

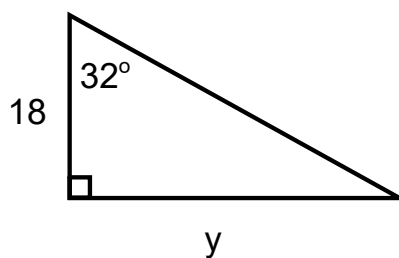
Trigonometry - CoSine Law

Learning Goal:

By the end of today, I will be able to solve for the missing sides and angles in a triangle when the Primary Trigonometric ratios and the Sine Law are not applicable.

May 28-11:40 AM

Find the missing value in the triangle below:



Checklist

- Is the triangle a RIGHT triangle?
- What trig ratio ties the information together (sin, cos, tan)?
- Am I looking for an angle or a ratio (side)?

May 28-11:40 AM

When there is a 90 degree angle, we can and should use the Primary Trigonometric Ratios as well as Pythagorean Theorem.

$$\sin \theta = \frac{opp}{hyp}$$

$$\cos \theta = \frac{adj}{hyp}$$

$$\tan \theta = \frac{opp}{adj}$$

Nov 11-11:39 AM

Sine Law

- used when there are NO, 90 degree angles
- used when we have an "opposite side - angle" pair or a completed ratio

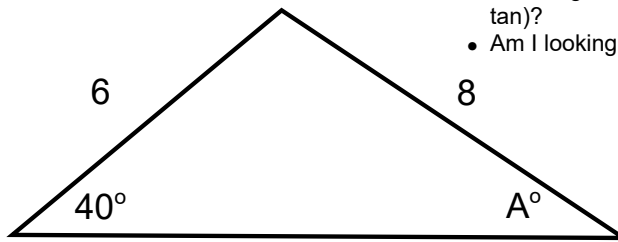
$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

or

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Nov 10-3:35 PM

Find the missing value in the triangle below:

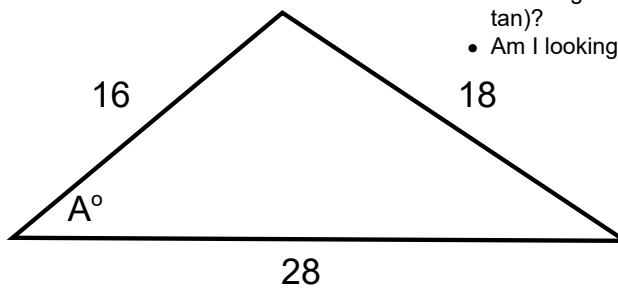


Checklist

- Is the triangle a RIGHT triangle?
- What trig ratio ties the information together (sin, cos, tan)?
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May 28-11:40 AM

Find the missing value in the triangle below:

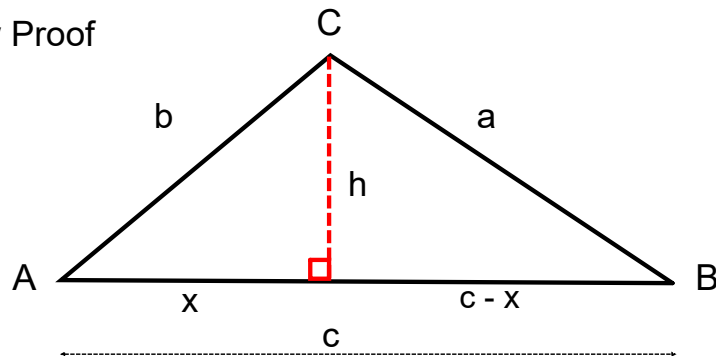


Checklist

- Is the triangle a RIGHT triangle?
- What trig ratio ties the information together (sin, cos, tan)?
- Am I looking for an angle or a ratio (side)?

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CoSine Law Proof



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

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

$$x^2 + h^2 = b^2$$

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

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Cosine Law

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

or

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

or

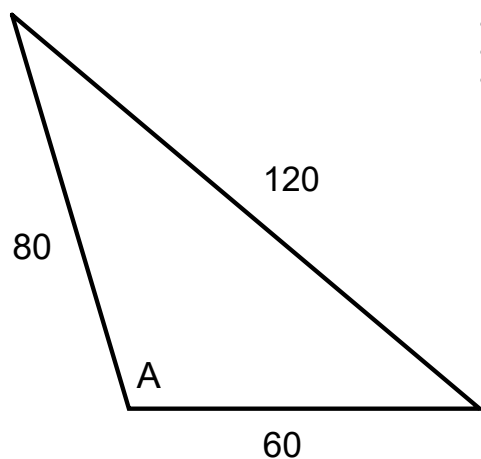
$$c^2 = a^2 + b^2 - 2ab(\cos C)$$

Do you notice any similarities or patterns in the different forms of the Cosine Law?

If you had a triangle with vertices X, Y, and Z, what would the cosine law look like?

Nov 11-11:59 AM

Find the missing value in the triangle below:

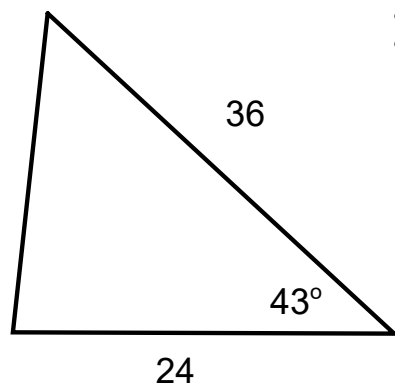


Checklist

- Is the triangle a RIGHT triangle?
- Is there an opposite side angle pair?
- Am I looking for an angle or a ratio (side)?

May 28-11:40 AM

Find ALL of the missing values in the triangle below:



Checklist

- Is the triangle a RIGHT triangle?
- Is there an opposite side angle pair?
- Am I looking for an angle or a ratio (side)?

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Consolidation Questions:

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