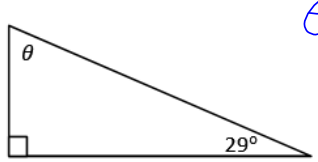
MCF3M Lesson 2

Finding Angles in Right Triangles

Given 2 angles in any triangle it is always possible to find the 3rd angle.

Example:

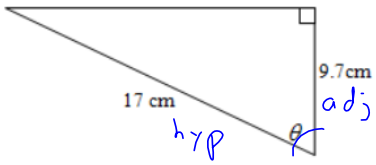


$\theta = 90 - 29$

$\theta = 61°$

Given 2 sides it is also possible to solve for an angle using SOH CAH TOA.

Examples

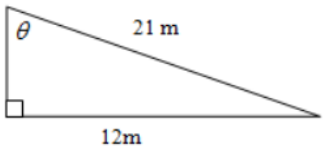


hyp adj

$\cos\theta = \frac{9.7}{17}$

$\theta = \cos^{-1}\left(\frac{9.7}{17}\right)$

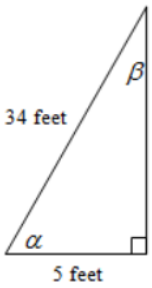
$\theta \doteq 55°$



$\sin\theta = \frac{12}{21}$

$\theta = \sin^{-1}\left(\frac{12}{21}\right)$

$\theta \doteq 34.8°$



$\sin\beta = \frac{5}{34}$

$\cos\alpha = \frac{5}{34}$

$\alpha = \cos^{-1}\left(\frac{5}{34}\right)$

$\alpha \doteq 81.5°$

$\beta = 90 - 81.5$

$\beta = 8.5°$

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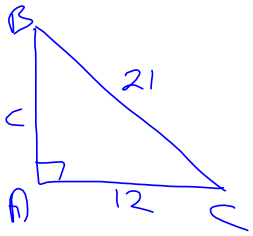
In triangle ABC, <A = 90°, b = 12 cm and a = 21 cm. Solve the triangle.



$21^2 = c^2 + 12^2$

$c^2 = 21^2 - 12^2$

$c^2 = 297$

$c = \sqrt{297}$

$c = 17.2\text{ cm}$

$\cos C = \frac{12}{21}$

$C = \cos^{-1}\left(\frac{12}{21}\right)$

$C \doteq 55°$

$\angle B = 90 - 55$

$\angle B = 35°$

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