



HOW TALL IS THAT TREE? HOW OLD?

Below are a number of options for calculating the height of a tree and the age of a tree:

The height of a tree

1. Children work in pairs. They measure the height of their partner. One pupil stands beside the tree while their partner stands back and estimates how many times their partner fits into the height of the tree from root to crown. (Hold out a stick – bottom of stick lined up with partner's feet, thumb lined up on stick with partner's head) Estimate the height of the tree. (How many times does the partner stick length fit into tree) Compare with other estimates of other pairs. Note the type of tree measured.
2. On a sunny day, measure the height of your partner. Note the time of day when the shadow your partner cast is the same length as his / her height. Measuring the shadows cast by the trees at this *same time* of day will give you a good estimate of their height.
3. The ruler method. Ask your partner to stand by the tree. Holding a ruler upright extended at arm's length, stand where the top of your ruler 'touches' the top of the tree and the bottom is in line with the tree base. Now twist your wrist so that the ruler lies horizontally. Ask your partner to walk in a straight line (along the ruler line) to the 'end' of the ruler and stop. Mark their position. The measure of distance between the tree and position of your partner is the height of the tree.
4. The human clinometer: Position yourself with your back to the tree so that when you bend over and look at it from between your legs you can see the top of it just where your legs meet! Measure this distance between you and the tree on the ground, then add your height – this is the approximate height of the tree. How well does it work when people of several different heights try it out?!
5. Ratio method: Measure the shadow of a tree from the trunk outwards (in centimetres). Then measure the shadow of a metre ruler. Multiply the shadow of the tree by the length of the ruler (100cm). Then divide the answer by the length of the shadow of the ruler. This will give an answer in centimetres. Then convert to metres and centimetres.
6. Use a 45 set square. Hold the long side up to your eye. Move away from the tree keeping the bottom side of the set square parallel with the ground until your eye is in line with the top of the tree. The height of the tree is the distance you are from the tree, plus the height of the bottom of the set square above the ground.

The age of a tree

Measure the distance around the trunk (or girth) about one metre from the ground. Wrap string around the trunk (circumference) and measure the length of it. Every **2.5cm*** of girth corresponds to approximately one year's growth. So a tree with a girth of 100cm will be about 40 years old (100 divided by 2.5).

** This is an average – a fast growing tree such as pine or willow grows at 3cm a year; a slow growing tree such as oak, ash, beech only 2cm a year- use accordingly*