

Measurement: Record Breaking Trees

These activities make use of pupil's natural inquisitiveness by challenging them to use their numeracy skills to find record breaking trees in the school grounds. Each challenge starts off with an amazing fact about trees. Its up to you how much information you want to give them to carry out the task.

You can either leave it up to the pupils to apply their mathematical knowledge and select appropriate tools to provide evidence or you can provide appropriate materials and model techniques for gathering their data.

To help them identify their tree you can take photographs of the leaves from the trees in your school grounds and label them with their names. The Woodland Trust's Tree Tools for Schools website has lots of downloadable tree identification sheets. http://www.treetoolsforschools.org.uk/activitymenu/?cat=tree_id.

1. Measuring Girth [video 0:46]

The tree with the largest girth in the world is *El Árbol del Tule* (Spanish for The Tree of Tule), a cypress tree in Mexico. It has a circumference of 42 metres.

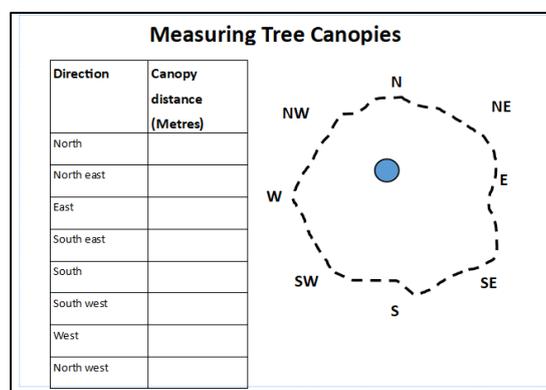
To measure the girth, measure at a height of 1m from the ground. Get your pupils to find 1m up on their bodies, and then they should measure trees' girths at that level. Use a fabric measuring tape. Get them to find the tree with the largest girth.

2. Measuring Tree Canopy circumference [video 2:27]

The tree with the widest spread of a tree canopy in the world is a *banyan* tree, found in India. It has a circumference of 412 metres and covers 1.2 hectares of ground - which is about the size of a football pitch.

You can think about spread of tree canopy like the fabric of an open umbrella, and measuring the circumference of the canopy like measuring an open umbrella.

One way to get your pupils to work out the circumference of a tree is to plot the distance from the trunk of the points of the compass so that they can then plot the circumference and measure it, as below:



3. Measuring leaves [video 3:56]

The tree with the **longest leaf** in the world is the *Raphia regalis*, a species of *Raffia Palm*. It has huge leaves that can reach a record breaking **25.11 m long by 3 m wide**.

Make sure you explain what a leaf is, and that it starts where the stalk of the leaf joins the branch of the tree and that children measure the whole leaf and not just a leaflet if it is a compound leaf.

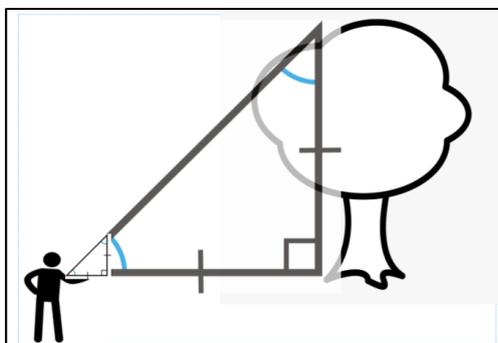
A fabric tape measure is the best tool to use for this.

4. Measuring tree height [video 5:40]

The **tallest trees** the world are the redwoods in California, U.S.A. Among the redwoods, a tree named *Hyperion* dwarfs them all. The tree was discovered in 2006 and is **115.7 metres** tall.

Trees can be measured using a stick! Stand next to your tree, and hold your stick in front of you at arms' length with your arm straight out from your body. Then walk backwards until you hand holding the stick is in line with the base of the trunk, and the top of the stick is in line with the top of the tree. The distance from you to the tree is the same as the height of the tree.

The reason for this is explained in the diagram below:



Estimating Distance using double pacing [video 7:43]

If you don't have enough tape measures, or you want to get your pupils thinking of other ways to measure, you can teach them to use double pacing. This is the length of two of their normal steps. They can measure how many double paces they have in a given length, and use that to estimate other distances. They can also compare their initial estimations with their estimations by using double pacing.