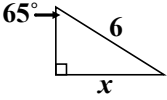
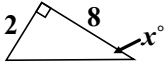
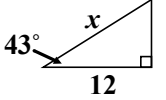
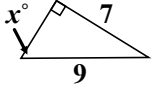
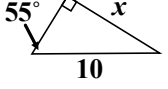
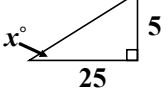
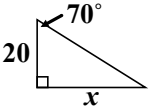
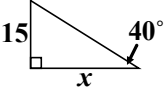
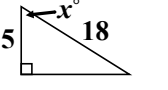
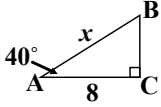
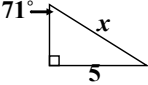
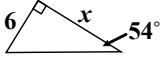
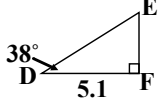
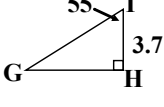
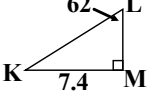
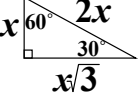


Solving Trigonometry Problems

Write a trig equation and isolate x . Then, use the Table of Trigonometric Values to evaluate the measure of x . Round angles to the nearest degree and sides to the nearest tenth.

<p>EXAMPLE</p>  <p>H: 6, O: x, A: ??? \rightarrow SOH!</p> $\sin(65^\circ) = \frac{x}{6}$ $6 \sin(65^\circ) = x$ <p>Look it up on the table</p> $6(0.9063) = x$ $5.4378 = x$ $x = \boxed{5.4}$	<p>EXAMPLE</p>  <p>H: ???, O: 2 A: 8 \rightarrow TOA!</p> $\tan(x^\circ) = \frac{2}{8}$ $x^\circ = \tan^{-1}\left(\frac{2}{8}\right)$ <p>Divide to make decimal with 4 places.</p> $\frac{0.2500}{8 \overline{) 2.00}}$ $\begin{array}{r} 8 \overline{) 2.00} \\ -16 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$ $x^\circ = \tan^{-1}\left(\frac{2}{8}\right)$ $x^\circ = \tan^{-1}(0.2500)$ <p>$\tan A = .2500$ is between $.2493$ (14°) & $.2679$ (15°). $2500 - 2493 = 7$ closer! $2679 - 2500 = 179$</p> $x^\circ = \boxed{14^\circ}$	<p>EXAMPLE</p>  <p>H: x, O: ??? A: 12 \rightarrow CAH!</p> $\cos(43^\circ) = \frac{12}{x}$ $\frac{\cos(43^\circ)}{1} = \frac{12}{x}$ $x \cos(43^\circ) = 12$ $\frac{x \cos(43^\circ)}{\cos(43^\circ)} = \frac{12}{\cos(43^\circ)}$ $x = \frac{12}{\cos(43^\circ)}$ <p>Plug in the value...</p> $x = \frac{12}{.7314}$ $x = \boxed{16.4}$ $\begin{array}{r} 16.40 \\ 7314 \overline{) 120000.00} \\ -7314 \\ \hline 46860 \\ -43884 \\ \hline 29760 \\ -29256 \\ \hline 5040 \end{array}$
<p>1.</p> 	<p>2.</p> 	<p>3.</p> 
<p>4.</p> 	<p>5.</p> 	<p>6.</p> 

Make sure you pay attention to the problem. It doesn't always want you to find the value of x . Sometimes, it only wants the set-up, and other times it's setting you up to make a mistake. You have to know what the problem wants, and what you'll need to do to get it.

<p>EXAMPLE Write the trigonometric ratio and solve for x. Write your answer as a fraction.</p>  <p>H: x, O: ???, A: 8 → CAH!</p> $\cos(40^\circ) = \frac{8}{x}$ $\frac{\cos(40^\circ)}{1} = \frac{8}{x}$ $x \cos(40^\circ) = 8$ $\frac{x \cos(40^\circ)}{\cos(40^\circ)} = \frac{8}{\cos(40^\circ)}$ $x = \frac{8}{\cos(40^\circ)}$	<p>7. Write the trigonometric ratio and solve for x. Write your answer as a fraction.</p> 	<p>8. Write the trigonometric ratio and solve for x. Write your answer as a fraction.</p> 
<p>EXAMPLE Determine the length of DE. Round to the nearest hundredth.</p>  <p>DE is what I want, so that's x. H: x, O: ???, A: 5.1 → CAH!</p> $\cos(38^\circ) = \frac{5.1}{x}$ $\frac{\cos(38^\circ)}{1} = \frac{5.1}{x}$ $x \cos(38^\circ) = 5.1$ $\frac{x \cos(38^\circ)}{\cos(38^\circ)} = \frac{5.1}{\cos(38^\circ)}$ $x = \frac{5.1}{\cos(38^\circ)} = 0.7880$ <p>Use long division to simplify. $x = 6.472 \dots = \boxed{6.47}$</p>	<p>9. Determine the length of GH. Round to the nearest hundredth.</p> 	<p>10. Determine the length of LM. Round to the nearest hundredth.</p> 
<p>EXAMPLE Use a special right triangle to write $\sin(60^\circ)$ as a fraction. First, you need to draw the picture. Draw and label a 30-60-90 triangle.</p> <p>H: $2x$, O: $x\sqrt{3}$, A: x $x \rightarrow \sin \rightarrow SOH$</p>  <p>$\sin(60^\circ) = \frac{\text{opp}}{\text{hyp}}$ Simplify.</p> $\sin(60^\circ) = \frac{x\sqrt{3}}{2x} = \frac{\cancel{x}\sqrt{3}}{2\cancel{x}} = \frac{\sqrt{3}}{2}$	<p>11. Use a special right triangle to write $\cos(45^\circ)$ as a fraction.</p>	<p>12. Use a special right triangle to write $\sin(30^\circ)$ as a fraction.</p>