

ULTRA ACCESS

The "3, 4, 5 rule" in scaffolding

And how mathematics is in constant use when building scaffolds

The "**3, 4, 5 rule**" is a practical mathematical method used in construction, and specifically when scaffolders "square off" their base outs.

This is to ensure two tubes meet at a perfect 90° (degree) right angle.

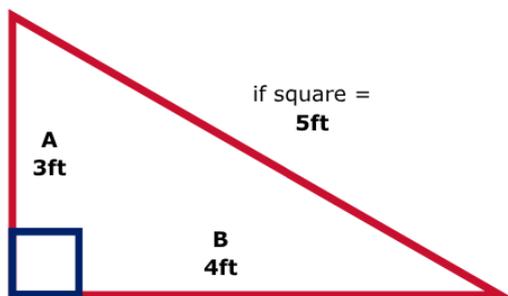
It relies on the **Pythagorean theorem**, a maths principle stating that in a right-angled triangle, the longest side (hypotenuse) equals the length of the other two sides, for example:

Imagine two scaffolding tubes joined at a corner, when the base out has formed a square... Measure 3 units (e.g., metres or feet) along one tube (usually the Transom) from the centre of its Double Coupler, where it joins with your Standard and Ledger, marking it as point **A**. Then... Measure 4 units along the other tube (usually the Ledger), from the the centre of its Double Coupler - marking point **B**.

If the 2 tubes are at the correct 90° angle, the straight / diagonal-line distance between **A** and **B** should be exactly 5 units.

If not, adjust / kick the square frame around until it is.

In short: Measure and mark 3ft along the Transom from its Double and 4ft along the Ledger from its Double and the 2 marks will equal 5ft if the scaffold is square.



If scaffolds aren't squared off correctly, the structure loses 90° alignment, possibly leading to uneven weight distribution.

Loads may shift towards weaker points, leading to twisting, buckling, or collapse under stress like wind or excessive weights. This creates shear forces, weakening Node Points and joints, risking catastrophic failure and collapse, as seen in real accidents where poor squaring off amplified instability.

Mathematics is extremely important within the scaffolding industry, and not just for the complex calculations used when creating bespoke Design Drawings with within the Engineering side of the trade, but for the boots-on-the-ground scaffolder too.

For a scaffolder, a decent understanding of basic maths, ensures that one would build safe, correct / compliant and stable structures, with the Tape Measure being the 3rd most important tool a scaffolder has after their Spanner and their Brain (especially when having to get around safety critical and financially implicating issues on-the-go, when on site)

The 9x table - being the most vital to know is due to scaffold boards width of approximately 9 inches (or 225mm) wide.

Knowing multiples of the 9x table helps scaffolders quickly calculate Independent Scaffold widths, ensuring precise spacing and alignment for the boards to fit, so that the scaffold can be safely built upwards to its intended height.