

SCIENCE FOR ONE

Ages
5 - 9

Choice of
activities
for ages:

5-7 and 7-9

- * Each activity sheet is based around **one easy to obtain resource**
- * Children **work independently** but should be encouraged to talk in pairs or groups
- * Any additional resources needed are minimal and easy to provide for each child
- * Activities are **linked to topics** and suggestions are given
- * The activities **can be done outside**.

Activities accessed from: The Primary Science Teaching Trust

<https://pstt.org.uk/resources/curriculum-materials/Science-for-One>

Activity One: Science with a cardboard box

Shoe, pizza, paper and delivery boxes are all junk resources that are simple to collect and are free. Any sized box can be used.



Activity Two: Science with straws

Paper straws are cheap, recyclable and come in straight or flexible varieties. Either type is suitable for the activities suggested here. Bamboo straws will also work and if necessary, the activities can be done with plastic straws.



Activity Three: Science with foil

Foil is cheap, recyclable, and simple to tear and manipulate. It is a good modelling material and its surface is reflective. It also conducts electricity so is useful for teaching circuits.



Activity Four: Science with playdough

Making models from playdough or other modelling clay is a powerful way for children to organise, share and explain their scientific thinking and ideas. Playdough is cheap and easy to make and provided it is kept in an air-tight container, it can last for several months.



Activity Five: Science with egg boxes

Egg boxes are a versatile science resource: they can be used whole (e.g. for collecting, identifying and sorting items, as bird feeders, or for growing seeds) and the individual chambers can be cut out and used separately as containers or moulds.



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Activity One

box

Activities for doing **practical science** while
respecting social distancing

AGE 5-7 NATURE COLLECTION

Challenge children to explore outside and assemble a collection of natural objects in their boxes: sticks of different lengths and sizes; leaves of different colours and shapes; stones with different surfaces.

What to do with the collection:

- Identify ways in which the natural resources are similar and different
- Group and classify them according to observable features
- Identify the leaves with this Nature Detectives' leaf identification tool
- Discuss which objects are alive, were once alive or have never been alive, and encourage the children to give reasons for their ideas
- Create a model animal inside their box from some or all of their natural resources. Stories such as *Leaf Man* by Lois Ehlert or *Fletcher and the Falling Leaves* by Julia Rawlinson could provide inspiration for this

HEALTH AND SAFETY NOTE: the children should wash their hands before and after collecting the objects, and they should be briefed about what is safe to collect.

Resources per child

- Cardboard box
- Leaf identification tool

Science explored

- Living things
- Plants
- Identifying and classifying

<https://www.woodlandtrust.org.uk/media/48345/leaf-id-sheet.pdf>

AGE 7-9 MAZE MAKING

Let the children play with the magnet and the paperclip. See if they notice that the attraction is stronger at the ends (poles) of the magnet than it is in the middle. Ask them to test the attraction of the paperclip to the magnet with the cardboard box in between them. Can they move the paperclip around by moving the magnet?

Explain that the challenge is to move the paperclip around a maze or a racetrack that they will draw inside their box (they can do a second one on the outside). For a maze they could create lines that join letters on the left side of the box to numbers on the right, or pathways from the centre to the corners. For a racetrack they could draw parallel lines and make it as convoluted as they like. The children could:

- Try and complete the racetrack without the paperclip touching the edges of the track
- Get a partner to give directions to guide the paperclip around the maze without looking at it themselves

Resources per child

- Cardboard box
- Magnet
- Paperclip
- Felt tip pens

Science explored

- Forces and magnetism



Maze using wiggly lines to join letters to numbers



Racetrack



Maze using pathways from the centre to the corners

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Activity Two

straw

Activities for doing **practical science** while respecting social distancing

AGE 5–7 TALL TOWERS

Give children time to explore their resources and discuss and describe their properties, e.g. if they can bend, twist, squash or stretch them.

Challenge the children to use the straws to build a stable structure. They should aim for the tallest structure they can, but it must be able to stand on its own. Start by using just 3 straws, then try with 4 straws and finally, with all 5 straws.

Each time, encourage the children to draw a picture of each structure and record how high it is using a ruler; this could be on a pre-prepared recording table or completed independently. Encourage children to discuss how their structure changed each time and what strategies they used. Ask them if they can identify whether there were any shapes they made or patterns they noticed that made the tower more stable. Ask them to describe what happened each time they added another straw.

AGE 7–9 LAUNCHING ROCKETS

The children can make their rocket indoors or outdoors, but the rocket testing should be done outside. Explain to the children how to make a simple rocket by wrapping paper tightly around a pencil, securing with tape, then making one end air-tight by folding over and taping down. When they remove the pencil, they will have made a paper cylinder with one sealed end. Their straw should be able to fit inside the paper tube 'rocket'. The straw will be the 'launcher'.

Once outside, the children can launch their rockets by giving a short sharp blow into the straw. Challenge them to think about what they could change to make their rocket go further, or to make their rocket land on a particular spot, or target on the ground. This could include:

- changing the paper rocket: size, shape, type of paper
- changing the straw launcher: length/diameter of straw, launch angle
- changing how hard they blow

Encourage children to think about how they can make accurate measurements, and to discuss their ideas and findings with each other.

HEALTH AND SAFETY NOTE: straws and rockets should be disposed of to avoid risk of cross-contamination; repeated blowing may cause dizziness.

Resources per child

- 5 straws (straight or flexible)
- Blob of sticky tack/moulding putty

Science explored

- Properties of materials
- Gathering data and using ideas

Resources per child

- 1 straw
- Paper
- Sticky tape

Science explored

- Forces and motion; air resistance
- Planning a scientific enquiry; controlling variables

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Activity Three

foil

Activities for doing **practical science** while respecting social distancing

AGE 5-7 MODELLING BIRDS AND MAMMALS

Challenge children to use one piece of foil to create a bird. Encourage the children to think about the main features of their bird and how they move, and to discuss this with each other.

Next, ask them to choose a mammal to make with their second piece of foil. Before they start, give them time to think and discuss the features of their mammal. Ask them to think about if it is a carnivore, omnivore or herbivore, and how it is similar or different to their bird. Create a class aviary or zoo for children to view and identify each other's creations. Extend the activity to include other types of animal.



Resources per child

- Two 30cm x 20cm pieces of foil

Science explored

- Features of animals
- Identifying and classifying living things



SOLAR OVEN: fold the foil-covered card in half to form the oven base and lid.

AGE 7-9 MAKING A SOLAR OVEN

Do this outside on a sunny day. The children need to:

- wrap one side of the card in foil (the extra foil folded around the edges should hold it in place)
- fold the card in half and lay it on its side so that one side becomes the lid and the other the base of the oven
- angle the oven lid so that the foil reflects sunlight onto the base
- put marshmallows or chocolate buttons onto the base

Ask the children to discuss and predict what they think will happen, why this is and how quickly it will happen. Encourage them to use scientific vocabulary: solid, liquid, melting, freezing. Ask them to record by writing or drawing what they notice is happening. They could also record timings. The children could explore the effect of changing the colour of the card base, or the angle of the oven lid. They could also try melting different materials, e.g. butter, crayons or ice cubes.

Resources per child

- One slightly larger than A4 piece of foil
- A4 piece of card
- Marshmallows or chocolate buttons

Science explored

- Changes of state
- Reflection of light
- Observing and recording findings

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Activity Four

play
dough

Activities for doing **practical science** while
respecting social distancing

AGE 5-7 PLANT POWER

In this outdoor activity, prompt the children to take a small flowering plant (ideally from the school grounds) and pull it carefully apart, observing the different parts closely and laying them out on a piece of paper. Then challenge them to put the parts back together, and to discuss what they are called and whether the parts look the same from plant to plant.

Challenge the children to model their own version of the plant using playdough. Encourage them to focus on the different parts they observed in the real plant. The children could:

- make a 2D or a 3D model and label the basic features of their plant
- discuss features of their plant with their partner and identify similarities and differences between the two plants
- use what they have learnt to examine trees and identify their basic structure and features

Resources per child

- 1 ball of playdough
- A small plant e.g. dandelion or other weed
- OPTIONAL – hand lens

Science explored

- Plants
- Observing closely

AGE 7-9 TERRIFIC TEETH

Prompt the children to feel their teeth with their tongues (and if possible look at them in a small mirror) and discuss whether they are all the same and how many they can count. Using a mouth shape drawn on the card, challenge the children to model their own set of teeth using playdough. Encourage them to name the types of teeth and their functions: molars chew, canines tear and incisors cut. They could:

- label the three types in their cardboard mouths
- discuss how the shape of each type of tooth makes it suitable for its function
- discuss how many they have of each type and why that might be
- share the number of teeth in their cardboard mouths and see if that is the same for everyone in the class, including the teacher

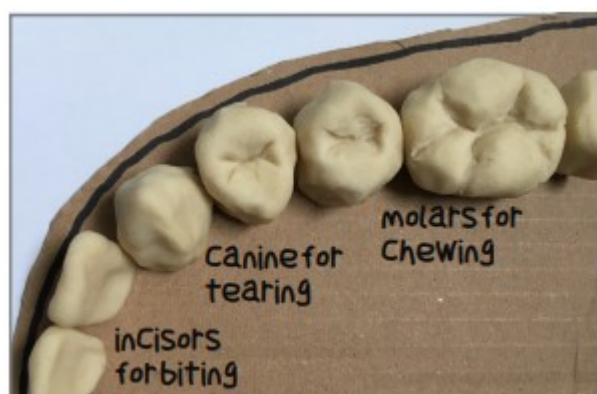
The children could find out about different animals and their teeth, and how these differ between carnivores, omnivores and herbivores.

Resources per child

- 1 ball of playdough
- Piece of stiff card
- OPTIONAL - mirror

Science explored

- Animals including humans – Teeth
- Observing closely



Playdough recipe available from:

[https://www.bbcgoodfood.com/howto/guide/
playdough-recipe](https://www.bbcgoodfood.com/howto/guide/playdough-recipe)

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Activity Five



Activities for doing **practical science** while respecting social distancing

AGE 5-7 GET GROWING

The six chambers in an egg carton are ideal for comparative tests. Children can set up different conditions in each chamber and compare their findings. Give the children some seeds and encourage them to discuss with their partner what their seeds look like and what they might need to grow. Challenge the children to use their egg box to set up an investigation to find out about seed germination and plant growth.

The children could:

- Compare different types of seed, or numbers of seeds in each chamber
- Explore the effect of giving seeds different amounts of water
- Compare growing seeds on different surfaces, e.g. paper towel, fabric, sand, soil, the egg box itself
- Explore covering or half-covering the top of some of the chambers with black paper or other materials

They could also put their egg boxes in different parts of the classroom so they can make general comparisons with each other's findings.

Resources per child

- Egg box
- Seeds (e.g. cress, radish, pea)
- Beaker of water
- OPTIONAL – sand, soil, paper towel, fabric, black paper

Science explored

- Plants
- Observation over time

AGE 7-9 CASTLES IN THE SAND

The children need to cut the chambers from their egg boxes. This can be done inside, but the activity should be completed outside.

Ask the children to think about sandcastles and discuss how they would build one, including what shape works best, and what they would need as well as sand. Challenge the children to use one of their egg chambers to make a sandcastle using only dry sand. Discuss what happens and explain that their challenge is to experiment to find the ideal proportions of sand and water for building a sandcastle that stays together.

The children could then investigate using individual sandcastles to build the tallest sandcastle or to create a model of a real castle. They could also try using salty water to see what difference this makes to their sandcastle.

Resources per child

- Egg box
- Large beaker of sand
- Spoon
- Access to water
- OPTIONAL – small beaker or cylinder for more accurate measurement, salt

Science explored

- Materials

**Additional websites that support the activities in this pack
(as recommended by The Primary Science Teaching Trust):**

Leaf dial: <https://www.woodlandtrust.org.uk/media/48346/leaf-idial-sheet.pdf>

Scavenger Science: https://pstt.org.uk/application/files/6815/9056/8599/Science_Fun_at_Home_10_Scavenger.pdf

Magnets: <https://wowscience.co.uk/resource/magnets/>

Building a structure: https://pstt.org.uk/application/files/7815/5654/0643/Gustave_Eiffel_Activity_Sheet.pdf

Balloon Rocket: <https://wowscience.co.uk/resource/xploration-station-make-a-balloon-rocket/>

Squeezy Bottle Rocket: <https://www.science-sparks.com/how-to-make-a-squeezy-bottle-rocket/>

All about animals: <https://www.bbc.co.uk/bitesize/topics/z6882hv>

Animal sorting game: <https://wowscience.co.uk/resource/please-do-feed-the-animals/>

States of matter: <https://www.bbc.co.uk/bitesize/topics/zkgg87h/articles/zsgwwxs>

Healthy plant growth film clip: <https://wowscience.co.uk/resource/healthy-plant-growth/>

Teeth and eating game: <https://wowscience.co.uk/resource/teeth-and-eating/>

The strength of sand: <https://www.stevespanglerscience.com/lab/experiments/strong-sand/>