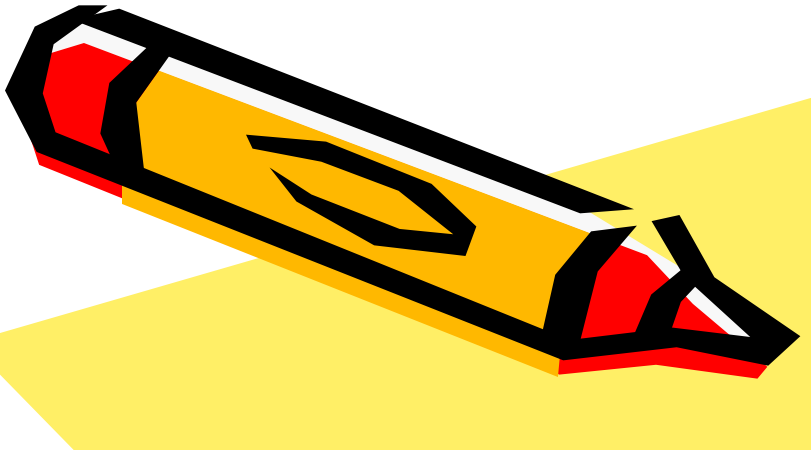


Geometry

Inverse Trigonometry
(Right Triangles)

Right Triangle Trigonometry

We can use the inverse trig functions when we know the ratio of the sides and are looking to the measurement of the angle.

The inverse trig functions are represented by:

$$\sin^{-1}$$

$$\cos^{-1}$$

$$\tan^{-1}$$

Right Triangle Trigonometry

Using a calculator, find the angles measure given the trigonometric ratio's value. Round to the nearest tenth.

a) $\sin^{-1} .6691 =$

b) $\cos^{-1} .2079 =$

c) $\tan^{-1} 1.2799 =$

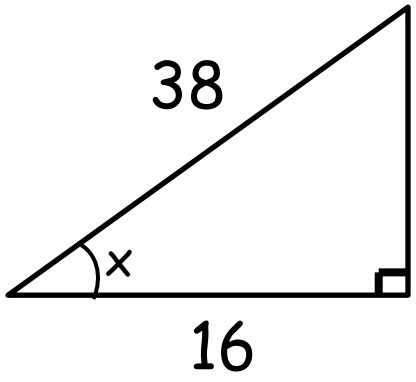
d) $\sin^{-1} .2356 =$

e) $\cos^{-1} .8504 =$

f) $\tan^{-1} .4581 =$

Right Triangle Trigonometry

Using a calculator, find the measurement of the indicated angle of the triangle. All final measurements for angles and sides should be rounded to the nearest tenth.



Since we're working with the adjacent and the hypotenuse, we will use cos.

$$\cos x = \frac{16}{38}$$

$$\cos x = .4211$$

$$X = \cos^{-1}(.4211)$$

$$X = 65.1^0$$

we could have used the shortcut:

$$\cos x = \frac{16}{38}$$

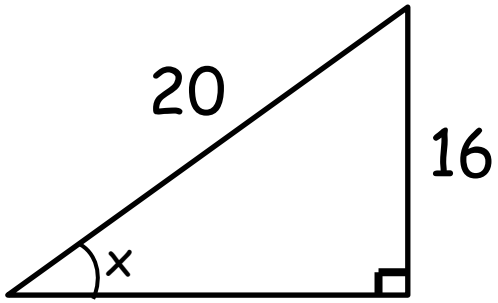
$$X = \cos^{-1}\left(\frac{16}{38}\right)$$

$$X = 65.1^0$$

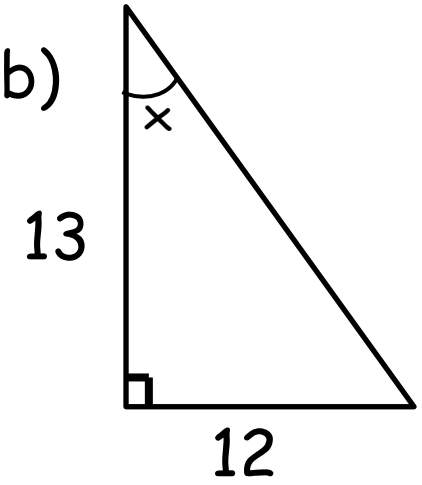
Right Triangle Trigonometry

Find the measurement of the indicated angle.

a)



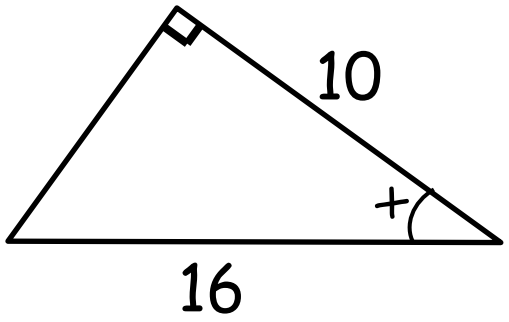
b)



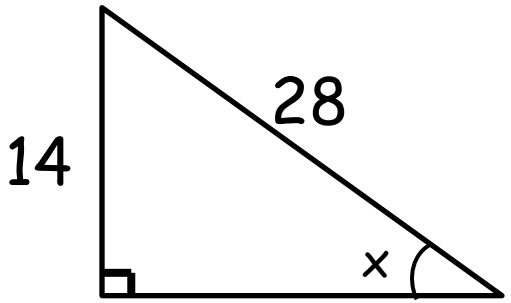
Right Triangle Trigonometry

Find the measurement of the indicated angle.

c)



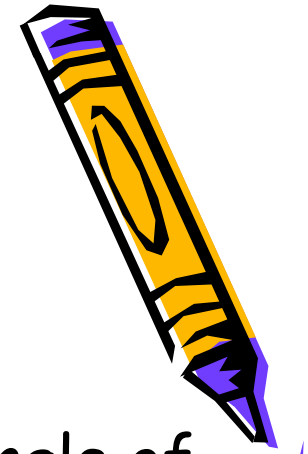
d)



Trigonometry Word Problems

An 18 foot ladder is placed 3 feet from a wall. How high up the wall will the ladder reach?

Trigonometry Word Problems



To guard against a fall, a ladder should make an angle of 80° with the ground. What is the maximum height that a ten-foot ladder can reach safely?

Trigonometry Word Problems

The 600 block of Powell Street in San Francisco has a steep rise. If it takes 66 feet along the horizontal for the street to rise 10 feet, find the angle the street makes with the horizontal.

Trigonometry Word Problems

A plane is one mile above sea level when it begins to climb at a constant angle of 2° for the next 70 ground miles. How far above sea level is the plane after its climb?

Trigonometry Word Problems

A plane is traveling at 15,000 feet. The angle of decline (down from the horizon) to reach the landing strip is 10°. Approximately how many miles away is the plane from the airport? (1 mile = 5280 feet)