



Do Now

Calculators

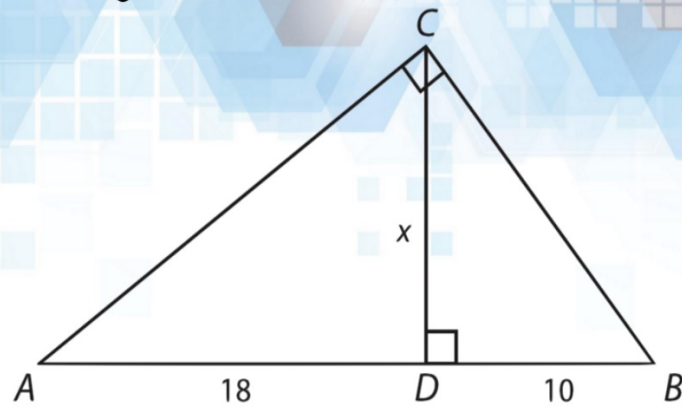
Take out your homework for questions



Guided Practice

Example 2

Find the length of the altitude, x , of $\triangle ABC$.



Agenda!

1. Introduction to Trigonometry

2. Learn about Sine, Cosine, and Tangent!

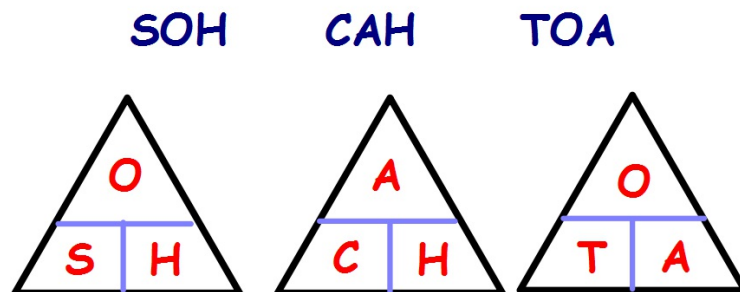
3. Independent Practice.

4. HW

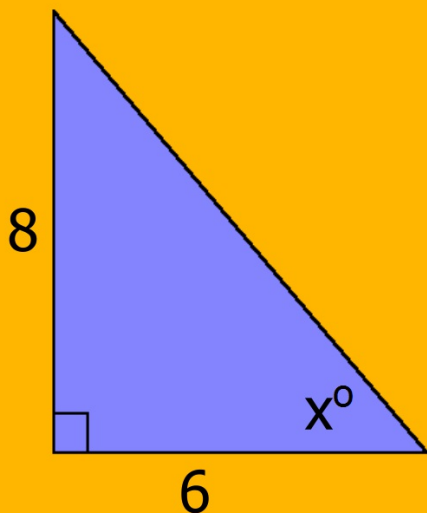


Trigonometry finding the missing side.

Lesson Objective : Be able to find any missing side of a triangle in which you know one side and one angle.



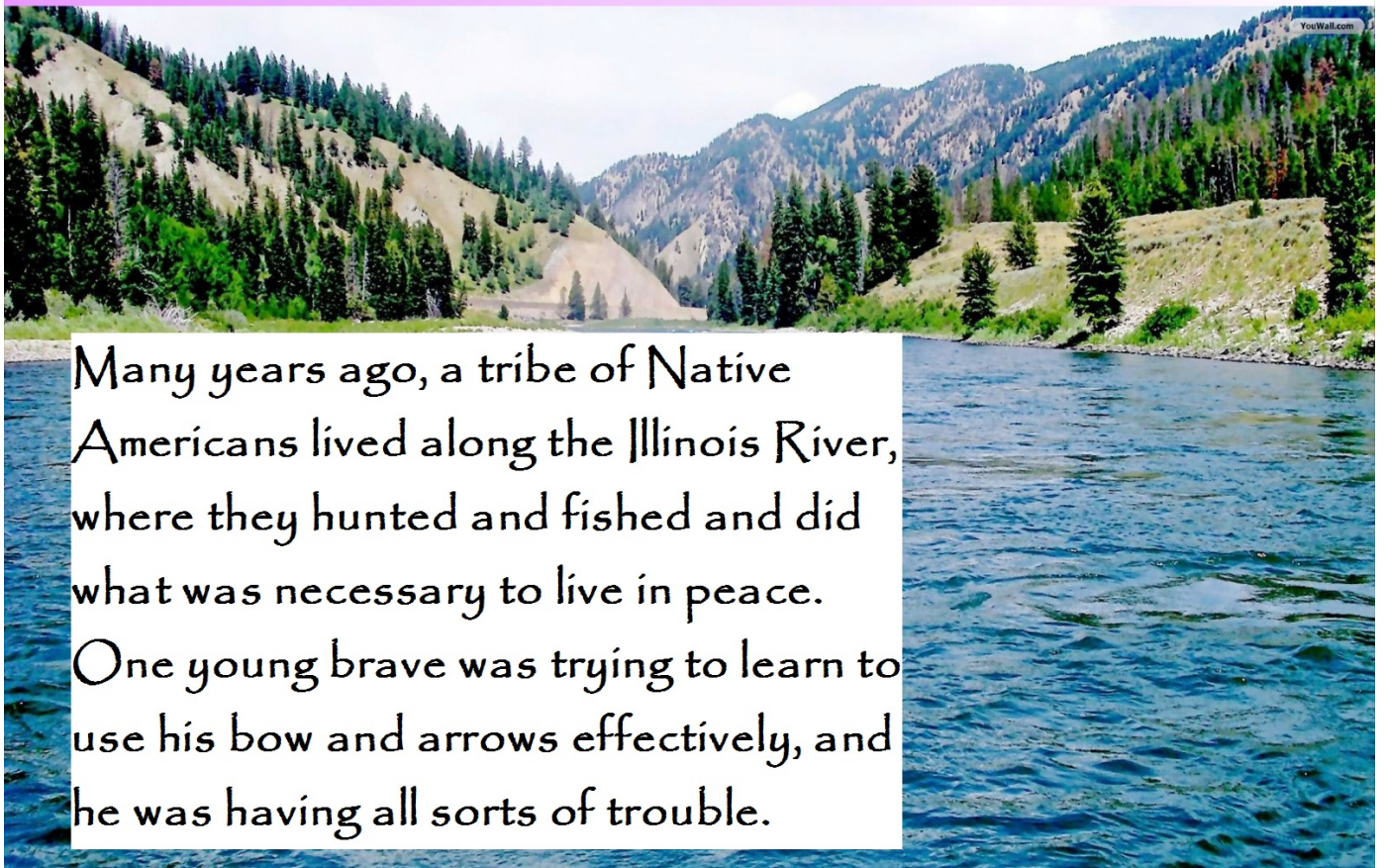
Why Are Trig Ratios Useful?



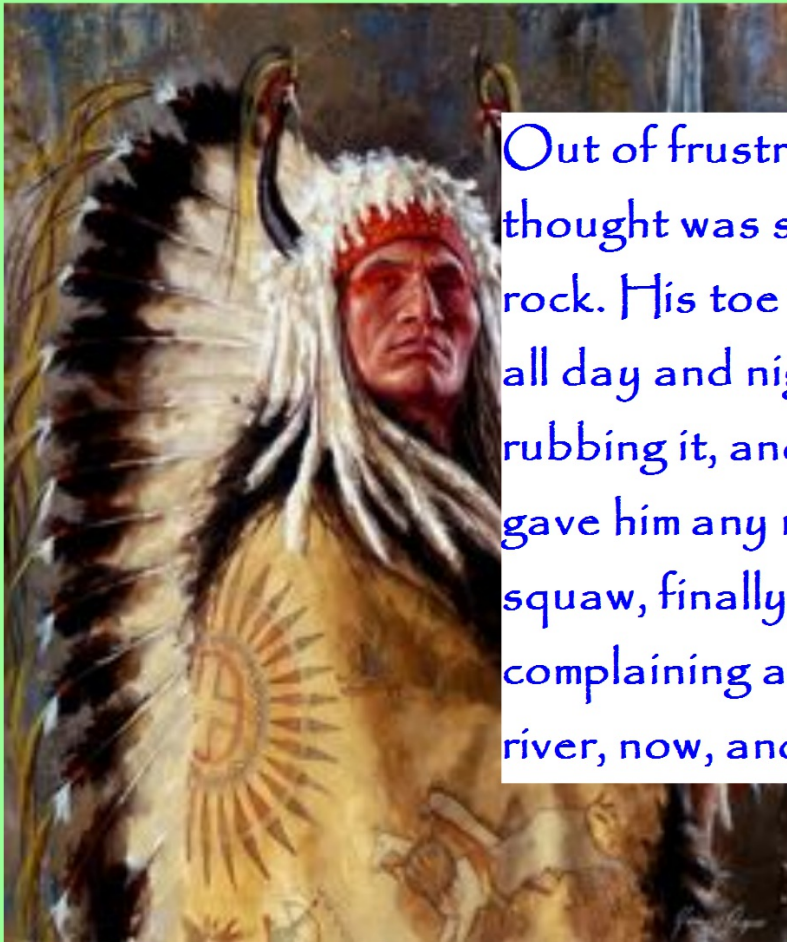
You can find a missing angle or the missing length of one side of a right triangle.

The legend of an Native American chief named
SohCahToa.

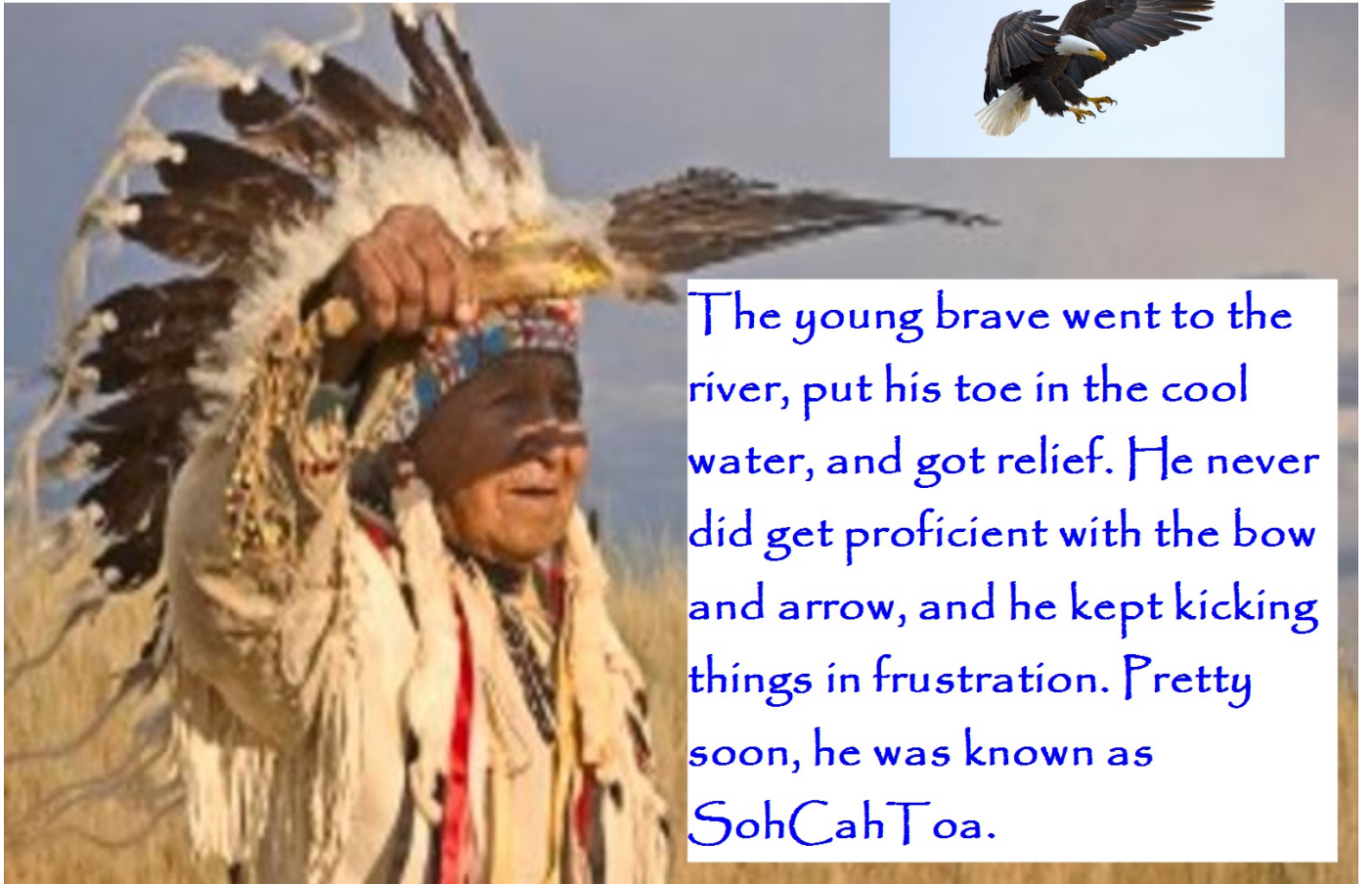




Many years ago, a tribe of Native Americans lived along the Illinois River, where they hunted and fished and did what was necessary to live in peace. One young brave was trying to learn to use his bow and arrows effectively, and he was having all sorts of trouble.



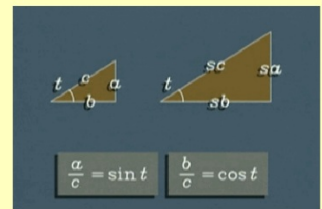
Out of frustration, he kicked what he thought was something soft, but it was a rock. His toe turned blue and throbbed all day and night. He tried wrapping it, rubbing it, and ignoring it, but nothing gave him any relief. His mother, a wise squaw, finally had enough of his complaining and said, "Go down to the river, now, and Soh Cah Toa!"



The young brave went to the river, put his toe in the cool water, and got relief. He never did get proficient with the bow and arrow, and he kept kicking things in frustration. Pretty soon, he was known as SohCahToa.

A trigonometric ratio is a ratio of the lengths of two sides of a right triangle.

The three basic trigonometric ratios are **Sine**, **Cosine**, and **Tangent**.



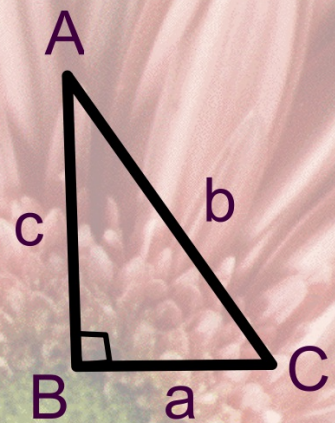
Sine

(SOH)

$$\sin(\text{angle}) = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\sin A = \frac{\text{opp}}{\text{hpy}} = \text{---}$$

$$\sin C =$$



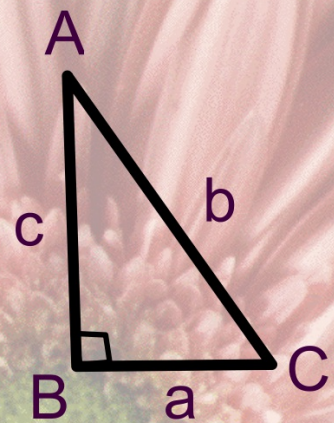
Cosine

(CAH)

$$\cos(\text{angle}) = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\cos A = \frac{\text{adj}}{\text{hyp}} = \text{---}$$

$$\cos C =$$



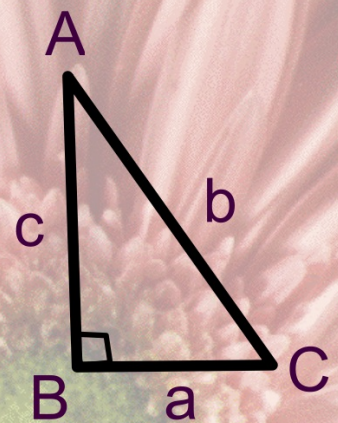
Tangent

(TOA)

$$\tan(\text{angle}) = \frac{\text{opposite}}{\text{adjacent}}$$

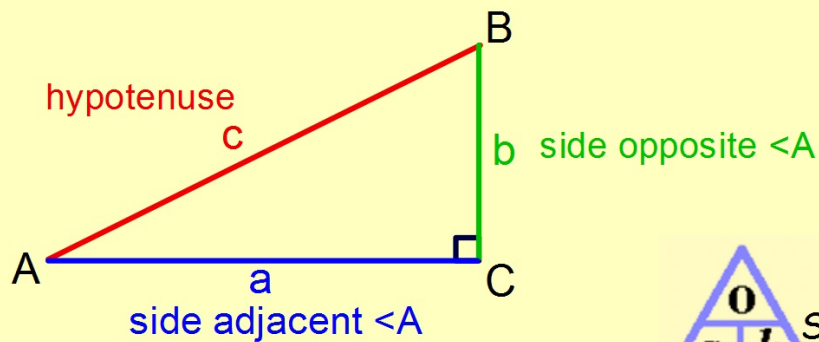
$$\tan A = \frac{\text{opp}}{\text{adj}} = \text{---}$$


$$\tan C =$$



Trig Ratio's


Let $\triangle ABC$ be a right triangle. The sine, the cosine, and the tangent of acute $\angle A$ are defined as follows.






$\cos A = \frac{a}{c}$

A small triangle with a horizontal line across the middle. The top vertex is labeled 'a'. The bottom-left vertex is labeled 'c'. The bottom-right vertex is labeled 'h'.



$\sin A = \frac{b}{c}$

A small triangle with a horizontal line across the middle. The top vertex is labeled 'o'. The bottom-left vertex is labeled 's'. The bottom-right vertex is labeled 'h'.

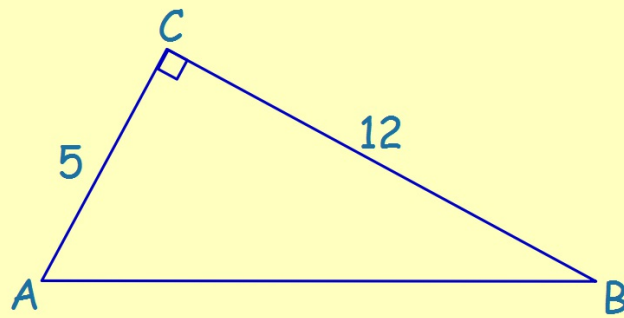


$\tan A = \frac{b}{a}$

A small triangle with a horizontal line across the middle. The top vertex is labeled 'o'. The bottom-left vertex is labeled 't'. The bottom-right vertex is labeled 'a'.

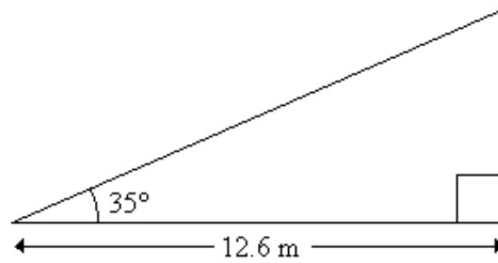
H
I
N
T

Find: a. $\cos \angle A$
b. $\tan \angle B$



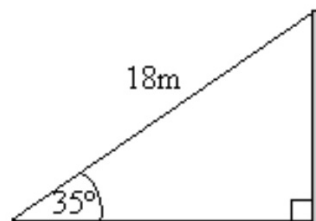
HINT

Sally is trying to estimate the height of her school. She measures the angle of elevation of the highest point as 35° . She measures the distance from the bottom of the wall along level ground as 12.6 m.



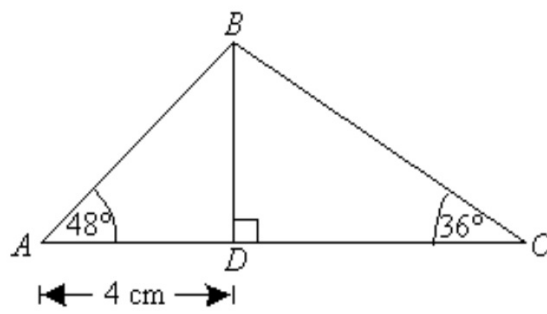
- (a) Calculate the height of the school.

A wire 18 m long runs from the top of a pole to the ground as shown in the diagram. The wire makes an angle of 35° with the ground.



Calculate the height of the pole.

Give your answer to a suitable degree of accuracy.

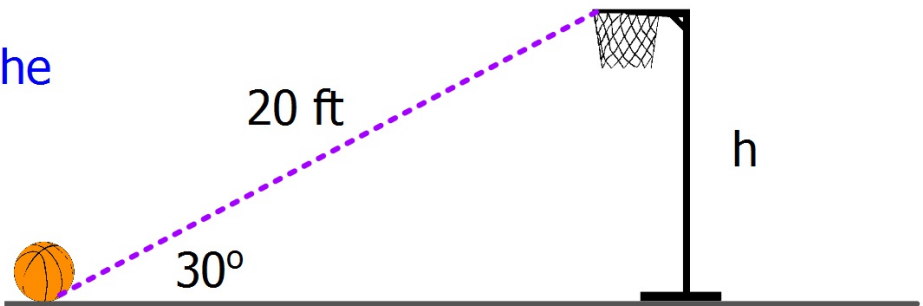
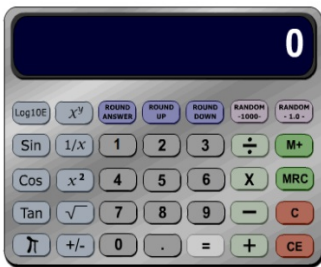


In the figure shown, calculate

- (a) the length of BD ,

Your Turn to Try

How high is the basketball hoop?

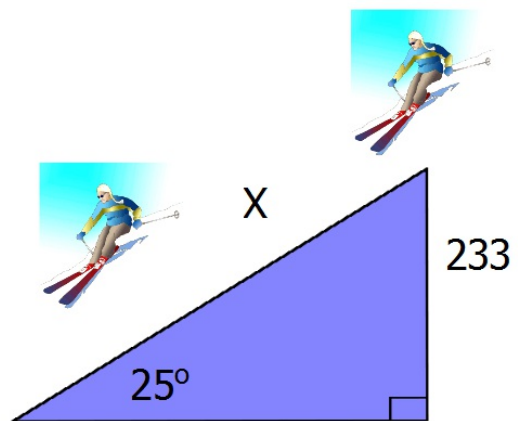
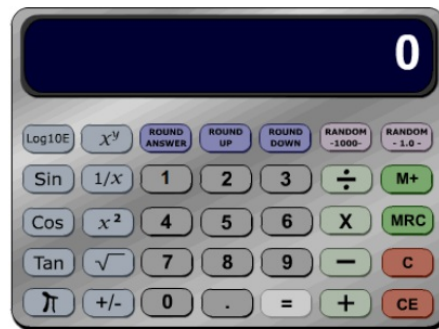




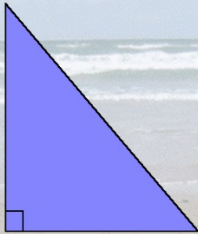
Your Turn to Try



The ski run at Mighty Mountain rises at an angle of 25° . The height of the run is 233 meters. How long is the run?



Choosing the correct ratio



sohcahtoa



Ask yourself:

- 1. Which angle is involved?**
- 2. Which sides are involved?**
- 3. Which ratio is needed?**



Independent Practice

1. This **In Class Activity** is at the Material Station.
2. You have **30 minutes** to complete this activity. Stay on task and finish.
3. Once you're finished, **raise your hand and let Mr.Kim check.**



Expectations:

- Individual / Independent work.
- You may ask your neighbor questions.
- Draw it out and label (you can't ask a question before you do this!).
- Use your notes.