

Tree Measuring 1

These activities are aimed at the first level of Curriculum for Excellence (about 5 to 8 years old). They help children learn about estimation, simple measurement and basic calculations, through measuring the height and girth of trees.

CURRICULUM LINKS

Mathematics

- Number, money and measure
 - *Estimation and rounding*
 - *Number and number processes*
 - *Measurement*

Languages

- Literacy and English
 - *Listening and talking*

Health and wellbeing

- Physical education, physical activity and sport
 - *Physical activity and health*

Before you start make sure that the children are familiar with the basic parts of a tree – roots, trunk, branches and leaves.

MEASURING HEIGHT

Estimating height

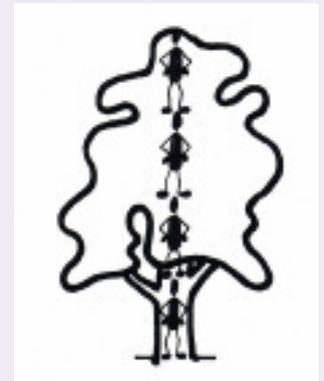
You will need: a measuring tape.

Comparing the height of a tree by eye, to objects of a similar height provides a sense of scale. For example the height of the tree can be compared to a person or a nearby building.

This can lead to discussions about closer objects looking bigger while those that are far away seem smaller. Think about what you need to do to make your estimate better.

Working in pairs the children can estimate the height of a tree by measuring one child. This child then stands beside the tree. Their partner imagines how many times the measured child fits (head to foot) into the height of the tree (from the ground to the top of the tree).

Multiply the number of times the child fits, say 4 times, by the height of the child, say 1 metre to get the height of the tree – in this example the tree is 4 metres tall.



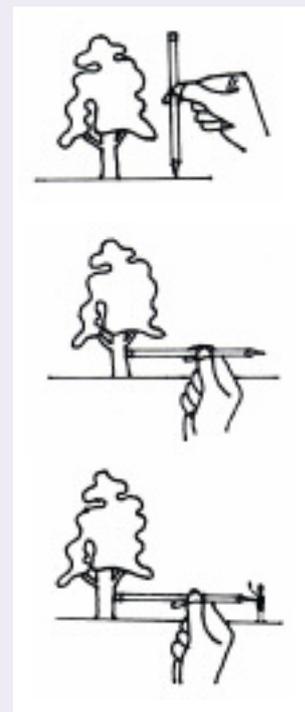
Using a pencil to measure tree height

You will need: a pencil and a measuring tape, or trundle wheel.

Working in pairs, one child stays beside their tree while the other walks away from the tree but looks back at intervals. When they look back the child holds a pencil at arms length vertically and lines it up with the tree. Keep walking until the bottom of the tree is level with the bottom of the pencil, and the top of the tree is level with the top of the pencil.

Staying in the same spot, the child turns the pencil to a horizontal position, with the end of the pencil still at the base of the tree. The child standing beside the tree now walks away from the tree, at a right angle until they reach the "point" of the pencil. The pencil holder will need to shout "stop" to their partner when they look like they are level with the point of their pencil. Then mark this spot.

The distance between this mark and the base of the tree is the height of the tree. The distance can be measured roughly by pacing out or exactly by using a measuring tape or trundle wheel.



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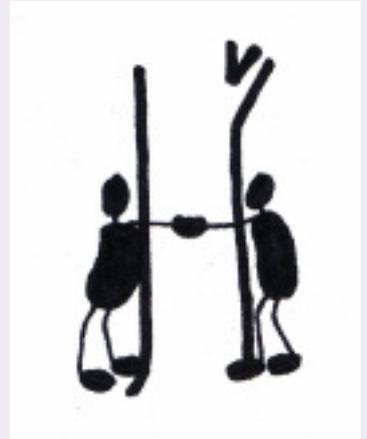
MEASURING GIRTH

Hugging a tree

The easiest way to get a measure of a tree's girth is to use the outstretched arms of a number of children, touching one another's fingertips, standing around the tree. Discuss how the girths of different trees vary.

You can also experiment with different measures, like hand spans, around the tree.

Discuss and decide how the children will get consistency in their measurements between different trees.



Measuring a tree

You will need: a measuring tape (optional - a piece of string).

You can measure the exact girth of a tree using a tape measure or a piece of string, which can be marked and measured.

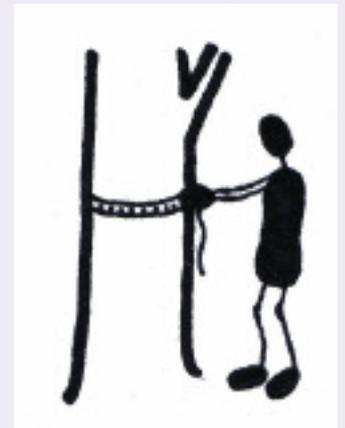
Have a look at the shape of a tree's trunk - is it an even girth all the way up?

Girth is usually measured at 1.5 metres up from the ground. For children 1 metre or underarm height can be used.

If you are in a woodland that has a number of different species, you can measure a few of each species. Then draw a diagram or chart that shows the different girths of each species.

Is there wide variation both within the same species and between species? If so discuss possible reasons for this?

Are the trees different ages, or are they in different growing conditions (like close together or far apart)?



Tree Measuring - 2 and **Tree Measuring - 3** are also available for higher levels of Curriculum for Excellence. The **DIY tree measurement kit** outlines more advanced tree measuring techniques. These are all available on the **Outdoor & Woodland Learning Scotland** website.