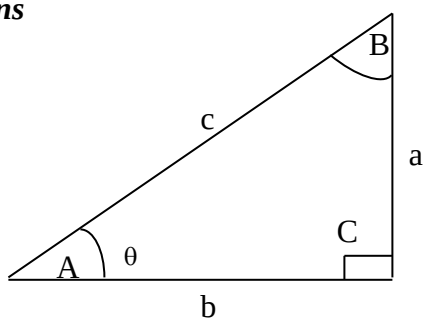
Trig. Functions

On a 90º right triangle you can use your trig. functions and the Pythagorean Theorm to find the sides and/or angles of the triangle. Capital letters are angles and small case letters are sides.
Let angle "A" be "θ"

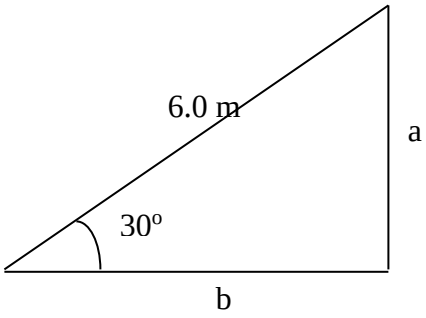


Sin θ = opp/hyp = a/c

Cos θ = adj/hyp = b/c

Tan θ = opp/adj = a/b

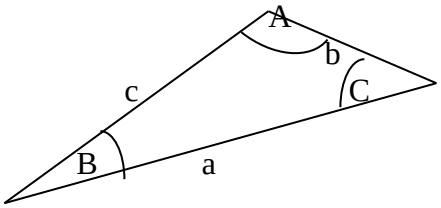
$c^2 = a^2 + b^2$



Sin 30º = a/6.0 m
a = sin 30º (6.0 m) = 3.0 m

Cos 30º = b/6.0 m
B = cos 30º (6.0 m) = 5.2 m

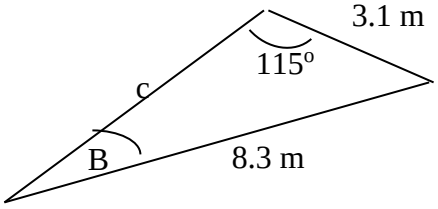
For non 90º triangles you must use the Law of Sines and the Law of Cosines



Law of Sines: sin A/a = sin B/b = sin C/c

Law of Cosines: $a^2 = b^2 + c^2 - 2abCosA$

So, if you know an angle and its side and any other side or angle you can solve for any other variable you can use the Law of Sines



sin 115º/8.3 m = sin B/3.1 m B = 20º

Or, if you know an angle and its side and another side you can use the Law of Cosines to find your unknown side.

$a^2 = (3.1\text{ m})^2 + (6.5\text{ m})^2 - 2(3.1\text{ m})(6.5\text{ m})Cos\ 115^o = 8.3\text{ m}$