

## Estimating the height and age of common UK tree species

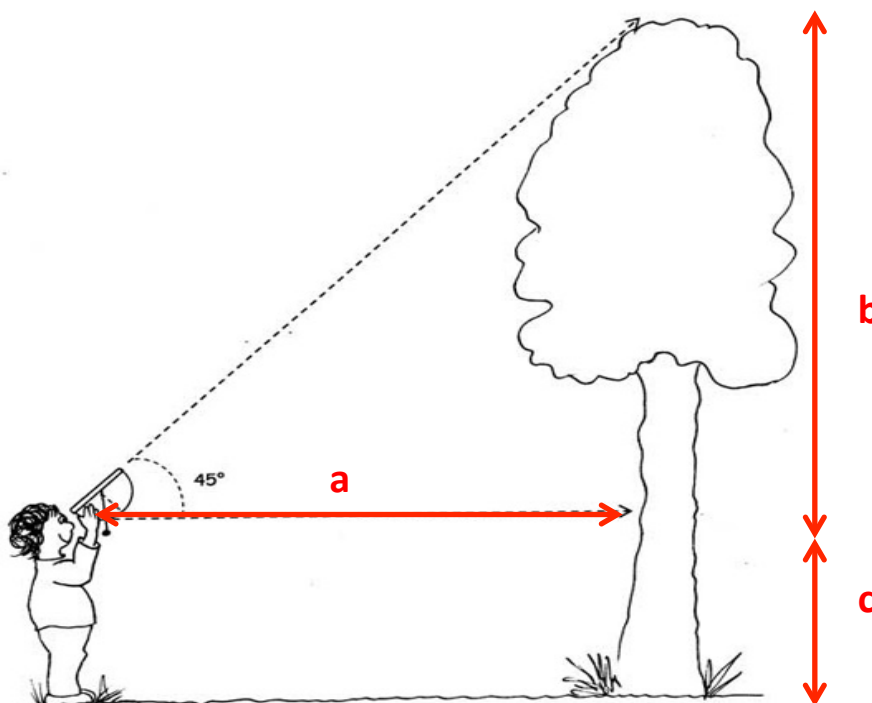
### Equipment:

1 x clinometer (to measure angles)

1 x tape measure

### Method:

1. Pick a tree that you want to measure the height of.
2. Look through your clinometer at an angle of 45 degrees. You want the top of the tree to be showing as you look through the clinometer at  $45^\circ$ .
3. Move forwards or back until you have achieved this.
4. You have formed a right-angled isosceles triangle (see below). These triangles (with angles of  $45^\circ$ ,  $45^\circ$  and  $90^\circ$ ) always have the 2 straight sides of the same length (shown as **a** and below). So you can measure the distance from your feet to the base of the tree (when looking up at the canopy at  $45^\circ$ ). Because of this mathematical rule, you know that distance 'b' will be the same.  $b = \dots\dots\dots$  m
5. Finally, because you right angled, isosceles triangle is raised off the ground (see picture), you need to add on that distance to find the height of the tree- marked 'c' on the diagram.
6. To calculate 'c' measure the distance from your feet to your eye.  $c = \dots\dots\dots$  m
7. To calculate the height of the tree: add measurement 'b' to measurement 'c'
8. My tree is..... metres high.



Alternative method if you do not have a clinometer and or tape measure:

A rough way of measuring the height of a tree is to walk some distance from the tree. Bend over and look at the tree between your legs. Keep trying this until you can see the canopy (top) of the tree. At this point, measure the distance from your feet to the base of the tree. If you don't have a tape measure, you can pace it out, assuming each pace is 1m.

## Estimating the age of a tree

A good way of estimating the age of a tree, is to measure its girth, or circumference. Trees grow a little wider every year so this gives you an idea of its age. However, different tree species grow at different rates, so you also need to know the species. If your tree is one of the species in the table below, you can work out its age.

### Equipment:

2 x tape measures, or 1 x tape measure and 1 x metre ruler.

Calculator

### Method:

1. Measure 1.4 metres up the trunk from the ground.
2. At this point measure the girth (circumference) of the tree. Make sure your tape measure is straight all the way around. Girth = ..... cm
3. Tree species = .....
4. Divide your girth (in centimetres) by the number from the table associated with that tree species.  
The age of the tree is: .....years

### Tree Age calculations

Species	Holly	Silver Birch	Beech	Oak	Hornbeam
	1.3	2.89	2.5	1.88	1.65

