



BRITISH
SCIENCE
WEEK

7-16 March 2025



CHANGE & ADAPT

CHANGE & ADAPT

Delivered by



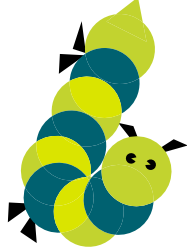
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PRIMARY ACTIVITY PACK

A range of activities to be run with
children aged 5-11 (approx.)

britishscienceweek.org



Welcome to the British Science Week 2025 Primary pack!

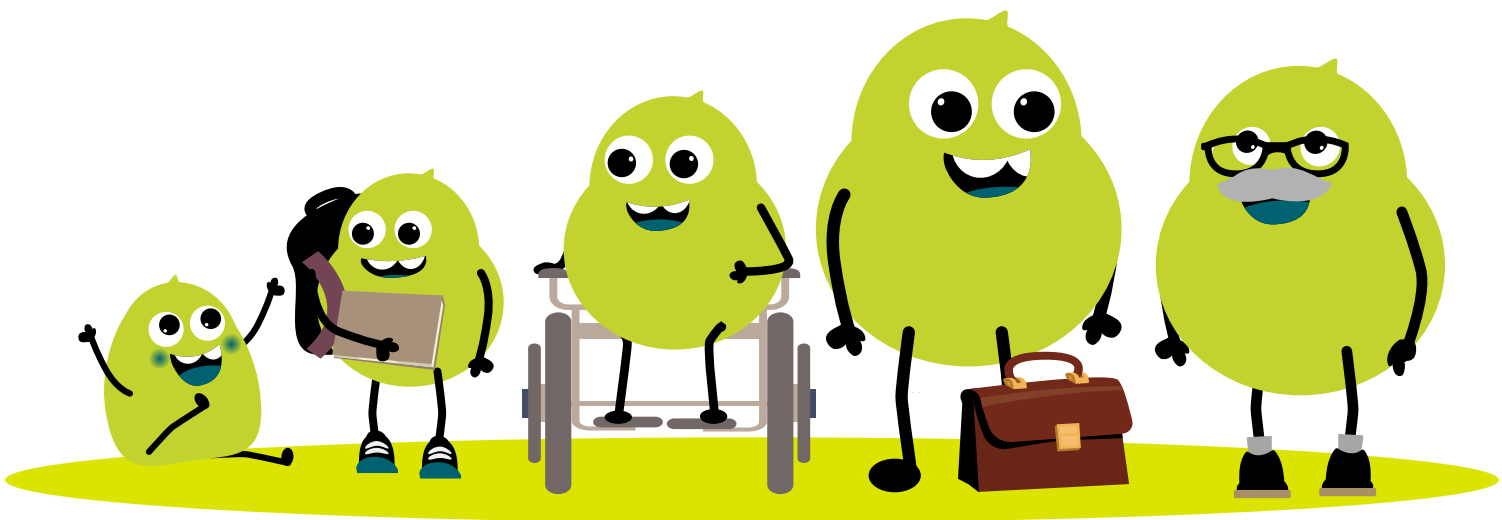
This activity pack is a one-stop shop to support you during British Science Week, and you can use it all year!

When developing this pack, we looked for activities which promote cross-curricular learning and break down the stereotypes surrounding science, technology, engineering, and maths (STEM). We therefore encourage you to use British Science Week as an opportunity

to link STEM to other curriculum subjects, and to your children's own backgrounds, lives, and interests.

We have included activities for children to complete in any setting, whether that is their school, a club, an organisation, or at home with their families.

You can share your brilliant activities, vlogs, or images on social media! Join the conversation or see what's happening during the Week by tagging British Science Week on X (@ScienceWeekUK ✨) and using the hashtag #BSW25 across all social media platforms.



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If you're looking for more activities suitable for younger children, check out our Early Years activity pack. This pack is full of fun, hands-on activities aimed at children aged 5 and under, but many of them are perfect for younger primary pupils too!



This year's theme

Each year there is a new theme for British Science Week, and for 2025 it's 'Change and adapt'.

As British Science Week enters its fourth decade, it's a great time to think about how the world is changing and how we can adapt to those changes.

You can also think about all the types of change and adaptation we see in STEM – the options are endless!

Here are some ways you can introduce the theme to students in a fun, imaginative way to get them excited about the Week:

➤ Design a poster based on this year's theme and enter it into our annual competition for the chance to win some fabulous prizes! Some of the activities in this pack can provide inspiration, simply look out for the activities marked with the paintbrush symbol shown above. We also have an exciting, special competition category this year, suitable for older primary children. You can find more information about the competition on [page 32](#) and how to enter here: [britishsienceweek.org/poster-competition](https://www.britishsienceweek.org/poster-competition) ✨



- Talk about what change and adaptation mean. How have you noticed the world around you changing, and how have you adapted? Think about your favourite science experiment or activity, did it involve change? How have animals and people adapted to new environments over time? Is ever-changing technology making our lives easier, or are we adapting to fit it in?
- If you work in a school or with a community group, invite a special guest to share their own experience of change and adaptation. Are there any STEM professionals local to you, or museums to visit? Maybe a city planner could talk about how the places we live have changed and adapted to technology and growing populations?

CHANGE & ADAPT



CREST Awards

CREST Awards is a scheme run by the British Science Association that inspires young people to think and behave like scientists and engineers.

CREST projects are hands-on, student-led investigations that allow children and young people to develop STEM skills, communication and teamwork, and discover how STEM is relevant to their lives.

At primary level, pupils who complete six activities can earn a CREST Star or SuperStar Award, recognised with a certificate. The Award is given for participation and engagement with the activities and there is no need to submit pupils' work at this level.

Look out for the CREST logo in this pack to see which activities can be put towards a CREST Award. You may like to adapt or scaffold the activities,

depending on the needs of your children. You can find more CREST Star and SuperStar projects suitable for children working at primary level in our free online resource library: primarylibrary.crestawards.org ✨

You can also find a range of Discovery projects in our resource library: discoverylibrary.crestawards.org ✨. All the resources are free to download and use with your students.

CREST Discovery Awards are typically completed by students aged 10-14 and they can be run at both primary and secondary level. Students earn a Discovery Award by taking part in a five-hour group project. Discovery

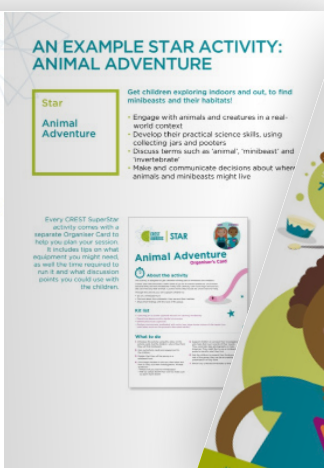
projects are perfect to run during one school day, but they can also be spread out across a week or term.

What impact does CREST have?

We have found that there is around a 50/50 split of boys and girls completing CREST Awards, helping to smash the stereotype of science being 'for boys', and driving towards a more representative future STEM workforce.

Three in five schools who run CREST are in challenging circumstances; earning a CREST Award can be particularly beneficial for children from disadvantaged backgrounds.

Find out more in the [CREST Impact Report \(2021-22\)](#) ✨.



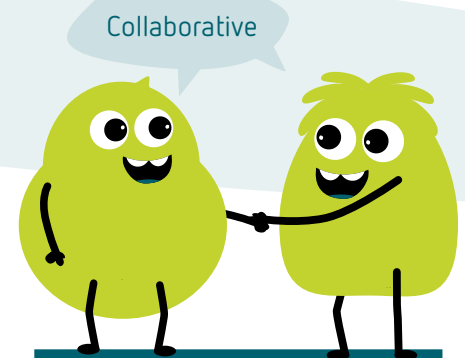
UNLOCKING SKILLS

A fantastic way to encourage children to take an interest in STEM is to introduce transferable skills used by those working in STEM-related jobs.

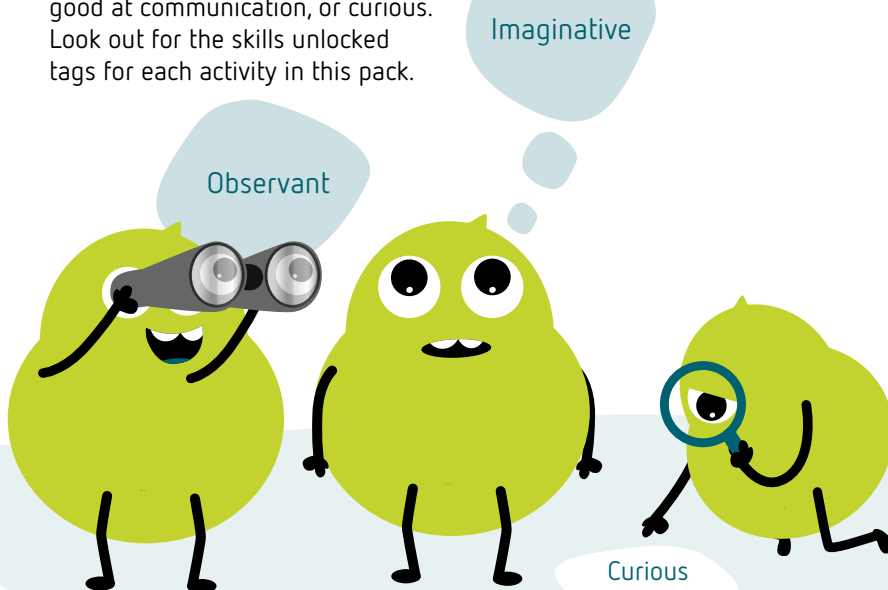
These skills will strengthen positive attitudes and reduce stereotypes of those working in the field.

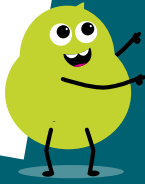
You could, for example, use the **STEM Person of the Week** ✨ activity from NUSTEM at Northumbria University or introduce a scientist from the British Science Association's **Smashing Stereotypes** ✨ campaign. Ask children to identify what characteristics people working in STEM need. These might include being observant, creative, patient, good at communication, or curious. Look out for the skills unlocked tags for each activity in this pack.

The table opposite has a complete list of attributes developed by NUSTEM to use as a talking point or to share with other teachers. As a little bit of motivation, why not award children with a certificate for each STEM characteristic they demonstrate well during the Week? You can download and print the certificates from britishscienceweek.org/plan-your-activities/marketing-materials ✨.



Observant
Open-minded
Committed
Curious
Logical
Creative
Imaginative
Patient
Self-motivated
Collaborative
Resilient
Clear communicator
Passionate
Hard-working
Organised





LET'S MAKE A WORMERY

Worms make good soil which is very important in nature. In this activity you'll be investigating how worms change dead leaves and waste materials into soil. It takes 20-30 minutes to set up, but you'll need to collect leaves and worms before you start. After two weeks, you can observe the changes!

🕒 20 minutes followed by observation over 2+ weeks

🛒 Kit list

2-litre plastic bottle

Soil

Sand
(ideally coloured)

Leaves

Water and a
measuring cup
or cylinder

Worms
(collected from
school grounds)

Container
without a lid

Piece of dark
coloured paper

Sticky tape

Child-friendly
scissors

📖 Instructions

- 1 Start by going outside to gently collect worms in your container. We want to find worms in their natural habitats. Be sure to collect dead leaves for your wormery as well.
- 2 Carefully cut off the top of the bottle and smooth the edges with tape. (Teachers can help with this.)
- 3 Fill the bottle with different layers of sand and soil. You need to create thicker layers of soil and thinner layers of sand.
- 4 Put a layer of dead leaves on top.
- 5 Pour a small amount of water into the bottle (approx. 30ml).
- 6 Put two or three earthworms in the top of the wormery.
- 7 Wrap a piece of paper around the bottle and tape in place.
- 8 Add a small amount of water each day to keep the soil damp.
- 9 Mark your calendar! After two weeks, take the paper off and look at the results.

⚠️ Watch out

Teachers – please be sure to risk assess practical activities following the advice of your Health & Safety advisor.

Children must wash their hands thoroughly after touching worms and soil.

➡️ Next steps

- What happens when you add waste food?
- Discuss why worms and insects are so important in our world.
- Talk about why we see more worms when it rains.

This activity and fact sheet can be downloaded from PSTT's 'Science & STEM Club', within the Earth Explorers collection:
pstt.org.uk/resources/science-and-stem-clubs

🏠 At home

Learn about the soil around you. Mix soil and water in a jar, creating muddy water. Leave the jar for an hour and the mixture will settle into layers. Notice anything interesting?

🔍 Career options

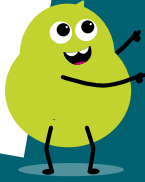
Brianna Green is a biogeochemist who collects soil samples in the North pole to see what kinds of microbes are there! Learn about Brianna's work in the following slideshow: pstt.org.uk/download/1504/?tmstv=1676566064 ✨

Discover more scientists in PSTT's 'A Scientist Just Like Me' resource: pstt.org.uk/unique-resources/a-scientist-just-like-me/ ✨

🔒 Skills unlocked

Patient, observant

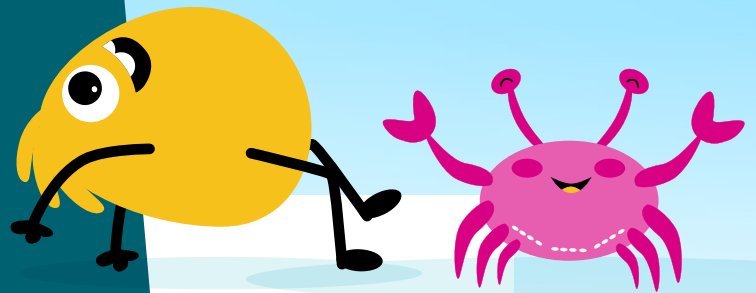




DEEP SEA YOGA DISCOVERY

This activity will engage you in a fun and educational game that combines physical movement with learning about marine life and their adaptations, promoting both physical wellness and environmental awareness.

🕒 30-60 mins



📋 Kit list

Relaxing music or ocean sounds

Yoga mats or gym mats

Large space

Pose descriptions
(on the following page)

📖 Instructions

- 1 Your teacher will set the scene with calm, ocean-themed and whale song background music.
- 2 Your teacher will lead a gentle warm-up to get you ready for yoga. This can include simple stretches (reach for the sky, touch your toes and reach for the seabed) and deep breathing exercises (imagine you're a big, slow-moving whale).
- 3 Your teacher will introduce each yoga pose with a brief explanation of the corresponding marine animal and its adaptation.
- 4 Your teacher will demonstrate the pose and then help you to try it yourself. Hold each pose for about 1-2 minutes, and learn about the connection between the pose and the animal's adaptation.

➡ Next steps

Find out more about ocean science, art and careers at www.rmg.co.uk/stories/our-ocean-our-planet ✨.

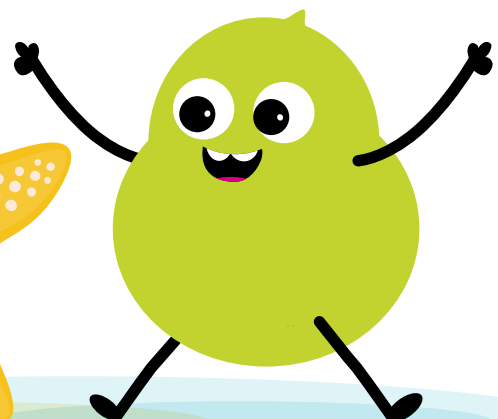
The National Maritime Museum is the world's largest maritime museum, filled with inspirational stories of exploration and endeavour at sea and packed to the gunwales with intriguing objects and fascinating galleries. www.rmg.co.uk/national-maritime-museum ✨.

↔ Career options

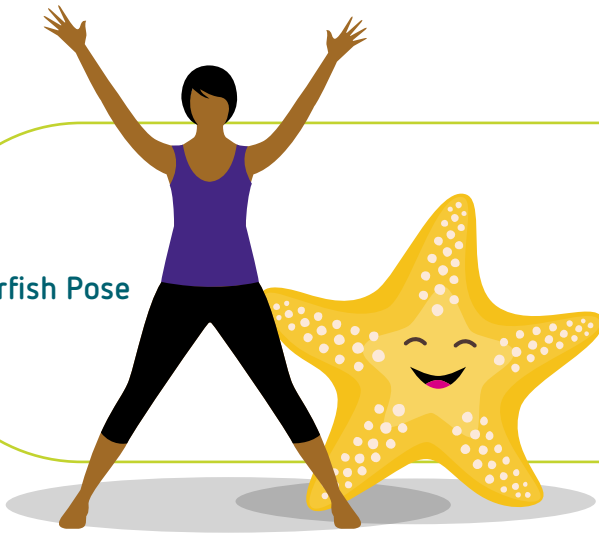
- Marine scientist
- Zoologist

🔓 Skills unlocked

Passionate, open-minded



Starfish Pose



Teacher explanation: Starfish can regenerate lost limbs.

Pose: Standing in a star shape, reach legs and arms wide as if reaching for something in the air.

Activity: Talk about how starfish can grow back limbs if they lose them.

Teacher explanation: Crabs have hard shells for protection.

Pose: Sit with feet flat on the ground, hands behind you, and lift your body into a tabletop position, walking sideways like a crab.

Activity: Discuss how crabs use their shells to stay safe.

Crab Pose



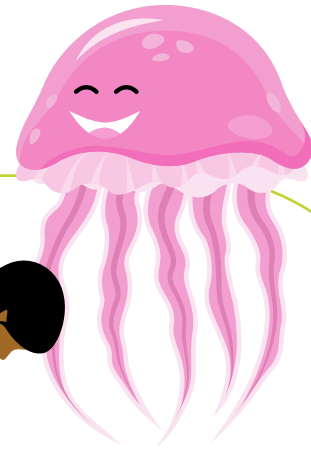
Clownfish Pose



Teacher explanation: Clownfish receive a safe space to live and in return they help rid the anemones of harmful parasites.

Pose: Sit cross-legged, then twist your torso gently to one side, imitating the way clownfish dart in and out of anemone tentacles.

Activity: Discuss how clownfish and anemones help each other survive. Clownfish receive a safe space to live and in return, clownfish provide fish to the anemone to help rid it of harmful parasites.



Teacher explanation: Jellyfish use their tentacles to capture prey and their bodies to float effortlessly with ocean currents.

Pose: Stand tall, then bend forward, letting your arms dangle like tentacles. Slowly sway from side to side.

Activity: Discuss how jellyfish move with the ocean currents and how they catch their food with their tentacles.



Jellyfish Pose



Seahorse Pose



Teacher explanation: Seahorses have a unique way of swimming upright and use their tails to anchor themselves to plants.

Pose: Kneel on the floor, sit back on your heels, and bring your hands to your chest with palms together. Lift your head and chest high, imitating an upright seahorse.

Activity: Explain how seahorses anchor themselves and blend into their surroundings to avoid predators.

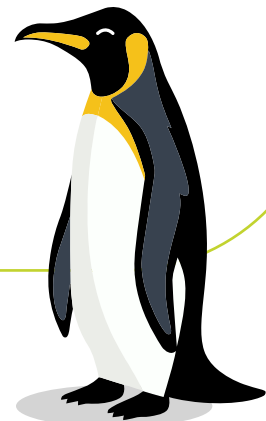
Teacher explanation: Penguins are excellent swimmers and can withstand cold temperatures.

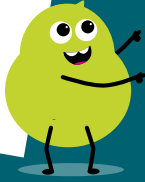
Pose: Stand upright with feet together and arms by your sides. Waddle around like a penguin and bring the group together and huddle like penguins.

Activity: Talk about how penguins swim and how they huddle together to keep warm in cold environments.



Penguin Pose





AMAZING ANIMAL ADAPTATIONS!

How do polar bears survive in such chilly climates without freezing? How do tigers sneak up on their prey without being heard?

Use this activity to explore some of the remarkable adaptations that allow animals to thrive in different habitats around the world.

🕒 30 mins



📋 Kit list

Animal adaptation cards

Child-friendly scissors

Pencil/pen and colouring pencils

Books/tablet/computer for research

📖 Instructions

- 1 As a class, discuss what you think the word 'adaptation' means.
- 2 Try to come up with as many animals as you can that live in: rainforests, oceans, polar regions and deserts – do any animals from the same habitats share similar adaptations?
- 3 In pairs, carefully cut out all the animal and adaptation cards and mix them up.
- 4 Move the cards around to match the animals to their correct adaptations.
- 5 Choose an animal not on the cards already and use books or online research to find out:
 - The animal's habitat
 - An adaptation the animal has for its habitat
- 6 Use the spare cards to write your animal's name, its habitat and adaptation.
- 7 In a group of four-six, mix up all of your new animal and adaptation cards, swap them with another group and see whether you can match all the new animals to their habitats and adaptation.

➤ Next steps

Using books and/or online research to help, choose an animal from the cards and draw a diagram of it. Write down what habitat your animal lives in and label at least four different adaptations it has.

🏠 At home

Make your own animal and adaptation cards at home. Mix them up, turn them all over and play a game of pairs with your family and friends.

↔ Career options

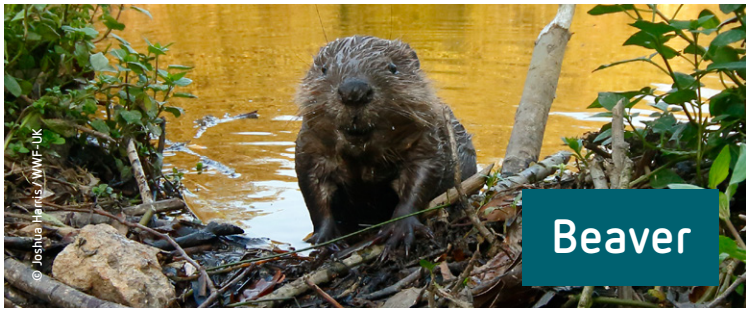
- Wildlife conservationists help protect important habitats and endangered species in the UK and across the world.
- Zoologists are scientists that study animals, their behaviours, their body parts and the ecosystems they are part of.
- Environmental educators teach other people about the importance of protecting different habitats for wildlife and people.

🔒 Skills unlocked

Logical, hard-working



African elephant



Beaver



Bumblebee



Emperor penguin



Fennec fox



Green turtle



Polar bear



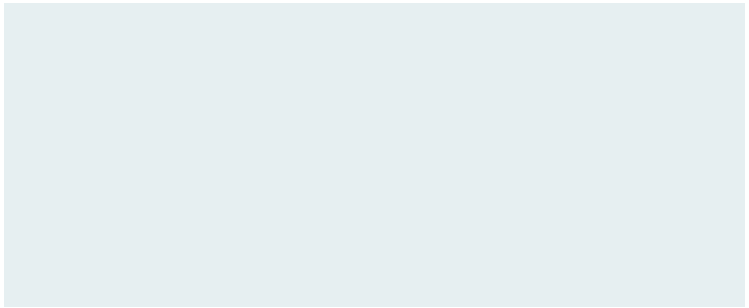
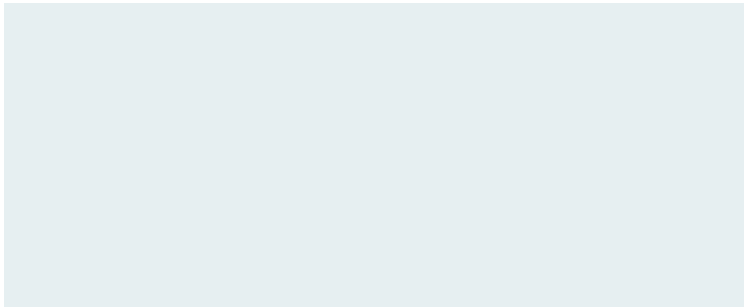
Sloth



Tiger



Red-eyed tree frog



Animal adaptations

- 1 Thick fur keeps this animal warm.
- 2 Large paws help this animal walk on icy surfaces.
- 3 Sharp teeth and claws allow this animal to catch its favourite food – seals!

Animal adaptations

- 1 Stripes help to keep this animal camouflaged.
- 2 Large paws help this animal to walk silently and creep up on its prey!
- 3 This animal has a very good sense of hearing which helps it detect its prey.

Animal adaptations

- 1 Legs covered in sticky hairs help this animal to collect pollen.
- 2 A long tongue helps this animal reach inside flowers for nectar.
- 3 Having a sting helps protect this animal from predators.

Animal adaptations

- 1 Flapping its big ears like a fan cools this animal down.
- 2 Wrinkly skin helps to trap moisture and keep this animal cool in hot climates.
- 3 This animal has a long trunk which it can use to pull leaves off trees and bushes.

Animal adaptations

- 1 Two layers of feathers help keep this animal warm and waterproof.
- 2 A streamlined body is perfect for diving underwater.
- 3 Huddling together helps to keep this animal, and its young, nice and warm.

Animal adaptations

- 1 Large ears help this animal to cool down.
- 2 Sharp claws help this animal to burrow underground to escape the heat.
- 3 This animal is nocturnal so it is awake at night-time when it is cooler.

Animal adaptations

- 1 Strong teeth help this animal chew through wood and bark.
- 2 A broad flat tail helps this animal steer through water.
- 3 An extra clear eyelid helps this animal see underwater.

Animal adaptations

- 1 Broad flippers help this animal swim underwater.
- 2 This animal can slow down its heart rate and this allows it to stay underwater for up to five hours!
- 3 A hard shell protects this animal from being eaten by large predators.

Animal adaptations

- 1 Large eyes allow this animal to easily spot prey as well as any predators.
- 2 Long legs and webbed toes make this animal an excellent climber.
- 3 Being green helps this animal to blend in with leaves.

Animal adaptations

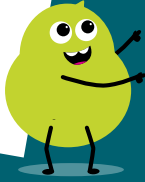
- 1 This animal has four parts to its stomach, great for digesting plants.
- 2 Curved claws help this animal climb and hang onto trees.
- 3 This animal's fur grows in a way that lets rainwater roll off when it hangs upside down.

Animal adaptations

- 1
- 2
- 3

Animal adaptations

- 1
- 2
- 3



MINECRAFT: AXOLOTL ADAPTATIONS

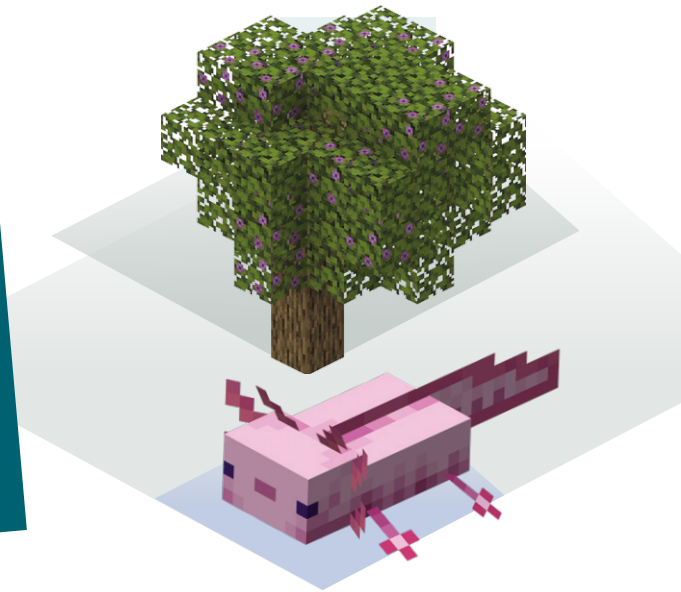
Animals are perfectly adapted to survive in their habitat. In this activity, you will use Minecraft to build your own axolotl pond with all of the features of a lush cave, which is the axolotl's natural habitat in Minecraft.

In real life, axolotls are endangered and are only found wild in a lake complex in Mexico.

🕒 1 hour

MINECRAFT

Collins



📋 Kit list

Minecraft

any version and a device that allows you to play

Notepad or piece of paper

A pen or pencil

i Instructions

- 1 Find an azalea tree. These can be found most commonly in forested biomes.
- 2 Dig down to find a lush cave – where Minecraft axolotls live!
- 3 Explore the lush cave and note down the features of the habitat.
- 4 Find a wild axolotl – or two – and catch them in a water bucket.
- 5 Find somewhere above ground to build your own axolotl pond.
- 6 Dig a shallow hole for the pond. Make sure you have a slope up to the ground, as axolotls leave the water for short periods of time.
- 7 Fill your pond with water using a bucket.
- 8 Remember - animals are perfectly adapted to the habitat they live in. You should include all the features of lush caves to make sure your axolotls feel right at home!
- 9 You can even breed your captive axolotls by feeding a pair of axolotls with buckets of tropical fish. Then reintroduce them into lush caves to increase the wild population.

➤ Next steps

If you finish your axolotl pond, you could build an axolotl laboratory to study these incredible creatures.

You can also print these free worksheets to learn more about animal adaptation: <http://bit.ly/MinecraftBSW> ✨

Think about adaptation and if humans should help endangered species to reproduce.

🏠 At home

Do some research on real-life axolotls. They are fascinating creatures!

- What is unique about their life cycle?

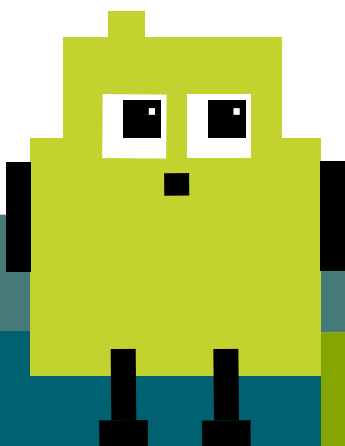
↔ Career options

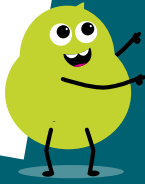
- A conservationist acts to protect and preserve wildlife and the environment.
- An evolutionary biologist studies how species have evolved and changed over time.

🔒 Skills unlocked

Imaginative, curious

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Suitable for older primary children, aged 7-11, or those working at this level.



PLAYGROUND GAMES

This activity is designed to get you thinking about how games can be adapted to include disabled children. You'll learn about the effects of limited vision and other disabilities and design games that accommodate the needs of different players.

🕒 45 minutes

VIDEO AVAILABLE



📦 Kit list

Games equipment such as bean bags, balls, cones, poles etc.

Bells and other noise makers

Torches and other lights

Ear plugs

Low-vision simulators

📖 Instructions

- 1 Think about disabled children, perhaps someone might be partially sighted, have limited hearing or use a wheelchair. How might this affect how they could play a game like ten-pin bowling?
- 2 Do some research and discuss your thoughts. Perhaps use a blindfold to help you understand what it is like to not be able to see.
- 3 Using your equipment, design a game or set of games that could be played together by disabled children and non-disabled children. How could you adapt a game like bowling? Perhaps you could use a noisemaker near the pins to help children with low vision find them.
- 4 Test your ideas and share your games.
- 5 You could take photos or a video of someone taking part in your games, or write instructions for how to play them.



⚠️ Watch out

- Before restricting sight, hearing or movement, ensure children are in a safe space and have appropriate support. Watch out for any children showing signs of distress.
- Follow your organisation's guidelines for outdoor work.
- Make sure any alterations made to sports equipment are safe.

➡ Next steps

This activity is one of the CREST SuperStar challenges. Why not try some of the other activities? You can find out more and download all the resources you need here: primarylibrary.crestawards.org ✨

If you are an adult wanting to run CREST Awards, visit the website for advice on how to get started: www.crestawards.org ✨

🏠 At home

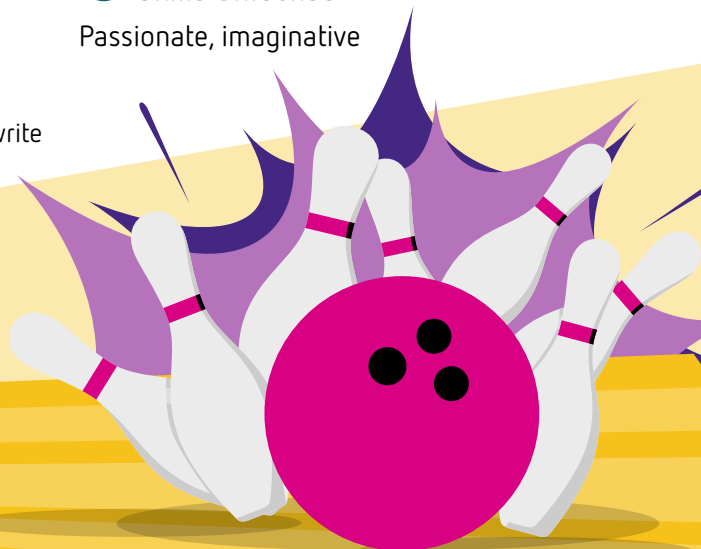
When you play games at home with your family/carers, think about changes you could make to include people with different needs.

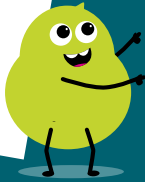
↔️ Career options

- Occupational therapists help disabled people to live independent lives.
- Disability sports coaches help adapt sports to be inclusive of and accessible to disabled people.

🔒 Skills unlocked

Passionate, imaginative



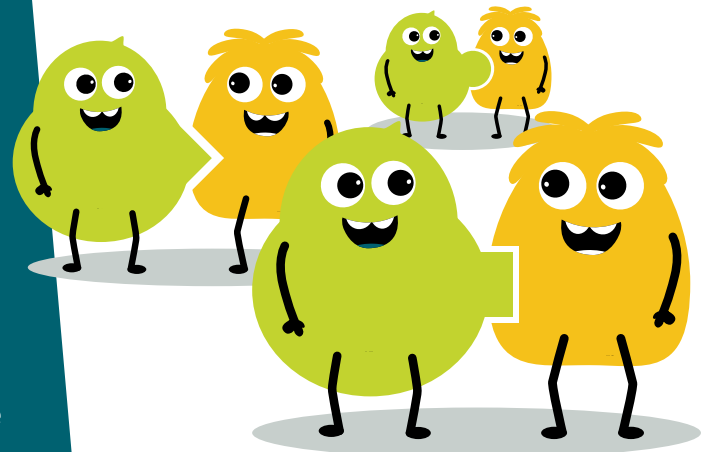


Suitable for older primary children, aged 7-11, or those working at this level.

ANTIBODY ADVENTURE: MEMORY CHALLENGE

Our immune systems adapt to protect us against illness. When something enters our body that could make us ill, like a virus, we call them antigens. Our bodies make antibodies that recognise antigens by fitting together with them like jigsaw pieces. The antibodies get rid of the antigen, keeping us healthy.

🕒 15 - 30 mins



- 5 Is it faster when you know the patterns already? That's what happens when an antigen enters your body a second time. You already have antibodies that recognise the antigen as bad and get rid of it much quicker, meaning you won't get as ill.

📋 Kit list

A set of antigen and antibody cards, printed on A4 or A3 paper and cut out

A partner

📖 Instructions

- 1 Your teacher will hand out cards showing antigens and antibodies. Separate the cards into two groups, one for antigens and one for antibodies. Turn all the cards over and shuffle them around, keeping each group separate.
- 2 Turn over one card from antigens and one from antibodies. Do the patterns match like jigsaw pieces? If they do, leave them facing up. If they don't, turn them back over.
- 3 Keep turning over two cards, one from each group, at a time. One of the cards you've just turned over might match another you turned over earlier, so try to remember which card had which pattern on.
- 4 Once you've matched them up, turn them all back over and try again without shuffling.

➡ Next steps

Play the game again, but this time have the cards with antibodies on them already turned over and turn over one antigen card at a time.

This is how vaccines work. They teach your body to fight off illnesses without the illness making you sick.

🏠 At home

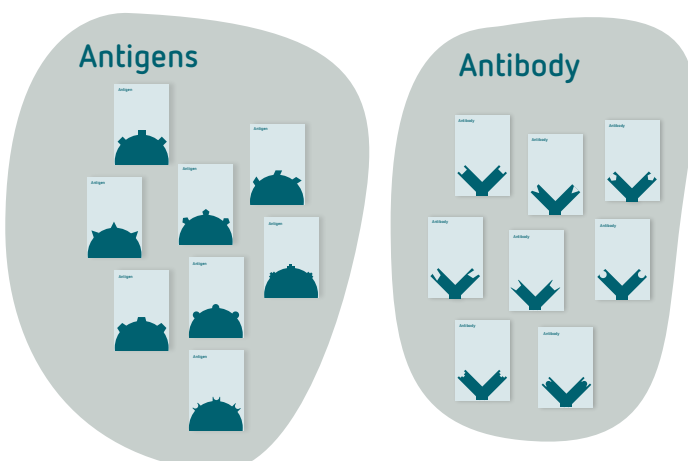
Why not have a go at this activity with people at home?

↔ Career options

- People who study the immune system are called immunologists. They might study vaccines, asthma, allergies or cancer and other diseases.
- Immunologists do lots of different jobs including research at universities, creating new medicines and treatments in pharmaceutical companies to keep humans and animals healthy, and in hospitals treating people that have problems with their immune system.

🔒 Skills unlocked

Resilient, committed



Antigen



Antigen



Antibody



Antibody



Antigen



Antigen



Antibody



Antibody



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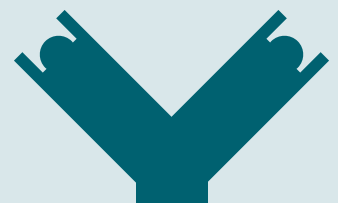
Antigen

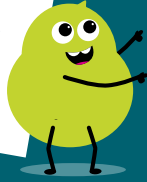


Antibody



Antibody





Suitable for younger primary children, aged 5-7, or those working at this level.



MUSIC MAKER

This activity is designed to get you thinking about how different sounds are made. You'll test different amounts of water in bottles and other containers, and change the amounts to create new sounds. Can you make a song to perform?

🕒 45 minutes

🛒 Kit list

Several identical glass bottles

Additional glass or ceramic containers of different sizes e.g. flower pots, mugs, jars or cups

Spoons, pencils or other tappers

Food colouring (optional)

📄 Instructions

- 1 Collect the glass bottles that are all the same size and carefully pour different amounts of water into each.
- 2 Gently tap the bottles with the pencils, spoons and other tappers to discover the sounds they make.
- 3 Change the amounts of water in the bottles to create new sounds. Does changing which objects you use as tappers also change the sound?
- 4 If you line up the bottles in order of highest to lowest note, you will have made a musical instrument! You could add food colouring to the water to decorate your instrument.
- 5 Fill other types of containers with water and tap them to see if they make different sounds.
- 6 Using all your bottles, containers and tappers, create a simple tune and play it for an audience.

⚠️ Watch out

- Care needs to be taken when using glass. Check your organisation's policy for using glass.
- Clear up water spills and breakages quickly.
- Encourage children to tap gently.
- Food colouring can stain children's skin.

- Discard bottles with cracks / chips / sharp edges.
- Children must not drink from the bottles.
- Bottles must be standing on a table when being tapped.
- Don't use bottles larger than 350ml.

➤ Next steps

This activity is one of the CREST Star challenges. Why not try some of the other activities? You can find out more and download all the resources you need here: primarylibrary.crestawards.org ✨

If you are an adult wanting to run CREST Awards, visit the website for advice on how to get started: www.crestawards.org ✨

🏠 At home

With help from parents / carers, create water instruments at home. How many different sounds can you make?

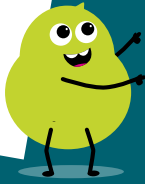
↔️ Career options

- Sound designers work with musicians to create music and sound effects.
- Sound engineers study how sound travels in different situations, such as concerts or underwater.

🔓 Skills unlocked

- Creative, curious





TOP OF THE CROPS!

Selective plant breeding is a fantastic example of human-influenced plant adaptation. In this activity, you can choose the best of a crop to help improve the next harvest!

🕒 2 x 30mins for the initial seed extraction and potting, plus time to grow

Kit list

Tomatoes
(non-hybrid variety)

Shallow container

Sieve

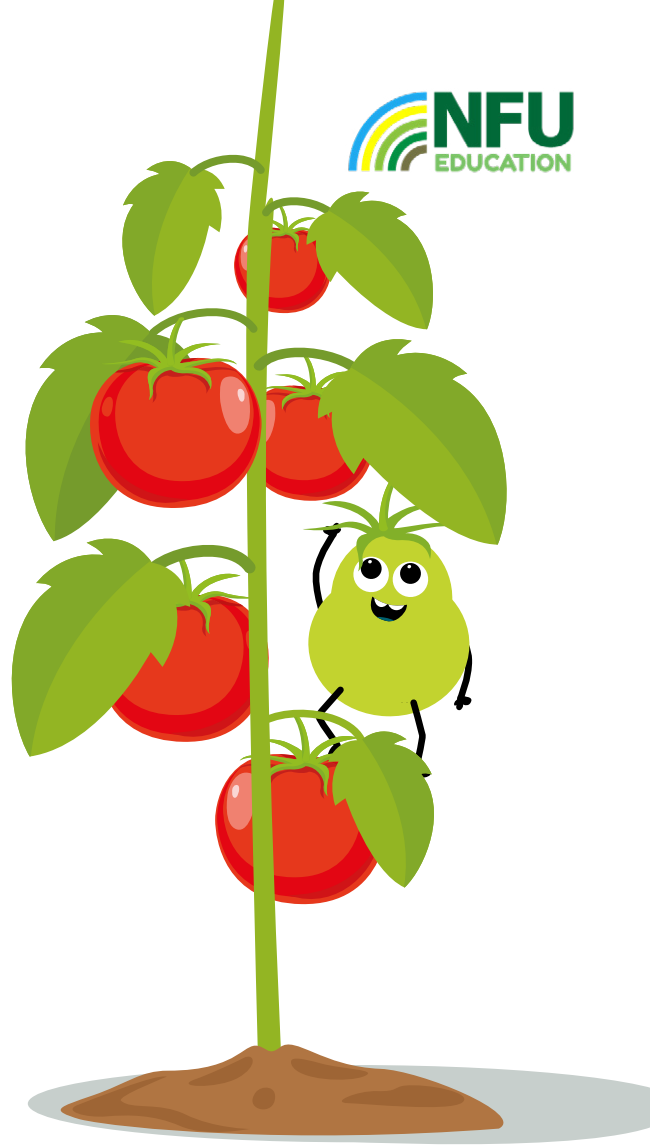
Kitchen roll

Compost

Small pots

Instructions

- 1 Gather a range of traditional/heirloom tomato varieties.
- 2 Think about how to decide which one is the best. You could think of different categories such as shape, size, taste. Which is the most important and why?
- 3 As a class/group, decide which tomato you want to use to start your new crop and take a photo of it.
- 4 Halve the selected tomatoes and scoop the seeds out into a shallow container of water. Put the container aside for four or five days, after which a mould will have developed.
- 5 After the four or five days, pour the seeds into a sieve and wash them thoroughly with water to remove the mould.
- 6 Arrange the seeds on a piece of kitchen roll to dry out. Once the seeds are dry, they are ready to be planted.
- 7 When your tomatoes grow, examine them. How are they similar to your original tomato? How are they different?



Next steps

Join one of our fantastic, interactive 'Change and adapt' live lessons at www.nfueducationlive.com ✨. All lessons are free to attend and there are differentiated lessons for KS1, Lower KS2 and Upper KS2. All lessons are supported by curriculum-linked resources for before, during and after the lesson.

At home

Horticulture, the growing of fruits and vegetables, is just one kind of farming. Can you find out about any other types of farming?

Career options

Growing fruit and vegetables requires a huge range of people. From plant geneticists to robotics engineers, farm managers and tractor drivers, each of them has a role to play to ensure we have fresh and healthy food to eat.

Skills unlocked

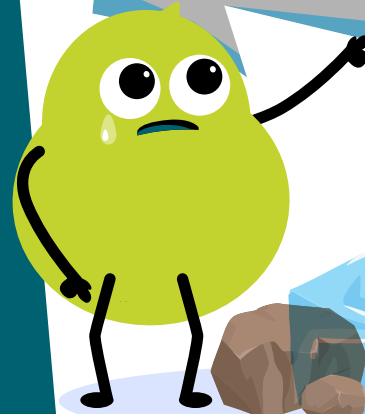
Organised, observant



TABLETOP GLACIERS

Antarctica is home to some of the largest and oldest glaciers on Earth but not many people get to see them up close, so scientists often use models. This activity shows the impact that water contact and changes in temperature have on glaciers and explores how they shape the landscape around them.

🕒 Approx 30 mins (plus time beforehand to freeze ice cubes)



🧰 Kit list

Water
(cold and warm)

Blue food colouring
(optional but aids visibility)

Large ice cube tray

Small rocks or pebbles

2 x trays or baking dishes

Timer

📖 Instructions

- 1 Mix cold water with blue food colouring.
- 2 Pour the blue-coloured water into an ice cube tray and freeze until solid.
- 3 Place small rocks or pebbles in each tray or baking dish to simulate the Antarctic landscape.
- 4 Arrange the blue ice cubes on top of the rocks and pebbles in each tray. These ice cubes represent glaciers.
- 5 Let the ice cubes in one tray melt at room temperature and time how long it takes.
- 6 Pour warm water into the other tray and time how long it takes the ice cubes in this tray to melt.
- 7 Observe how the blue ice cubes melt and move, pushing the pebbles (leaving behind trails of blue water) and mimicking glacial movement.
- 8 Compare the differences in timing and think about how warming global sea and air temperatures might impact Antarctica's glaciers.
- 9 What else can you think of that changes state between solids, liquids and gases?

➡ Next steps

Try the experiment again to see what else affects how things melt. This time sprinkle salt on one ice cube, sugar on another, pepper on the third and leave a fourth cube plain as a control. Start the timer and observe which cube melts fastest. Why do you think this is and what might this mean for Antarctica's glaciers?

🏠 At home

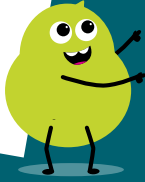
If the entire Antarctic ice sheet melted, sea levels could rise by about 60 metres! How might rising sea levels affect you? Ask older people what changes they have seen in their lifetimes.

↔ Career options

- Glaciologist - study glaciers and natural phenomena involving ice
- Carpenter - help to repair some of Antarctica's historic climate research bases
- Curator - share Antarctica's stories in your community through art, music or exhibitions

🔒 Skills unlocked

Observant, curious



Suitable for older primary children, aged 7-11, or those working at this level.

MAGNETIC COINS

Have you ever wondered what your coins are made out of? The answer may surprise you because not all coins are made out of the same material! Use a magnet in this quick experiment to find out what your coins are made out of and how they have changed over time.

⌚ 5-10 mins (extend to 45 mins by exploring other magnetic and non-magnetic objects)



Kit list

Magnet

A selection of 1p, 2p, 5p and 10p coins

Instructions

- 1 Hold your magnet over each coin and see which ones are attracted to the magnet. Split the coins into four piles - magnetic coppers, magnetic silvers, non-magnetic coppers and non-magnetic silvers. If all your coins are magnetic, try and find some more so you have at least one magnetic and one non-magnetic coin.
- 2 Before 1992, 1ps and 2ps were made out of a mixture of copper, tin and zinc (not magnetic!). By 1992 these metals were getting expensive so The Royal Mint, who make coins, started using steel (which is cheaper) to make the coins. They coated the coins in copper so that they would still look the same but, because steel contains iron, the new coins are magnetic!

- 3 5ps and 10ps were made out of copper and nickel (not magnetic) but from 2012 they have been made out of steel, just like the 1 and 2 pennies.

⚠ Watch out

Do not use neodymium magnets.

➡ Next steps

Display your results in a poster, labelling the coins and their materials. You could take your investigation further in class by exploring other metal objects to discover which are magnetic and which are not.

Find more Fun Science experiments you can do with household items here: www.fun-science.org.uk/funscienceblog ✨

🏠 At home

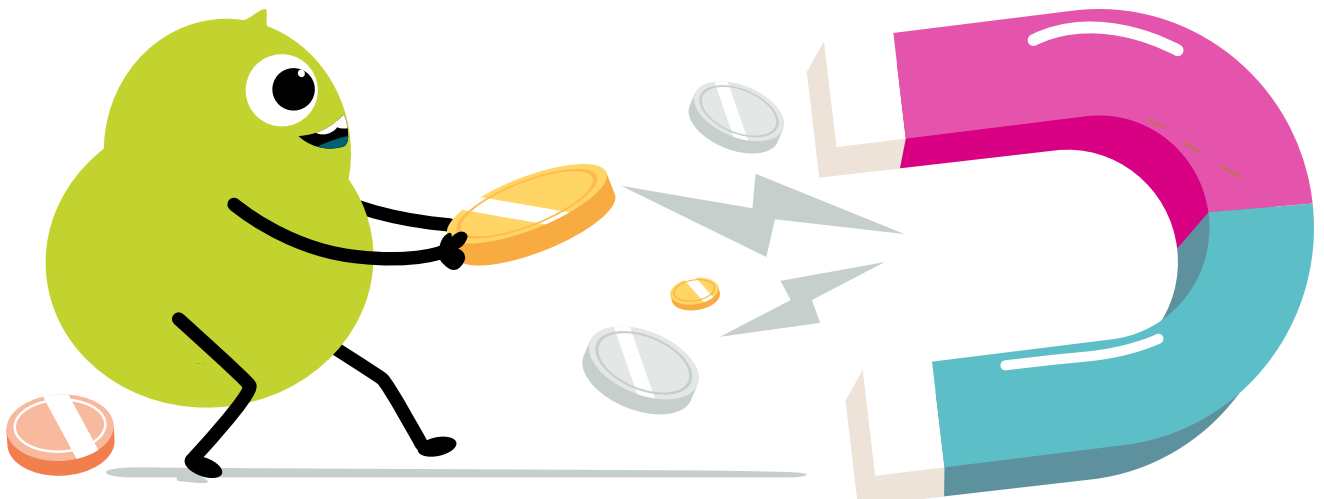
Find out if the other coins in your house are magnetic or non-magnetic. Do you think they will change one day too?

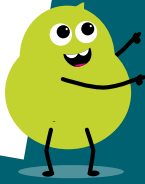
↔ Career options

A metallurgist is a scientist who works to test different types of metal and uses them to create a range of helpful items, including coins.

🔒 Skills unlocked

Logical, open-minded





Suitable for older primary children, aged 7-11, or those working at this level.

HEAVE-TO

Cutty Sark is equipped with different mechanisms to help it work efficiently, including pulleys. A pulley is a wheel with an inner groove on the edge which a rope runs through. Pulleys make it easier to move and lift heavy objects by sharing the force between the pulley and the person operating it. This activity will show you how to make your own pulley.

🕒 30 mins

🧰 Kit list

Wire coat hanger

Wire cutter

Empty thread spool

String

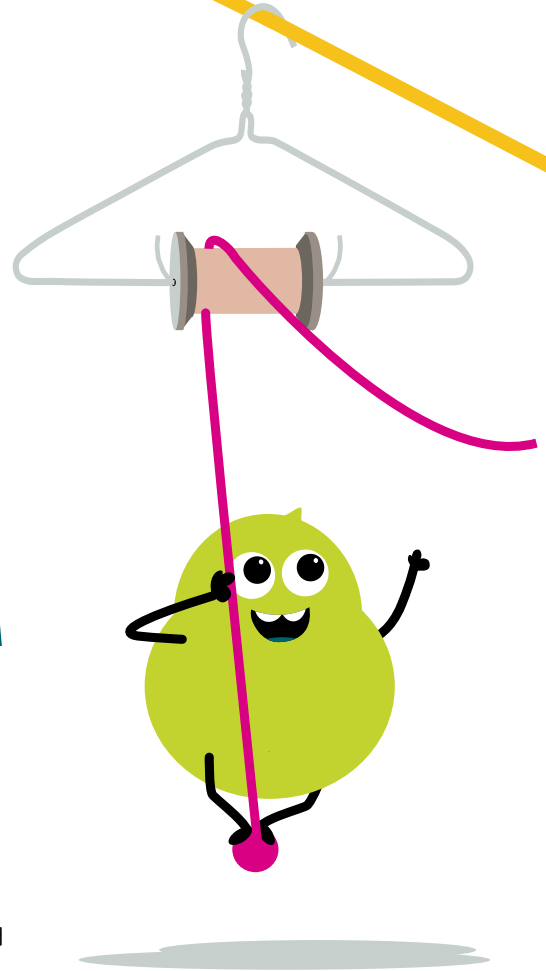
Item to lift
(a book can work well)

📖 Instructions

- 1 Have an adult cut the bottom of the coat-hanger in the middle and insert the spool into the open ends of the wire.
- 2 Adjust the wire so the spool turns easily, and then bend the ends down to keep the wires from spreading. Be careful of the sharp ends of the wire – you may need an adult to support you with this.
- 3 Lift your item and see how heavy it is.
- 4 Tie the item with enough string to suspend it (at least 50cm).
- 5 One person holds the handle of the coat-hanger and the other person loops the free end of the string over the spool once.
- 6 Pull the end of the string to lift the item.
- 7 Did you feel a reduction in the weight of the item? It should take less effort to lift through a pulley than lifting without!

⚠️ Watch out

- Ensure only adults use the wire cutters.
- Ensure children are careful when bending the wires.



➤ Next steps

Can you lift other objects using your pulley?

Cutty Sark is a celebrated historic sailing ship and the fastest of its time. Cutty Sark was built in 1869 and represents the pinnacle of clipper ship design. It is the world's only surviving tea clipper.

Find out more about Cutty Sark people and stories here: www.rmg.co.uk/cutty-sark ✨

🏠 At home

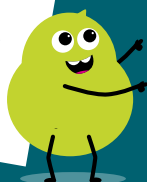
How do the number of pulleys affect how easy it is to lift something? Could you create a multiple pulley system?

↔️ Career options

- Engineer
- Ship-keeper

🔒 Skills unlocked

Hard-working, collaborative



Suitable for older primary children, aged 7-11, or those working at this level.



SHOULD WE FLUSH IT AWAY?

What can we flush away apart from pee and poo? Items like wet wipes do not breakdown in water so when they are flushed down the toilet they mix with grease in the sewer and form massive solids called fatbergs. Investigate which items change and breakdown easily in water so can be flushed away.

🕒 1 hour



🛒 Kit list

A variety of:

Toilet papers

Paper tissues

Kitchen roll

Wet wipes

Water

2-litre drinks bottles

Wooden kebab sticks

Stop watches

📄 Instructions

- 1 Fill the drinks bottle about two thirds full with water.
- 2 Place a piece of toilet paper in the bottle.
- 3 Screw the lid on tightly and shake for 15 seconds.
- 4 Record what has happened to the toilet paper. You could draw a labelled diagram.
- 5 Empty the bottle, using the kebab stick to remove any leftover paper if necessary.
- 6 Repeat with different items such as wet wipes. What do you notice?
- 7 Does it make a difference if you shake the bottle for longer? Is there a difference between how quickly different toilet papers and items breakdown?
- 8 You could investigate and test other items, made from different materials, that people flush down the toilet.
- 9 What advice would you give about what should be flushed down the toilet? How can we persuade people to change their behaviour?

➡ Next steps

Watch Explorify's *What's Going On?* - Flush it away? activity to see if the results are the same as yours. You could learn more about the problems with fatbergs blocking sewers by researching online. explorify.uk/en/activities/whats-going-on/flush-it-away ✨

Can you change people's behaviour by creating a poster to give advice about what to flush and not flush down the toilet?

🏠 At home

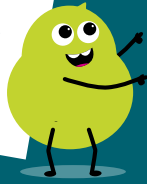
Tell your family what you have found out. You could do the investigation with them at home.

↔ Career options

Understanding how materials behave is very important in lots of jobs. Environmental scientists, engineers, water quality technicians, water treatment operators and plumbers are all involved in making sure we have clean water to drink. They also help to keep our sewers working.

🔒 Skills unlocked

Observant, clear communicator



MICROPLASTIC POLLUTION PROBLEM

Microplastics are tiny pieces of plastic waste that are not able to break down naturally and which pollute our seas causing harm to marine animals when they accidentally eat them. In this activity, you will find out which material is best at filtering out microplastics, using sand as an eco-friendly alternative. Your results may give you some ideas for how we can adapt our behaviour to try and solve this problem.

🕒 1 hour +

Kit list

A jug/jar with a mixture of sand and water

A selection of fabrics/paper of different thicknesses and filter paper

Funnels/sieves of different sizes

Beakers/jugs

Digital weighing scales

Measuring cylinders

Instructions

- 1 Make up a water/sand mixture.
- 2 Select different materials/objects you think would make a good microplastics filter e.g. a selection of fabrics/paper of different thicknesses/funnels and sieves.
- 3 Decide how you are going to measure the amount of sand left behind. Will you use a measuring cylinder to see how many millilitres of sand is left? Perhaps you'll weigh the sand in milligrams? Or you can make visual comparisons.
- 4 Time to test! In turn place the different filters over a beaker or in a funnel, stir the water/sand mixture and then pour the same amount through each one.
- 5 Measure the amount of sand each filter collects and record the results in a table.

- 6 Rank your materials/objects from worst to best filter.
- 7 Based on your findings, write down or draw how you think humans can adapt our behaviours to prevent microplastics from getting into our seas and oceans.

Next steps

This activity is taken from award-winning digital primary science programme, Snap Science. Each lesson is filled with practical activities and high-quality resources to make learning rich, lively, and engaging. You can find out more at collins.co.uk/SnapScience and register for a free 30-day trial.

At home

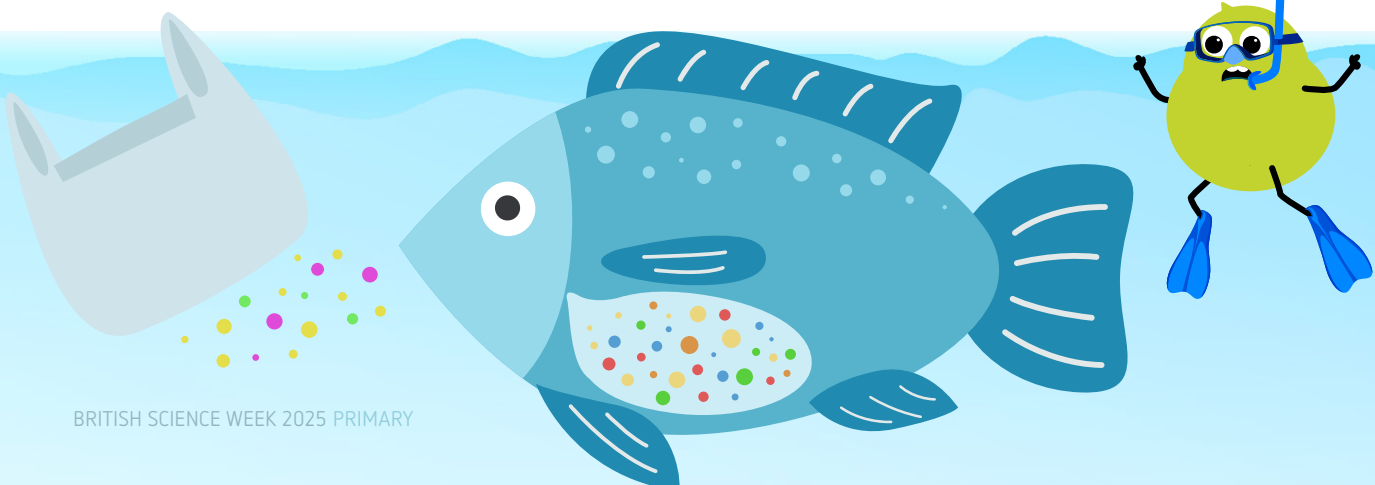
Can you invent a device to remove plastic litter from a water tray? Create your device using recycled objects from around the house.

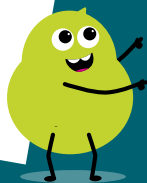
Career options

Marine biologists and ecologists do research to understand the impact of pollution on oceans. They lead projects to protect endangered species and restore habitats that have been damaged. Marine photographers take photos and film to show the problems pollution causes and inspire people to change how they dispose of materials.

Skills unlocked

Clear communicator, organised





DISSOLVING DILEMMA

In this activity you will use various types of sugar to investigate whether changing the size of the grains/lumps has an impact on the speed they dissolve in water. For a fair test, make sure you keep everything else the same and measure the ingredients carefully.

🕒 1.5 hours



📋 Kit list

4 small transparent cups or containers

Water

Measuring jug
(at least 100ml)

30-50g each of
granulated sugar
and caster sugar

A few sugar cubes

Teaspoon

Stopwatch

📖 Instructions

- 1 Look carefully at the different types of sugar. What differences do you notice between them?
- 2 You are going to investigate whether these differences change how quickly sugar dissolves in water.
- 3 With a partner, discuss how you are going to carry out this investigation. What will you need to keep the same? What will you need to measure? How will you know that the sugar has dissolved? What do you predict will happen?
- 4 Decide how you are going to record your results and then carry out the activity.
- 5 Scientists often take 'repeat measurements' to make sure that their results are accurate

so, if there is time, you may want to repeat the activity more than once.

- 6 What did you notice? Is this what you were expecting?
- 7 What do your results tell you about the effect of the size of the grain upon the speed that it dissolves in water?

➤ Next steps

You can find out more about this, and other activities in this sequence of learning at www.york.ac.uk/ciec/resources/primary/sustainability ✨.

🏠 At home

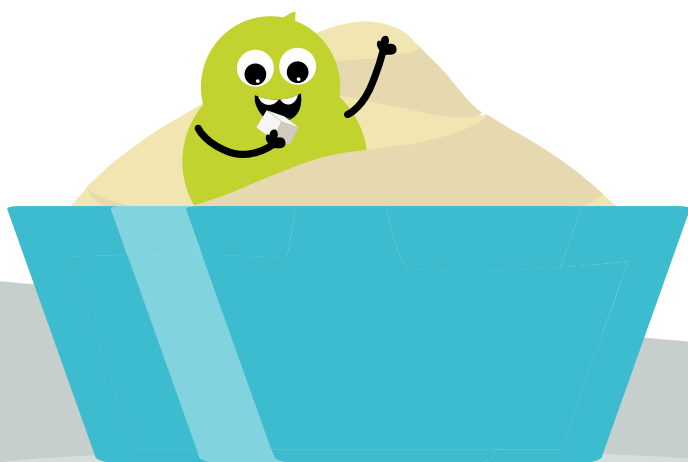
Have a look for other ingredients that dissolve in water. You could also investigate how well sugar dissolves in other liquids such as vinegar or lemonade.

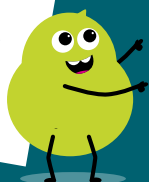
↔ Career options

Johnson Matthey is a company that makes fuel cells as a more environmentally friendly alternative to fossil fuels. They need to make sure that the ingredients in the cells mix together at the right speed and have been investigating whether the size of the ingredients used makes a difference.

🔑 Skills unlocked

Logical, curious

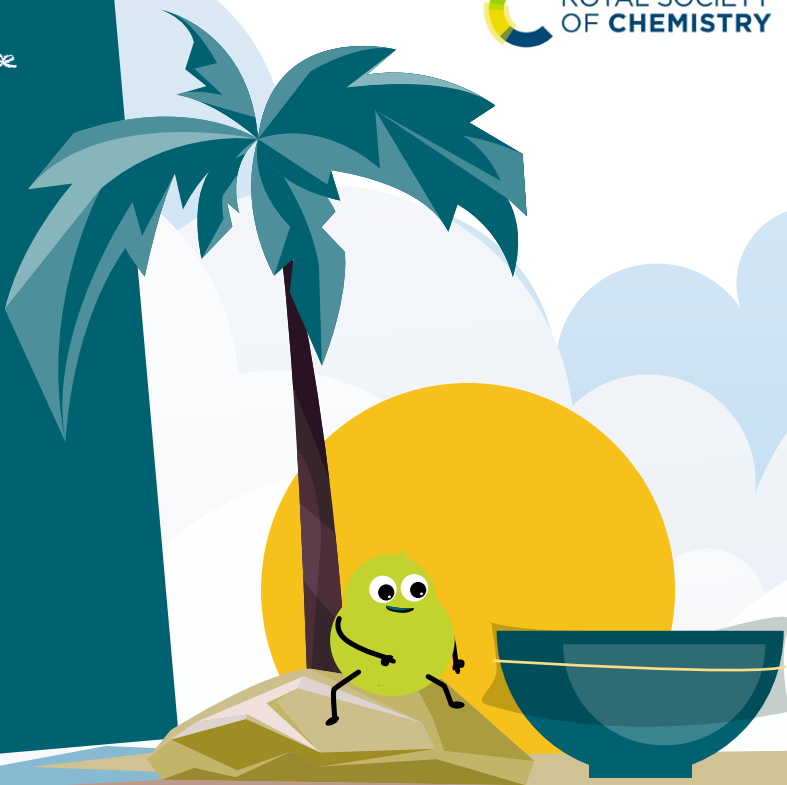




BE A DESERT ISLAND SURVIVOR

Imagine you're an astronaut in space or stranded on a desert island. How can you change contaminated water into clean water? This activity teaches you how to purify contaminated water using only simple equipment that you can find in your kitchen cupboard.

🕒 10 minutes to set up, about a week for observations



🛒 Kit list

One large container, and a smaller one that fits inside it

Cold water

Contaminant
(e.g. food colouring, salt)

Cling film

A weight
(e.g. pebble, ball of Blu Tack)

Tape

📖 Instructions

- Mix the contaminant into a small amount of cold water. The more water you use, the longer the experiment will take.
- Place the small container inside the larger one. If your smaller container is light enough to float, stick it to the bottom of the larger container using some of the Blu Tack. Pour the contaminated water into the large outer container.
- Cover both containers with a single piece of cling film and secure it with tape or an elastic band.
- Place the weight in the middle of the cling film so it creates a dip above the smaller container.
- Put the experiment in a sunny spot. Now wait and see what happens!
- Think about where our drinking water comes from and why we need to purify before drinking. There are different uses for water i.e. flushing a toilet and watering crops. Which one do you think uses the most water?

➡ Next steps

For step-by-step instructions, watch the video at rsc.li/spacecraft-survival ✨. If you'd like to explore more simple chemistry experiments from the Royal Society of Chemistry which use kitchen cupboard equipment, visit the Steps into Science website: rsc.li/kitchen-experiments ✨.

🏠 At home

Try using different contaminants to see what's left behind in the larger container. Does the experiment happen more quickly when there is more sun?

↔ Career options

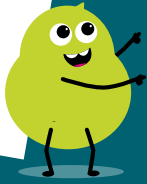
If you found this experiment interesting and you're passionate about how we use water, there are lots of jobs you might enjoy, including:

- Environmental chemist
- Water quality scientist
- Pollution control officer
- Public health specialist

All these careers involve protecting and distributing safe drinking water.

🔒 Skills unlocked

Resilient, patient



Suitable for older primary children, aged 7-11, or those working at this level.



YOUR PLANET NEEDS YOU!

'Green' skills are any skills that you use to help reduce carbon emissions (burning fossil fuels), lower the carbon footprint or protect the environment. Find out more about your skills and how you could apply them in Green Jobs to adapt how we live - and save the planet!

🕒 30-60 mins

📋 Kit list

Pen and paper

Timer

An internet-connected device

📖 Instructions

- 1 What are you good at? In groups of two or three, discuss and write down each other's talents and abilities. Include school subjects, but also think more broadly – are they great at telling jokes? Ace at your favourite video game? Or can they backflip?
- 2 Create a bubble diagram around your name, pass it to the left, work on it for two minutes, then swap, spending the final two minutes adding to your own bubble diagram.
- 3 Match those ideas to an Essential Skill on the list you'll find here: www.skillsbuilder.org/universal-framework ✨.
- 4 Pick your top few skills and under each skill heading describe how you've demonstrated that skill. e.g. Speaking – "I'm skilled at telling jokes with good timing to make my friends laugh".

- 5 Take your top three skills and explore the Green Jobs you could apply them in to save the planet: curiosityconnections.net/green-futures ✨

➤ Next steps

What Green Jobs do you think we'll need in the future? Could you design a future Green Job? Use this template to draw, describe and give a title to your Future Green Job – what are they doing, using and where are they working? Future Green Job template can be found at this link: curiosityconnections.net/future-green-job-worksheet ✨

🏠 At home

Being green is everyone's responsibility, in whatever job you're in or wherever you live. How could you make your life more sustainable for the planet?

↔ Career options

- Head of Sustainability at a sports stadium
- Sustainable Fashion Campaigner
- Ethical Investment Reviewer for a bank
- Reuse Shop manager
- Professor of Future Mobility

🔒 Skills unlocked

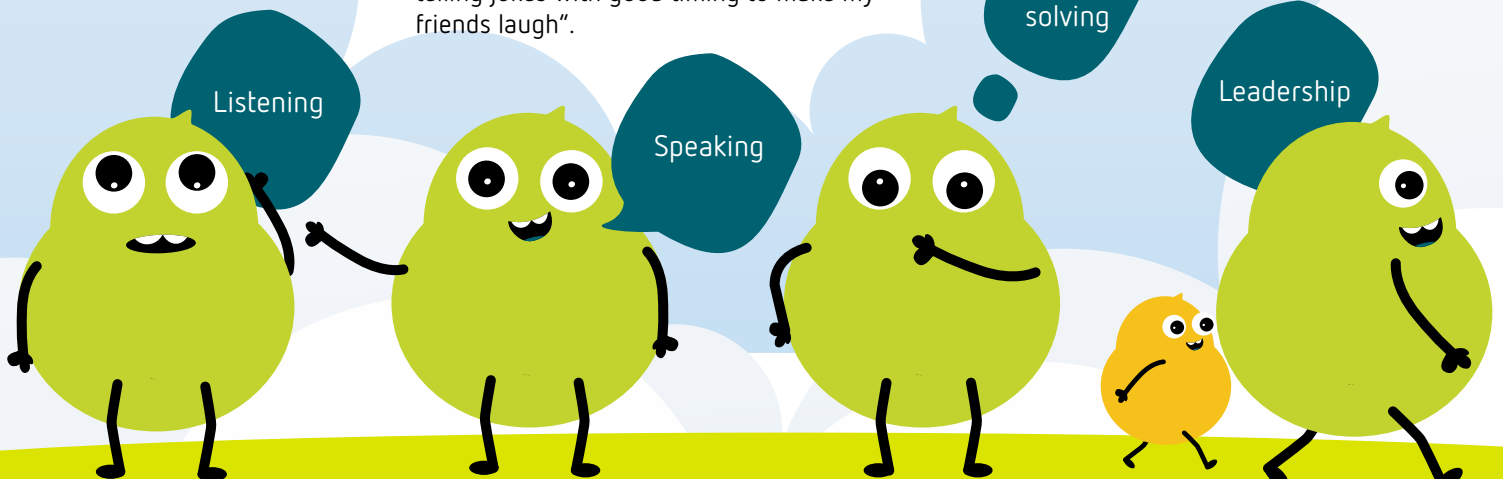
Passionate, open-minded

Problem solving

Leadership

Listening

Speaking



Whole school activity and assembly

Why not get your entire school working together as part of British Science Week this year, by running a whole-school data collection investigation?



Bring data to life by creating a giant, whole-school graph!

Measure all the children in your school and use the data to make a life-size graph, showing how our height changes over time. You could transform a corridor or wall in your hall by displaying the results!



Kit list

A large roll of paper (big enough for a child to lie down on!)

Large pieces of cardboard or paper, as tall as a child (enough for one per class)

Metre rulers, measuring tapes

Pencils and scissors

Art materials (e.g. paints, coloured paper and glue, sponges or stamps for printing)

Calculators (in Year 6 or equivalent)

Introduce the activity with a launch assembly

Explain that the whole school is going to be set a challenge and that every class is going to take part!

Ask children to think about what they know about height. Can they share their ideas with a partner? You could use some prompt questions:

- How do we measure height?
- Who measures it? Why?
- What happens to the height of humans as we get older?
- How tall do you think you will be when you are an adult? Why?
- What do you think will happen to the average height of humans in the future? Can you explain your thinking?

Tell children that they are all going to be part of a whole-school investigation into height and how it changes over time. Every class is going to collect some height data and present it back to the rest of the school (you might like to explain data here as a collection of numbers or information). You could use this as a prompt to talk about careers – lots of people collect, think about and use data in their jobs. Can you think of any examples?

Ask every class to find out the height of all their children and then create a scale picture of the class average. Adults in the school might like to join in too and create an average size grown-up! What do children think the results will be? These pictures will then be shared and displayed at the end of the week, to create a giant, life-size graph.

Introduce the activity in class

Explain that we are going to be thinking about how our height changes as we get older. Talk about height and how it changes with your class. You could use some of these prompt questions:

- How can we measure height?
- Have you ever had your height measured?



Whole school activity and assembly

- What instruments and units can we use?
- Why might we need to know our height?
- What happens to our height as we get older?
- Has the height of humans changed over time? How do we know this?

You could ask your class to line up in age order, and then again in height order. What do they notice?

Celebrating our differences

You might like to use this opportunity to talk with your class about the fact that we are all different and this is something to celebrate. Our different heights, sizes and appearances make us special and individual. Ensure that children understand that our differences are something to be proud of and being shorter or taller than the average is completely normal and what makes us all unique!

Data collection

Younger children could lie down and draw around each other. Can they use blocks or another simple unit of measure (e.g. cubes, dominoes) to find their height? They could decorate their outlines afterwards to create a class display!

Older children could work together in pairs or small groups, using metre rulers or measuring tapes. How tall are the children in their class? They could collect the data using tables or charts.

Year 6 (or equivalent) children could then take the data for the school and find a mean average for each class, with adult support if necessary.

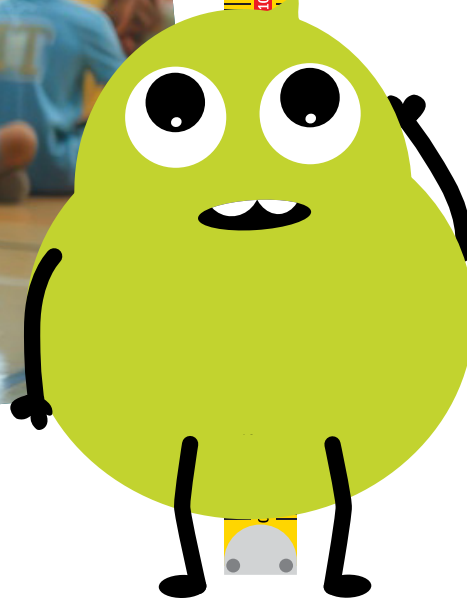
Data presentation

Older children might like to present the data for their group or class using a suitable diagram or graph.

Once Y6 children or adults have found the mean height for each class, create a cardboard 'child' to represent this average height. This can then be decorated using any method you like! Children might like to recreate their school uniform, using pens, paint or collage. Alternatively, the cardboard cut-outs could be filled with pictures or images that represent all the children in the class.

Share your results with a celebration assembly

You could finish British Science Week with a celebration assembly. This is the perfect opportunity for nominated representatives from each class to come up and present their data by sharing their decorated average child cut-out! All the cardboard children could be placed side by side, at the front of the hall, to create a visual display of average heights across the school. What does the life-size graph tell us about how our height changes over time? Are the results what you thought they would be?



Whole school activity and assembly

Extension activities and cross-curricular links

Maths

- Can you think of any other ways of measuring height? What else do we measure?
- Could you measure some other things around your classroom?
- Can you order the dataset for your class from smallest to largest?
- Can you find the difference between the shortest and tallest person in your class?
- How far would all the children in your class reach if they lay down head-to-toe? What about all the children in your school?

Computing

- Can you use a suitable computer programme to present your class height data?

DT

- It's quite hard to measure your own height! Can you come up with a design for a piece of equipment that would make this easier? How would it work? What materials would you need to make it?

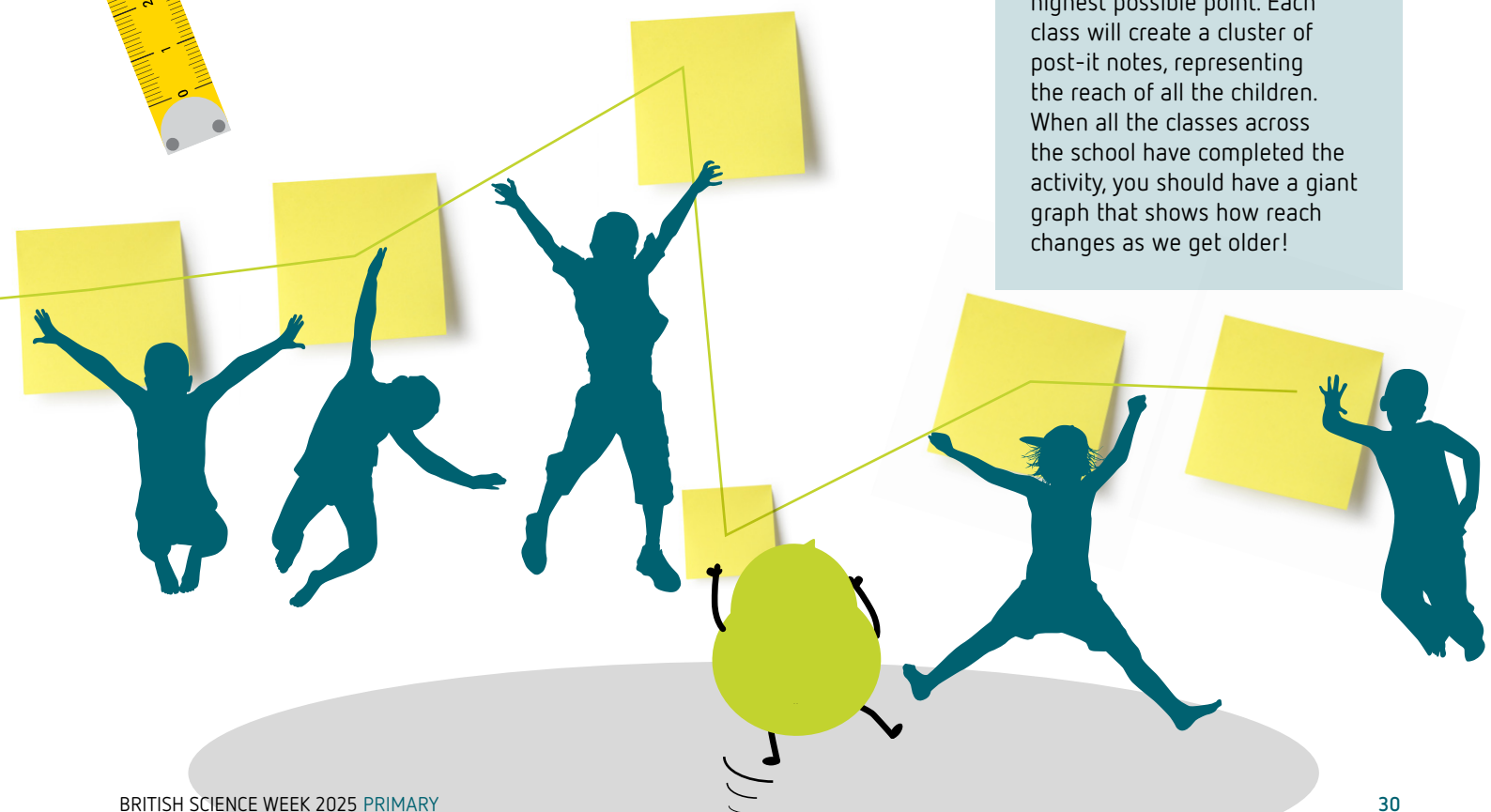
History

- How has the height of humans changed over time?
- Can you think of any clues that show us that people's average heights used to be different in the past?
- What do you think will happen to this trend in the future and what might it mean for the way we live?

Alternative life-size graph how high can you reach?

If you don't have time for the full height investigation, you could carry out a shorter enquiry into reach and how this changes with age. This will still give you a nice visual display that represents the whole school's data.

You will need a large wall, with enough clear space for every class in the school to have a small section, with the youngest classes starting on the left and then going up in year group order. Each class will need a set of post-it notes (enough for one for every child) and 10 minutes in the space to carry out their investigation. Ask children to take it in turns to jump as high as they can or reach up if not able to jump, reaching up and sticking their post-it note on the wall at the highest possible point. Each class will create a cluster of post-it notes, representing the reach of all the children. When all the classes across the school have completed the activity, you should have a giant graph that shows how reach changes as we get older!



Competition: Create a British Science Week poster



 **BRITISH
SCIENCE
WEEK
2025**

Children aged 3-11 can get creative and enter the British Science Week annual, UK-wide poster competition! To enter, they simply need to create a poster which fits in with the theme of 'Change and adapt'.

Schools then select the five best creations and submit them for a chance of winning an array of prizes. The activities found in this pack marked with a paintbrush symbol could all be used as a source of inspiration to get children started!

Kit list

Paper (A4 or A3)

Creative materials such as:

pens, pencils, scissors, glue, watercolours, paint, crayons, pipe cleaners, felt, thread, wool, foil, clay, string, beads, stamps, foam, pompoms

Instructions

Encourage children to think about change and adaptation – what it means to them and how it relates to science they've learnt about – to come up with ideas to include in their poster. Here are some points and questions to get you going:

- Get children to think about ways that they might have changed or adapted to new experiences and places as they've grown.
- What about change and adaptation in the world, and beyond? How do plants and animals adapt to a changing environment? Do the stars and planets in space change?
- Technology changes all the time, how is it changing our lives? Is it always for the better?

Make your poster

Once they've done their thinking, it's time for children to get creative! Posters must be A4 or A3 in size and you'll need to be able to take a photograph of each one so it can be sent to us online for judging. Children can use pop-up pictures, pull out tabs or use materials such as pencils, paints, crayons and paper to create their posters.

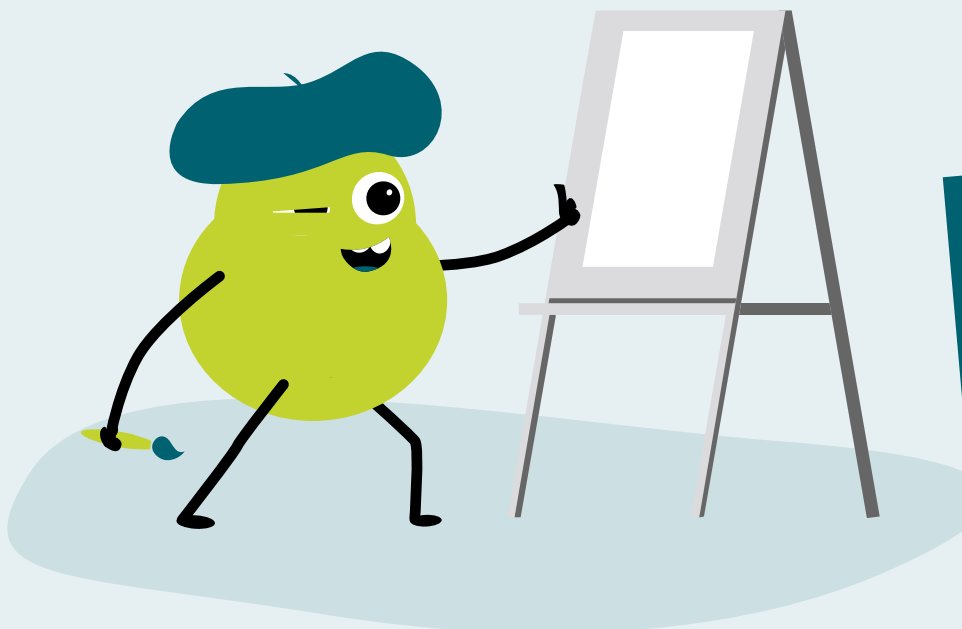
Send us your poster

Posters will be judged on creativity, how well they fit the theme, how well they have been made or drawn, and how engaging they are. Once a child's poster is complete, take a photo of it and complete the online form to submit it as an entry.

Next steps

Celebrate! For more details, along with the full set of poster competition rules and tips, check out our website: britishscienceweek.org/plan-your-activities/poster-competition*

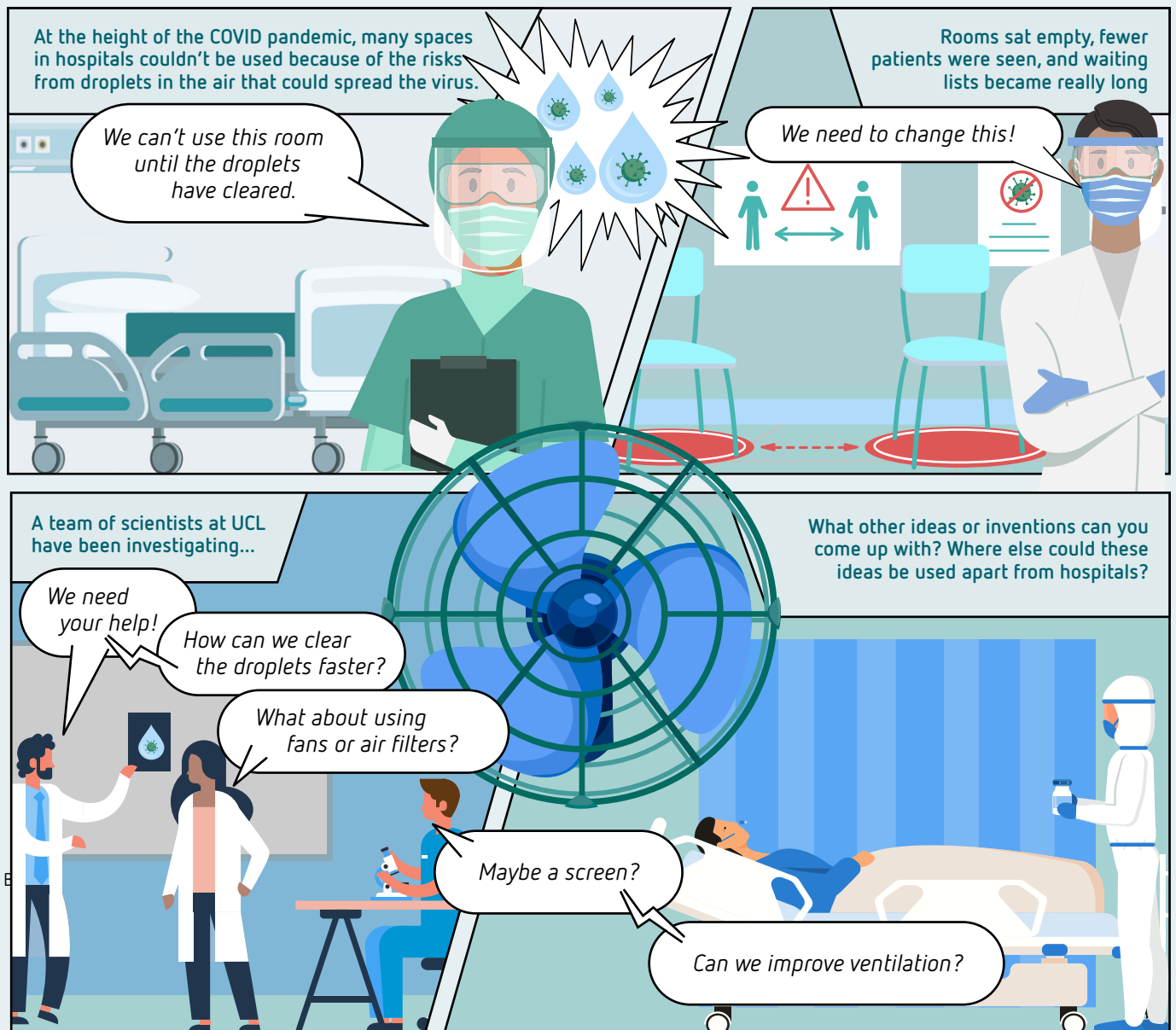
Older primary children (aged 8-11) may like to enter our special competition category this year - see page 32 for more details.



Competition: The scientists from UCL need your help!

Older primary pupils (aged 8-11) might like to enter our special competition category this year and share their ideas with a team of top scientists at University College London (UCL)! Can they help by coming up with a new invention to improve the health of the air in our buildings?

Schools then select five of the best entries across the competition categories and submit them for a chance of winning an array of prizes! See the next page for instructions.



Competition: The scientists from UCL need your help!

i Instructions

Choose an indoor public space where you often spend time – this could be an area where you learn, or a place you visit regularly like a library, café or cinema. Do you think the air in this space is healthy and clean? Why? Come up with an idea or invention to change the air in your chosen space, making it healthier to breathe. How will it work? Could it be used in other public places too?

You might come up with a brand-new idea, or you might like to think about a new way of using something that already exists. The researchers at UCL have considered lots of different ideas for improving air quality and preventing the spread of viruses in hospitals. For example, you could think about face masks, curtains and screens, ventilation, fans or air filters.

You may like to do some research into how viruses spread to give you some ideas. Have a think about the science behind your idea. How will it work? How will it be made and used?



Make your poster

Think about how you present your idea to make sure it is clear and easy to understand. You could create a diagram or set of instructions, or you might like to develop an eye-catching poster! Will you include pictures, graphs or other illustrations?

Entries must be A4 or A3 in size and you'll need to be able to take a photograph of your work so it can be sent to us online for judging.

Send us your entry

Once pupils' entries are complete, take a photo of them and complete the online form to submit the top 5! For more details, along with the full set of poster competition rules and tips, check out our website: britishscienceweek.org/plan-your-activities/poster-competition ✨



britishscienceweek.org

