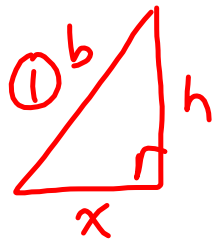
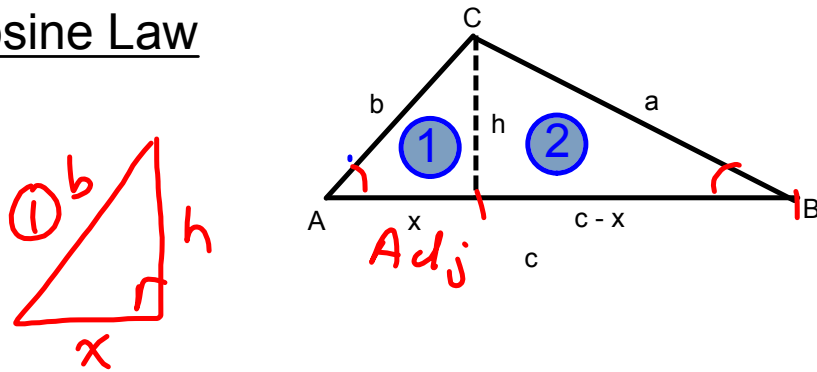


Cosine Law

$$\cos A = \frac{x}{b}$$

$$h^2 + (c-x)^2 = a^2$$

$$a^2 = h^2 + c^2 - 2cx + x^2$$

$$a^2 = \underbrace{h^2 + x^2} + c^2 - 2cx$$

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

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

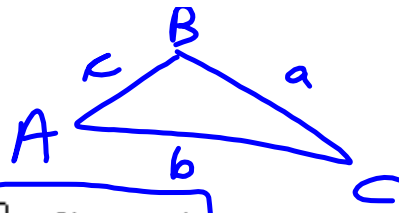
$$\rightarrow \cos A = \frac{x}{b}$$

$$\underline{b \cos A = x}$$

$$\begin{aligned}(c-x)^2 &= (c-x)(c-x) \\ &= c^2 - cx - cx + x^2 \\ &= c^2 - 2cx + x^2\end{aligned}$$

Angle

# Cosine Law



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

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

~~$$\cos B = \frac{c^2 + a^2 - b^2}{2ca}$$~~

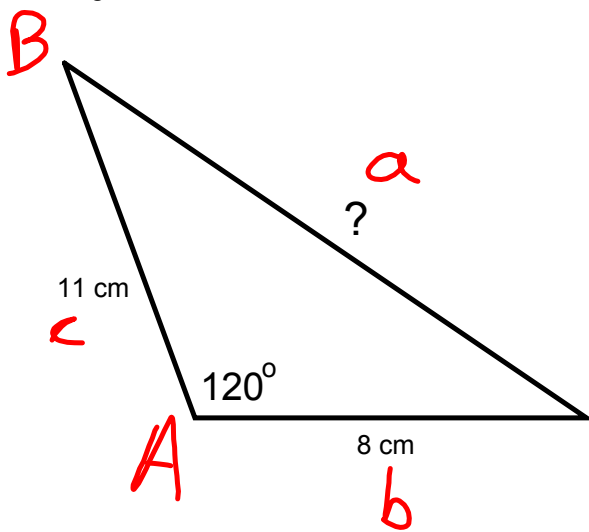
~~or  $b^2 = c^2 + a^2 - 2ca \cos B$~~

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

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

Side

Finding a Side



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

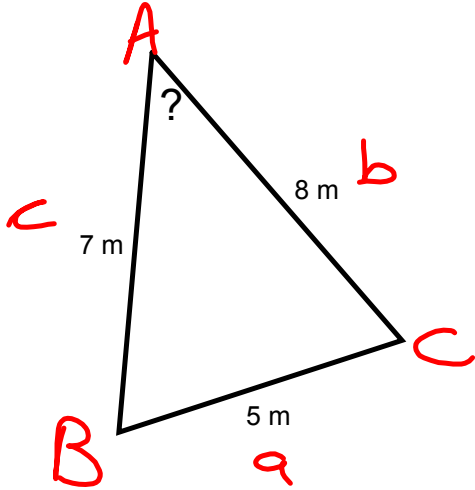
$$a^2 = 8^2 + 11^2 - 2(8)(11)\cos 120^\circ$$

$$a^2 = 64 + 121 - (-88)$$

$$\sqrt{a^2} = \sqrt{273}$$

$$a = 16.5$$

Finding an Angle



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

$$\cos A = \frac{8^2 + 7^2 - 5^2}{2(8)(7)}$$

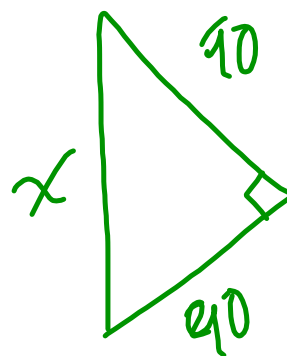
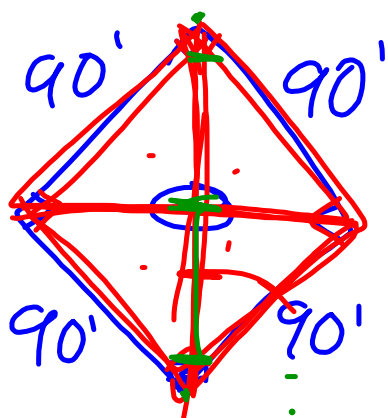
$$\cos A = \frac{64 + 49 - 25}{112}$$

$$\cos A = \frac{88}{112}$$

$$\cos A = 0.7857$$

$$A = 38^\circ$$

pg. 443  
# 3, 4, 7, 9



63.6'

