

Algebra 1
Lesson 10-6
Trigonometric Ratios

Goal: to find and use trig ratios for right triangles

The sun strikes the four trees shown below at the same angle. How tall is the fourth tree?

$\frac{10}{6} = \frac{x}{15}$ or $\frac{5}{3} = \frac{25}{x}$

When we are dealing with right triangles, the ratios of side lengths form trigonometric ratios.

Sine A = $\frac{\text{opp}}{\text{hyp}}$
Cosine A = $\frac{\text{adj}}{\text{hyp}}$
Tangent A = $\frac{\text{opp}}{\text{adj}}$

SohCahToa

Give the sin A, cos A, and tan A: $\tan B = \frac{8}{15}$

$\sin A = \frac{\text{opp}}{\text{hyp}} = \frac{15}{17}$ $\sin^{-1}(\text{Ans}) \rightarrow 28.1$

$\cos A = \frac{\text{adj}}{\text{hyp}} = \frac{8}{17}$

$\tan A = \frac{\text{opp}}{\text{adj}} = \frac{15}{8}$

We can use the trig functions on our calculators to help us find an angle measure.

Find x.

$x \cdot \cos 35 = 1.575$
 ~~$\cos 35$~~

Solve the triangle.

$a^2 + b^2 = \sqrt{c^2 - 7^2}$
 $\sin B = \frac{\text{opp} = 7}{\text{hyp} = 21}$
 $\sin^{-1}(\text{Ans}) = 19.5^\circ$

Find p

$792 \cdot \tan 21 = \frac{x}{792} \cdot 792$
 $792 \cdot \tan 12 = \frac{y}{792}$

An angle of depression is when you are looking down.

An angle of elevation is when you are looking up.

Suppose a plane takes off at an angle of 42 degrees with the ground. What horizontal distance has the plane traveled when it reaches an altitude of 30,000 feet?

$x = \frac{30,000}{\tan 42}$
 $x = 33,318.4'$

Hwk: pg. 649 - 650

#8 - 16 evens, 17, 18,

26 - 34 evens, 35, 38,

39 - 43 all