BuildMath

Solve a Triangle

One worked example, with the maths behind each result - follow it in the app and check it by hand.

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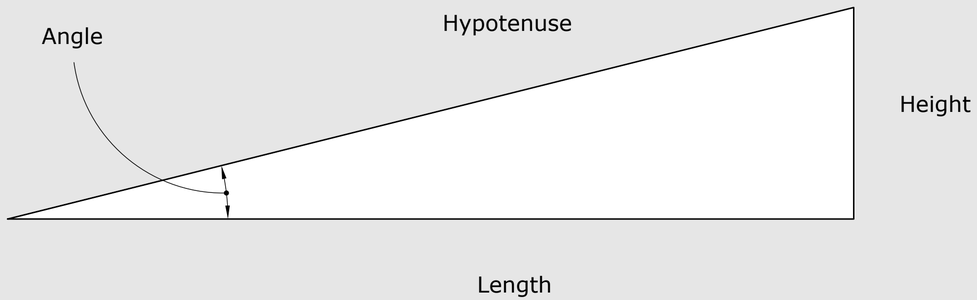

Solve a Triangle gives the missing angle or side of a right-angled triangle from the two you know.

Labelled and calculated in terms of the most commonly given measurements: horizontal length, height and angle.

The hypotenuse and opposite angle are worked out for every result.

tan(angle) = height ÷ length
Hypotenuse = √(length² + height²)

Note:
To mark an angle across a board, use the Angle Offset calculator.

Inputs - Results



Choose Find the Angle
Find the Height and Find the Length work the other way, from a known angle.

Enter the values
Length 3000 - the horizontal length.
Height 1200 - square up from the length.

The angle
$\tan(\text{angle}) = 1200 \div 3000 = 0.4$
$\text{angle} = \tan^{-1}(0.4) = 21.8°$

The hypotenuse
$\sqrt{(3000^2 + 1200^2)} = \sqrt{10{,}440{,}000} = 3231.1$ - the length along the slope.
Or from the angle: $3000 \div \cos(21.8°) = 3231.1$ - the way to go when you only know one side.

The opposite angle
$90° - 21.8° = 68.2°$ - the angle at the top.

Tip: a shortcut to Pythagoras
To check a set-out for square, enter the two sides - the hypotenuse is the diagonal to measure.

Entering values, saving configs and recent angles: see Build Math - the basics.