Using Trig Ratios to Find Angles of Right Triangles

Finding Angles of Right Triangles

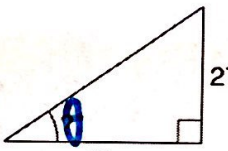
To find the measure of an **angle**, use the **inverse sine** ($\sin^{-1}$), **inverse cosine** ($\cos^{-1}$), or **inverse tangent** ($\tan^{-1}$).

Ex. Find the measure of the indicated angle. Round to the nearest degree.

$\tan\theta = \frac{27}{38}$

$\theta = \tan^{-1}\left(\frac{27}{38}\right)$

$\theta \approx 35°$



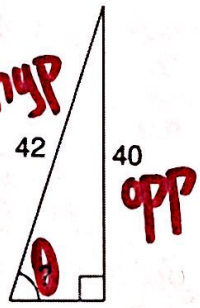
opp

adj

$\sin\theta = \frac{40}{42}$

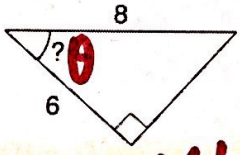
$\theta = \sin^{-1}\left(\frac{40}{42}\right)$

$\theta \approx 72°$



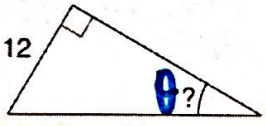
opp

Try these!



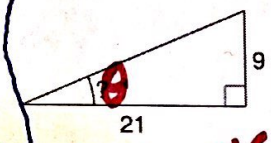
$\theta = \cos^{-1}\left(\frac{6}{8}\right)$

$\theta \approx 41°$



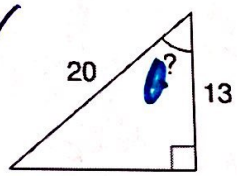
$\theta = \sin^{-1}\left(\frac{12}{24}\right)$

$\theta = 30°$



$\theta = \tan^{-1}\left(\frac{9}{21}\right)$

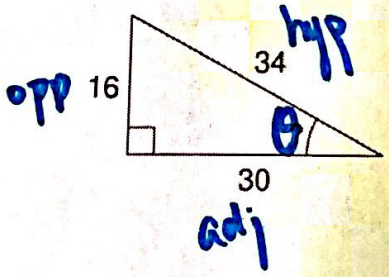
$\theta \approx 23°$



$\theta = \cos^{-1}\left(\frac{13}{20}\right)$

$\theta \approx 49°$

What if I give you all three side? Which trig ratio do you use?



$\theta = \tan^{-1}\left(\frac{16}{30}\right)$

$\theta \approx 28°$

$\theta = \cos^{-1}\left(\frac{30}{34}\right)$

$\theta \approx 28°$

$\theta = \sin^{-1}\left(\frac{16}{34}\right)$

$\theta \approx 28°$