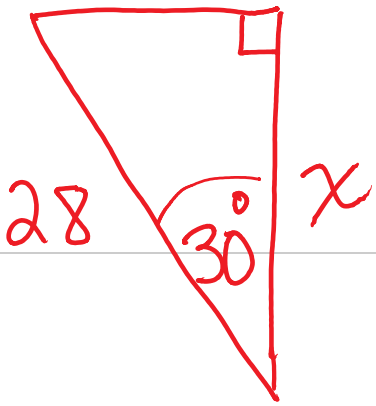
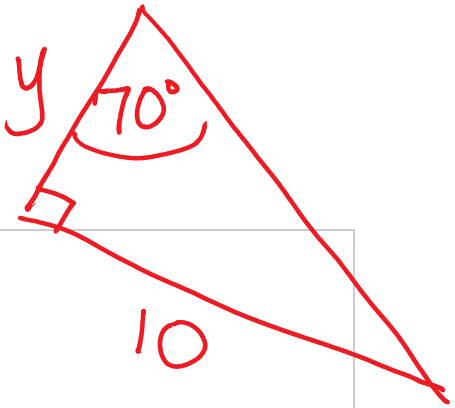
U2D3_T Solving for an Unknown Angle lesson

Monday, February 26, 2018 12:04 PM

U2D3_T Solving fo...





U2D3

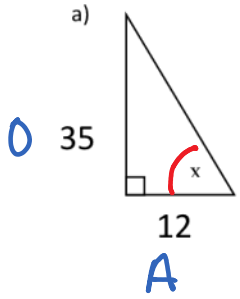
Determining Measures of Angles in Right Triangles

Trig ratios can also be used to find the measures of angles of a right triangle that are not known.

Examples: For the following triangles, identify the trig ratio to use, write the equation and solve it to one decimal place using the INVERSE TRIG buttons on your calculator.

$\sin^{-1}$ $\cos^{-1}$ $\tan^{-1}$

a)



Have: $O = 35$

$A = 12$

Need: x

Use: $\tan^{-1}$

TOA

$\tan x = \frac{35}{12}$

$x = \tan^{-1}(35 \div 12)$

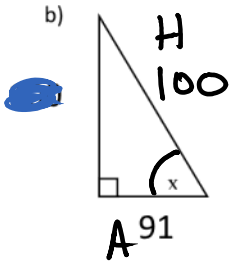
$x = 70.07\ldots$

$x \doteq 70.1°$

In calculator $35 \div 12 = \tan^{-1} =$

SOH CAH TOA

b)



Have: $A = 91$

$H = 100$

Need: $\angle x$

Use: $\cos^{-1}$

$\cos x = \frac{A}{H}$

$\cos x = \frac{91}{100}$

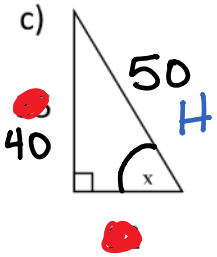
$x = \cos^{-1}(91 \div 100)$

$x = 24.49\ldots$

$x \doteq 24.5°$

$91 \div 100 = \cos^{-1} =$

c)



O

SOHCAHTOA

Have: $O = 40$

$H = 50$

Need: x

Use: $\sin^{-1}$

$\sin x = \frac{O}{H}$

$\sin x = \frac{40}{50}$

$x = \sin^{-1}(40 \div 50)$

$x = 53.13$

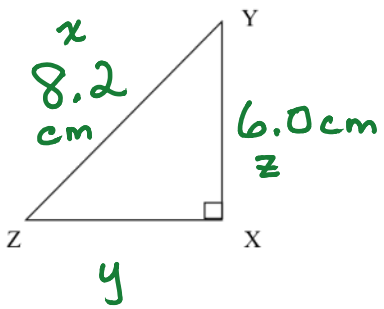
$x \doteq 53.1°$

To solve means

to determine the values of all missing sides and angles.

Ex. 2 Solve Δ XYZ given that

$$\angle X = 90°, x = 8.2\ cm, z = 6.0\ cm$$



$y^2 = x^2 - z^2$

$y^2 = 8.2^2 - 6^2$

$y^2 = 67.24 - 36$

$y^2 = 31.24$

$y = \sqrt{31.24}$

$y \doteq 5.6\ cm$

For ∠Y,

z = 6.0 (Adj)

x = 8.2 (Hyp)

$\cos Y = \frac{6}{8.2}$

$Y = \cos^{-1}(6 \div 8.2)$

$Y \doteq 43°$

Check $90° + 43° + 47° = 180°$ ✓

∠Z

Opp = 6

Hyp. = 8.2

$\sin Z = \frac{6}{8.2}$

$Z = \sin^{-1}(6 \div 8.2)$

$Z \doteq 47°$

U2D3 Practice: Pg. 80 # 5, 6, 7, 11, 13 ✓ Answers Pg. 540 2.1