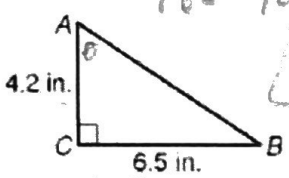
Q: What are the inverse trig functions used for?

Find missing angles.

Inverse Trigonometric 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 $\tan^{-1}x = m\angle A$.

Example 1:



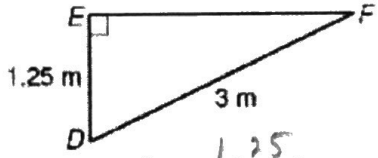
$180-90-57=$ $\boxed{33^\circ \approx B}$

$\tan\theta = \frac{6.5}{4.2}$

$\theta = \tan^{-1}\left(\frac{6.5}{4.2}\right)$

$\theta \approx 57^\circ \approx A$

Example 2:



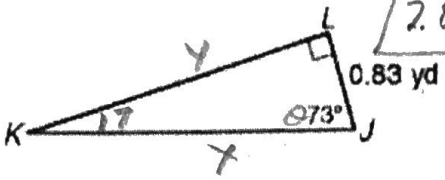
$\cos\theta = \frac{1.25}{3}$

$\theta = \cos^{-1}\left(\frac{1.25}{3}\right)$

$\approx 65^\circ$

$180-90-65$ $\boxed{\approx 25^\circ}$

Example 3:



$\tan(73) = \frac{Y}{.83}$

$.83 \cdot \tan 73 = Y$

$\boxed{2.84 \text{ yds}}$

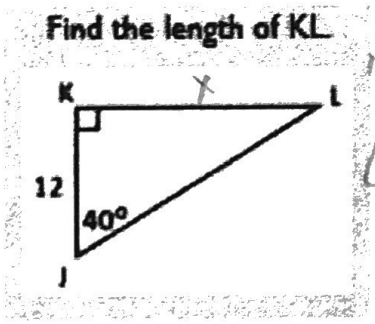
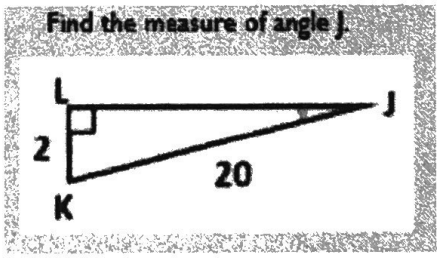
or

$X \cdot \cos(73) = \frac{.83}{X} \cdot X$

$X\cos(73) = .83$

$X = \frac{.83}{\cos 73}$

$\boxed{KJ \approx 2.84 \text{ yds}}$

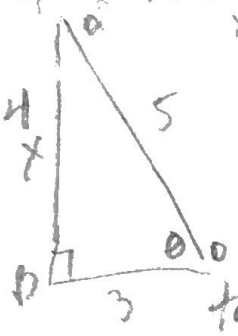
What do Trig Functions allow you to find?	What do Inverse Trig Functions allow you to find?
missing sides	missing angles
Find the length of KL.  $12 \cdot \tan 40 = \frac{X}{12} \cdot 12$ $\boxed{10.1 = KL}$	**Find the measure of angle J.**  $\sin\theta = \frac{2}{20}$ $\theta = \sin^{-1}\left(\frac{2}{20}\right)$ $\boxed{\approx 6^\circ}$

$3^2 + x^2 = 5^2$

$9 + x^2 = 25$

$x^2 = 16$

$x = 4$



$\tan\theta = \frac{4}{3}$

$\theta = \tan^{-1}\left(\frac{4}{3}\right)$

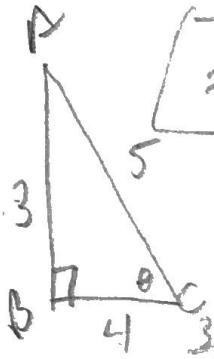
≈ 53

$\angle A \approx 36.9$

DRAW A RIGHT TRIANGLE WITH POINTS A, B, & C TO REPRESENT EACH SET OF GIVEN INFORMATION. GIVEN B IS THE RIGHT ANGLE.

$\sin A = \frac{3}{5}$

$\tan C = \frac{3}{4}$



$\boxed{\approx 53.1}$

$\tan\theta = \frac{3}{4}$

$\theta = \tan^{-1}\left(\frac{3}{4}\right)$

$\boxed{\approx 36.9^\circ}$

6.4