

## Solving Trig with a Calculator

You've learned how to set up and simplify trig equations with the goal of determining the measure of a side or an angle. At this point, your answers look something like this:

$$x = \frac{\cos(38^\circ)}{9}$$

$$x = \frac{4}{\tan(47^\circ)}$$

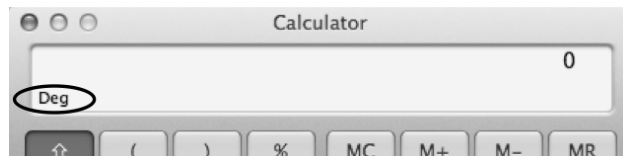
$$\sin(x^\circ) = \frac{5}{2}$$

Which, when solved for  $x$  is:

$$x^\circ = \sin^{-1}\left(\frac{5}{2}\right)$$

The final step to solving trig problems is learning how to translate these answers into numbers. **If you're using a calculator**, you can simply plug in your solution and push "=". However, there are a few things you need to check on your calculator first.

- 1) Make sure it is set on **DEGREE** mode.  
If the display says, "RAD" or "GRAD," you have to switch it to "DEG" before getting started.



- 2) Test how your calculator functions. Is it a more advanced calculator that allows you to type in the problem as written, or do you have to type it in in reverse order?

TEST: Type  $\tan 22 =$

**If it displays 0.4040..**, then you can type in the problems as written.

**If it displays 22**, then clear your calculator and try typing  $22 \tan =$ . Now, if you get 0.4040..., then that means your calculator needs you to type the trig pieces of the solution backwards.

Calculating a problem on the more advanced calculators:

$$x = \frac{5}{(\sin(30^\circ))} \rightarrow [5] [\div] [(] [\sin] [2] [0] [)] [)] [=]$$

*Parentheses are your friends, they keep your calculator from misunderstanding you. Don't be afraid to use them.*

Calculating a problem *without* an advanced calculator:

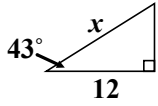
$$\frac{5}{(\sin(30^\circ))} \rightarrow [5] [\div] [(] [2] [0] [\sin] [)] [=]$$

**Evaluate  $x$ . Round your answer to the nearest tenth (one decimal place).**

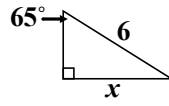
<p><b>EXAMPLE</b></p> $x = 9 \cos(82^\circ)$ <p>Type in:</p> $[9] [\times] [(] [\cos] [8] [2] [)] [)] [=]$ <p>or</p> $[9] [\times] [(] [8] [2] [\cos] [)] [=]$ <p>Display reads: 1.25... 1.25 rounds up to <math>\boxed{1.3}</math></p>	<p><b>EXAMPLE</b></p> $x = \frac{8}{\sin(34^\circ)}$ <p>Type in:</p> $[8] [\div] [(] [\sin] [3] [4] [)] [)] [=]$ <p>or</p> $[8] [\div] [(] [3] [4] [\sin] [)] [=]$ <p>Display reads: 14.30... 14.30 doesn't round up, so the answer is <math>\boxed{14.3}</math></p>	<p><b>EXAMPLE</b></p> $x = \tan^{-1}\left(\frac{2}{3}\right)$ <p>Type in:</p> $[\text{shift}] [\tan] [(] [2] [\div] [3] [)] [=]$ <p>or</p> $[2\text{nd}] [\tan] [(] [2] [\div] [3] [)] [=]$ <p>or</p> $[(] [2] [\div] [3] [)] [\text{shift}] [\tan] [=]$ <p>or</p> $[(] [2] [\div] [3] [)] [2\text{nd}] [\tan] [=]$ <p>Display reads: 41.81... 41.81 doesn't round up, so the answer is <math>\boxed{41.8}</math></p>	<p><b>EXAMPLE</b></p> $x = \cos^{-1}\left(\frac{4}{5}\right)$ <p>Type in:</p> $[\text{shift}] [\cos] [(] [4] [\div] [5] [)] [=]$ <p>or</p> $[2\text{nd}] [\cos] [(] [4] [\div] [5] [)] [=]$ <p>or</p> $[(] [4] [\div] [5] [)] [\text{shift}] [\cos] [=]$ <p>or</p> $[(] [4] [\div] [5] [)] [2\text{nd}] [\cos] [=]$ <p>Display reads: 7.37... 7.37 rounds up to <math>\boxed{7.4}</math></p>
<p>1. <math>x = \frac{10}{\cos(49^\circ)}</math></p>	<p>2. <math>\sin^{-1}\left(\frac{3}{13}\right)</math></p>	<p>3. <math>x = 6 \tan(25^\circ)</math></p>	<p>4. <math>\cos^{-1}\left(\frac{5}{8}\right)</math></p>

Use a trigonometry equation to evaluate  $x$ . Round your answer to the nearest tenth.

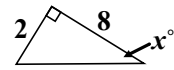
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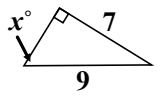
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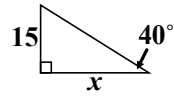
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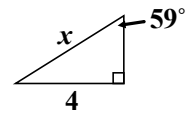
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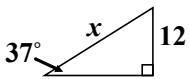
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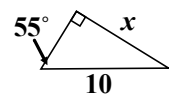
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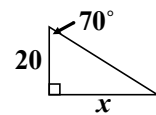
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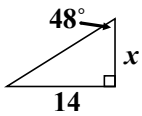
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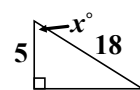
13.



14.



15.



16.

