

# Trigonometry

To find unknown sides use:

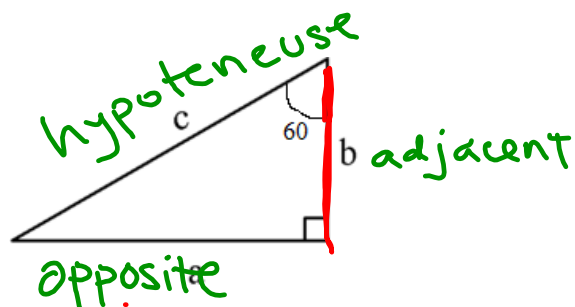
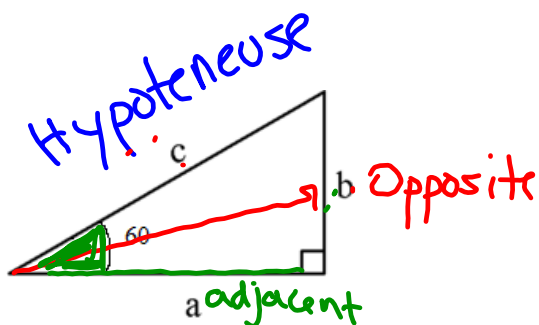
**SOHCAHTOA**      **SOH - CAH - TOA**

S = sin    C = cos    T = tan     $S = \frac{O}{H}$      $C = \frac{A}{H}$      $T = \frac{O}{A}$

O = opposite- always located opposite of the angle given

H = hypotenuse- always the longest side of the triangle

A = adjacent- side which is not the O or the H.



SOH  
 $\sin 60 = \frac{b}{c}$   
 $\sin 60 = \frac{O}{H}$

SOH  
 $\sin 60 = \frac{a}{c}$

CAH  
 $\cos 60 = \frac{a}{c}$   
 $\cos 60 = \frac{A}{H}$

CAH  
 $\cos 60 = \frac{b}{c}$

TOA  
 $\tan 60 = \frac{b}{a}$   
 $\tan 60 = \frac{O}{A}$

TOA  
 $\tan 60 = \frac{a}{b}$

## **Steps to determine which to use:**

- 1- Place hyp, adj and opp on the triangle
- 2- Determine if use cos, sin or tan
- 3- Solve for unknown

TOA CAH SOH

adjacent  
60°  
40 N = hyp  
x = opposite

$\sin 60 = \frac{x}{40}$   
 $x \rightarrow 40$   
 $x = 34.64$  N

CAH  $\cos 60 = \frac{x}{40}$

60°  
H 40 N  
x  
opp

$\rightarrow 40$   
 $= 20$  N

Toa  $\tan 30 = \frac{x}{75}$

hyp  
30°  
75 N = a  
x = opp

$x \rightarrow 75$  N  
 $43.3$  N  
40 N

Toa  $\tan 20 = \frac{25}{x}$

25 N = o  
h  
20°  
x a

$25 = \frac{\tan 20 x}{\tan 20}$   
 $68.7 = x$   
 $70$  N

SOH  $\sin 40 = \frac{x}{75}$

75 N  
H  
x  
A  
40°

$48.2$   
 $50$  N

CAH  $\cos 40 = \frac{x}{50}$

40°  
50 N  
x  
40 N  
Y

$38 = 40$  N  
 $32 = 30$  N

SOH  $\sin 40 = \frac{y}{50}$   
 (Y)

SOH

$$\sin(\ ) = \frac{O}{H}$$

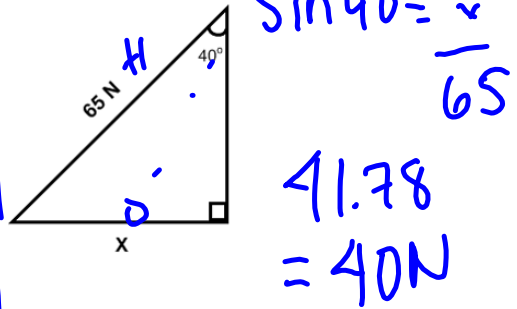
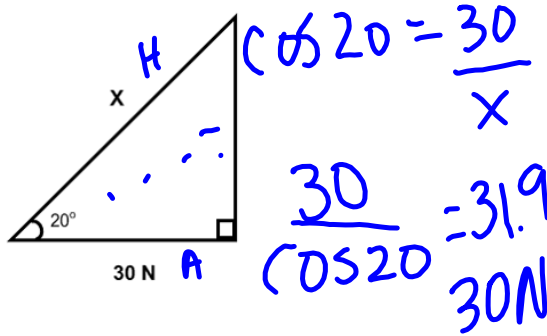
CAH

$$\cos(\ ) = \frac{A}{H}$$

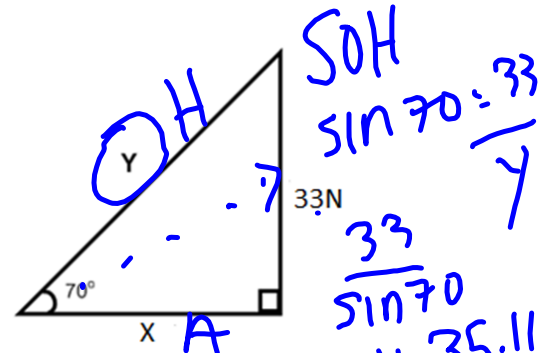
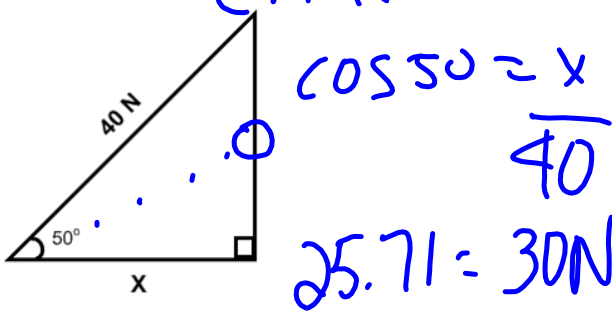
TOA

$$\tan(\ ) = \frac{O}{A}$$

CAH  
SOH



CAH



TOA

