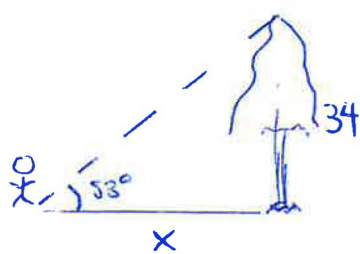


Name: **KEY**

**Section 6.1d – Applications of Trigonometry**

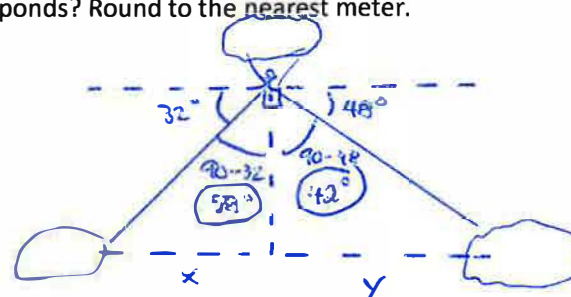
Solve for the required information.

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  $53^\circ$ . 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.



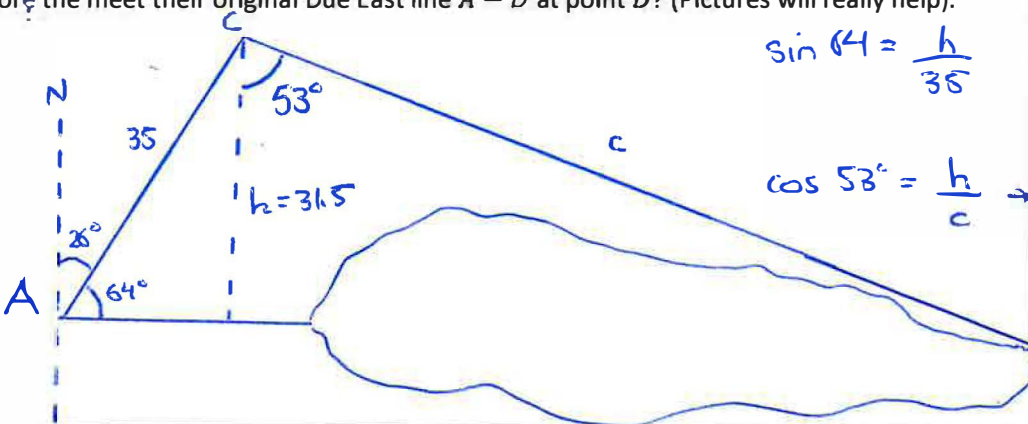
TOA so  
 $\tan 53 = \frac{34}{x}$   
 $x = \frac{34}{\tan 53}$   
 $x = 25.6 = \boxed{26m}$

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  $48^\circ$  and to the West, the angle of depression is  $32^\circ$ . If my balloon is  $250m$  above the ground, how far apart are the two ponds? Round to the nearest meter.



$h = 250$   
 $\tan 58 = \frac{x}{h}$      $\tan 58 = \frac{x}{250}$      $x = 250 \tan 58$   
 $x = 400$   
 $\tan 42 = \frac{y}{h}$      $\tan 42 = \frac{y}{250}$      $y = 250 \tan 42$   
 $y = 225$   
 $x + y = 225 + 400 = \boxed{625m}$

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



$\sin 64 = \frac{h}{35}$      $h = 35 \sin 64$   
 $h = 31.5$   
 $\cos 53 = \frac{h}{c}$      $\cos 53 = \frac{31.5}{c}$   
 $c = \frac{31.5}{\cos 53}$      $c = 52.3$

**$c = 52.3 km$**