FIELD MEASUREMENT GUIDE

The *Nest* User Guide

Complete guide to measuring your 4 trees, entering data into the calculator, and understanding your module positioning results.

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PART 1

What You Need Before Starting

Before heading to the site, gather these tools. They're all easy to find and you don't need any technical experience.

- **Compass** — To find geographic North
- **Measuring tape** — At least 10 metres
- **Protractor** — To measure angles
- **2 long ropes** — To tie between trees
- **Notebook & pen** — To record 12 values
- **Phone** — To enter data online

PART 2

Establish Centre Point O and North Reference N

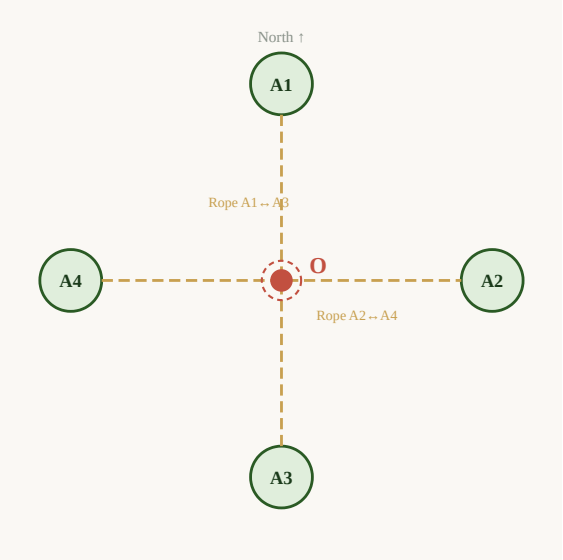
The first step is creating your reference system on the ground. This takes about 10 minutes.

STEP 1

Create point O — the centre of the 4 trees

Tie a **rope** between **Tree 1** and **Tree 3** (the opposite trees). Tie another rope between **Tree 2** and **Tree 4**. Tie the ropes at waist height (~1 metre). **Where the ropes cross is O** — the centre reference point.

Diagram — How to create point O



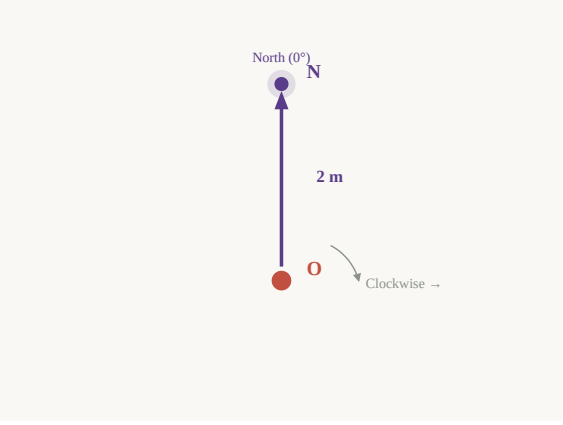
The golden ropes cross at point O (red). This is the centre reference for all measurements.

STEP 2

Create point N — the North reference

Standing at **O**, use your **compass** to find **geographic North**. Walk **2 metres toward North** and place a marker on the ground. That marker is **N**. The line from O to N (O–N) always points North = 0°.

Diagram — Point N and the O–N reference line



The O→N line always points to geographic North (0°). All angles are measured clockwise from this line.

💡 TIP

You can use your phone's compass app if you don't have a physical compass. Make sure you're away from metal objects that might affect the reading.

PART 3

Measure the 12 Values (3 per tree)

For each of the 4 trees, you need to measure exactly 3 things: the **angle**, the **distance**, and the **tie-point height**.

θ
Angle (Theta)

Standing at O, facing N. Rotate clockwise until you're pointing at the tree. That angle is θ.

Unit: degrees (0° – 360°)

D
Distance

Measure with your tape the straight-line distance from O to the base of the tree.

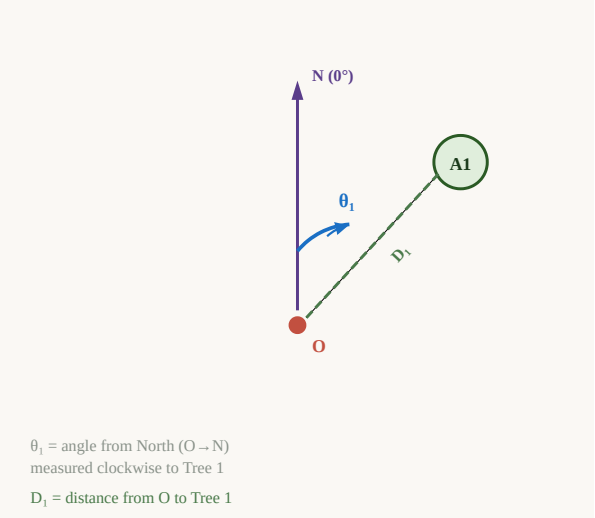
Unit: metres (m)

H
Tie-Point Height

Measure from where the rope is tied on the trunk DOWNWARD to the ground (base of the trunk).

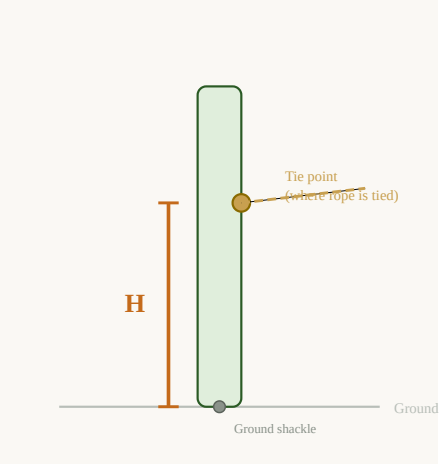
Unit: metres (m)

Diagram — How to measure θ (angle) for a tree



Standing at O, face N (0°). Rotate clockwise until pointing at A1. That angle is θ_1. The distance O ↔ A1 is D_1.

Diagram — How to measure H (tie-point height)



H is the vertical distance from the rope tie-point DOWNWARD to the trunk base (ground). It is NOT the total height of the tree.

⚠ **IMPORTANT**

H is NOT the tree height. It's only the distance from where the rope is tied down to the ground. Typically between 0.5 and 2 metres. If your H values are greater than 2m, double-check your measurement.

YOUR 12 VALUES

Repeat for all 4 trees

You'll end up with 12 numbers recorded in your notebook:

TREE	θ (angle)	D (distance)	H (tie-point height)
Tree A1	θ_1 = ___°	D_1 = ___m	H_1 = ___m
Tree A2	θ_2 = ___°	D_2 = ___m	H_2 = ___m
Tree A3	θ_3 = ___°	D_3 = ___m	H_3 = ___m
Tree A4	θ_4 = ___°	D_4 = ___m	H_4 = ___m

PART 4

Entering Data Into the Calculator

There are two ways to enter your 12 values. Choose whichever is most convenient for you.

OPTION A — ENTER DIRECTLY ON THE WEBSITE

Open the calculator in your browser. Enter your name and email address. Then type the 12 values directly into the fields for each tree (4 cards, 3 fields each). Click "**Calculate Module Position**".

OPTION B — UPLOAD AN EXCEL/CSV FILE

Download the Excel template from the website. Fill it in with your 12 values (one row, 12 columns). Return to the calculator, select "**Upload File**" and drag your file in. Click "**Calculate Module Position**".

💡 TIP

If you only have one set of measurements, **Option A** (direct entry) is faster. If you're measuring multiple sites, **Option B** (Excel) lets you save and reuse the data.

PART 5

Understanding the Results

After calculating, the tool will show you whether your Nest module can be installed between the 4 trees, and exactly how to do it.

MAIN RESULT — MODULE SIZE

4.8 × 3.3 m

The calculator evaluates 3 module sizes (6.0m, 4.8m, 3.6m long, all 3.3m wide). It tells you which is the largest that fits between your trees. If none fits, it explains why.

FIELD STEP 1 — LOCATE VERTEX V1

$\theta_5 = 100.5° \cdot OV_1 = 2.91$ m

Standing at **O**, face **North**. Rotate clockwise **θ_5 degrees**. Walk **OV_1 metres**. Mark that point on the ground — it's **V1**, the first corner of the module.

FIELD STEP 2 — LOCATE VERTEX V2

$\theta_6 = 249.0° \cdot OV_2 = 2.91$ m

Return to **O**. Now face **V1** (the point you just marked). Rotate clockwise **θ_6 degrees**. Walk **OV_2 metres**. Mark it — that's **V2**, the second corner.

💡 WHAT ABOUT CORNERS V3 AND V4?

Once V1 and V2 are marked, V3 and V4 are located automatically because the module is a rectangle. The distance V1↔V2 defines the long side. V3 and V4 are 3.3m away at right angles.

OTHER DATA IN THE REPORT

- 📊 **Configuration quality** — EXCELLENT, GOOD, MARGINAL, or TIGHT. Indicates how much safety margin your installation has.
- 📐 **2D diagram** — Aerial view showing the 4 trees, the module rectangle, connections (struts), and exact measurements.
- 📏 **Strut lengths** — The length of each rigid bar connecting a tree to a module corner. Important for purchasing materials.
- 🏔 **Terrain slope** — If your H values differ between trees, the calculator estimates the ground slope.
- ⬆️ **Module elevation** — The height of the module above the ground at point O.
- 📄 **PDF report** — A professional document with all data, the diagram, and field instructions. Sent automatically to your email.

PART 6

What If It Says "Not Feasible"?

Sometimes the 4 trees won't allow any module size to be installed. This can happen for several reasons:

- 🌲 The trees are **too close together** (the struts would be too short to reach the corners).
- 🌲 The trees are **too far apart** (the struts would exceed the maximum length of 4.5 metres).
- 📐 The angles don't allow each tree to be **"visible" from its corner** (vision cone constraint).
- ⬆️ The module elevation would be **less than 2 metres** (insufficient clearance underneath).

💡 WHAT TO DO?

The PDF report includes a detailed analysis of **why** it's not feasible and which constraint was violated. With that information you can evaluate whether there are other nearby trees that work, or if a different tie-point on one of the trees would help.

ZeroCabin · The Nest

Module Positioning Calculator

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