

SOH-CAH-TOA Word Problems.....Page#

Goal: Solve trigonometric equations from a word problem scenario.

Mar 14-10:33 AM

For each problem draw a picture, set up the equation, and solve for the missing measure. Round your answers to the nearest hundredth.

1. If a building is 120 meters tall and the sun has an angle of elevation of 34° . How long will the building's shadow be?

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$\tan 34^\circ = \frac{120}{x}$
 $x \cdot \tan 34^\circ = 120$
 $x = \frac{120}{\tan 34^\circ}$
 Shadow is 177.91m

2. Brad places a ladder next to a building to get to the top. The bottom of the ladder is placed 11 feet away from the building at an angle of 66° . How tall is the building?

$\tan 66^\circ = \frac{x}{11}$
 $x = 24.71$
 Building is 24.71 ft.

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3. A plane takes off and climbs at a constant angle with the ground. If the plane has traveled 500 ft ground distance and is at an altitude of 1,400 ft. What is the angle the plane is climbing at?

Does your answer make sense?

$\tan^{-1} \frac{1400}{500} = x$
 $x = 70.34^\circ$
 Plane Flying at 70.34°

4. Albert is flying a kite, holding the string above his head at 6.5 feet. The kite's string is 80 ft long and is flying at a 72° angle. How high off the ground is Albert's kite?

$80 \sin 72^\circ = \frac{x}{80} \cdot 80$
 $x = 76.08$
 $76.08 + 6.5 = 82.58$
 Kite's height is 82.58 ft.

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5. Jack and Jill are standing on top of a 200 foot tower overlooking a lake. From the tower, the angle of depression to a sailboat in the lake is 12° . If they fall off the tower and then swim to the boat, how far will they have to swim?

Start by drawing a picture!

Mar 16-12:41 PM

This is the type of problem you may see on the MCA test.

6. Captain Jack is standing on the top of a cliff and spies 2 ships out on the bay. The ships are 150 meters apart. Barbosa on the closest ship looks up at an angle of 39° and sees Captain Sparrow. His ship is 320 meters from the cliff. What is the angle of elevation from the 2nd ship to the Captain Jack Sparrow?

$320 \cdot \tan 39^\circ = \frac{y}{320} \cdot 320$
 $y = 259.13$
 $\tan^{-1} \frac{259.13}{470} = x$
 $x = 28.87^\circ$

Mar 16-1:48 PM

Assignment:

Trig Word problems worksheet

ABCDEFGHIJKLMNOPQRSTUVWXYZ

Mar 16-2:01 PM