one you think will melt quickest.
- Why did you choose that hand?
- At the end of the fair we will see who is right.

LIVELY LIFE

Age Range: Y2 – Y6; age 6 – 11 years

Theme: Living it up

Objectives:

To know some of the life processes of animals and plants.

Resources:

Five pictures of plants and 5 pictures of animals.

Activity Notes:

Children look at the pictures of animals and plants, identifying the life processes of each of them.

For each of the plants they should identify – growing, feeding, reproducing and respiration.

For each of the animals they should identify – growing, moving, feeding, breathing and reproducing.

Key Questions:

Parents or other staff could ask: Do all the animals need to do the same thing to stay alive?

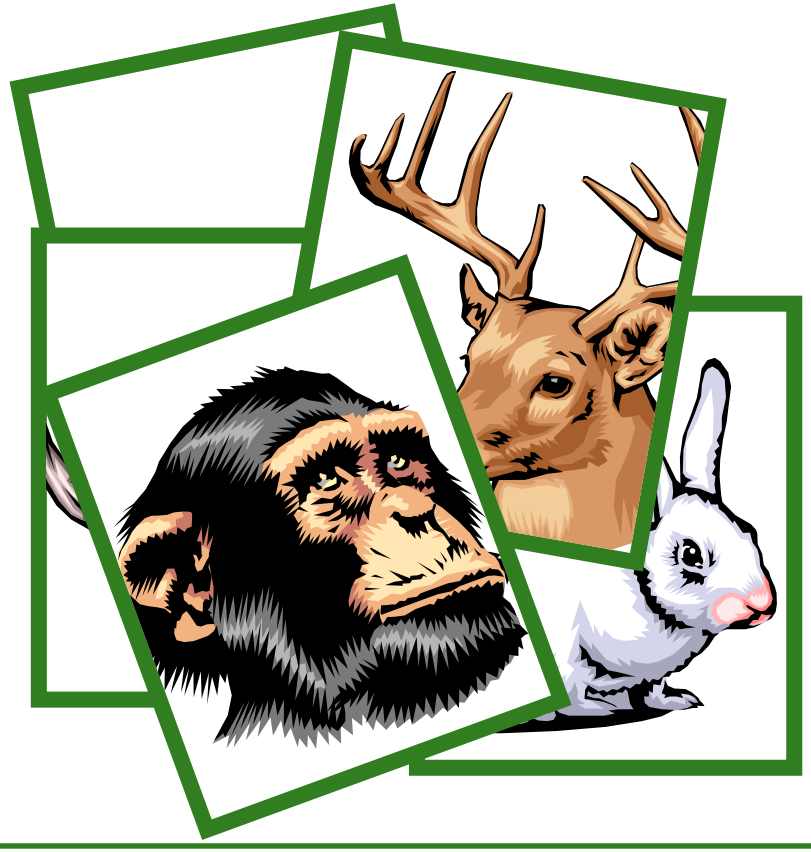
What about the plants?

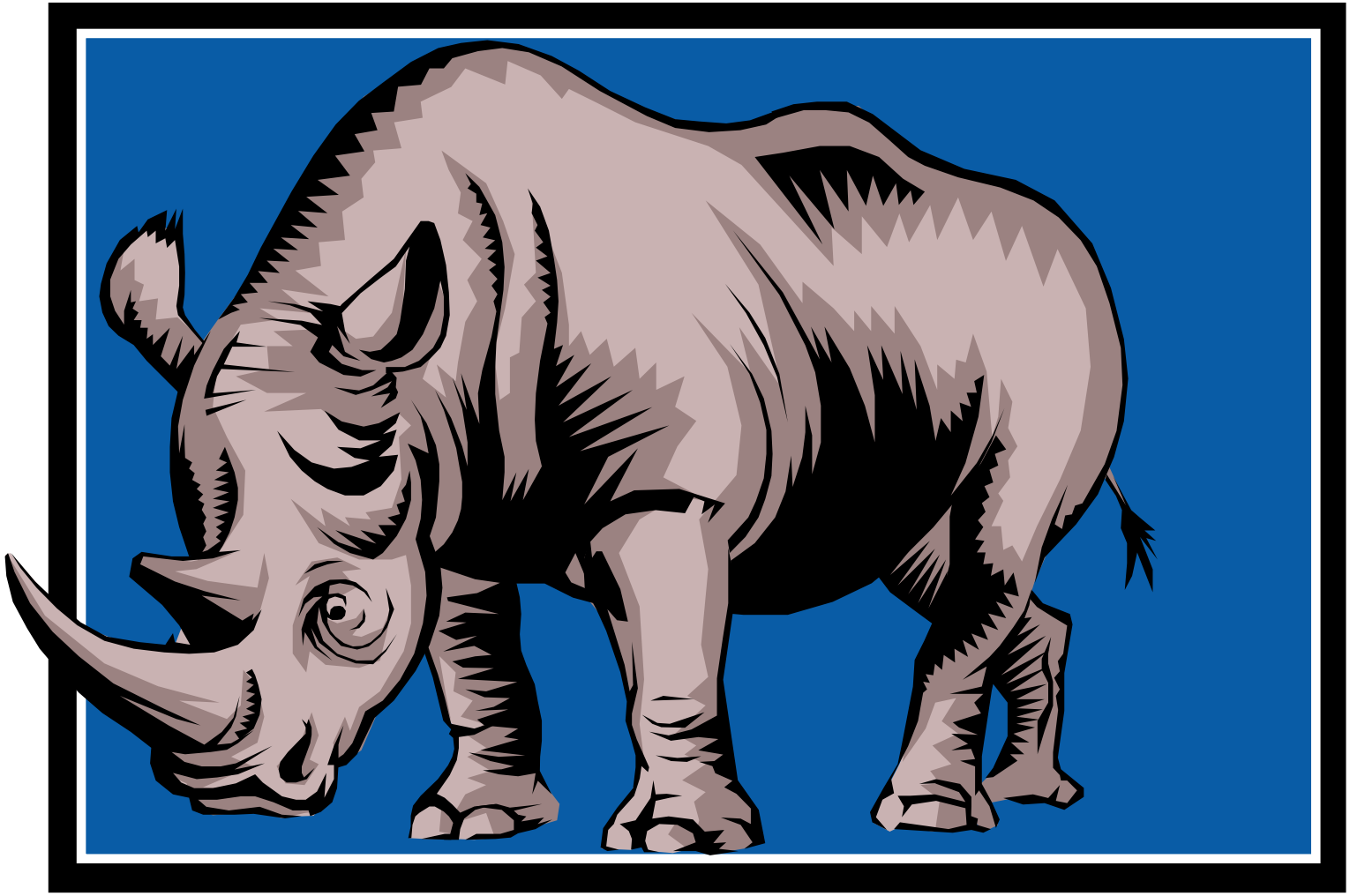
Are these things the same for plants and animals?

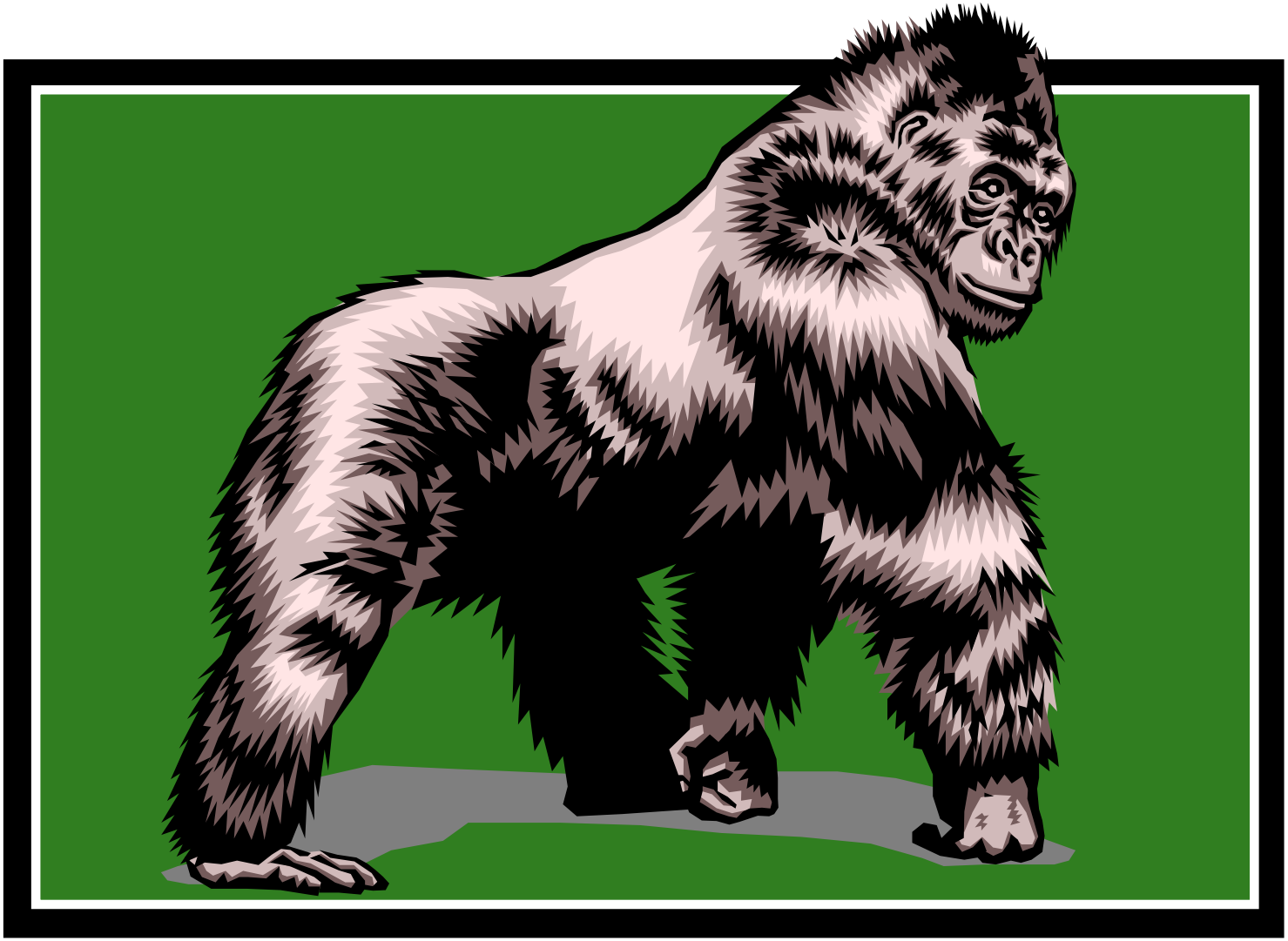
Recording Opportunities:

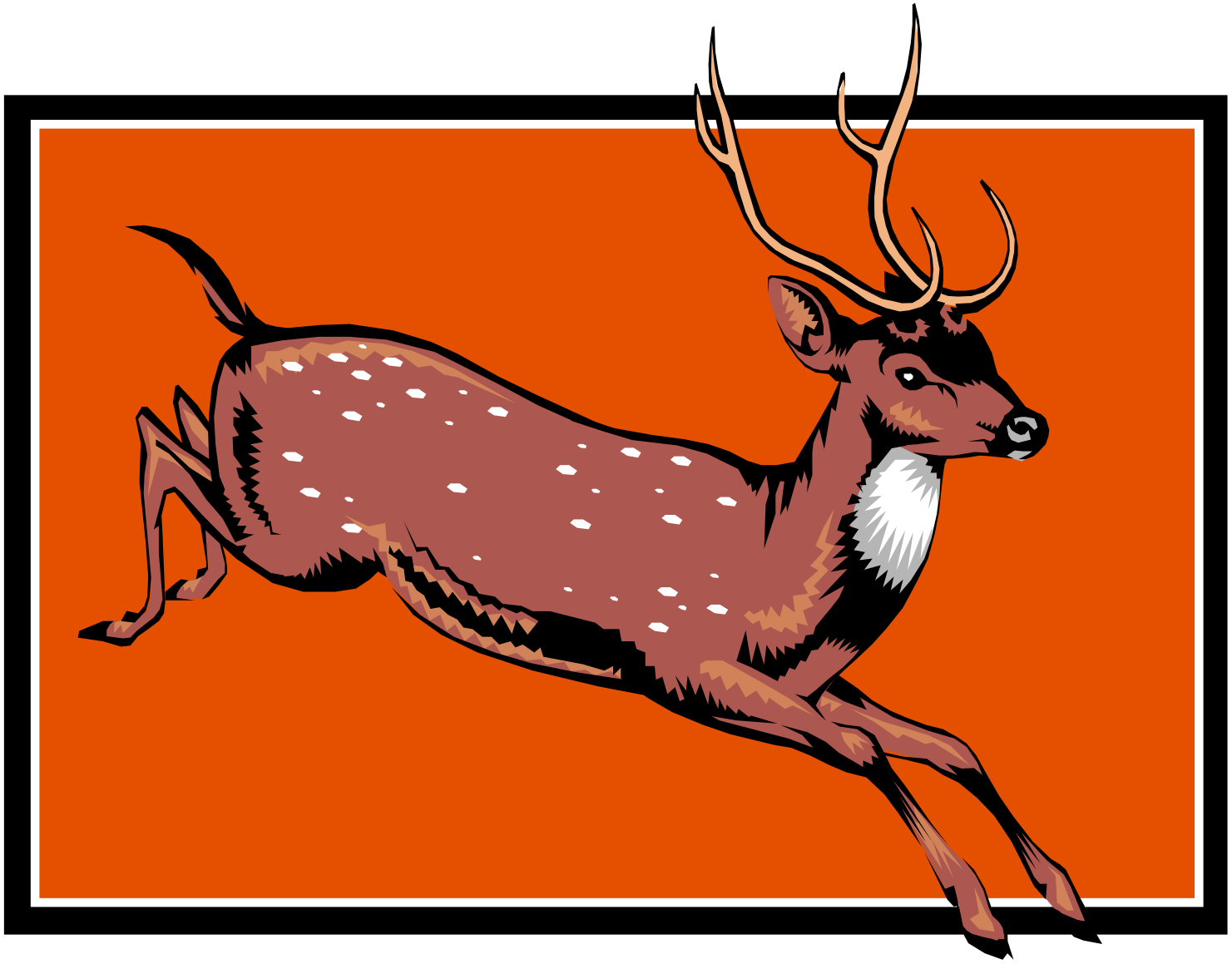
LIVELY LIFE

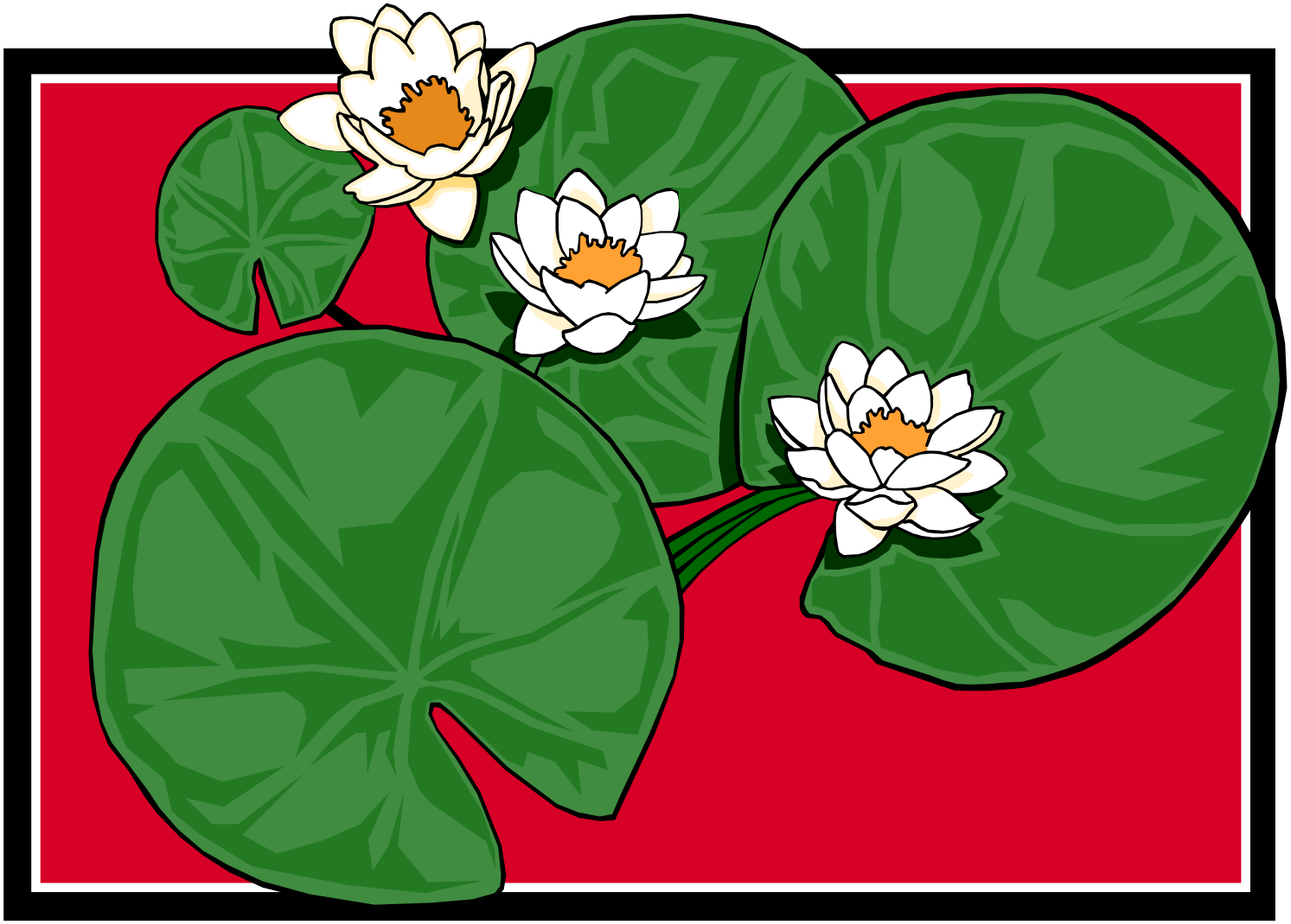
- Look at the pictures of plants and animals.
- What do they need to stay alive?
- Which of these are similar for plants and animals?

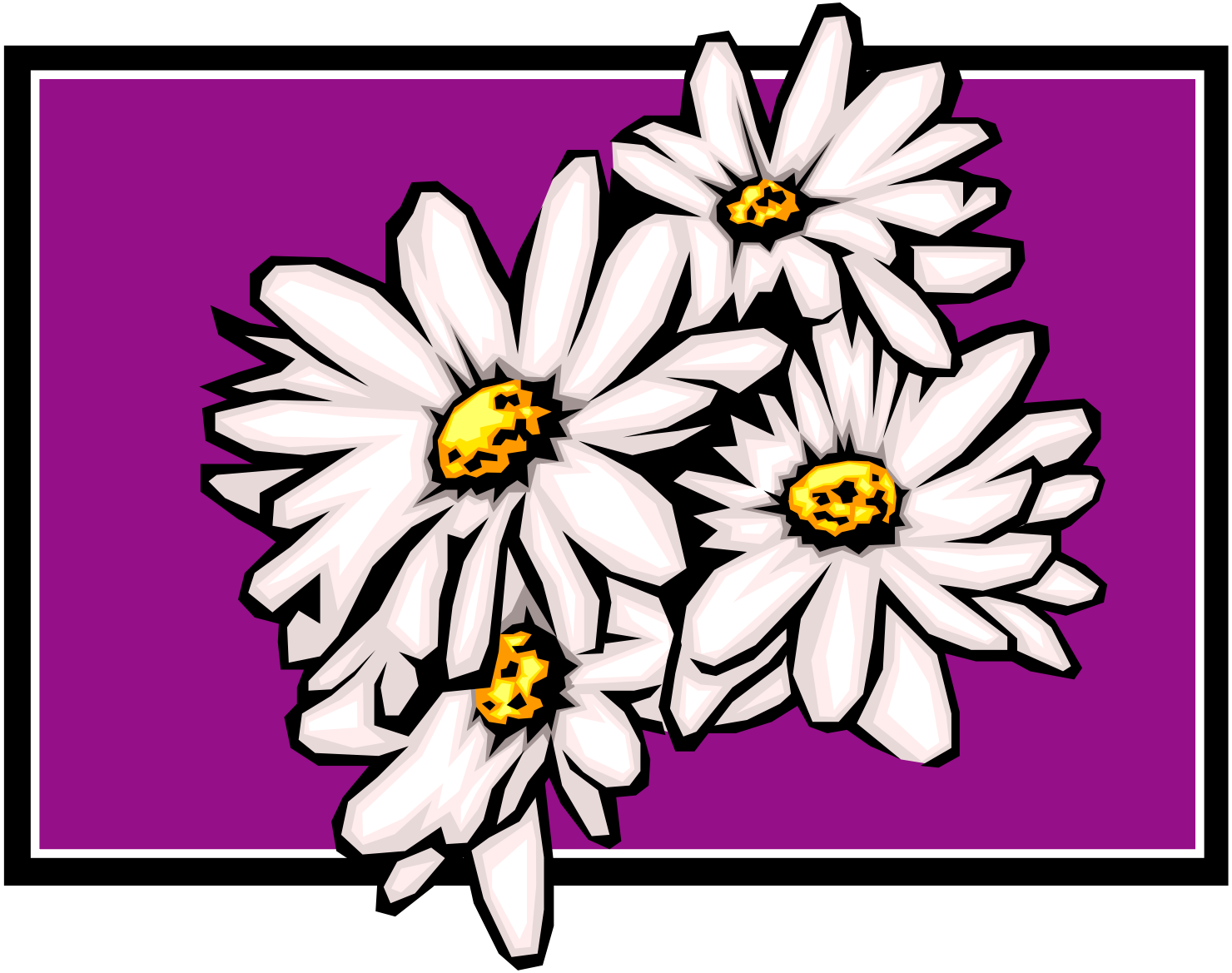












LUCKY LUNCHBOXES

Age Range: KS2; age 7 – 11 years

Theme: Magic Materials

Objectives:

To know that materials are suitable for particular purposes because of their properties.

To use knowledge of heat conductors and insulators to solve a problem.

Resources:

Bubble wrap; felt and other materials; cellophane, tin foil; paper, card, newspaper.

Activity Notes:

This is mainly a paper based activity requiring the children to use their knowledge of materials and how they conduct or insulate heat. Children have to design a lunchbox and flask holder that will keep their lunch hot or cold.

The materials suggested in the resources can be used to prompt the children's designs. The children record their designs as diagrams labelled with the material they chose and the reasons why they chose it.

Watch out for – Children who think that good heat insulators will keep the drink hot, but will not help to keep a packed lunch cold.

Parents might like to ask children the following questions:

Key Questions:

Why did you decide to use that material? What would happen if you used a different material?

Recording Opportunities:

Designs are recorded as labelled diagrams on paper provided.

LUCKY LUNCHBOXES

- Design a lunch box and flask cover to keep your lunch cold and your drink warm.
- Think about which materials will be best?
- The ones on the table might give you some ideas, but you can choose your own.
- For your designs, draw and label which materials you decide to use and why you used them.

MIXED UP MATERIALS

Age Range: Y5/Y6; age 9 – 11 years

Theme: Magic Materials

Objectives:

To explore ways of separating materials.

To know that two solids can be separated by sieving.

To know that insoluble solids and liquids can be separated by filtering; and soluble solids and liquids by evaporation.

Resources:

Filter Papers; sieves; water in beakers; funnels.
Mixture of dried peas and sand; mixture of earth and water; mixture of salt and sand.
Containers for sieving and filtering into; sauce pan or suitable apparatus for evaporating water.
A way of heating water, e.g. small electrical ring or over a small burner.

SAFETY – This activity must be supervised at all times, with an adult heating the mixture of water and salt. Children and adults must wear suitable protective eye wear, as the salt can 'spit' out of the pan when the water evaporates.

Activity Notes:

This activity gives children an opportunity to use their knowledge to solve problems. The activity card asks them to think about how they could separate the mixtures they are given, using the apparatus on the table. The children may try out different methods that are not successful.

Key points of understanding they should be guided towards are:

- Two solids can be separated by sieving, as the larger solid will not fall through the holes.
- The earth does not dissolve so can be filtered, as the particles will not fit through the holes in the filter paper.
- Salt dissolves so it needs to be separated from the sand by adding water. Filtering this mixture will leave the sand behind in the filter paper. The dissolved salt will pass through the filter paper, so the water needs to be evaporated off to leave the salt behind.

As these are quite complicated processes the adult supervising can guide children by questioning.

Key Questions:

In this activity it is also important to ensure correct vocabulary is used.

e.g. soluble material – one that will dissolve
insoluble material – one that will not dissolve
solution – mixture of a dissolved solid and a liquid
evaporation – when a liquid is heated causing it to change into a gas.

Suggested questions that will guide children to the key points:

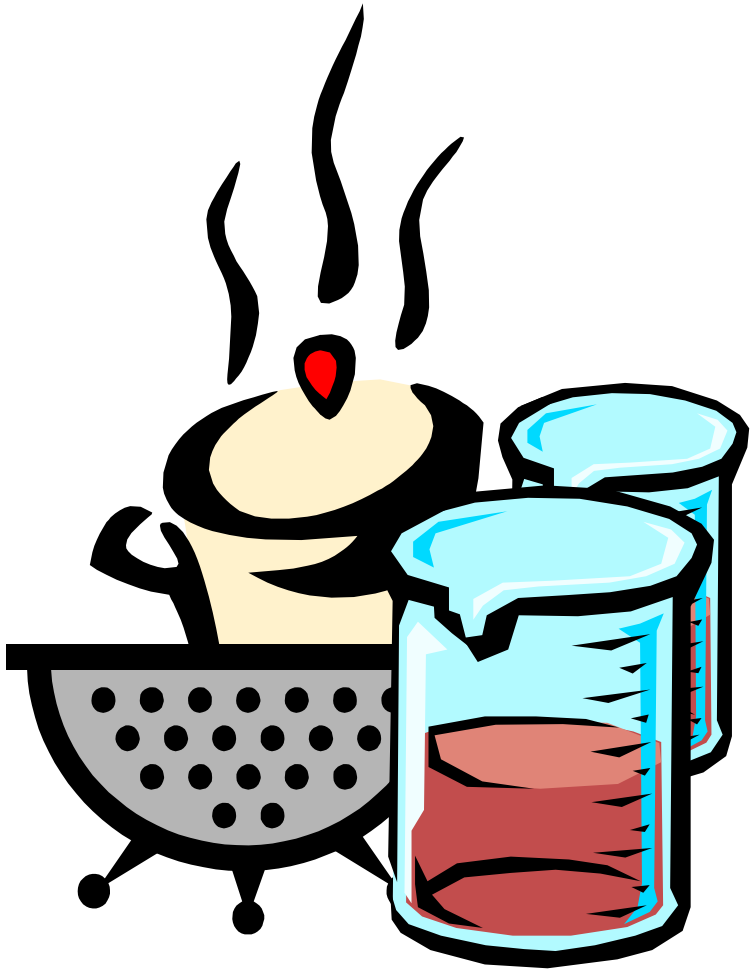
- What happens to the peas when you put the mixture through a sieve?
- What will happen to the soil when you put the mixture of the earth and water in the sieve?
- What would happen if you filtered it with a funnel and filter paper?
- Why does the sand or earth not go through the filter paper?
- What happens to the salt in the water? Will the salt go through the filter paper? Why?
- How could we separate the salt from the water? What do we call this process?
- What happens to the water?

Recording Opportunities:

The children could draw labelled diagrams showing the method of separation for each of the mixtures. These could then be displayed with a sample of the mixtures.

MIXED UP MATERIALS

- Try to work out how you would separate these mixtures, using just the equipment you are given.
- Dried Peas and Sand.
- Salt and Sand.
- Water and Earth.
- Can you explain to someone else how you separated them?



MARSHMALLOW SCRUPAPER

Age Range: Y2 — Y6; age 6 – 11 years

Theme: Magic Materials/Super Structures

Objectives:

To find out that structures can be built higher if their base covers a bigger area.

Resources:

Packets of spaghetti ; packets of marshmallows; newspaper/Plastic sheets.

Activity Notes:

Organise the children into groups of four. Younger children may need some support with this activity, either from adults, or older children. The groups have a set amount of time (probably 20 mins) to build a free standing tower using the spaghetti and marshmallows. Their aim is to build a tower as high as possible. They use the marshmallows to link the spaghetti together. The children should establish they need to have a wide base to support their tower. At the end of the twenty minutes the towers could be measured to find which group built the highest tower. Attention could be drawn to larger bases that allow the tower to be built higher.

This activity can be messy, so it is a good idea to build the tower on plastic sheets or newspaper.

Older children or parents could support KS1 children in building the towers and ask questions to help the children think about what they are doing.

Key Questions:

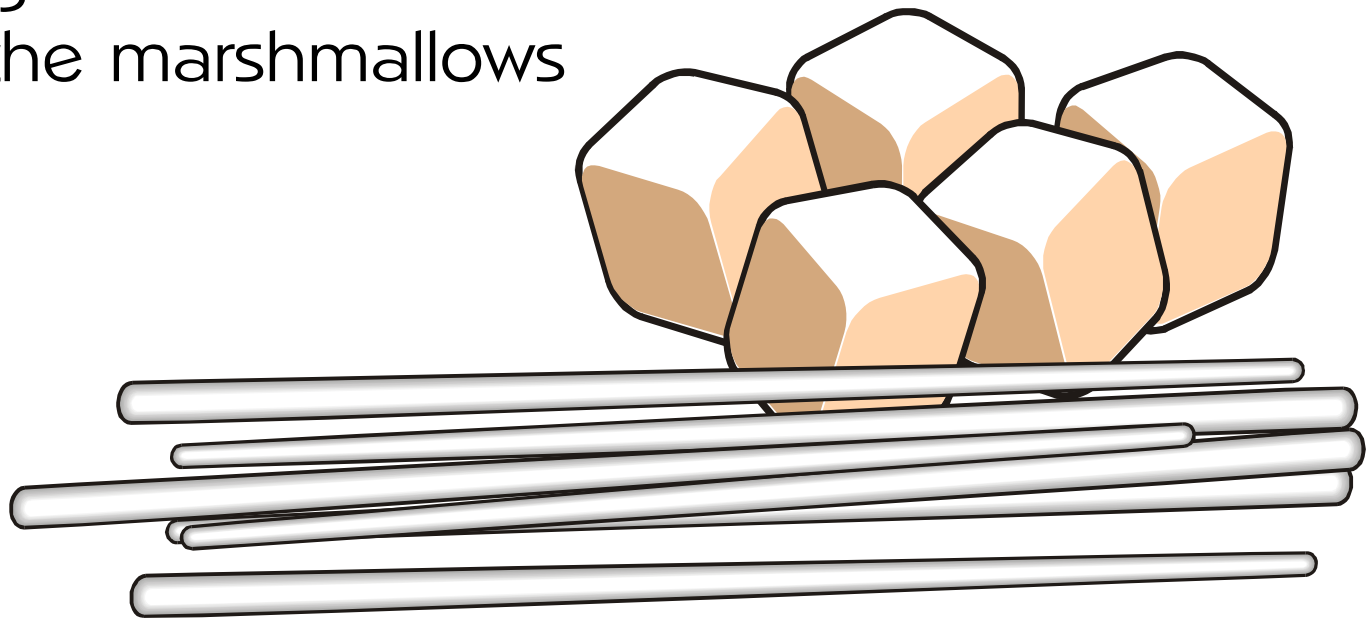
- How can you make the links between the marshmallows stronger?
- How could you make the base of your tower more stable?

Recording Opportunities:

Diagrams could be made of the towers or photographs taken and a short account written of how the winning tower was created.

MARSHMALLOW SCRYPAPER

- Use the marshmallows and spaghetti to build the highest tower you can.
- You have twenty minutes to do this.
- How can you make your tower more stable?
- How can you make the links between the marshmallows stronger?



MAY THE FORCE BE WITH YOU

Age Range: Y5/Y6; age 9 – 11 years

Theme: Fabulous Forces

Objectives:

To know that gravity pulls objects towards the earth.
To make predictions and test ideas.
To find out that paper fliers with larger surface area will fall slower.
To understand that air resistance slows a paper flier down.

Resources:

Template of Paper Flier (provided).

Activity Notes:

Children make a paper flier and test their models. The questions on the prompt sheet are designed to elicit from the children that gravity causes the paper fliers to fall to the floor, that air resistance slows the paper fliers down. Children are then asked to predict how they could make the paper flier fall more slowly and then test their ideas. The final question extends their thinking about what may be the best size for the flier.

Parents may want to make and test their own paper fliers. They could also ask the following questions:

Key Questions:

What would happen if you made the flier smaller?

What would happen if you added more paper clips?

How could you find out what the best size for paper flier would be?

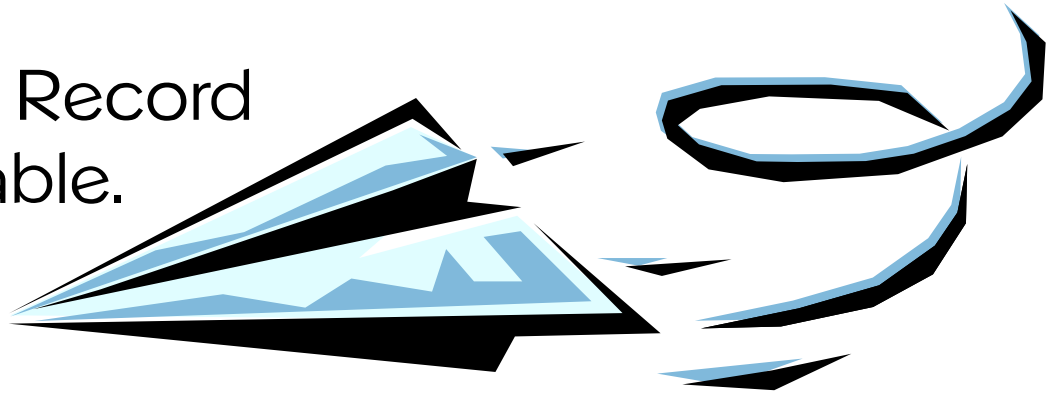
Recording Opportunities:

A two columned table, with columns for “Length of wing” and “Time taken to reach the floor” could be put on the table for the children to fill in their results as they try out their ideas. This could be laminated and used with dry wipe pens.

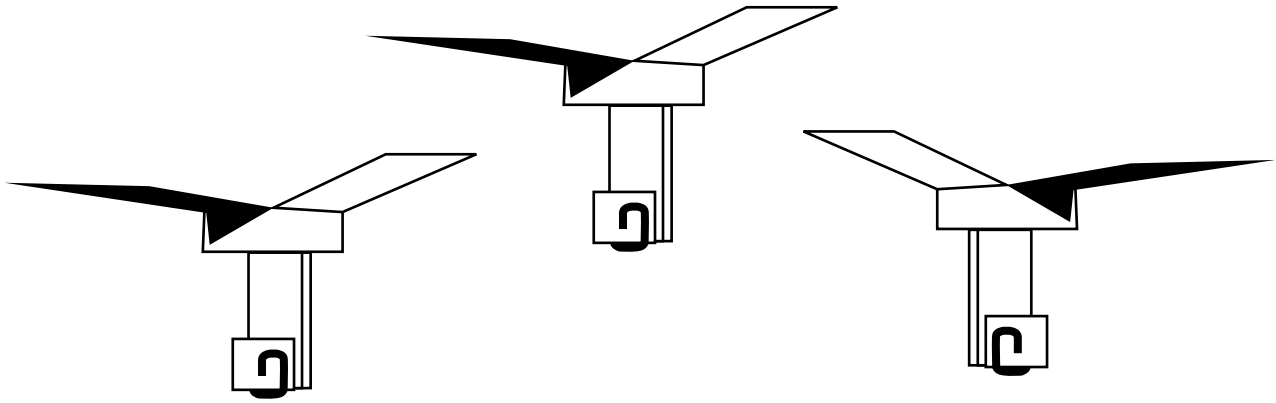
A class line graph could be drawn from the table with a “Length of wing” on the horizontal axis and “Time taken to reach the floor” on the vertical axis. This recording activity would work especially well if the data was entered straight onto a computer, the children would be able to see the graph immediately.

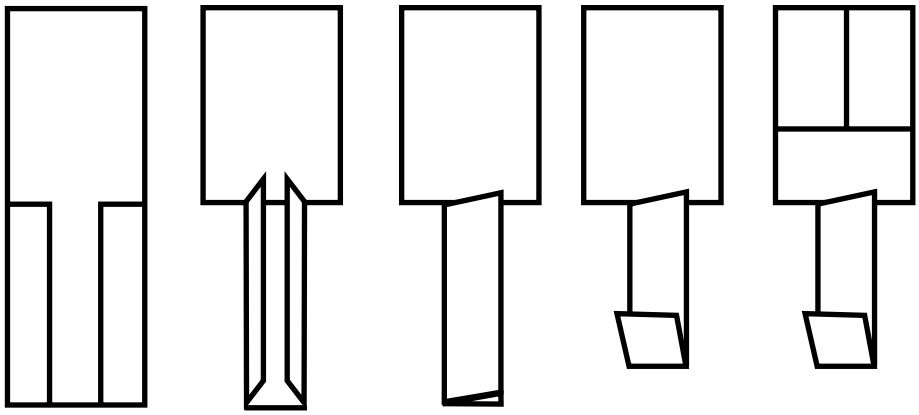
MAY THE FORCE BE WITH YOU

- Use the template of a paper flier to make a copy of the paper flier on the table. Cut your paper accurately and fold it in the same way. Add a paper clip to support the main length.
- Try out your flier and think about these questions!
- What makes the flier fall to the ground? What slows the paper flier down as it falls? How could you make it fall more slowly?
- Test out your ideas! Record your result on the table. Is there a best size for the flier?



The Flier





Instructions

- Cut on the two middle horizontal lines, and fold in.
- Fold the bottom flap up.
- Cut the vertical line at the top and fold paper in opposite directions to create two flaps.
- For best results, attach a paper clip to the bottom.
- Drop and watch it spin!

PERFECT PLANTS

Age Range: **Y5/Y6; age 9 – 11 years**

Theme: **Living it up/Perfect Plants/Incredible Investigations**

Objectives:

To know the conditions needed for plant growth.

To demonstrate understanding of scientific process by planning an investigation on plant growth.

Resources:

Pen and paper.

Activity Notes:

Children use their knowledge of how investigations are carried out to plan a series of investigations that prove plants need warmth, light, water and nutrients to grow.

Investigations could be planned on a writing frame or on plain paper.

Key Questions:

- What would you need to carry out the investigation? What would you change?
- What would you measure?
- What would you need to keep the same to make sure the investigation is fair?
- What do you think will happen if you change the amount of food/water/light?
- How could you record your results?

Recording Opportunities:

This activity is based on recording the planning of an investigation in a structured way.

The children's investigations may be completed as part of timetabled science work, where their actual results and conclusions could be recorded.

PERFECT PLANTS

- How could you prove that plants need warmth, light, water and food to grow?
- On one of the pieces of paper try to design an investigation to test this.
- Remember for an investigation to be fair you can only change one of the things at a time.
- You might need more than one investigation!

SHADY SHADOWS

Age Range: KS2; age 7 – 11 years

Theme: Lovely Light

Objectives:

To know that light does not pass through opaque materials and that this will cause shadows.

To know that shadows get bigger the closer an object is to the light source.

Resources:

Overhead Projector and screen.

A range of different materials, some of which are opaque, some transparent and some translucent.

Activity Notes:

Children test the different materials to see which will let light through and which will not. They then sort these into two groups, transparent and opaque materials, before thinking about which create shadows. Translucent materials will let some light through but may cause a shadow on the screen. The children then explore ways of making the shadows bigger and smaller. It is important that this part of the activity is done between the OHP and the screen, rather than between the bulb and the mirror of the OHP, or the children will not find out that the closer an object is to the light source the bigger the shadow will be.

Parents could be involved in this activity by asking the children questions or sorting the materials themselves.

Key Questions:

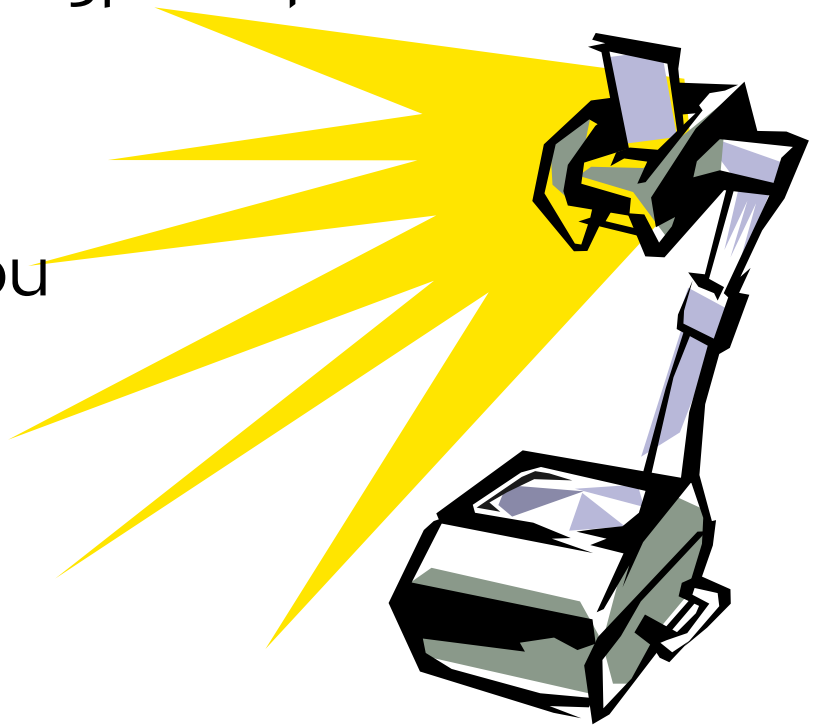
- Why have you sorted particular materials into each group?
- How are the translucent materials different?
- How are you going to make the shadow bigger/smaller?
- What do you think will happen if you move the material closer to the light source?

Recording Opportunities:

Children could record this activity by drawing Venn diagrams for transparent, opaque and translucent materials.

SHADY SHADOWS

- Sort these materials into those that will let light through and those that will not?
- Can you sort those that let light through into another two sets?
- What do we call these three types of material?
- Which will make shadows?
- Use the OHP to see how you can make the shadows bigger or smaller.
- What did you find out?



SPACED OUT

Age Range: Y5/Y6; age9 – 11 years

Theme: Superb Space/Fabulous Forces

Objectives:

To know the relative sizes of the Sun, Moon and Earth.

To know the length of orbit of the Earth round the Sun and the Moon round the Earth.

Resources:

Tennis Balls.

Footballs.

Plasticine.

Cards with “365 days”, “28 days”, “24hours” and “¼” on them.

Activity Notes:

Children use their knowledge of Earth and Space to make models of the Sun, Moon and Earth.

They match up cards showing orbit and rotation times to the appropriate model, before demonstrating how the Earth rotates and orbits the Sun, and how the Moon orbits the Earth.

Parents could get involved in this activity by watching the children demonstrate the orbits and by asking questions.

Key Questions:

- How do we get day and night?
- Which is bigger the Sun or the Moon?
- When we see the Sun and the Moon in the sky why does the Moon seem bigger?

SPACED OUT

- Use the plasticine and balls to make models of the Sun, Moon and Earth.
- Think carefully about their sizes.
- Match the times on the cards to theright orbits for the Sun, Moon and Earth.
- Now use your models and the cards to show how they orbit and rotate.


24
hours


28
days


365
days


1
4

STEALING FROM CIRCUITS

Age Range: KS2; age 7 – 11 years

Theme: Excellent Electricity

Objectives:

To use knowledge of circuits to solve a problem.

Resources:

At least 5 or 6 Mars Bars; battery, wires and buzzer; A4 card.

Aluminium foil and paper clips.

Activity Notes:

This is an activity that the children really enjoy. It does take a little patience in setting up, but is definitely worth it. The circuit needs to be set up so that when the Mars Bar is removed from the folded card the foil and paper clip will touch, completing the circuit and setting the buzzer off. See instructions below.

The children have to see if they can remove the Mars Bar from the card without setting the buzzer off. They are only allowed to touch the Mars Bar and only allowed to use their hands. You may want to limit the activity to three goes per child otherwise they may spend all their time on this activity and you may run out of Mars Bars. It is also worth spending some time setting up this activity so you are almost certain that the buzzer will go off.

Children often try to pick up the Mars Bar very slowly. Some will try to slide the Mars Bar off the card.

If children are successful, you may have to have a supply of Mars Bars ready so they at least get some reward.

1. Fold the card in half, creasing the fold, so it will spring up again when the Mars Bar is removed.
2. Stick the card to a table. Place the Mars Bar on top of the card to weigh it down.
3. Now stick the foil to the top of the card, along one of the short sides.
4. Connect a crocodile clip to the aluminium foil and connect the battery, buzzer and other wire up.
5. Hold a paper clip in a crocodile clip at the other end of the circuit. This needs to be stuck to the table so that the paper clip overhangs the aluminium foil on the card, without touching it.
6. When the Mars Bar is taken off, the card should spring up so the foil comes into contact with the paper clip.

STEALING FROM CIRCUITS

- Try to take the Mars Bar off the sheet without the buzzer going off.
- You can only touch the Mars Bar with your hands and you can't use or touch anything else.
- If the buzzer goes off you have to put the Mars Bar back.
- Why does the buzzer go off when you move the Mars Bar?

TROUBLING TEETH

Age Range: KS2; age 7 – 11 years

Theme: Living it up

Objectives:

To know the names and functions of human teeth.

Resources:

- Quartered apples (placed in a bowl of water with a few drops of lemon juice).
- Unlabelled diagram of mouth showing canines, incisors and molars.
- Make sure that children have returned their consent forms before they do this activity.

Activity Notes:

Children eat a piece of apple from the bowl of water, thinking about which teeth they use to bite, tear and chew.

They then record on the diagram which teeth they used and try to name the teeth. Laminating or covering the diagram of the mouth and keeping it on the table with this activity would mean that children could use a dry wipe pen to record their answers and then wipe them off.

This would reduce photocopying and mean the children don't have to carry round lots of pieces of paper.

Parents may like to try out this activity as well. Other staff and parents could also ask the children which teeth they used and correct any misconceptions, as sometimes children may use different teeth to bite, tear and chew. This might help them to understand the correct functions of the named teeth.

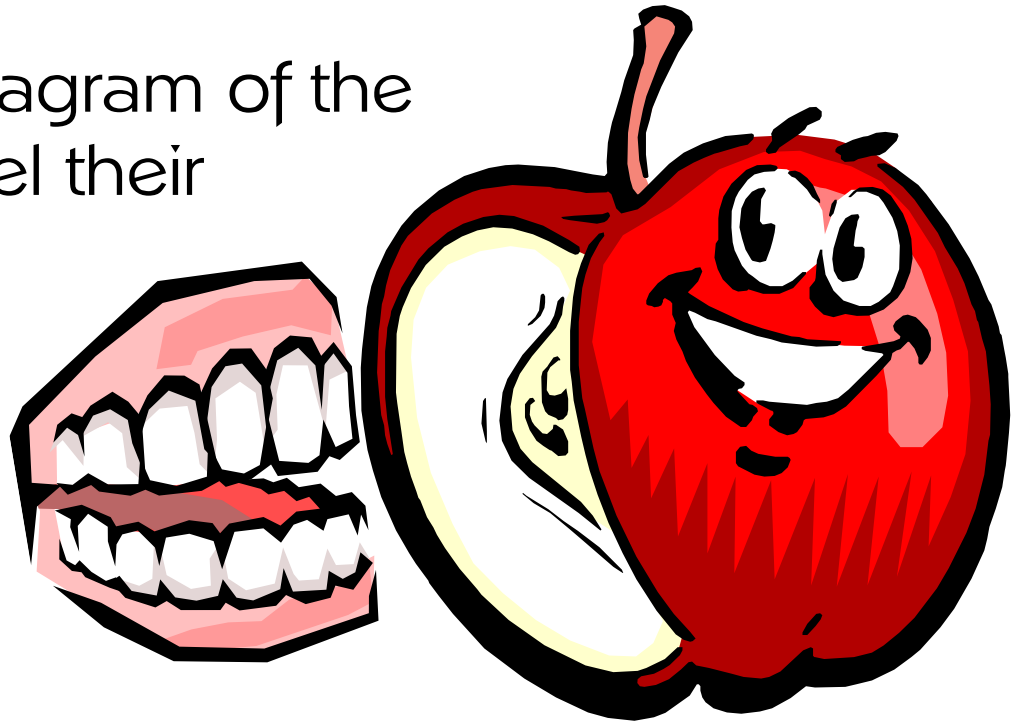
If children bite into the apple without removing any, and then look at their bite marks they may be able to see the arrangement and shape of their teeth. If parents or teachers do this activity the children could also discuss the difference between their teeth and the adults' teeth.

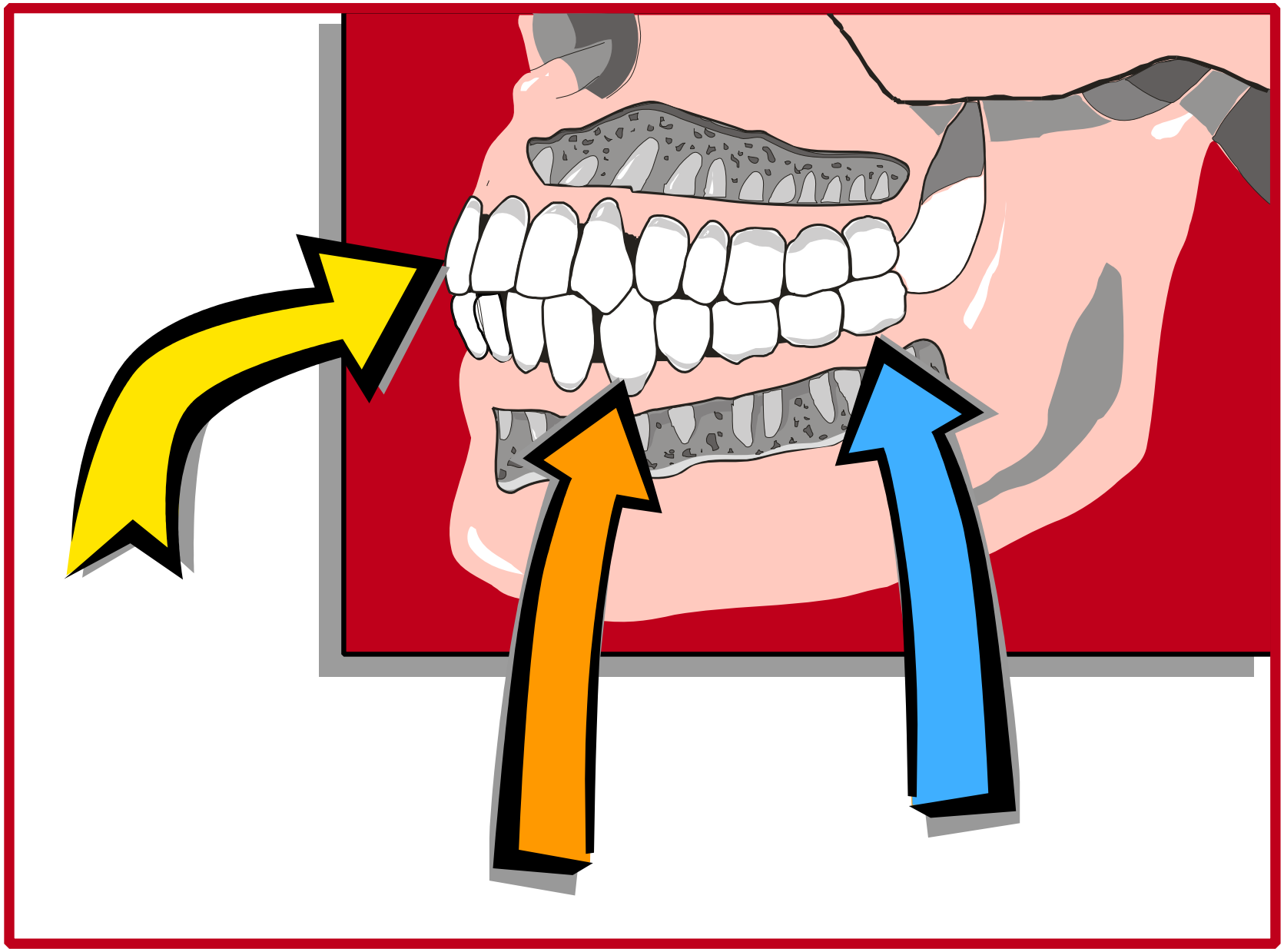
Recording Opportunities:

Children record their findings on the diagram of the mouth and label the names of the teeth.

TROUBLING TEETH

- Bite a piece from the apple and chew it.
- This time tear a piece off the apple and chew it.
- Which teeth did you use to bite, tear and chew?
- Label them on the diagram of the mouth and try to label their names too.





VARIOUS VIBRATIONS

Age Range: KS2; age 7 – 11 years

Theme: Superb Sound

Objectives:

- To know sound is caused by vibration.
- To find out that bigger vibrations cause louder sounds.

Resources:

G clamp; Metre ruler (with pencil taped across the ruler at one end);
A4 Paper with a line across the middle; Clipboard.

Activity Notes:

In this activity, children record on paper the sound of a ruler vibrating. They should be able to work out where the louder sounds were when there were bigger vibrations and where the quieter sounds were when there were smaller vibrations.

The activity is set up by clamping the end of the ruler to a table, with the end holding the pencil free to vibrate when it is pressed down and released. The children then put the paper on a clipboard and hold it against the pencil, with the point of the pencil on the line, and the line horizontal. They press the ruler down and let go. The ruler vibrates and the children move their piece of paper along the pencil. The vibrations of the ruler will be reflected on the paper by the lines. The activity card prompts the children to think about the lines that have been drawn. When the children look at their paper, they should see that the bigger lines are when the sound was loudest and the smaller lines are when the sound was quietest at the end.

Safety — Children should not press the ruler too hard or it may snap.

Parents could observe this activity and ask questions, such as:

Key Questions:

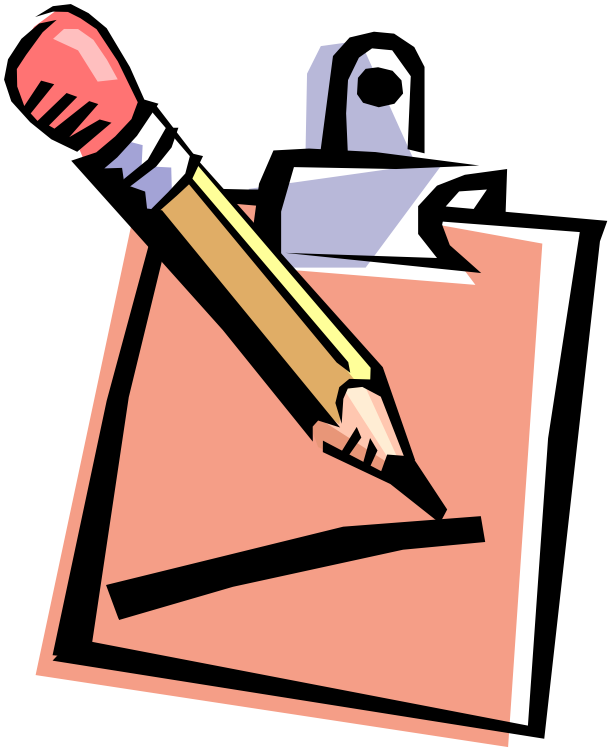
Why are some of the lines on your paper smaller? What was happening then? Why are some of the lines larger? What was happening then? What would happen to the lines if the sound was louder/ quieter? Why does the sound get quieter?

Recording Opportunities:

This activity records itself in some ways, but children could go on to label their lines to show what the volumes of the sounds were at certain points and explain why the sounds were like that.

VARIOUS VIBRATIONS

- Hold a piece of paper on a clip board, against the pencil.
- Start with the pencil on the line, bend the ruler so it vibrates, and move your paper along to draw a line.
- What do you notice about the lines when the sound is louder and when it is quieter?
- What would happen to the lines on the paper if the sound was even louder or quieter?



WHAT IS IT?

Age Range: **Y5/Y6; age 9 – 11 years**

Theme: **Magic Materials**

Objectives:

To know and use terms solid, liquid and gas.

To give examples of a solid, a liquid and a gas.

Resources:

Plastic cups.

Enough bottles of lemonade for all children to have a cup each.

Make sure that the consent forms have been returned before the children to do this activity.

Activity Notes:

A simple activity to set up, but one that will get children thinking. Put one bottle of lemonade on the table with the activity card. The children have to work out what types of material the object is made from. The correct answer is solid (plastic bottle), liquid (lemonade), gas (bubbles in the lemonade).

Many children will look at the ingredients or simply put plastic and lemonade, so some clues might need to be given, e.g. opening the bottle so the children can hear the gas escaping.

Before the children can have their drink they have to get their answers checked by a teacher, this should allow some supervision of who has already had a drink.

Parents might like to have a go at this activity so they can have a drink.

Key Questions:

A question that might extend thinking in this activity even further is:

What is the name of the gas that makes the bubbles in the drink?

WHAT IS IT?

- What ***type*** of material is this object made from?
- If you get all three materials you can have a glass of lemonade.
- Write your answer on a piece of paper and check it with a teacher.