

A close-up photograph of a child's hand holding a snail. The child is wearing a light blue patterned shirt. The background is a blurred outdoor setting with green grass and foliage. The image is framed by a dark green border with rounded corners.

## **Nutty Maths!**

**A selection of outdoor maths-related activities to for children aged 5-9 years**

**Scotland: First (P2, P3, P4)**

**England and Wales: Year 2,3,4**

**Northern Ireland: Year 3,4,5**

## Estimation



Compare natural objects – trees, apples, conkers, bags of hazelnuts, logs, leaves – and ask the students to estimate which is the heaviest item, and which is the lightest, longest, shortest? Can they line them up in order? Share with the group: How did they work this out?

Use scales, rulers, tape measures etc. to work out the correct answers and compare them to the group's estimates. You can also give them the measurements (length, height, weight) of animals and ask them to find something – or someone - with the same measurements. Estimate, then use measuring tools to check.

E.g. the average Scottish red deer hind is 114cm high at the shoulder, and the average slater (woodlouse) is 1cm long. Is anyone in the class the same height as a red deer?

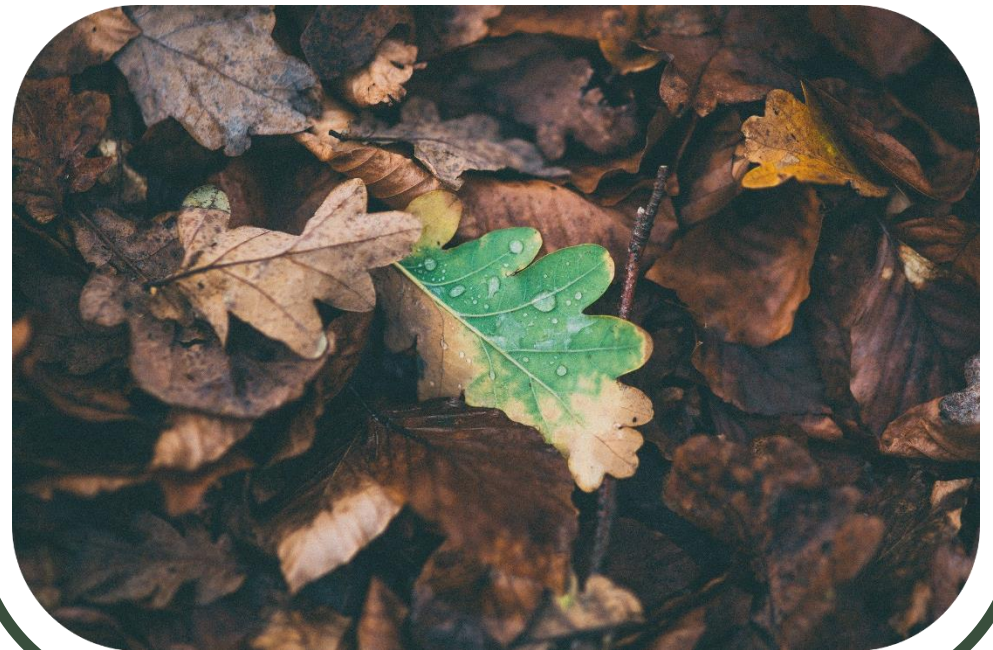
## Learn with Leaves

How many patterns can the students spot outside? Can they make some of their own using natural items?

Autumn is a great time to do this. They can collect different colours, shapes and sizes of leaves and create their own patterns, sort them into categories and even look at symmetry in nature. Can they work alone or in groups to create some natural artwork?

You can also use leaves to form equations, using twigs or chalk to make the functions. Give each type of leaf a value e.g. oak leaf = 5, beech leaf = 2 and so on, and give the students equations to solve, or give them an answer to make up an equation for.

This helps with maths skills and leaf ID!



## Maps and Directions



Choose something in the school grounds (or garden or park) such as a particular tree, bush or natural feature, but don't tell anyone what you've chosen. Discuss left and right and make sure everyone knows which is which. Direct the group using 'left' 'right' 'backwards' 'forwards' and numbers of paces, to see who can find the object first. Who can name the tree or plant?

Once they get the idea get smaller groups or pairs to do this for each other. Once the students are confident with this you can introduce a simple map of the space with a grid. Introduce the concept of grid references, then check their understanding by calling out grid references for them to race to (it's helpful to use grid references which correspond to landmarks or objects that are marked on the maps).

For a variation, use blindfolds (ensuring you're in a safe, obstacle-free space, or with someone to guide each child), use compass directions instead of left and right. With confident students, get them to make their own maps too – they could even make their own treasure hunts for other to follow!

## Measuring and sharing

After collecting some tasty edible berries together, ask the students to make sure everyone gets a fair share.

How many different ways could they be divided between the class? What fractions represent these answers? Can they be simplified, and can they be represented in more than one way?

Why not bake them into a cake together, then get the students to divide the cake up into equal pieces for everyone?

Be sure to give the berries a wash before eating or cooking them.



## Minibeasting

Find out what minibeasts live in different environments – woodland, tree bark and leaves, leaf litter, old walls, vegetable beds, and meadows.

You just need some simple equipment - spoons or paintbrushes for gently scooping up the tiny animals to get a closer look, and trays, magnifying pots, or even washed-out yogurt pots to place them in to take a closer look. Be sure to keep them out of sunlight, and put them back where you found them once you've taken a good look.

Try to identify what you find using books or guides. Look at things like how many legs do the creatures have? Is their body all in one piece, or in segments? What colour and size are they, and where were they found?

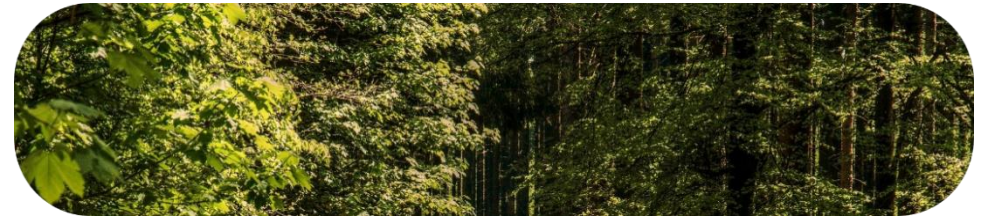
Sort the minibeasts into categories based on these characteristics. Altogether, count up how many minibeasts are in each category and make graphs, charts or pictograms to display the results.

Compare the graphs from different habitats – are there any trends?

What about at different times of year or in different weather?



## Tremendous Trees



Using some simple maths, work out the height of a tree, then measure its circumference to estimate the age of the tree. Can the students find a tree their age?

There are a few ways to estimate the height – some more accurate than others!

Walk away from the tree trunk, stopping every so often to bend forward and look at the tree between your legs. Stop at the point where you can just see the top of the tree. Measure the distance along the ground from you to the tree using a tape measure or trundle wheel. This is approximately the height of the tree! Get several students to do this and see what range of answers you get.

Find other ways to do this on [www.wikihow.com/Measure-the-Height-of-a-Tree](http://www.wikihow.com/Measure-the-Height-of-a-Tree).

To work out the age of the tree, measure the circumference with a tape measure, or estimate it with arm spans. Roughly every 2.5cm of circumference represents 1 year of growth (though this varies by species). So, to estimate the age of the tree in years, divide its circumference by 2.5.

Can you find the oldest and youngest trees? Can you measure a few trees to find the average age?

# Canopy Calculations



This activity ties in well with learning about photosynthesis, and with the tree size and age calculations in the previous activity.

How close do trees grow to each other? Measure with footsteps or tape measures and plot them on a map or on graph paper.

Compare the shape or area of different tree leaves – which will be best at capturing sunlight for photosynthesis, and how do trees maximise the amount of sunlight they can capture?

While there are still leaves on the trees, look at the canopy – how much is covered by leaves and how much is open, letting light through? Use grid paper to plot this and work out a percentage.

Do this for different trees and compare them – do different trees have different canopy sizes, or have more gaps in the canopy coverage?

Does canopy size or coverage depend on a tree's age or species?

Thanks for reading, we hope you enjoy these activities! Be sure to take a look at our website where you'll find more resources and lots of information about our different projects and the flora and fauna of the Caledonian Forest.

You can also find updates, photos and videos on  
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Trees for **L**ife

Rewilding the Scottish Highlands  
Ath-fhiadhachadh na Gàidhealtachd

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