If you know the sine, cosine, or tangent of an acute angle measure, you can use the inverse trigonometric functions to find the measure of the angle.

Inverse Trig Functions

If $\sin A = x$, then $\sin^{-1} x = m\angle A$.

If $\cos A = x$, then $\cos^{-1} x = m\angle A$.

If $\tan A = x$, then $\tan^{-1} x = m\angle A$.

SOH CAH TOA

When using your calculator to find the value of an inverse trigonometric expression (AN ANGLE MEASURE), you may need to **press the (2nd) key, and then the trig function** needed.
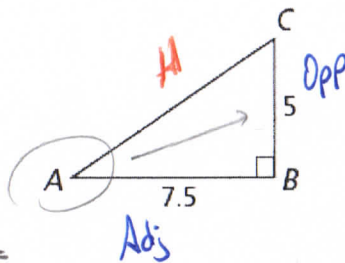
How to find the missing angles using trigonometry.

1. Circle the angle you are finding.
2. Label the sides as opposite, adjacent, and hypotenuse from the angle that you circled.
3. Identify which Trigonometric Function to use. Sine, Cosine, or Tangent. (Need 2 known sides)
4. Set up the equation (using the inverse function) (2nd)(Trig)
5. Solve

Round angle measures to the nearest degree.

Find the measure of ∠A.

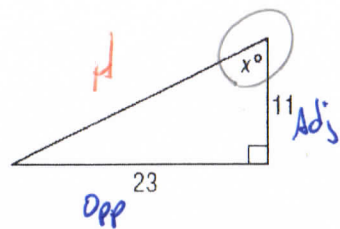Which trig function would we use? __tangent__

$$\tan A = \frac{5}{7.5}$$

$m\angle A = \underline{33.6901}$ type: $2^{nd} \tan(5/7.5) =$

$\approx 33.7°$ see: $\tan^{-1}(5/7.5)$

≈ 34

C
Opp 5
H
A — 7.5 — B Adj

Example 1:

H
x°
11 Adj
23 Opp
Opp

Example 2:

H
29
x°
9 Opp
Adj

$\sin x = \frac{9}{29}$

calc: $2^{nd} \sin(9/29)$

$x = 18.1°$

$\approx 18°$

Example 3:

OPP
H
6
x°
4
Adj

$\cos x = \frac{4}{6}$

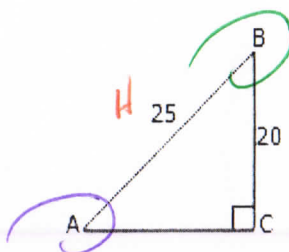calc: $2^{nd} \cos(4/6) =$

$x = 48.18969$

$x \approx 48°$

Example 4: Find all the missing angles.
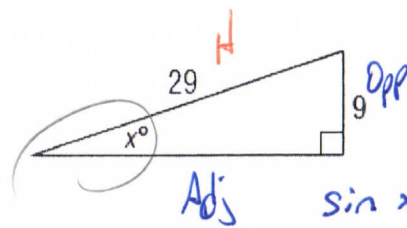
$\sin A = \frac{20}{25}$

$m\angle A = 53.1°$

$\approx 53°$

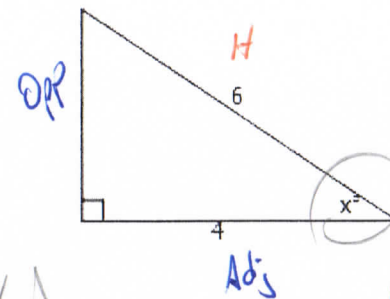H 25
B
20
A   C

$\cos B = \frac{20}{25}$

$m\angle B = 37°$