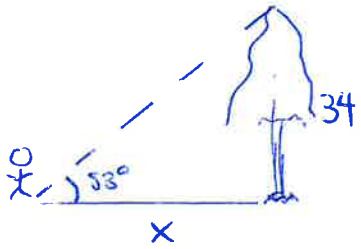
Name: KEY

Section 6.4 – Applications of Trigonometry

Solve for the required information.

An observer looks up to the top of a tree. The angle of inclination measured from their feet to the top of the tree is 53°. If the tree is $34m$ height, how far away from the tree is the person standing? Draw a picture and round answers to the nearest meter.

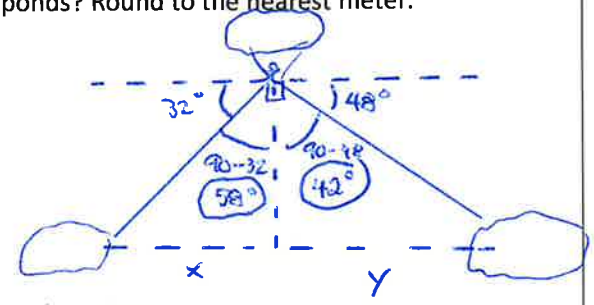


TOA so

$\tan 53 = \frac{34}{x}$

$x = \frac{34}{\tan 53}$ $\quad x = 25.6 = \boxed{26m}$

Up in my hot air balloon I spot two small ponds to the East and West of my position. To the East, the angle of depression is 48° and to the West, the angle of depression is 32°. If my balloon is $250m$ above the ground, how far apart are the two ponds? Round to the nearest meter.



$h = 250$

$\tan 58 = \frac{x}{h}$ $\quad \tan 58 = \frac{x}{250}$ $\quad x = 250 \tan 58$

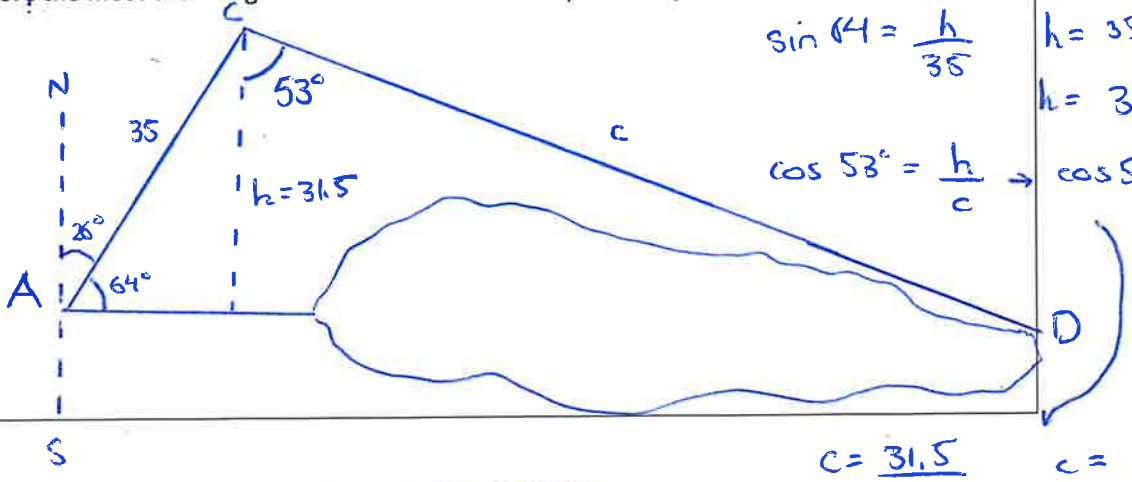
$x = 400$

$\tan 42 = \frac{y}{h}$ $\quad \tan 42 = \frac{y}{250}$ $\quad y = 250 \tan 42$

$y = 225$

$x + y = 225 + 400 = \boxed{625m}$

A surveyor mapping a road Due East at point A look ahead and notice a lake at point B, they immediately turn $N26°E$ and travel for $35km$ to point C. They then turn $S53°E$, how far do they have to travel before the meet their original Due East line $A - D$ at point D? (Pictures will really help).



$\sin 64 = \frac{h}{35}$ $\quad h = 35 \sin 64$

$h = 31.5$

$\cos 53° = \frac{h}{c} \rightarrow \cos 53 = \frac{31.5}{c}$

$c = \frac{31.5}{\cos 53}$ $\quad c = 52.3$

$\boxed{c = 52.3km}$