Guiding Question: Can I apply my knowledge of trigonometry to solve triangles?

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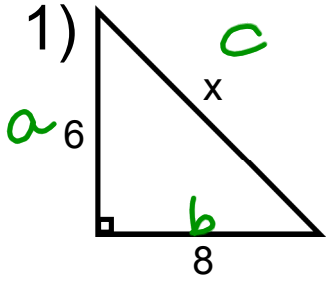
Solve for the unknown sides:

1)



Pythagorean Theorem

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

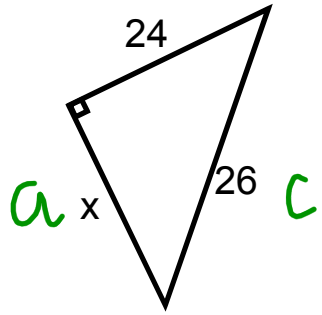
$6^2 + 8^2 = x^2$

$36 + 64 = x^2$

$\sqrt{100} = \sqrt{x^2}$

$10 = x$

2)



$x^2 + 24^2 = 26^2$

$x^2 + 576 = 676$

$-576 = -576$

$\sqrt{x^2} = \sqrt{100}$

$x = 10$

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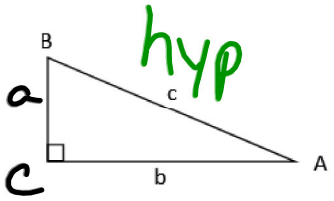
Opposite/Adjacent/Hypotenuse

To understand sine, cosine, and tangent, you must be able to find nd label sides as adjacent or opposite of an angle.



What **side** is the hypotenuse? c

What **side** is opposite of $\angle A$? a

What **side** is adjacent to $\angle A$? b

What **side** is opposite of $\angle B$? b

What **side** is adjacent to $\angle B$? a

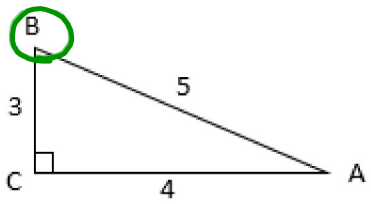
Sine (sin) / Cosine (cos) / Tangent (tan)

To remember the trigonometric ratio we can use the following saying:

SOH-CAH-TOA

Sin = $\frac{opp}{hyp}$ Cos = $\frac{adj}{hyp}$ Tan = $\frac{opp}{adj}$

Using the triangle below express sine-cosine-tangent.



sin A = $\frac{3}{5}$ sin B = $\frac{4}{5}$

cos A = $\frac{4}{5}$ cos B = $\frac{3}{5}$

tan A = $\frac{3}{4}$ tan B = $\frac{4}{3}$

$S\frac{O}{H}C\frac{A}{H}T\frac{O}{A}$

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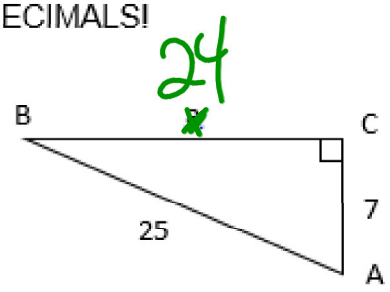
Examples: Use the triangle below to find sin, cos, tan. NO DECIMALS!

1. sin A = $\frac{24}{25}$
2. cos A = $\frac{7}{25}$
3. tan A = $\frac{24}{7}$
4. sin B = $\frac{7}{25}$
5. cos B = $\frac{24}{25}$
6. tan B = $\frac{7}{24}$



$x^2 + 7^2 = 25^2$

$x^2 + 49 = 625$

$-49 \quad -49$

$\sqrt{x^2} = \sqrt{576}$

SOH CAH TOA

Finding Missing Sides

You can find trigonometric ratios using your calculator!

****** Make sure your calculator is in** degrees ********

Examples: Find the values using your calculator

7. sin 45°

.7071

8. cos 87°

.0523

9. tan 37°

.7535

Examples: Find the missing side lengths.

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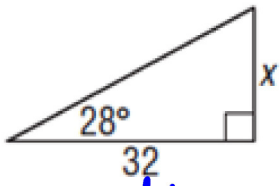
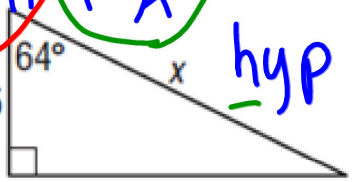
10.



opp

adj

11.



hyp

adj

$\tan 28° = \frac{x}{32}$

$\frac{.5317}{1} = \frac{x}{32}$

$x = 32(.5317)$

$x = 17$

$\cos 64 = \frac{15}{x}$

$\frac{.4383}{1} = \frac{15}{x}$

$\frac{x(.4383)}{.4383} = \frac{15}{.4383}$

$x = 34.2$

Ch. 14 Trigonometry Day 1 Practice