

Trigonometric Ratios
SOH-CAH-TOA....Page #

Goal: Solve right triangle trigonometric equations.

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SOH
CAH
TOA

Using the above RIGHT TRIANGLE: Determine the following trigonometry ratios.

$\sin A = \frac{a}{c}$ $\cos A = \frac{b}{c}$ $\tan A = \frac{a}{b}$
 $\sin B = \frac{b}{c}$ $\cos B = \frac{a}{c}$ $\tan B = \frac{b}{a}$

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Make sure your calculator is in degree mode!!

Solve the following Trigonometric Ratios.

1. $\sin 15 = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{2}{2}$
 $\sin(15) \cdot 2$

2. $\cos 78 = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{12}{12}$

3. $\tan 31 = \frac{5}{x} \cdot x$
 $x \cdot \tan 31 = 5$
 $x = \frac{5}{\tan 31}$

4. $\sin 35 = \frac{10.5}{x} \cdot x$
 $x \cdot \sin 35 = 10.5$
 $x = \frac{10.5}{\sin 35}$

5. $\sin^{-1}(\sin A) = 48$
 $A = 53.1^\circ$

6. $\cos^{-1}(\cos B) = 68.75$
 $B =$

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Find each length. Round to the nearest hundredth.

Where should you "stand" to set up each trig ratio needed to solve?

7) $c \cdot \sin 41 = \frac{6.1 \cdot c}{c}$
 $c \cdot \sin 41 = 6.1$
 $c = \frac{6.1}{\sin 41}$
 $c = 9.30 \text{ in}$

8) $b = \tan$
 $b \cdot \tan 41 = \frac{6.1}{b}$
 $b \cdot \tan 41 = 6.1$
 $b = \frac{6.1}{\tan 41}$
 $b = 7.02 \text{ in}$

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9) n
 $8.7 \cdot \sin 20 = \frac{n}{8.7}$
 $n = \frac{8.7 \cdot 8.7 \cdot \sin 20}{8.7} = 11.0$

10) p

11) $\angle P = 70^\circ$

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"Stand" at the angle you want to find.

Now let's find a missing angle given two sides.

12) $\angle B$
 $\tan B = \frac{6}{8}$
 $\angle B = 37^\circ$

13) $\angle B$
 $\cos B = \frac{12}{12}$
 $\angle B = 0^\circ$

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Find ALL the unknown measures. Round lengths to the nearest hundredth and angle measures to the nearest degree.

14.

$\tan B = \frac{4.8}{3.6}$

$3.6^2 + 4.8^2 = c^2$

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Assignment: SOH-CAH-TOA Worksheet (16.6/16.7)

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