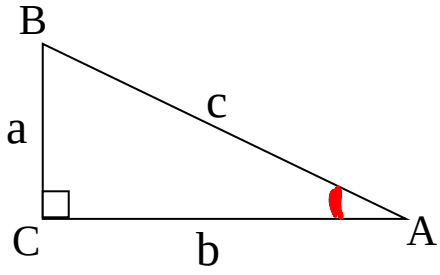
Sect. 13.1 – day 2

Algebra 2 Trig G

Key

Let's Review!

SOH CAH TOA



Write the ratio for the following...

$\tan A = \frac{a}{b}$ $\quad \cot A = \frac{b}{a}$

$\sin A = \frac{a}{c}$ $\quad \csc A = \frac{c}{a}$

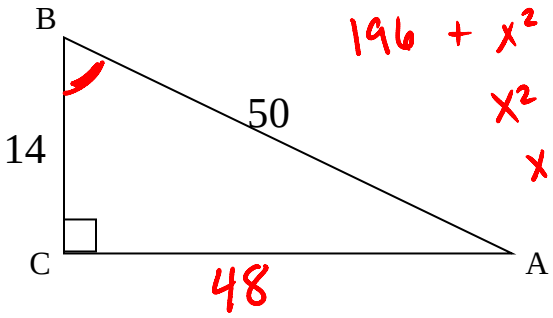
$\cos A = \frac{b}{c}$ $\quad \sec A = \frac{c}{b}$

Complete the following. SOH CAH TOA

$\sin B = \frac{48}{50} = \frac{24}{25}$ $\quad \csc B = \frac{50}{48} = \frac{25}{24}$

$\cos B = \frac{14}{50} = \frac{7}{25}$ $\quad \sec B = \frac{50}{14} = \frac{25}{7}$

$\tan B = \frac{48}{14} = \frac{24}{7}$ $\quad \cot B = \frac{14}{48} = \frac{7}{24}$



$14^2 + x^2 = 50^2$

$196 + x^2 = 2500$

$x^2 = 2304$

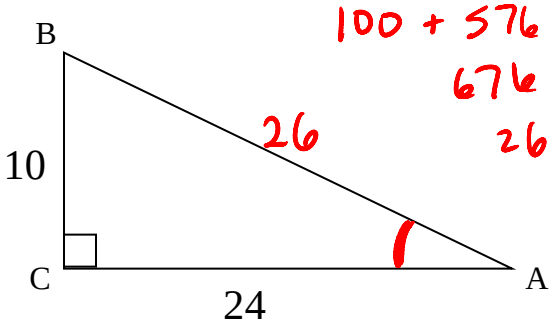
$x = 48$

Complete the following.

$\sin A = \frac{10}{26} = \frac{5}{13}$ $\quad \cot A = \frac{24}{10} = \frac{12}{5}$

$\tan A = \frac{10}{24} = \frac{5}{12}$ $\quad \sec A = \frac{26}{24} = \frac{13}{12}$

$\cos A = \frac{24}{26} = \frac{12}{13}$ $\quad \csc A = \frac{26}{10} = \frac{13}{5}$



$10^2 + 24^2 = x^2$

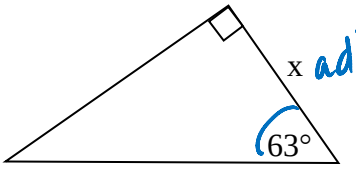
$100 + 576 = x^2$

$676 = x^2$

$26 = x$

Set up the proportion to find the missing side.

a)



adj

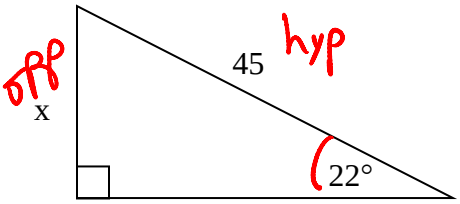
hyp

$\frac{\cos 63}{1} = \frac{x}{38}$

$38(\cos 63) = x$

$17.25 = x$

b)



opp

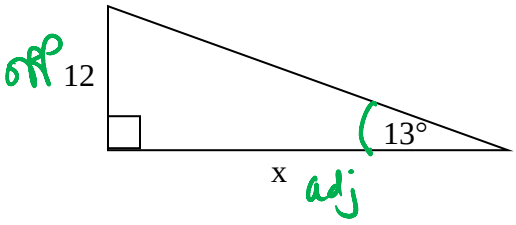
hyp

$\frac{\sin 22}{1} = \frac{x}{45}$

$45(\sin 22) = x$

$16.86 = x$

c)



opp

adj

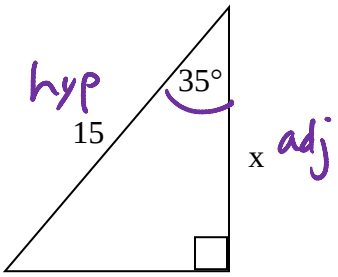
$\frac{\tan 13}{1} = \frac{12}{x}$

$x(\tan 13) = 12$

$x = \frac{12}{\tan 13}$

$x = 51.98$

d)



hyp

adj

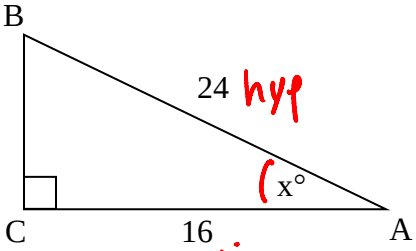
$\frac{\cos 35}{1} = \frac{x}{15}$

$15(\cos 35) = x$

$12.29 = x$

Now that we can find missing sides, how do you find an ANGLE?

Use the INVERSE! **.** $\sin^{-1}$ $\cos^{-1}$ $\tan^{-1}$



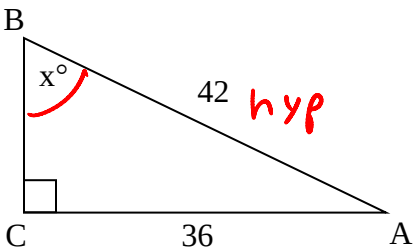
hyp

adj

$\cos x = \frac{16}{24}$

$\cos^{-1}\left(\frac{16}{24}\right) = x$

$48° = x$



hyp

opp

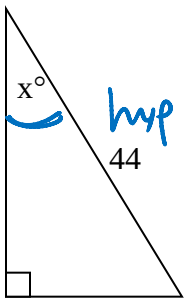
$\sin x = \frac{36}{42}$

$\sin^{-1}\left(\frac{36}{42}\right) = x$

$59° = x$

Find the missing angle. Remember, when solving for angles, use the INVERSE !!!

a)

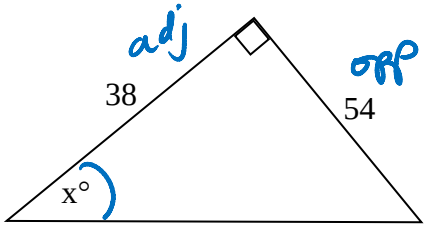


$\sin x = \frac{12}{44}$

$\sin^{-1}\left(\frac{12}{44}\right) = x$

$16^\circ = x$

b)

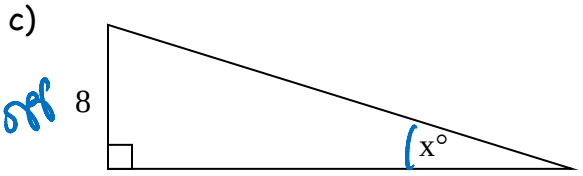


$\tan x = \frac{54}{38}$

$\tan^{-1}\left(\frac{54}{38}\right) = x$

$55^\circ = x$

c)

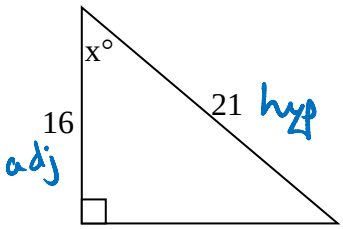


$\tan x = \frac{8}{26}$

$\tan^{-1}\left(\frac{8}{26}\right) = x$

$17^\circ = x$

d)



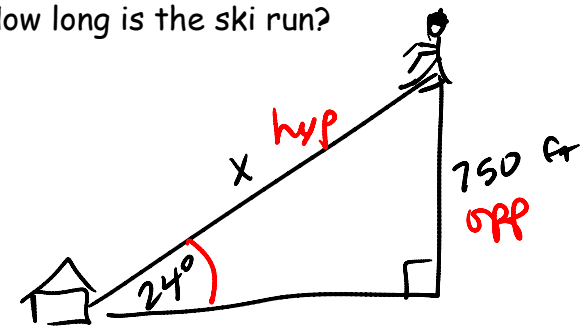
$\cos x = \frac{16}{21}$

$\cos^{-1}\left(\frac{16}{21}\right) = x$

$40^\circ = x$

Word Problems!

a) The new ski slope at Devil's Head is 750ft high. From the ranger's station the slope is at an angle of elevation of 24°. How long is the ski run?

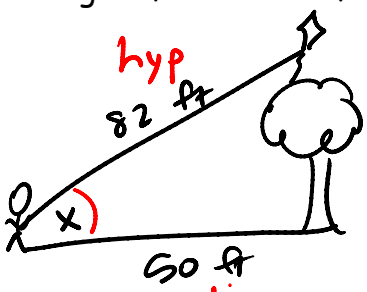


$\frac{\sin 24}{1} = \frac{750}{x}$

$x(\sin 24) = 750$

$x = 1844$ ft

b) Sue was standing 50 feet from a tree flying her kite. If the kite is directly above the tree and 82 feel of string is being used, what is the angle of elevation of the kite?



$\cos x = \frac{50}{82}$

$\cos^{-1}\left(\frac{50}{82}\right) = x$

$52^\circ = x$