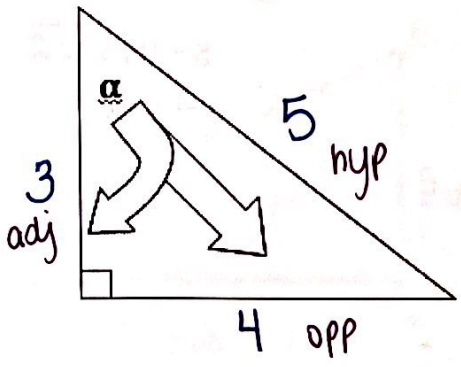
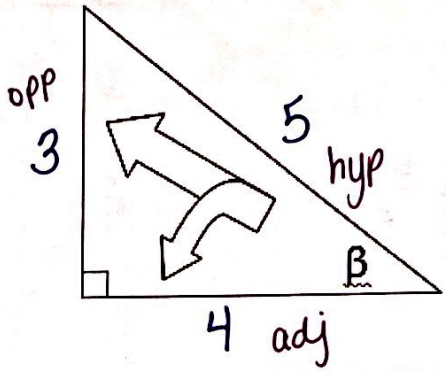
Day 5 – Trig Ratios – Notes

In a right triangle, there are several ratios that can be created using trigonometry. There are three main trig ratios and then the reciprocals of those ratios.





Ratio Definition	Example	Example	Relationship Between Ratios
Sine = $\frac{opp}{hyp}$	sin α = $\frac{4}{5}$	sin β = $\frac{3}{5}$	sin α = cos β
Cosine = $\frac{adj}{hyp}$	cos α = $\frac{3}{5}$	cos β = $\frac{4}{5}$	cos α = sin β
Tangent = $\frac{opp}{adj}$	tan α = $\frac{4}{3}$	tan β = $\frac{3}{4}$	tan α = N/A

Remembering Trigonometric Ratios: SOH CAH TOA

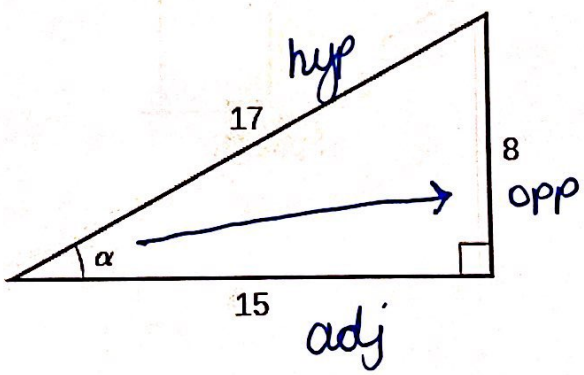
$\alpha + \beta =$ 90°

Practice: Find the ratio of the Sine, Cosine, and Tangent of α.

Sin α = $\frac{8}{17}$

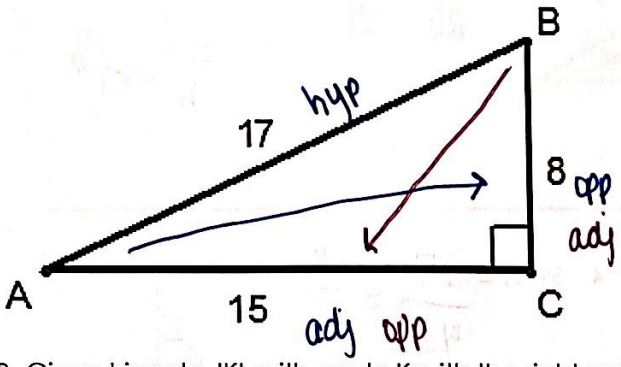
Cos α = $\frac{15}{17}$

Tan α = $\frac{8}{15}$



Practice with Trig Ratios

A. Find the following trig ratios:



Which of the following will be equal? $\cos A = \sin B$ $\sin a = \cos B$

Sin A = $\frac{8}{17}$ Sin B = $\frac{15}{17}$

Cos A = $\frac{15}{17}$ Cos B = $\frac{8}{17}$

Tan A = $\frac{8}{15}$ Tan B = $\frac{15}{8}$

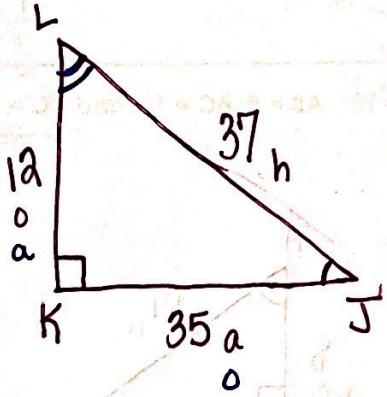
B. Given triangle JKL with angle K with the right angle, answer the following if you know the sin J = $\frac{12}{37}$.

a. side JK 35

b. sin J = $\frac{12}{37}$ sin L = $\frac{35}{37}$

cos J = $\frac{35}{37}$ cos L = $\frac{12}{37}$

tan J = $\frac{12}{35}$ tan L = $\frac{35}{12}$



$12^2 + b^2 = 37^2$

$144 + b^2 = 1369$

$b^2 = 1225$

$b = 35$

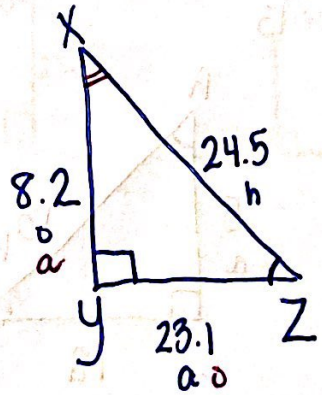
C. Given triangle XYZ with angle Y with the right angle, answer the following if you know the cos Z = $\frac{23.1}{24.5}$.

a. side JK 8.2

b. sin X = $\frac{23.1}{24.5}$ sin Z = $\frac{8.2}{24.5}$

cos X = $\frac{8.2}{24.5}$ cos Z = $\frac{23.1}{24.5}$

tan X = $\frac{23.1}{8.2}$ tan Z = $\frac{8.2}{23.1}$



$23.1^2 + b^2 = 24.5^2$

$533.61 + b^2 = 600.25$

$b^2 = 66.64$

$b = 8.2$