Trigonometry
Finding Angles

If you are given questions like sin A = 0.8235 you will need to use the $\sin^{-1}$ function on your calculator to determine the missing angle.

First make sure that your calculator is in degrees, $\sin^{-1}$, can be accessed by pressing second function and then sin. You will then need to round your answer to the nearest degree.

This works for $\cos^{-1}$ and $\tan^{-1}$ too!

Try these:

$$\sin A = 0.2853$$

$$\cos B = 0.2578$$

$$\tan C = 1.2556$$

$$\sin^{-1}(0.2853) = A$$
$$17^0 = A$$

$$\cos^{-1}(0.2578) = B$$
$$75^0 = B$$

$$\tan^{-1}(1.2556) = C$$
$$51^0 = C$$

If you are given a triangle and you are asked to find an angle:
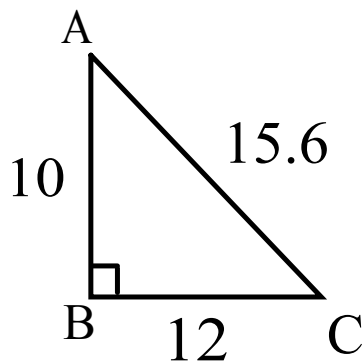
Step 1: Determine what trig ratio you are going to use (sin, cos, tan)

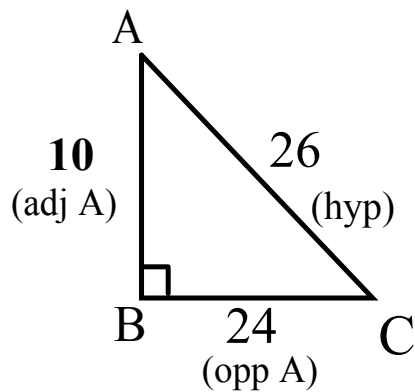**Step 2:** Write your ratio, divide, and round decimals to 4 places.

Step 3: Use $\sin^{-1}$, $\cos^{-1}$, $\tan^{-1}$ on your calculator to determine the missing angle in degrees

To find <A: **To find <C:**

A

10   15.6

B   12   C

Example: Given the following diagram, find the measure of angle A.

Step 1: You could use sin, cos or tan because all side lengths are given. CHOOSE 1!

$$\sin A = \frac{opp}{hyp} \qquad \cos A = \frac{adj}{hyp} \qquad \tan A = \frac{opp}{adj}$$

$$\sin A = \frac{24}{26} \qquad \cos A = \frac{10}{26} \qquad \tan A = \frac{24}{10}$$

$$\sin A = 0.9231 \qquad \cos A = 0.3846 \qquad \tan A = 2.4000$$
$$\sin^{-1}(0.9231) = A \qquad \cos^{-1}(0.3846) = A \qquad \tan^{-1}(2.4000) = A$$
$$67^0 = A \qquad 67^0 = A \qquad 67^0 = A$$

Example: Given the following triangle find the measure of angle C.

A

12
hyp

B   5   C
adj C
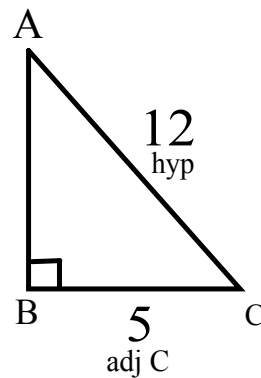
Step 1: Because there are only 2 sides given, there is only one trig. ratio that will work...COSINE!

cos C = $\frac{adj}{hyp}$

cos C = $\frac{5}{12}$

cos C = 0.4167

$\cos^{-1}(0.4167) = C$

$65^0 = C$