

Today we are going to start looking at trigonometric or "trig" functions. There are buttons for each of these functions on your calculator and you have probably noticed them before. Sin, Cos, and Tan are the buttons on your calculator that stand for Sine, Cosine, and Tangent. You will learn how to use the calculator later on, but right now we are just going to write the trig ratios (fractions) by hand.

Each of the functions represents a fraction that you can write using the sides of the triangle. Before you can write the fraction, you need to figure out which sides of the triangle you need to use. This brings us to what SOHCAHTOA stands for:

Sin **O**pposite **H**ypotenuse **C**os **A**djacent **H**ypotenuse **T**an **O**pposite **A**djacent

$$\sin \theta = \frac{\text{opp}}{\text{hyp}} \quad \tan = \frac{\text{opp}}{\text{adj}}$$

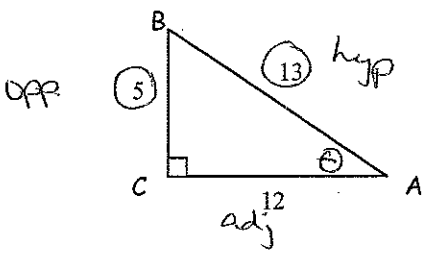
$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

So how do we use this? SOHCAHTOA tells you which sides to use in relation to the angle you are looking at. There are a few steps to doing these problems.

1. Mark the angle you are looking at.
2. Label the sides *in relation to* the angle you are looking at. (opposite, adjacent, hypotenuse)
3. Circle the sides you are supposed to use to make that trig function (use SOHCAHTOA) to help you.
4. Decide which side goes on top of the fraction (numerator) and which goes on bottom of the fraction (denominator).
5. Write the fraction.

Here are a few examples:

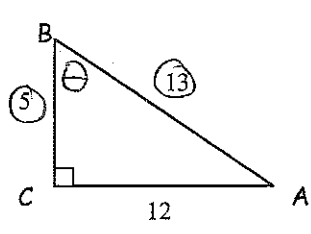
EX 1 Find sin A.



1. Mark angle A.
2. Label the sides in relation to angle A (opp, adj, hyp)
3. Circle the sides that we use for sin (opp, hyp)
4. Decide which side goes on top of the fraction (opp)
5. Write the fraction.

$$\sin A = \frac{5}{13}$$

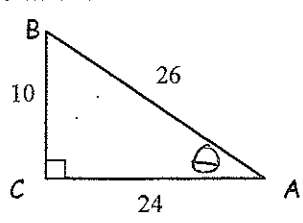
EX 2 Find cos B



1. Mark angle B.
2. Label the sides in relation to angle B (opp, adj, hyp)
3. Circle the sides that we use for cos (adj, hyp)
4. Decide which side goes on top of the fraction (adj)
5. Write the fraction.

$$\cos B = \frac{5}{13}$$

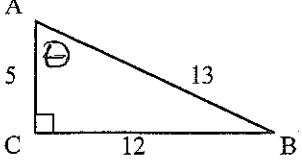
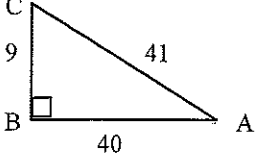
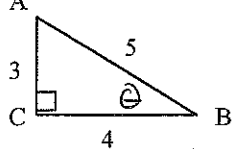
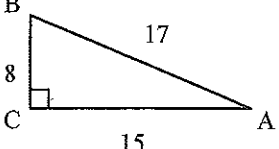
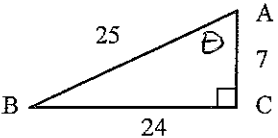
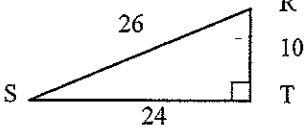
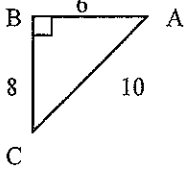
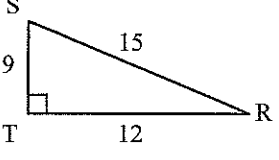
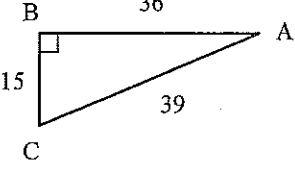
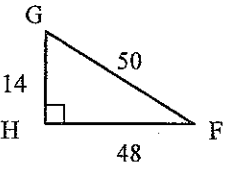
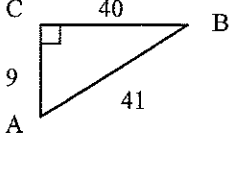
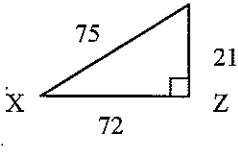
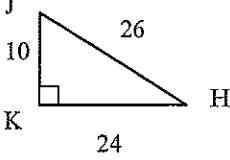
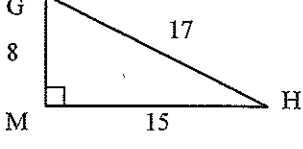
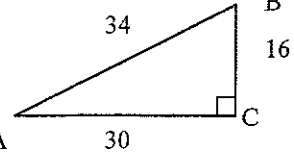
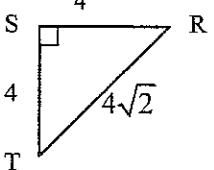
EX 3 Find tan A



1. Mark angle A.
2. Label the sides in relation to angle A (opp, adj, hyp)
3. Circle the sides that we use for tan (opp, adj)
4. Decide which side goes on top of the fraction (opp)
5. Write the fraction - careful - make sure to reduce!

$$\tan A = \frac{10}{24} = \frac{5}{12}$$

Now write each of these trig functions. Remember the 5 steps and look back at the examples on the front if you need help. And make sure to **reduce** your final answer!! Don't forget: **SOHCAHTOA**

<p>1. </p> <p>$\sin A = \frac{12}{13}$</p>	<p>2. </p> <p>$\sin A = \frac{9}{41}$</p>
<p>3. </p> <p>$\cos B = \frac{4}{5}$</p>	<p>4. </p> <p>$\cos A = \frac{15}{17}$</p>
<p>5. </p> <p>$\tan A = \frac{24}{7}$</p>	<p>6. </p> <p>$\tan R = \frac{24}{10} = \frac{12}{5}$</p>
<p>7. </p> <p>$\sin A = \frac{8}{10} = \frac{4}{5}$</p>	<p>8. </p> <p>$\cos S = \frac{9}{15} = \frac{3}{5}$</p>
<p>9. </p> <p>$\tan A = \frac{15}{36} = \frac{5}{12}$</p>	<p>10. </p> <p>$\cos F = \frac{48}{50} = \frac{24}{25}$</p>
<p>11. </p> <p>$\sin A = \frac{40}{41}$</p>	<p>12. </p> <p>$\tan Y = \frac{72}{21} = \frac{24}{7}$</p>
<p>13. </p> <p>$\cos H = \frac{24}{26} = \frac{12}{13}$</p>	<p>14. </p> <p>$\cos G = \frac{8}{17}$</p>
<p>15. </p> <p>$\sin A = \frac{16}{34} = \frac{8}{17}$</p>	<p>16. </p> <p>$\tan R = \frac{4}{4} = 1$</p>