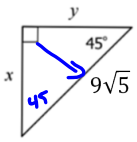
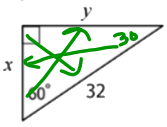
Warm Up:

1. $x = 4.5\sqrt{10}$, $y = 4.5\sqrt{10}$



2. $x = 16$, $y = 16\sqrt{3}$



30	60	90
x	$x\sqrt{3}$	2x
16	$16\sqrt{3}$	32

3. Simplify. $6a^{\frac{2}{5}} \cdot 2a^{\frac{3}{4}}$

$12a^{23/20}$

May 11-9:56 AM

Right Triangle Trigonometry

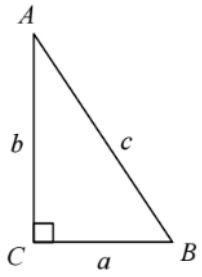
(Finding Missing Sides)

If you have a triangle that its angles are different than 30°, 45°, 90° how you can solve for the missing side?

You can use trigonometric ratios

sin, cos, and tan

May 11-9:42 AM



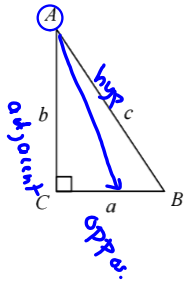
Notation for the angles and sides:

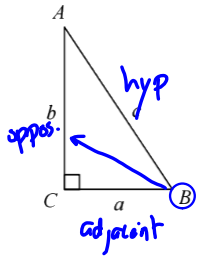
Angles are in UPPERCASE;

side opposite an angle has the same letter, but in *lowercase*

Dec 5-3:16 PM

What do we mean by opposite and adjacent sides?





Dec 5-4:02 PM

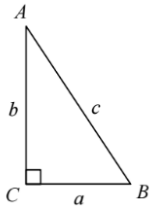
New! Trigonometric Ratios

name	abbreviation
sine	sin
cosine	cos
tangent	tan

Dec 5-3:17 PM

SINE

The ratio of the leg **opposite** the angle to the **hypotenuse**.



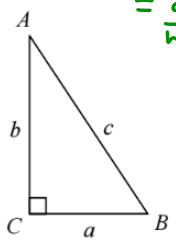
Sin $A = \frac{a}{c}$

Sin $B = \frac{b}{c}$

May 11-9:44 AM

COSINE = adjacent / hypotenuse

The ratio of the leg **adjacent** to the angle to the **hypotenuse**.

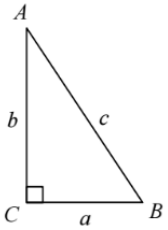


Cos A = b/c

Cos B = a/c

May 11-9:44 AM

TANGENT = The ratio of the leg **opposite** the angle to the leg **adjacent** to the angle.



Tan A = a/b

Tan B = b/a

May 11-9:44 AM

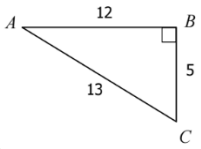
Remember !!

SOH - CAH - TOA

Sin = opp/hyp	Cos = adj/hyp	Tan = opp/adj

May 11-9:46 AM

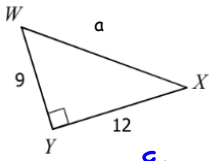
Example: Write the ratios in simplest form.



- Sin A = 5/13
- Cos A = 12/13
- Tan A = 5/12
- Sin C = 12/13
- Cos C = 5/13
- Tan C = 12/5

May 11-9:47 AM

Example: Write the ratios in simplest form.



- Sin W = a/9
- Cos W = 9/a
- Tan W = a/9 = 4/3
- Sin X = 9/a
- Cos X = 12/a
- Tan X = 9/12 = 3/4

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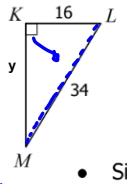
Example: You try! Write the ratios in simplest form.

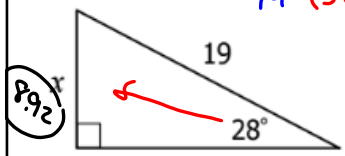


- Sin L = y/34
- Cos L = 16/34 = 8/17
- Tan L = y/16
- Sin M = 16/34 = 8/17
- Cos M = y/34
- Tan M = 16/y

May 11-9:49 AM

Example: Solve for the missing side.

Make sure your calculator is in DEGREE MODE!

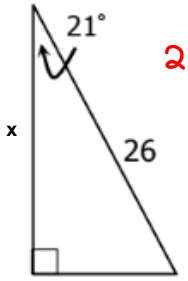


$19 \cdot (\sin 28^\circ) = \frac{x}{19}$

$8.92 \approx X$

May 11-9:51 AM

Example: Solve for the missing side.

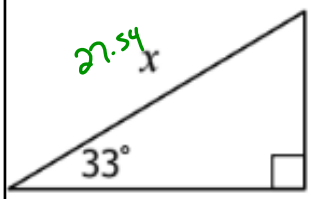


$26 \cdot (\cos 21^\circ) = \frac{x}{26}$

$24.27 \approx X$

May 11-9:51 AM

Example: Solve for the missing side.



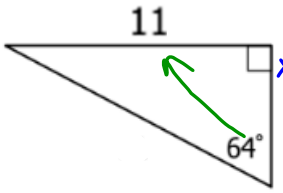
$x(\sin 33^\circ) = \frac{15}{x}$

$\frac{x \cdot (\sin 33^\circ)}{\sin 33^\circ} = \frac{15}{\sin 33^\circ}$

$X = 27.54$

May 11-9:51 AM

Example: Solve for the missing side.



$x \cdot (\tan 64^\circ) = \frac{11}{x}$

$\frac{x(\tan 64^\circ)}{\tan 64^\circ} = \frac{11}{\tan 64^\circ}$

$X \approx 5.36$

May 11-9:51 AM

Example:

Jake leaned a 12-foot ladder against his house. If the angle formed by the ladder and the ground is 68°, how far from the base of the house did he place the ladder?

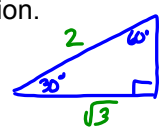
$12 \cdot (\cos 68^\circ) = \frac{x}{12}$

$4.49 \approx X$

May 11-9:54 AM

Use special right triangles to write each trig ratio as a simplified fraction.

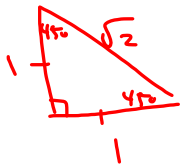
1) $\sin 30^\circ = \frac{1}{2}$



30	60	90
x	x√3	2x
1	√3	2

2) $\cos 30^\circ = \frac{\sqrt{3}}{2}$

3) $\tan 45^\circ = 1$



45	45	90
x	x	x√2
1	1	√2

Dec 6-7:31 AM