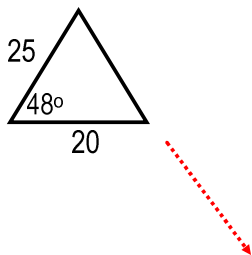


1.6 Cosine Law

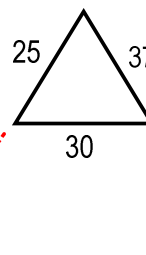
Sine law won't work for all cases...
Sine law needs at least one side/angle pair...

What if we have:

- Two sides and a contained angle?



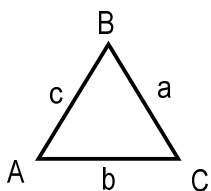
- Only 3 sides and no angle?



Use the COSINE LAW

Sep 15-9:19 PM

Cosine Law



$$b^2 = a^2 + c^2 - 2ac \cos B$$

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

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

to find a
side length

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

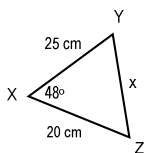
to find
an angle

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

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

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Ex 1 - Find x, round to 1 decimal place



$$x^2 = y^2 + z^2 - 2yz \cos X$$

$$x^2 = 20^2 + 25^2 - 2(20)(25) \cos 48^\circ$$

$$x^2 = 400 + 625 - 1000 \cos 48^\circ$$

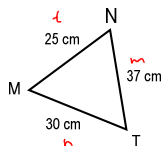
$$x^2 = 400 + 625 - 669.13$$

$$x^2 = 355.87$$

$$x = \sqrt{355.87}$$

$$x = 18.9$$

Ex 2 - Find N, round to 1 decimal place



$$\cos N = \frac{t^2 + m^2 - n^2}{2tm}$$

$$\cos N = \frac{25^2 + 37^2 - 30^2}{2(25)(37)}$$

$$\cos N = \frac{1094}{1850}$$

$$\cos N = 0.59135$$

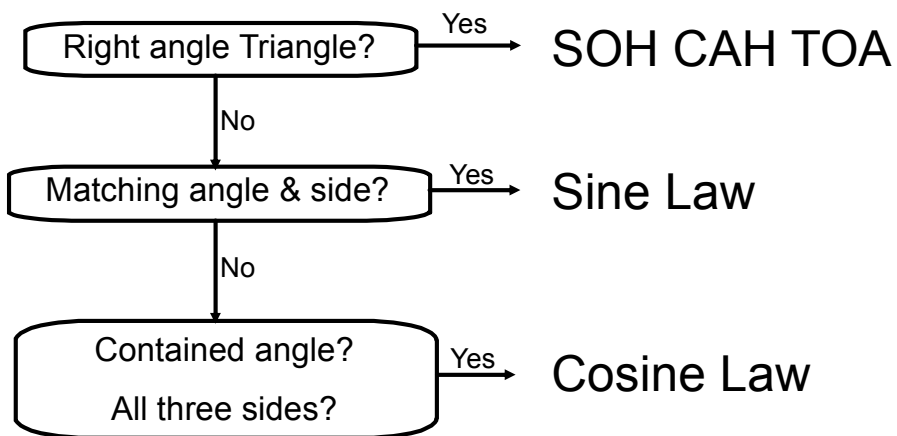
$$N = \cos^{-1}(0.59135)$$

$$= 53.747$$

$$= 53.7$$

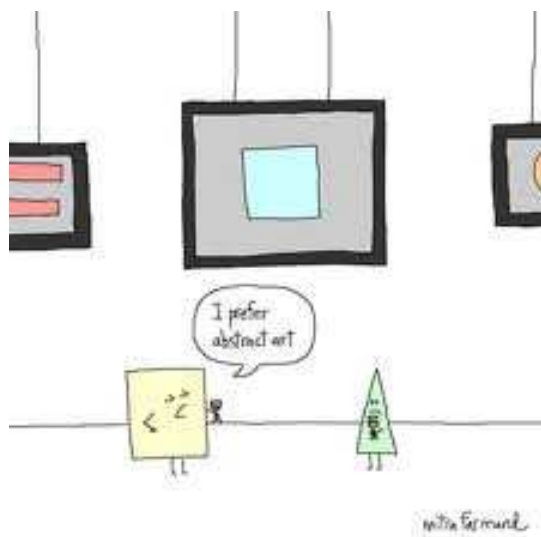
Sep 15-10:12 PM

Which tool to use?



Jan 1-9:47 PM

Practice:
p. 39 #1bc, 2bc, 4, 5, 7



Sep 15-10:28 PM