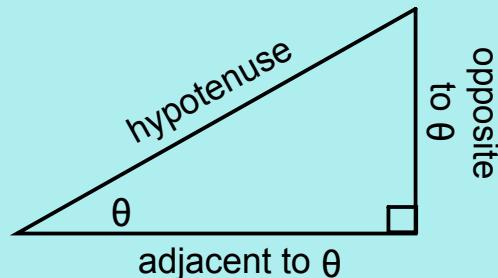


For any angle of interest, there are three (3) primary trigonometric ratios.

$$\text{sine of } \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\text{cosine of } \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\text{tangent of } \theta = \frac{\text{opposite}}{\text{adjacent}}$$



S o h C a h T o a

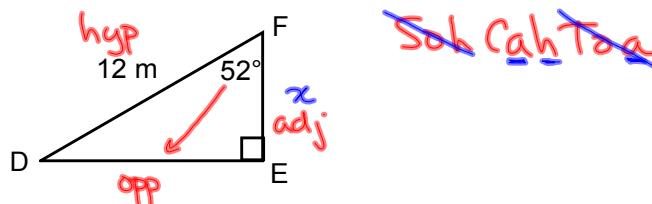
Dec 7-9:58 PM

Solving Right Triangles

Dec 12/2011

Recall: Trigonometric ratios can be used to determine side lengths or angle measures.

Ex.1 Calculate the height of the triangle shown below.



$$\cos 52^\circ = \frac{x}{12}$$

$$12 \times 0.6157 = \frac{x}{12} \times 12$$

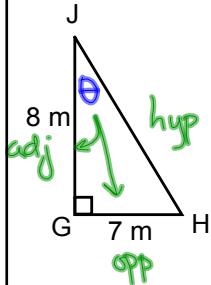
$$7.3884 = x$$

$$x = 7.39$$

\therefore the height is 7.39 m

Dec 9-9:41 PM

Ex.2 Determine the measure of angle J in the triangle shown below.



Soh Cah Toa

$$\tan \theta = \frac{7}{8}$$

$$\tan \theta = 0.875$$

$$\theta \approx 41^\circ$$

calculator

$$\tan \theta = 0.875$$

$$\theta = \tan^{-1}(0.875)$$

$\boxed{2nd}$ $\boxed{\tan}$ 0.875 $\boxed{=}$

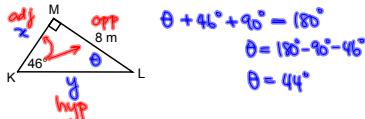
* must be in \boxed{DEG} or degree
or \boxed{D} mode

May 11-3:47 PM

To solve a triangle means to find all the missing sides and angles.

For right triangles use Pythagorean Theorem and/or the primary trigonometric ratios.

Ex.3 Solve the triangle shown below.



Soh Cah Toa

$$\tan 46^\circ = \frac{8}{x}$$

$$x \cdot \tan 46^\circ = \frac{8}{x} \cdot x$$

$$x \cdot \tan 46^\circ = 8$$

$$\frac{x(1.0355)}{1.0355} = \frac{8}{1.0355}$$

$$x = 7.7257$$

$$x \approx 7.7$$

Pythagorean

$$y^2 = x^2 + 8^2$$

$$y^2 = (7.7257)^2 + 64$$

$$y^2 = 123.6864$$

$$y = 11.1214, y > 0$$

$$y \approx 11.1$$

Trig

$$\sin 46^\circ = \frac{8}{y}$$

$$y \sin 46^\circ = \frac{8}{\sin 46^\circ}$$

$$y = \frac{8}{\sin 46^\circ}$$

$$y \approx 11.1214$$

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Assigned Work:

p. 403 #1a, 2a, 3, 5a, 6a, 7a, 8a, 10, 12, 13ab

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p 404 # 7(a)

~~Soh Cah Toa~~

$$\cos A = \frac{20}{32}$$

$$\cos A = 0.625$$

$$A = \cos^{-1}(0.625)$$

$\boxed{A \doteq 51.3^\circ}$

~~Soh Cah Toa~~

$$\sin B = \frac{20}{32}$$

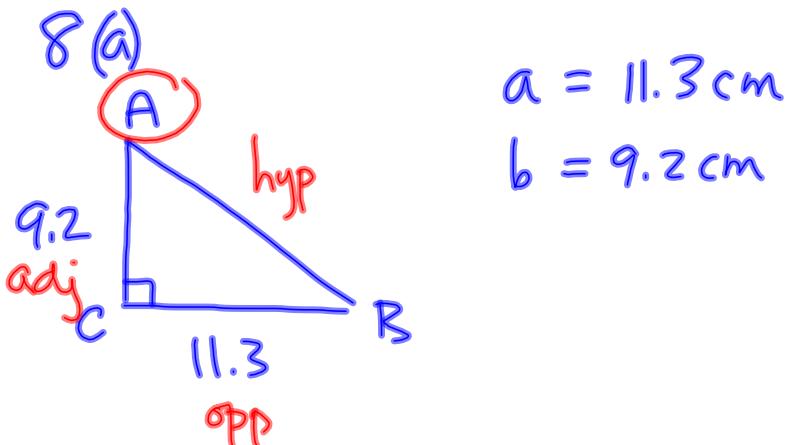
$$\sin B = 0.625$$

$$B = \sin^{-1}(0.625)$$

$\boxed{B \doteq 38.7^\circ}$

$\boxed{\sin^{-1}}$

Dec 13-10:31 AM



$$\tan A = \frac{11.3}{9.2}$$

\therefore

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10.

$\Delta ABC \sim \Delta ADC$ (by AA~)

but $AB = AD$ and AC common

$\rightarrow \therefore \Delta ABC \cong \Delta ADC$

\uparrow
Congruent

$\tan 60^\circ = \frac{j}{4}$

$j = 4 \tan 60^\circ$

$j = 4(1.7321)$

$j = 6.9282$

$j = 6.9$

Dec 13-10:39 AM