

Trigonometry: Which Trig Ratio to Solve?

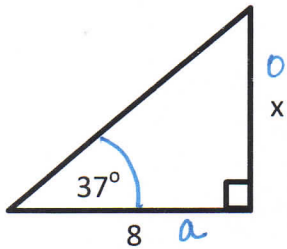
Date: Notes

For right angle triangles, you need to figure out which trig ratio to use to solve a triangle.

SOH – CAH - TOA

Example 1:

Find the value of x of the missing side.



Step 1: Label the sides of the triangle.

Step 2: Ask yourself, what sides are given and what sides do I need to find? $opp + adj$

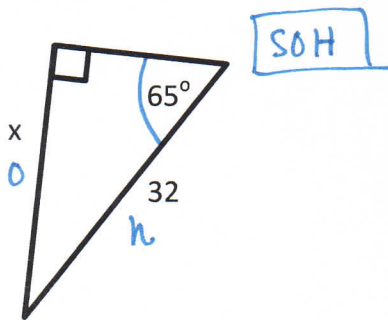
Step 3: Write out the trig ratio you are going to use. TOA

Step 4: Solve.

$$\begin{aligned} \tan 37^\circ &= \frac{opp}{adj} \\ \tan 37^\circ &= \frac{x}{8} \\ 8 \tan 37^\circ &= x \\ \boxed{6.0} &= x \end{aligned}$$

Example 2:

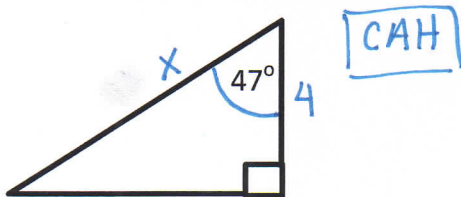
Find the value of x of the missing side.



$$\begin{aligned} \sin 65^\circ &= \frac{opp}{hyp} \\ \sin 65^\circ &= \frac{x}{32} \\ 32 \sin 65^\circ &= x \\ \boxed{29} &= x \end{aligned}$$

Example 3:

Find the value of x of the missing side.



$$\begin{aligned} \cos 47^\circ &= \frac{adj}{hyp} \\ \cos 47^\circ &= \frac{4}{x} \\ \frac{x \cos 47^\circ}{\cos 47^\circ} &= \frac{4}{\cos 47^\circ} \\ x &= \frac{4}{0.6820} \\ \boxed{x = 5.9} \end{aligned}$$

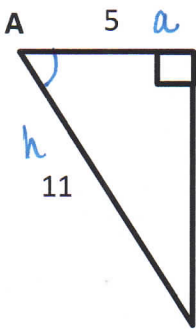
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Example 4:

Find $\angle A$ to the nearest degree.

CAH



$$\cos A = \frac{\text{adj}}{\text{hyp}}$$

$$\cos A = \frac{5}{11}$$

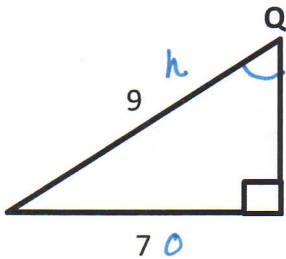
$$\angle A = \cos^{-1}\left(\frac{5}{11}\right)$$

$$\angle A = 63^\circ$$

Example 5:

Find $\angle Q$ to the nearest degree

SOH



$$\sin Q = \frac{\text{opp}}{\text{hyp}}$$

$$\sin Q = \frac{7}{9}$$

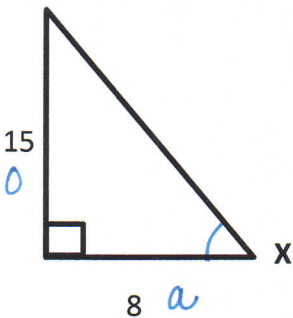
$$\angle Q = \sin^{-1}\left(\frac{7}{9}\right)$$

$$\angle Q = 51^\circ$$

Example 6:

Find $\angle X$ to the nearest degree.

TOA



$$\tan X = \frac{\text{opp}}{\text{adj}}$$

$$\tan X = \frac{15}{8}$$

$$\angle X = \tan^{-1}\left(\frac{15}{8}\right)$$

$$\angle X = 62^\circ$$

Example 7:

Write all three ratios for $\angle M$. Do not solve.

SOH CAH TOA

$$\sin M = \frac{7}{9}$$

$$\cos M = \frac{5}{7}$$

$$\tan M = \frac{7}{5}$$

