

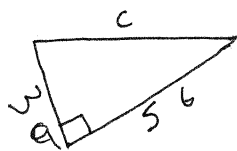
Trigonometry Review

→ In order to "solve" [find all angles and sides] a triangle, you would use Trigonometry.

To solve a right-angle Triangle you can use a variety of methods:

→ Pythagorean Theorem: $[a^2 + b^2 = c^2]$

This is used to find one side of a triangle when the sides that are known is two.



$$\begin{aligned} a^2 + b^2 &= c^2 \\ = 3^2 + 5^2 &= c^2 \\ = 9 + 25 &= c^2 \\ = 34 &= c^2 \end{aligned}$$

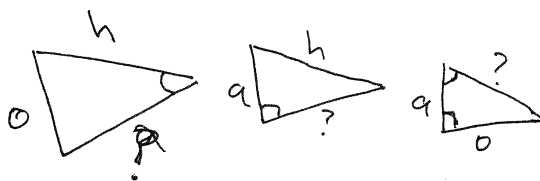
$$\sqrt{34} = c \rightarrow \boxed{c = 5.8}$$

5.83095 →

→ SohCahToa: Used to find the length of one side when one side and one angle is known.

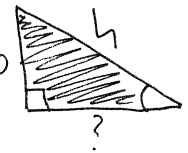
* S-o-h C-a-h T-o-a

h	o	a
i	d	n
p	j	p
p	a	p
o	c	o
s	c	s
i	c	i
t	c	t
t	c	t
e	c	e
s	c	s
e	c	e

Reference Angles: 

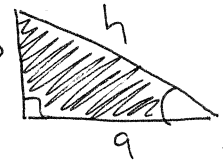
You use "Sin" when:

You have one angle, the hypotenuse, and the side opposite of the angle



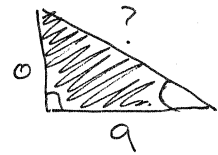
You use "Cos" when:

You have one angle, the side adjacent to the angle, and the hypotenuse.



You use "Tan" when:

You have one angle, the side opposite of the angle, and the side adjacent to the angle

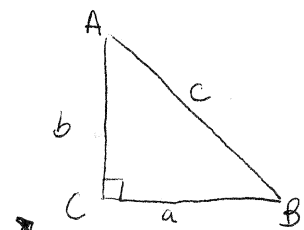


Sin^{-1} , Cos^{-1} , Tan^{-1} : can be used to find angles when we know the lengths of at least 2 sides of a right angle triangle.

$$\text{ex } \tan(A) = \frac{7.1}{6.2} \rightarrow \tan(A) = 1.1452$$

$$A = \tan^{-1}(1.1452)$$

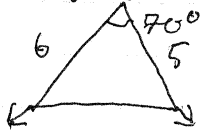
$$A = 49^\circ$$



If A is our reference angle, a would be our opposite, c would be the hypotenuse + b would be our adjacent.

Cosine Law: $c^2 = a^2 + b^2 - 2ab \cos(C)$
 or $b^2 = a^2 + c^2 - 2ac \cos(B)$
 (BEDMAS) or $a^2 = b^2 + c^2 - 2bc \cos(A)$

You would use the Cosine Law when you have two sides and a contained angle.

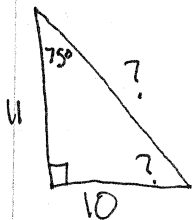


Sine Law: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

You cannot use the Sine Law when you would use the Cosine Law.

$\rightarrow \frac{8.2}{\sin A} = \frac{14.5}{\sin B} = \frac{c}{\sin 35^\circ} \rightarrow \text{CAN'T}$

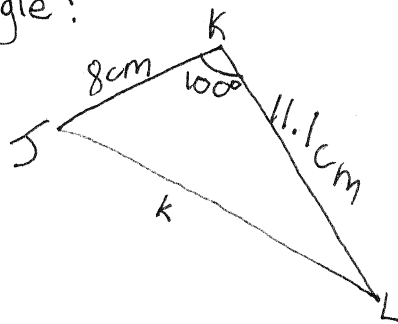
$\rightarrow \frac{8.2}{\sin A} = \frac{14.5}{\sin 4^\circ} = \frac{c}{\sin 35^\circ} \rightarrow \text{CAN}$



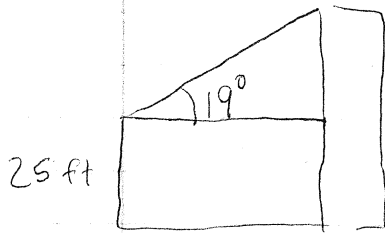
? How would you solve the triangle?

Solve.

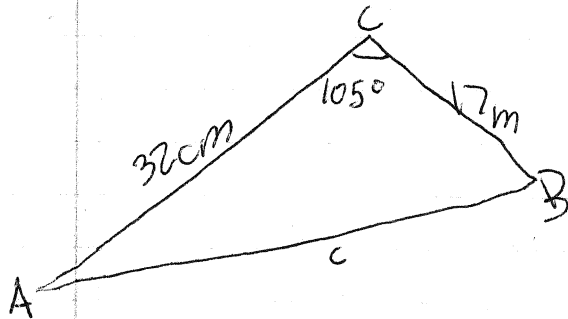
Which "Law" would you choose to solve for side k in the following triangle?



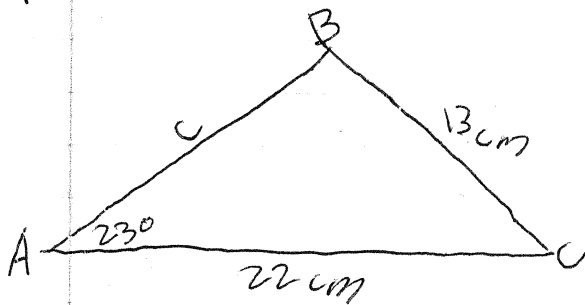
- a) Sine Law
- b) Cosine Law
- c) None of the above



Kristen is having a party. To liven up the party, she's going to put streamers from the top of the building 50ft to the pole. The pole is 25ft + the building is 50ft.



Solve using the Cosine Law.



Solve using the Sine Law.