Numeracy with Trees

You will need:
- Ruler
- Tape Measure
- Pencil
- A ball of string
- Scissors

The Royal Parks have a team of people who care for our magnificent trees. Try your hand at being an Arboriculturist (Tree Expert) and work through this guide to investigate a tree.

Historically, the Royal Parks were used by the crown as hunting grounds. The lower branches of trees were forced to grow perpendicular (at 90°) to the tree trunk so that the tree could provide lots of cover and protection for deer.

Find a tree and sit down in front of it. Draw a branch which is perpendicular (at 90°) to its trunk.

Each day, our Arboriculturists check to see if the trees have any broken branches to make sure that the trees and people in the park are safe. Have a look higher up the canopy of the tree. Can you see that the higher branches are not perpendicular to the trunk?

Draw one of the higher branches and label: (a) the acute (less than 90°) angle; (b) the obtuse (more than 90°) angle.
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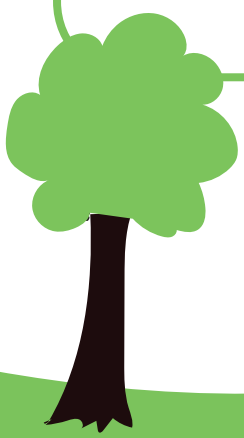


Calculate the Age of Your Tree

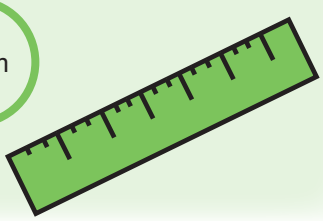
Method 1

1. How many of your hand spans does it take to go around the trunk?

hand spans

2. Using a ruler, measure how wide your hand span is.

cm

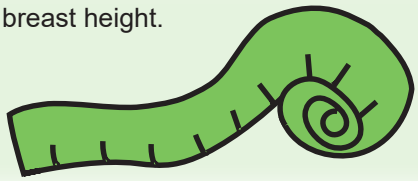


3. Using your hand span measurements, estimate how big the girth of the tree is.

Number of hand spans **x** Hand width (cm) **=** Tree girth (cm)

Method 2

1. Using a tape measure, measure the girth of the tree at breast height.

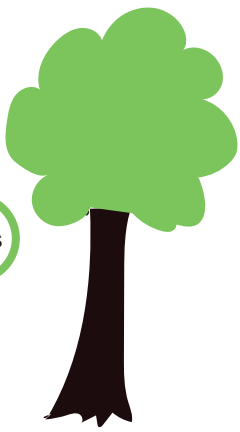


2. Is this measurement different to your hand spans measurement, and if so can you think of any reasons why?

Type of tree	Average growth rate (girth) per year (cms/yr)
English oak	1.5
London plane	7
Horse chestnut, lime	1
Sycamore	2.5

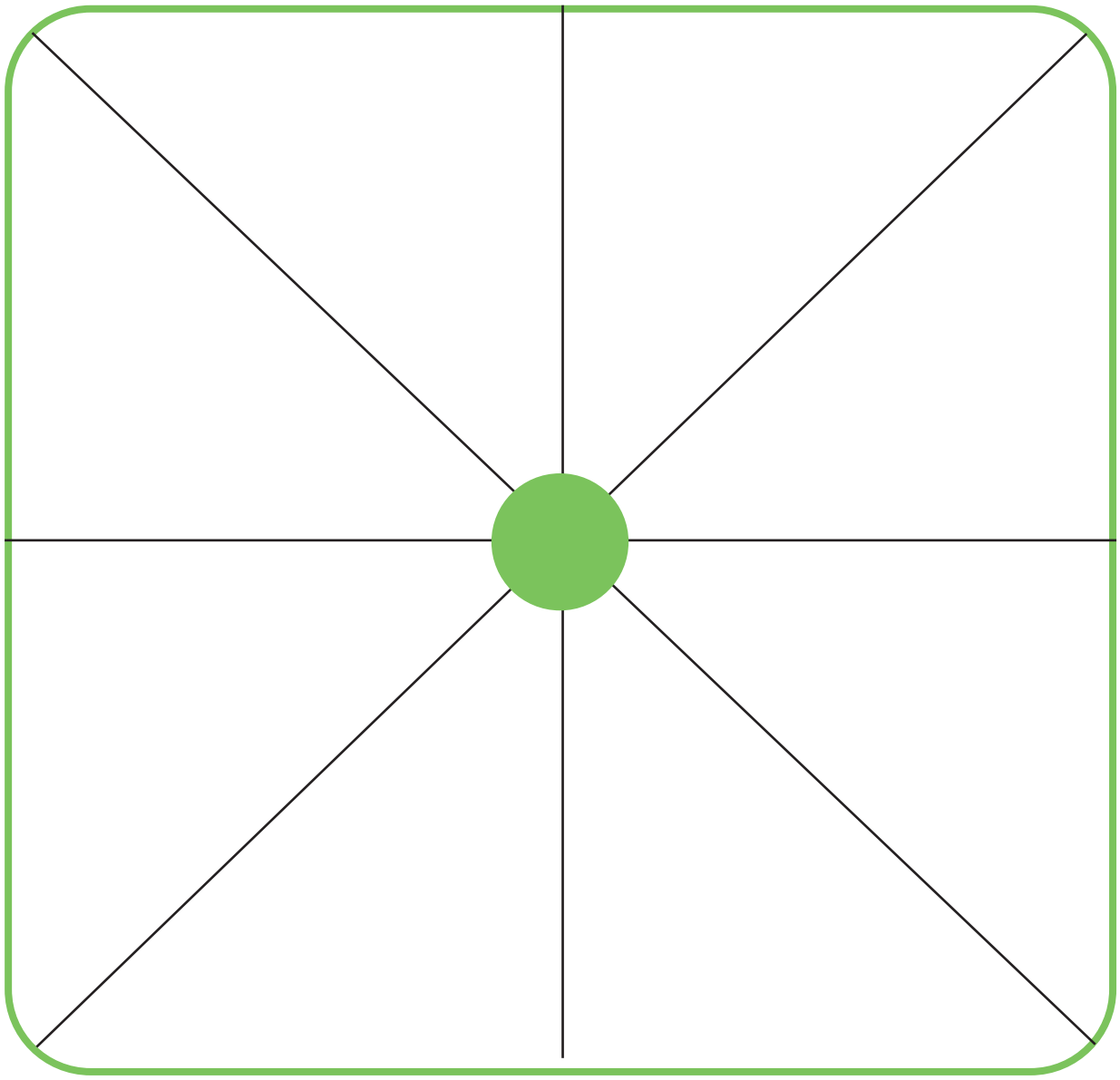
You can use the girth of your tree to work out its approximate age. As different types of tree grow at different rates, use the table to find your tree's rate.

$$\frac{\text{Tree girth}}{\text{Growth rate}} = \text{Years}$$



Tree Canopy Map

Map the canopy of your tree by setting out 8 pieces of string in straight lines that look like the 8 points of a compass with the trunk in the centre.



1. Follow along a piece of string continuing in a straight line until you reach the end of the furthest branch and measure this distance.
2. Plot this on the scale map above where 1m = 1cm and 10cm = 1mm.
3. Repeat for all 8 directions.
4. Join the dots in a rough circle to represent the tree canopy.
5. Plot the root network by calculating 1.5 times the distance for each of the 8 directions.
6. Join these dots to represent the root network.

Enjoyed exploring trees with us today? Head to royalparks.org to find more exciting things to learn about our parks!