



MOSELEY SCHOOL SCIENCE DEPARTMENT

Full Name: _____

I like to be called: _____

Primary School: _____

WELCOME TO SCIENCE



Mr Kinnaird Head of Department



Mrs Llewellyn Head of KS3

I am Mr Kinnaird and I am in charge of Science. I am a Physics specialist and I'm very funny... well I think I am! I am very approachable and always here to help.

I am Mrs Llewellyn and I am in charge of KS3 Science. I am also Head of Biology. If you have any problems that your Science teacher cannot sort, it is me that you come to. I am very friendly even if you cannot say or spell my name!!

Hello and a huge welcome from all of us here at the Moseley School Science Department!

We are all so excited to meet you! By now you would have normally had a day in school with us where we could get to know you, but under the circumstances this has not been possible. We wanted to introduce ourselves and help you feel at home so we have put together this booklet for you to look through during the summer. Hopefully you will find some fun things to do and when you bring it back to us when you arrive, we will get to learn a bit about you!

Please do not feel like you must do everything in the book and if you haven't got some of the equipment please do not worry. There is space on each page for you to make any notes about what you find out about the investigations but we will always happily look at any photos you take or pieces of work not in the booklet too!

Make sure you are keeping your minds and bodies active so that you are feeling good when you start secondary school. Until we all get to meet in person: Take care and Stay Safe!

YOU AND SCIENCE

Tell us something fun you have done involving science, either at home or school:

What is your favourite thing about science?

What are you most looking forward to in science at Moseley School?

Who is your favourite scientist and why?

Draw something to do with science:

Tell us a science joke:

BODY SCIENCE

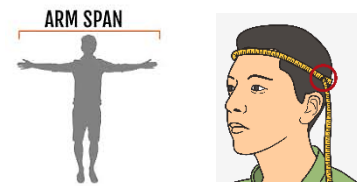
Part 1 - True or False?

Use a tape measure (or string and a ruler) to find out if these statements are body facts or body fictions:

1. The circumference of your head is 3 times the length of your foot.
2. Your arm span is the same as your height.
3. Your height is 10 times the length of your hand (from your longest finger to your wrist).
4. Your height is 5 times the length of your thigh.

YOU WILL NEED:

- A tape measure **or** string and a ruler
- Chalk **or** felt tips and a big piece of paper



HAVE A THINK!

- Can you find out any body facts of your own?
- Are the body facts the same for adults and children?
- Who has the widest arm span in your family?
- Who has the widest hand span?
- Is the oldest person in your family the tallest?

Part 2 – What is inside us?

If you have a hard surface outside that is okay for you to draw on with chalk then find a space where you can lie down. If not, use a big piece of paper or stick lots of smaller pieces of paper together.

Ask someone to draw round you. Then inside your body outline, draw what you think is inside your body. See if you can include: heart, lungs, stomach, small and large intestine, kidneys, liver, bones and brain. If you have access to the internet have a look to see if you got them in the right place.

Can you think of any more body parts to add?

My Notes:

SCAVENGER SCIENCE

Part 1 – Make a shelter

Collect some different materials together from indoors (e.g. foil, card, plastic, cotton) and/or outdoors (e.g. sticks, leaves). Use the materials to make a waterproof mini shelter for a toy. You could start by making a framework and then put different materials over it. Once the shelter is finished, put a small toy inside and spray or drip water over the top. Try changing the material to find out which one is best at keeping the toy dry.

NB if you are doing this indoors, put a tray or plastic sheet under the shelter to stop water going on the floor!

YOU WILL NEED:

- Collection of different materials (foil, plastic, card, leaves etc.)
- Jug of water
- Small toy
- Egg box carton or other small container
- Paper
- Glue

HAVE A THINK!

Which materials are best at keeping the toy dry?

Why do you think this is?

Which materials let the water through?

Do they let the water through straight away or after a bit of time?

Which materials soak up the water?

Part 2 – Make a Scavenger Hunt

Take an empty egg box and stick a label or write inside the lid the things you might like to collect in the box. You could use the ideas here or make up your own things.

Find something:

Made of Wood

Made of Stone

Made of Metal

Made of Plastic

That has never been alive

Non-Biodegradable

That uses energy from the Sun

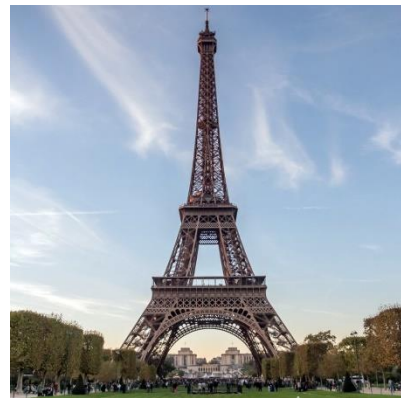
That was once alive

My Notes:

FUN SCIENCE FACTS

DID YOU KNOW....

- **Babies have around 100 more bones than adults** - Babies have about 300 bones at birth, with cartilage between many of them. This extra flexibility helps them pass through the birth canal and also allows for rapid growth. With age, many of the bones fuse, leaving 206 bones that make up an average adult skeleton.
- **The Eiffel Tower can be 15 cm taller during the summer** - When a substance is heated up, its particles move more and it takes up a larger volume – this is known as thermal expansion. Conversely, a drop in temperature causes it to contract again. The mercury level inside a thermometer, for example, rises and falls as the mercury's volume changes with the ambient temperature. This effect is most dramatic in gases but occurs in liquids and solids such as iron too. For this reason, large structures such as bridges are built with expansion joints which allow them some leeway to expand and contract without causing any damage.
- **20% of Earth's oxygen is produced by the Amazon rainforest** - Our atmosphere is made up of roughly 78 per cent nitrogen and 21 per cent oxygen, with various other gases present in small amounts. The vast majority of living organisms on Earth need oxygen to survive, converting it into carbon dioxide as they breathe. Thankfully, plants continually replenish our planet's oxygen levels through photosynthesis. During this process, carbon dioxide and water are converted into energy, releasing oxygen as a by-product. Covering 5.5 million square kilometres (2.1 million square miles), the Amazon rainforest cycles a significant proportion of the Earth's oxygen, absorbing large quantities of carbon dioxide at the same time.
- **A teaspoonful of neutron star would weigh 6 billion tons** - A neutron star is the remnants of a massive star that has run out of fuel. The dying star explodes in a supernova while its core collapses in on itself due to gravity, forming a super-dense neutron star. Astronomers measure the mind-bogglingly large masses of stars or galaxies in solar masses, with one solar mass equal to the Sun's mass (that is, 2×10^{30} kilograms/ 4.4×10^{30} pounds). Typical neutron stars have a mass of up to three solar masses, which is crammed into a sphere with a radius of approximately ten kilometres (6.2 miles) – resulting in some of the densest matter in the known universe.



FUN SCIENCE FACTS 2

- **Hawaii moves 7.5cm closer to Alaska every year** - The Earth's crust is split into gigantic pieces called tectonic plates. These plates are in constant motion, propelled by currents in the Earth's upper mantle. Hot, less-dense rock rises before cooling and sinking, giving rise to circular convection currents which act like giant conveyor belts, slowly shifting the tectonic plates above them. Hawaii sits in the middle of the Pacific Plate, which is slowly drifting north-west towards the North American Plate, back to Alaska. The plates' pace is comparable to the speed at which our fingernails grow.
- **Polar bears are nearly undetectable by infrared cameras** - Thermal cameras detect the heat lost by a subject as infrared, but polar bears are experts at conserving heat. The bears keep warm due to a thick layer of blubber under the skin. Add to this a dense fur coat and they can endure the chilliest Arctic day.
- **Stomach acid is strong enough to dissolve stainless steel** - Your stomach digests food thanks to highly corrosive hydrochloric acid with a pH of 2 to 3. This acid also attacks your stomach lining, which protects itself by secreting an alkali bicarbonate solution. The lining still needs to be replaced continually, and it entirely renews itself every four days.
- **Venus is the only planet to spin clockwise** - Our Solar System started off as a swirling cloud of dust and gas which eventually collapsed into a spinning disc with the Sun at its centre. Because of this common origin, all the planets move around the Sun in the same direction and on roughly the same plane. They also all spin in the same direction (counter clockwise if observed from 'above') – except Uranus and Venus. Uranus spins on its side, while Venus defiantly spins in the complete opposite direction. The most likely cause of these planetary oddballs are gigantic asteroids which knocked them off course in the distant past.



Fun Facts I have found out:

SALTY SCIENCE

Part 1 – Salty Plate

Put about half a litre of warm water into the jug. Stir in a large spoon of salt until you can no longer see all the grains of salt which means they have dissolved. Keep on stirring in salt, a spoon at a time, until you reach the point where no more salt will dissolve. Then pour a small amount onto a flat coloured plate or tray and leave the plate somewhere warm.

Over the next few days have a close look at what is happening on the plate.

Part 2 – Different Shapes

Take the rest of your salty water and put a small amount into each of your different shaped and sized containers. Try to put the same amount of salty water into each container. Find a sunny place to put the containers close together, or you can find a warm place indoors. Over the next few days, watch to see what happens.

YOU WILL NEED:

- Warm Water
- Salt
- Large Jug or container
- Several different size and shaped containers
- Coloured plastic plate or shallow dish

HAVE A THINK!

Part 1 –

What do you notice? Where do you think the water is going? Can you see the salt again? Does it look the same as the salt that you started with? What is the same about it? What is different about it?

Part 2 –

What do you notice is happening to the levels of the salty water? Can you see any salt crystals appearing? Which containers do you see salt in first, the tall and thin or the shallow and wide ones?



My Notes:

SPINNING SCIENCE

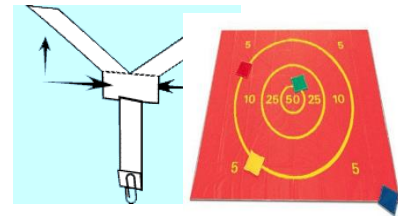
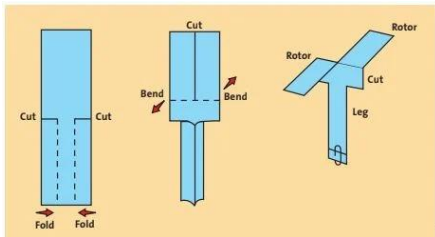
On the next page are some template for helicopter spinners. You can use these as templates to make your own!

CUT along the solid lines and FOLD along the dotted lines. PAPER CLIP the three folded pieces of the tail of the spinner.

FOLD the two 'wings' of the spinner in opposite directions. Hold the spinner high up, let go and watch what happens! You could make different sizes, use different types of paper, use more paper clips or change the length of the wings.

YOU WILL NEED:

- Paper
- Paper clips
- Scissors
- Different types of paper or card

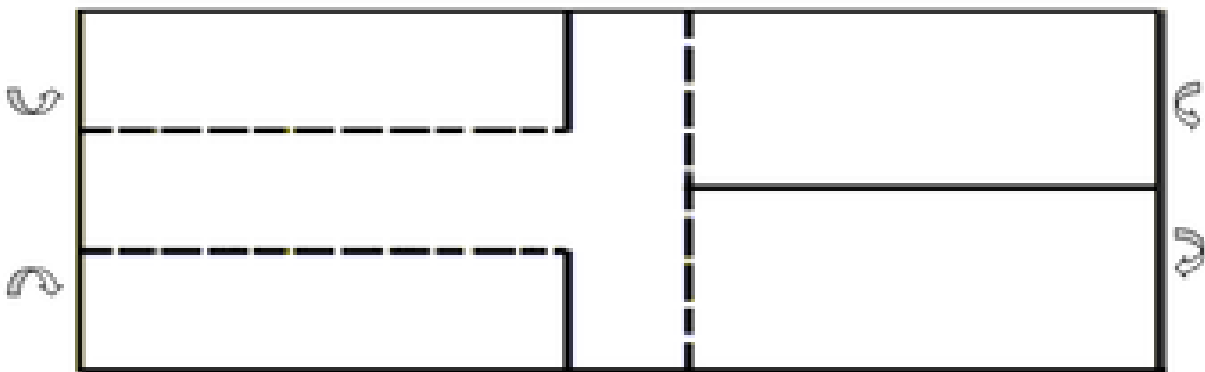
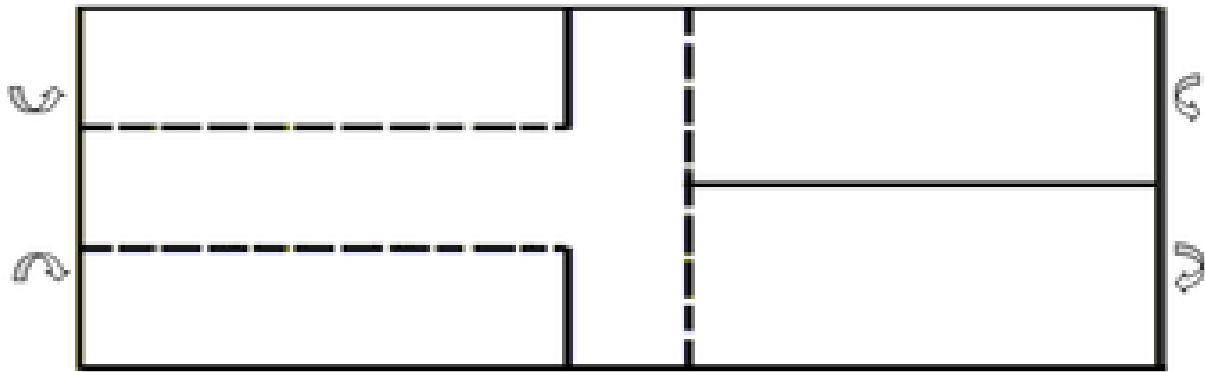
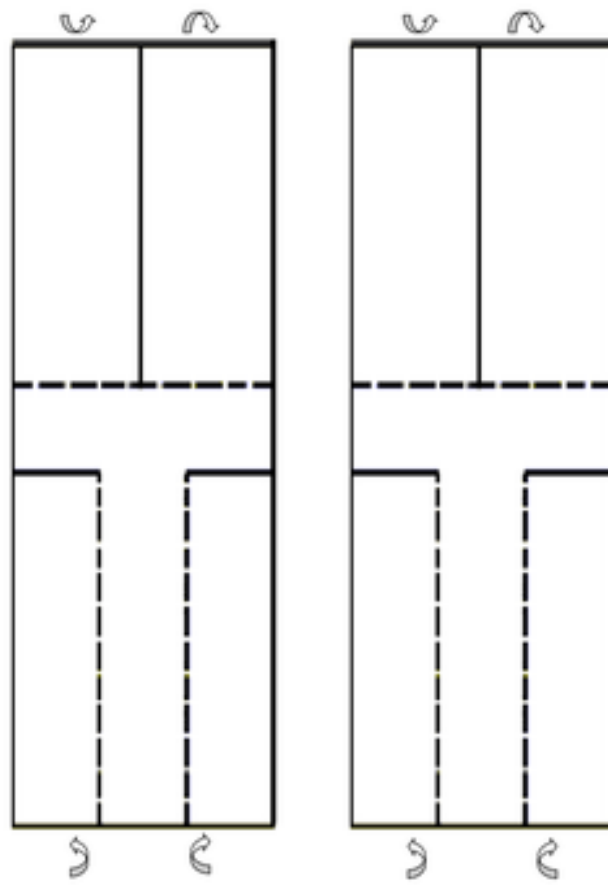


HAVE A THINK!

- What happens when you let the spinner go?
- Can you slow the spinner down? How?
- What happens if you use different sorts of paper?
- Does tissue paper fall fast or slower than cardboard?
- What happens when you make the wings longer or shorter?
- What if you make a giant one? Or a tiny one?

Take your spinner outside. Make a target on the ground – you could do this by drawing a circle on a large sheet of paper, or you could use a big shallow bowl. Hold your spinner up and drop it, trying to get it to land on your target. Have ten goes and count how many times you hit the target. Try moving the target to a different place outside and see if your score increases or decreases!

My Notes:



SCIENCE LOGO

Can you design a science logo for our department in Moseley School? It could use the Moseley badge, or the house colours but must include something to do with science. Good luck!