Trigonometry

This video will explain trigonometry. Trigonometry is the relationship between sides and angles in a right-angled triangle. It helps us find an unknown angle or side. To do this, we need to know the meaning of sine, cosine and tangent. Sin, cos and tan for short. We also need to know the names of the sides we give to a triangle.

Look at the triangle at the bottom of the screen. Note we use the theta symbol for our unknown angle. The hypotenuse is the longest, diagonal side. The adjacent side is the one next to the given angle. The opposite side is the one opposite the angle.

First, we'll look at finding the length of an unknown side. These three formulas are all you need. You can remember the acronym SOHCAHTOA. These triangles might help you remember.
We are looking for the length of side b, which we can label 'opposite'. We can also label the adjacent side. So, we will use this formula.

Tan55 = opposite ÷ 12cm. We need to transpose to solve. Tan55 x 12cm = the opposite side. Tan55 x 12cm = 17.137cm. So, after rounding down, side b is 17cm.

To find an unknown angle, the same 3 formulas are used but we need to use the inverse key on our calculator. This can be found by pressing shift, then either sin, cos or tan.

For example, we are looking for angle x. We know the opposite and the hypotenuse, so we know we are using sine. Putting it into our equation, sine = 100 ÷ 200, which makes sine 0.5. To find x we use the inverse key and this gives us 30 degrees.

To sum up, there are 4 steps to trigonometry.

Step 1 – find the two sides we already know or are looking to find out.
Step 2 – Use SOHCAHTOA to decide whether to use sine, cosine or tangent.
Step 3 – Remember our triangles for calculating sin, cos and tan.
Lastly, Step 4 – If you are after the angle, make sure you use the inverse button on your calculator.

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