

Trigonometric Ratios

OBJECTIVE

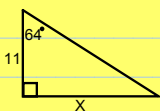
-Finding missing lengths of a right triangle using the trigonometry ratios Sine, Cosine, and Tangent.

Trigonometric Ratio Review

KEY CONCEPT		Trigonometric Ratios	
Words	Symbols	Models	
sine of $\angle A = \frac{\text{leg opposite } \angle A}{\text{hypotenuse}}$ sine of $\angle B = \frac{\text{leg opposite } \angle B}{\text{hypotenuse}}$	$\sin A = \frac{BC}{AB}$ $\sin B = \frac{AC}{AB}$		
cosine of $\angle A = \frac{\text{leg adjacent to } \angle A}{\text{hypotenuse}}$ cosine of $\angle B = \frac{\text{leg adjacent to } \angle B}{\text{hypotenuse}}$	$\cos A = \frac{AC}{AB}$ $\cos B = \frac{BC}{AB}$		
tangent of $\angle A = \frac{\text{leg opposite } \angle A}{\text{leg adjacent to } \angle A}$ tangent of $\angle B = \frac{\text{leg opposite } \angle B}{\text{leg adjacent to } \angle B}$	$\tan A = \frac{BC}{AC}$ $\tan B = \frac{AC}{BC}$		

Finding missing side lengths using trig ratios

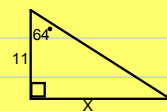
Find X.



- 1) First, write **SOH CAH TOA** on your paper. Refer to it when you are trying to figure out which trig ratios would work with the given info and X
- since our given angle is 64° , 11 is the measurement of the side adjacent to it, and x is opposite, we will use

[Redacted]

Finding missing side lengths using trig ratios



- 2) Next, Plug in the values
- 3) Solve for x. Treat $(\tan 64^\circ)$ as one whole variable as you solve.

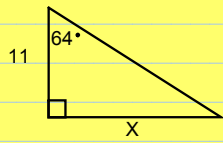
[Redacted]

- Second, use your calculator to find $\tan 64$
- Make sure your calc is set in Degrees (MODE - Degree ENTER)
 - Press **TAN 6 4 ENTER** and you get 2.050303842

Finding missing side lengths

Find X.

[Redacted]
[Redacted]
[Redacted]
[Redacted]

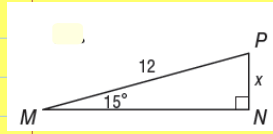


In your calculator, press

[Redacted]
[Redacted]

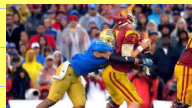
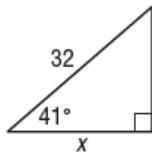
Now, you try!

Help Brett Hundley find x.



Now, you try again!

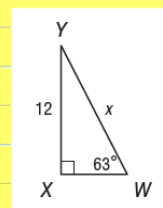
Find X.



Finding missing side lengths using trig ratios

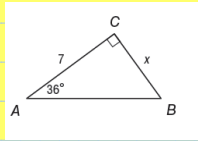
Use trig Ratios to find X.

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Now, you try!

Use Trig ratios to find X.

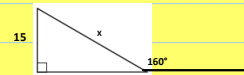


Finding missing side lengths

The O'Connor Math Teachers Skateboarding crew, led by Mrs. Bobbitt, build a ramp.

The ramp created a 160° angle with the ground, and the altitude of the ramp is 15 ft.

While Ms. Verschoor says that she isn't afraid to take on anything, Mr. Kilburn says he'll only ride if the ramp is less than 40 ft long. Will Mr. Kilburn get a chance to ride the ramp?



Now, you try! **Finding missing side lengths**

Diego used a theodolite to map a region of land for his class in geomorphology. To determine the elevation of a vertical rock formation, he measured the distance from the base of the formation to his position and the angle between the ground and the line of sight to the top of the formation. The distance was 43 meters and the angle was 36° . What is the height of the formation to the nearest meter?

