



Level 2 Certificate: Principles of Garden Planning, Establishment and Maintenance

1: Garden Features, Plant Selection and Planning

Courses for
Royal
Horticultural
Society
Qualifications

Outcome 1: Know how to carry out and record a garden survey.

Surveying is the main way of collecting information about a site – the relative positions of the house, boundaries, trees, manholes and services, etc.

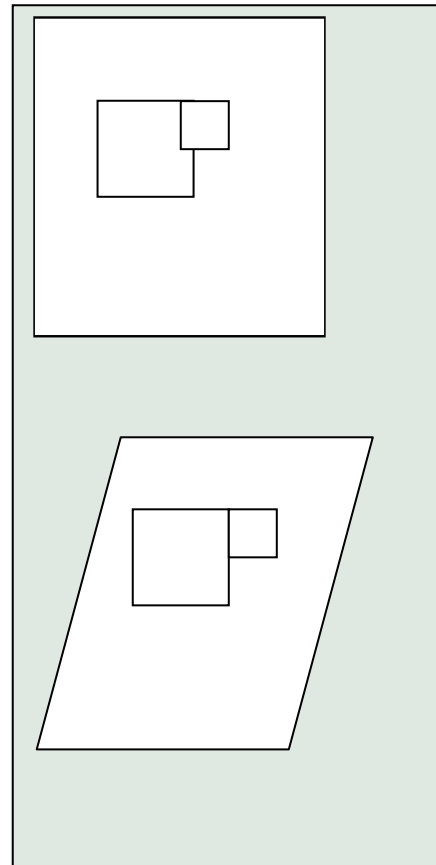
It has to be recorded (accurately) so that when you leave the site you can make a scale drawing as a basis for your plans.

Very few gardens are actually the simple shapes that they may appear – boundary fence lines are rarely straight, and houses don't sit squarely in the middle of neat rectangular plots.

If you draw up a plan for a garden, you need to know that your design will work when you come to lay it out on the ground - so you need accurate measurements to work with.

Measuring up the garden is the survey: it uses techniques that go back to the ancient Egyptians (who were rather good at it – think about the work involved in designing the pyramids!) to measure distances between all the important points on the site. Chains were used because they did not stretch; now steel tapes are more common.

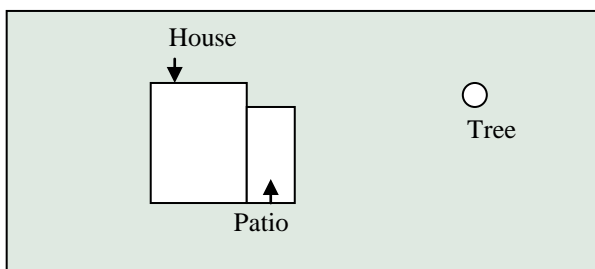
Surveying uses principles from geometry to show that where two points are established, you can find the third point in relation to them. You will need two main survey methods : **triangulation** and **offsets**.



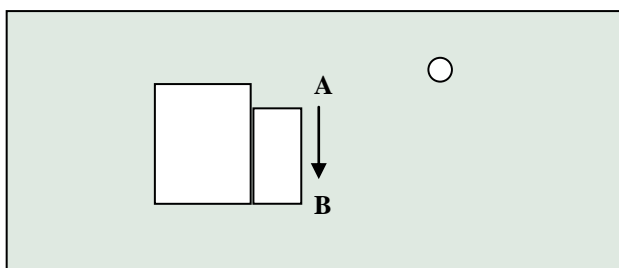
Triangulation

[you will also find this is called **trilateration** in some books]

Assume there is an old apple tree in the garden you are surveying – you need to know its exact position when you draw up your plan.

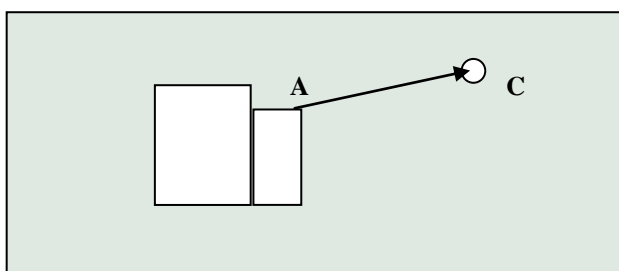


You begin by measuring a distance that is easy to use as a base line – here, the width of the patio (A-B).



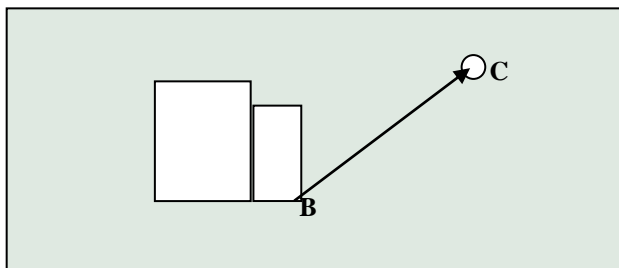
Record this: $AB =$

Now measure from point A – one edge of the patio – to the tree, C.



Record this: $AC =$

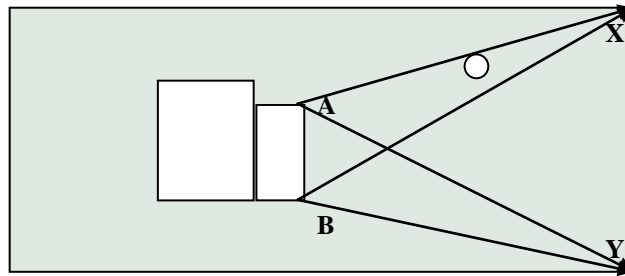
Next measure from point B – the other edge of the patio – to the tree, C.



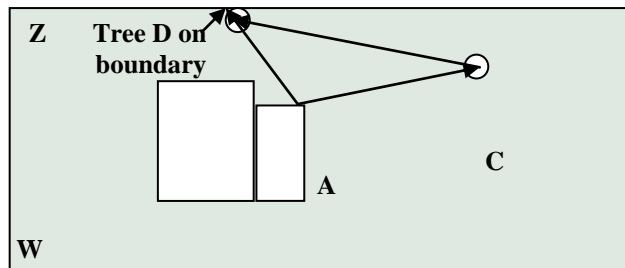
Record this: $BC =$

Now you have all three sides of a triangle, and you can put on paper an accurate scale drawing of the relationship between the patio and the apple tree – and anything else in the garden you can reach with the tape from points A and B.

You could measure the boundaries.



Where you can't make AB the base of your triangle to locate the tree D, you could use AC as the baseline, or BC.



Provided you always move between **triangles which have one line in common**, you can then use AD as a baseline to give you the front boundary Z (AZ, DZ, AD) and even go on to use DZ, DW, ZW to give you the final boundary point.

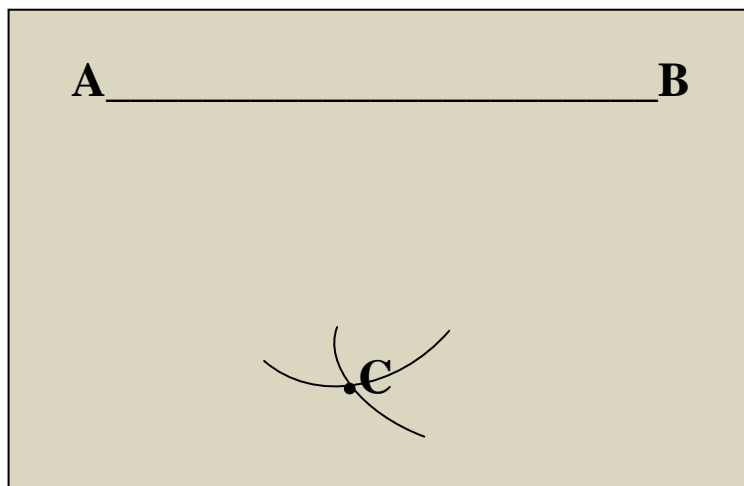
If you don't have a connection between each set of measurements, then you have lost the link – you may know where tree D is in relation to the front boundaries WZ, and where the back boundaries are in relation to the patio AB, but without the measurement for the common link AD you won't be able to put them together into a complete picture when you come to draw up the garden plan.

- When you are on site, making the measurements, you should draw a very rough outline of the garden and label all of the features you are measuring as A, B C etc.
- Write down a clear list of all the measurements :
(AB = 2.45 m, AC = 6.20 m, etc).

Drawing this up

When you are drawing the plan you decide a scale to suit your paper, then take a ruler, pair of compasses and pencil.

- Draw a line to represent (to scale) your measurement AB.
- Set pencil and compass point on your ruler to the distance AC
 - place the point of the compass at A and make an arc with the pencil at that distance (AC).
- Set pencil and compass point on your ruler to the distance BC
 - place the point of the compass at B and make an arc with the pencil at that distance (BC).
- Where these two arcs intersect is the true position of point C in relation to A and B.



Practical note about drawing up the plan:

Your starting line AB will be a line inside the garden boundaries – possibly one wall of the house, perhaps – so position it on the paper where you will have room to continue drawing in all the other points around it at the same scale.

The garden boundaries and their relationship to the house are the most important points to plot first, as they give you the area you need to fit onto your paper.

Offsets

Offsets are very useful for plotting curves – perhaps the edge of an existing flower bed, the outline of a pond or the flow of a curved path. It is also useful if your boundary fence is in poor condition and no longer standing in a straight line, or if you have a hedge that varies in width.

Start by taking a tape along the full length or width of the garden, if you can, between two surveyed points.

It does not have to be parallel to anything, but you are going to project off of this at right angles, so try to get a long clear run.

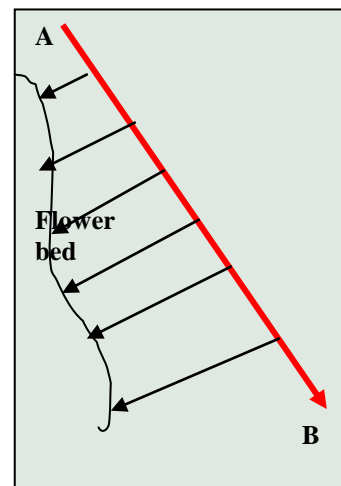
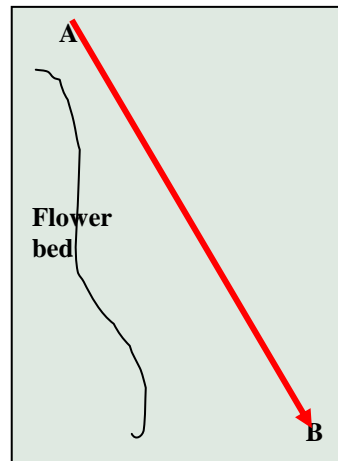
Measure across from your line with another tape, maintaining a right angle, until the tape touches the object or boundary you are measuring. Record the distance.

Do the same at regular intervals along the line – either 50 cm, or 1m.

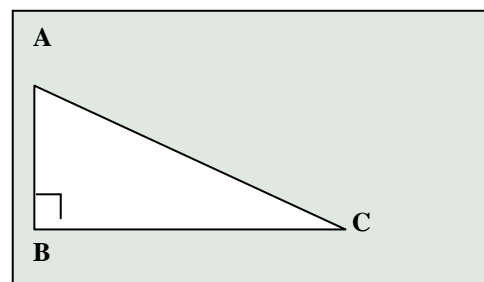
These measurements will give you a series of points that outline the edge of the feature.

You can take measurements to more than one feature from your baseline, and measure either side of the line.

When you take offset measurements you are using your knowledge of one of the basic rules of geometry – that if you know two sides of a triangle AND the angle between them is a right angle, the length of the third side is fixed.



- you measure every 50 mm (AB)
- the angle between your tape and the offset tape is always 90 degrees
- your measurement BC fixes point C.



When you write up your measurements on site, it is called ‘**Booking the survey**’.

A surveyor would use a **survey sheet** which makes it easy to record all the information in a conventional format, so that if someone else has to draw up the plan from it, there will be no confusion about what was being recorded.

An example of a survey sheet is included at the end of these notes.

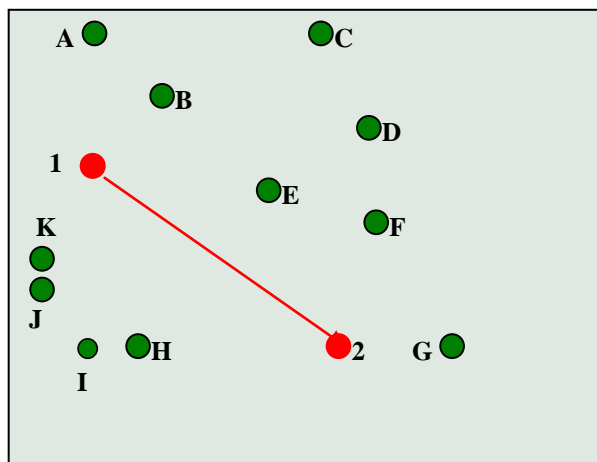
Clock surveying

We have only looked at ‘**linear surveying**’ for this outcome, not at changes in levels, as these need slightly more work. (At the simplest, you can take normal linear measurements, then estimate a slope by taking a baseline at the top, like the line of bricks in a wall – and taking a vertical measurement of the drop to the bottom of the slope.)

Linear surveying is very straightforward once you understand the principles involved – **except** that it is very rare to be surveying a totally open, clear site. In most cases where you are surveying an established garden, there will be many obstacles – large shrub borders, trees, ponds and steps, overgrown boundaries and hedges.

To survey this sort of garden will mean setting up lots of different base lines, relating each to the next. Another method which works well in a small but cluttered garden is what is known as **clock surveying**.

It has the advantage of being very efficient for one person to carry out by him/herself, or for two people to complete very rapidly.



1. In a small garden, especially if there are lots of obstructions to the view, set two garden canes centrally but quite far apart.(1-2)
2. Start at one corner and walk around the garden clockwise, assigning labels to all the points to be measured (A – K).
3. List them on your survey sheet: remember to include the distance between canes 1 and 2.

4. Secure one end of the tape on **Cane 1**.
5. Rotate clockwise, **recording all the measurements from the labelled points to Cane 1.**

List:	1-2 =
1-A =	2 - A =
1-B =	2 -B =
1-C =	2 - C =
1-D =	2 - D =
1 -E =	2 - E =

6. Secure one end of the tape on **Cane 2**.
7. Rotate again, **recording all the measurements from the labelled points to Cane 2.**

This gives you all you need to plot your survey.

Methods of recording survey information

Basic equipment to undertake a survey will include two tapes, canes, a pencil and notebook or survey sheets and clipboard.

Probably the most important new tool that you have today to help record a survey is a **digital camera or phone**.

Take lots of photographs, including an overlapping series as you turn through 360° in the garden: this can be tremendously helpful in filling in gaps in your recollection – was **A** the *Buddleja* or the washing line post?

Overleaf are examples of survey sheets – used traditionally to ‘book the survey’ and record it on site for drawing up later in an office.

