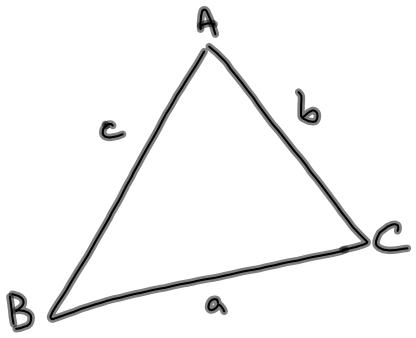
Cosine Law

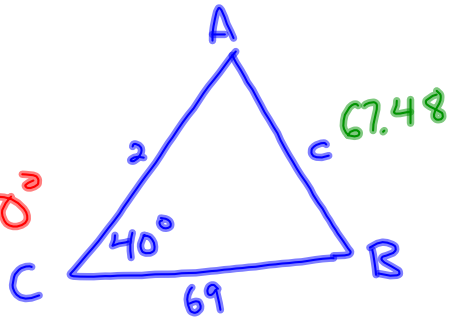
$$c^2 = a^2 + b^2 - 2ab\cos C$$

$$a^2 = c^2 + b^2 - 2bc\cos A$$

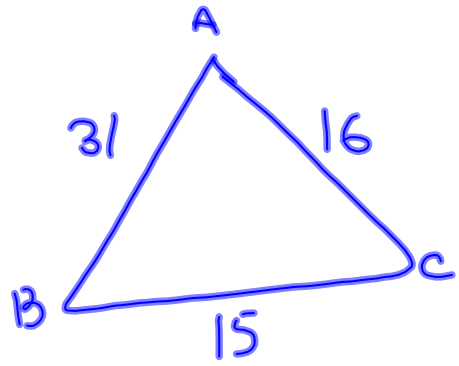


Ex. 1 Solve for c.

$$c^2 = a^2 + b^2 - 2ab\cos C$$
$$c^2 = 69^2 + 2^2 - 2(69)(2)\cos 40^\circ$$
$$c^2 = 4761 + 4 - 276(0.7660)$$
$$c^2 = 4553.584$$
$$c = \sqrt{4553.584}$$
$$c \doteq 67.48$$



Ex. 2 Solve for $\angle C$



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

$31^2 = 15^2 + 16^2 - 2(15)(16)\cos C$

$961 = 225 + 256 - 480\cos C$

$961 - 225 - 256 = -480\cos C$

$480 = -480\cos C$

$\frac{480}{-480} = \cos C$

$-1 = \cos C$

$\cos^{-1}(-1) = C$

$180^\circ = C$

pg. 20 # 1ac, 2ac, 4ac