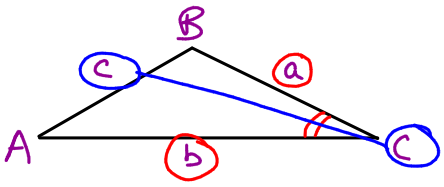
# The Cosine Law

We use the cosine Law in NON-Rt ∡ Δ's when we know:

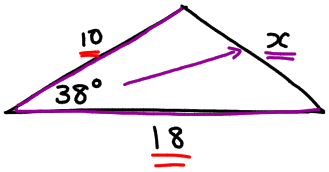
2 sides & the contained ∡

OR

all three sides



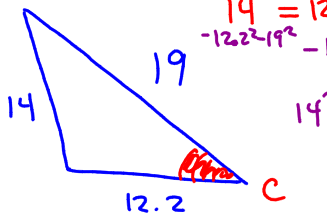

$c^2 = a^2 + b^2 - 2ab\cos C$




$a^2 + b^2 - 2 \cdot a \cdot b \cdot \cos C$

$x^2 = 10^2 + 18^2 - 2(10)(18)\cos 38$

$x = 11.84$




$14^2 = 12.2^2 + 19^2 - 2(12.2)(19)\cos C$

$-12.2^2 - 19^2 \quad -12.2^2 \quad -19^2$

$14^2 - 12.2^2 - 19^2 = -2(12.2)(19)\cos C$

$\frac{-313.84}{-463.6} = \frac{-463.6\cos C}{-463.6}$

$.67696 = \cos C$

$C = 47.4°$

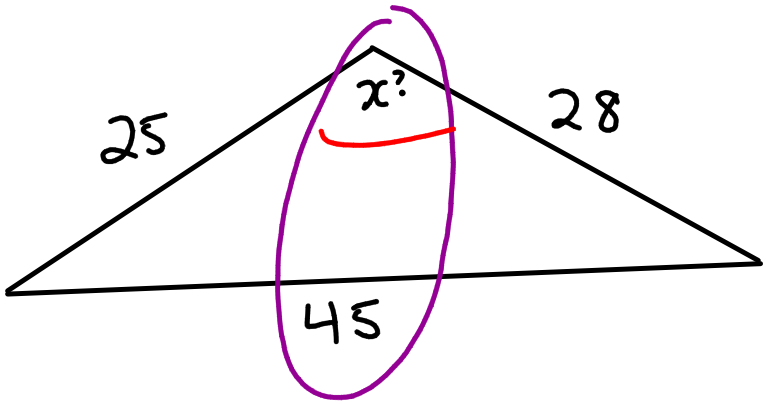
$c^2 = a^2 + b^2 - 2ab\cos C$

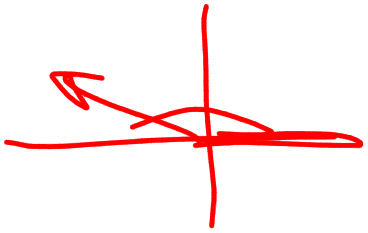
$-a^2 - b^2 \quad -a^2 \quad -b^2$

$\frac{c^2 - a^2 - b^2}{-2ab} = \frac{-2ab\cos C}{-2ab}$

$\cos C = \frac{c^2 - a^2 - b^2}{-2ab}$

$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$



$c^2 = a^2 + b^2 - 2ab\cos C$

$45^2 = 25^2 + 28^2 - 2(25)(28)\cos C$

$2025 = 625 + 784 - 1400\cos C$

$2025 = 1409 - 1400\cdot\cos C$

$-1409 \quad -1409$

$616 = -1400\cos C$

$\frac{616}{-1400} = \frac{-1400\cos C}{-1400}$

$-.44 = \cos C$

$C = 116^\circ$

① Sine Law W/s → get r' done

② Cosine Law W/S

③ Do Sections 2.3 & 2.4 from your Blue Sheet

AND the text book Review