

OBJECTIVE 1: Most Common Trig Ratios

- Sine : sin
- Cosine: cos
- Tangent: tan
- SOH-CAH-TOA is used to remember the second and third columns of the table below , & which trig ratio to use and its formula.

Pronounce as “so - ka - toe - ah”

“SOH CAH TOA”

Opposite
Hypotenuse

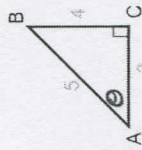
Sin = $\frac{\text{Opposite}}{\text{Hypotenuse}}$

Adjacent
Hypotenuse

Cos = $\frac{\text{Adjacent}}{\text{Hypotenuse}}$

Opposite
Adjacent

Tan = $\frac{\text{Opposite}}{\text{Adjacent}}$



The three most common ratios are sine, cosine, and tangent.

Trigonometric Ratio	Abbreviation	Definition	Example
Sine of A SOH	Sin A	Opposite Leg Hypotenuse	$\text{Sin A} = \frac{BC}{AB} = \frac{4}{5}$
Cosine of A CAH	Cos A	Adjacent Leg Hypotenuse	$\text{Cos A} = \frac{AC}{AB} = \frac{3}{5}$
Tangent of A TDA	Tan A	Opposite Leg Adjacent Leg	$\text{Tan A} = \frac{BC}{AC} = \frac{4}{3}$

OBJECTIVE 2: Using the Calculator

- Make sure the *MODE* is in *Degrees (DEG)* not *Radians (RAD)*!
- If finding the...
 - Side length: type it in as is
 - Angle measure: use the inverse function (\tan^{-1} , \sin^{-1} , \cos^{-1})

TASK 2: Use the calculator to evaluate the trig expression for the ratio of the sides. Round to the thousandths.

a) $\cos 41^\circ \approx 0.755$

b) $\sin 78^\circ \approx 0.978$

TASK 3: Use the calculator to evaluate the trig expression to work determine the angle measure given the ratio of the sides. Round to the nearest degree. (HINT: use the inverse function to work backwards.)

a) $\sin x^\circ = 0.79$ $\sin^{-1}(0.79) = 52^\circ$

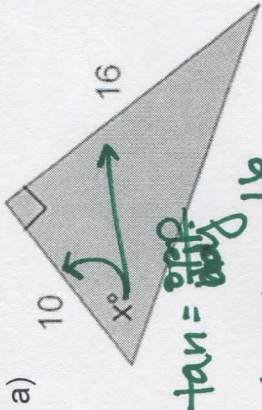
b) $\tan x^\circ = 2.14$ $\tan^{-1}(2.14) = 65^\circ$

OBJECTIVE 3: Applying the Trigonometric Ratios to Right Triangles

Determine what you have and what you are looking for.

- Looking for angle measure – use the inverse function
- Looking for side lengths – what do you have
 - Opposite & Hypotenuse – SIN
 - Adjacent & Hypotenuse – COS
 - Opposite & Hypotenuse – TAN

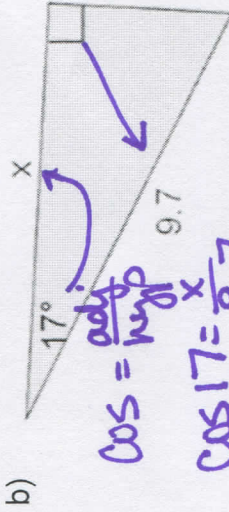
TASK 4: Solve for x using trig functions. Show set up, angle measure round to the nearest degree and side lengths round to the thousandths.



$$\tan x = \frac{opp}{adj}$$

$$\tan x = \frac{16}{10}$$

$$\tan^{-1}\left(\frac{16}{10}\right) = \boxed{58^\circ}$$

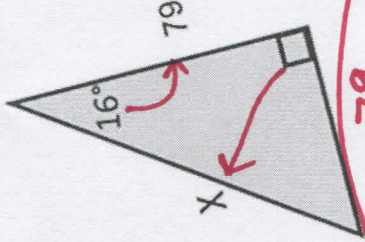


$$\cos = \frac{adj}{hyp}$$

$$\cos 17 = \frac{x}{9.7}$$

$$x = 9.7(\cos 17)$$

$$\approx 9.276$$



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

$$\frac{\cos 16}{1} = \frac{79}{x}$$

$$x(\cos 16) = \frac{79}{\cos 16}$$

$$x = \frac{79}{\cos 16} \approx 82.184$$

COMMON MISTAKES:

-inverse when looking for angles

-SOH - CAH - TOA

Still need help with: