

# Teach Yourself Trigonometry

# **Teach Yourself Trigonometry**

## **Part 2 : Applying the Right Triangle Trigonometric Ratios**

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Before you begin:

# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

Before you begin:

Understand that learning happens best when the learner puts in **real effort**.

# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

Before you begin:

Understand that learning happens best when **the learner** puts in **real effort**.



**That's you!**

# Teach Yourself Trigonometry

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# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

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Understand that learning happens best when the learner puts in **real effort**.

Be willing to **work hard** to understand the concepts as you progress.

# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

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Understand that learning happens best when the learner puts in **real effort**.

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Finally, do not rush through this.



# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

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Understand that learning happens best when the learner puts in **real effort**.

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## Part 2 : Applying the Right Triangle Trigonometric Ratios

Before you begin:

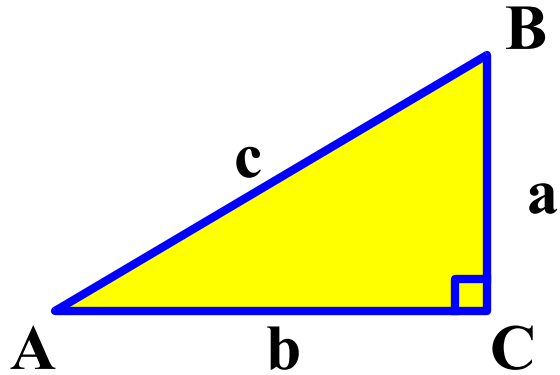
Understand that learning happens best when the learner puts in **real effort**.

Be willing to **work hard** to understand the concepts as you progress.

Finally, do not rush through this. In this case, it means **doing the activities** along with the lessons. Do your best to understand each concept **before** moving on to the next slide. Good Luck.

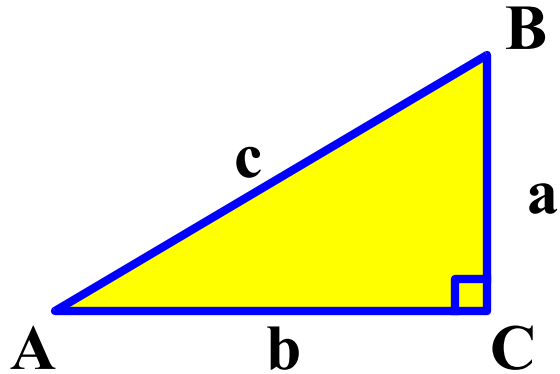
# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios



# Teach Yourself Trigonometry

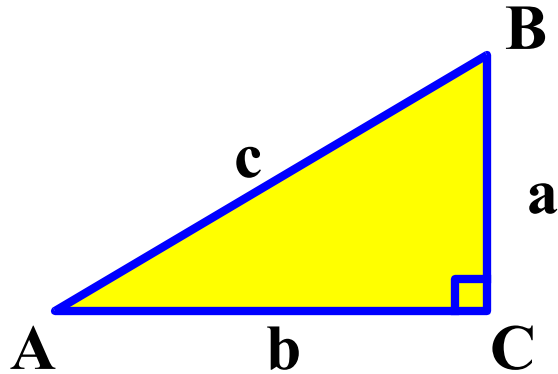
## Part 2 : Applying the Right Triangle Trigonometric Ratios



Let's review the three common right triangle trigonometric ratios.

# Teach Yourself Trigonometry

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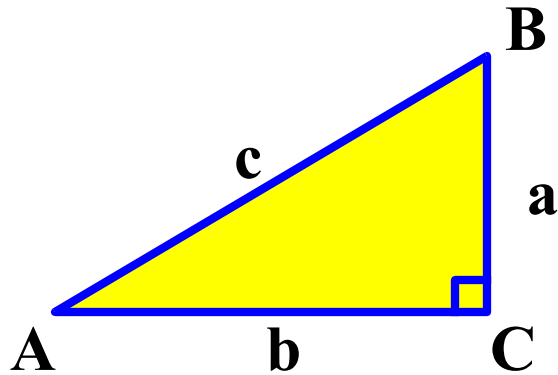


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The **sine ratio**

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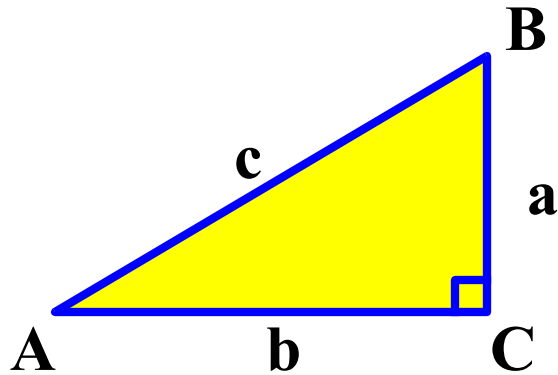


Let's review the three common right triangle trigonometric ratios.

The **sine ratio** is the ratio of the length of the **leg opposite the angle**

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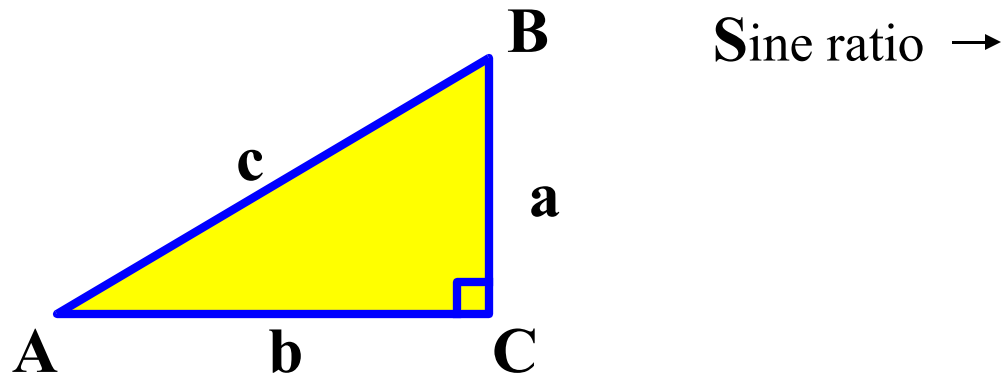
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# Teach Yourself Trigonometry

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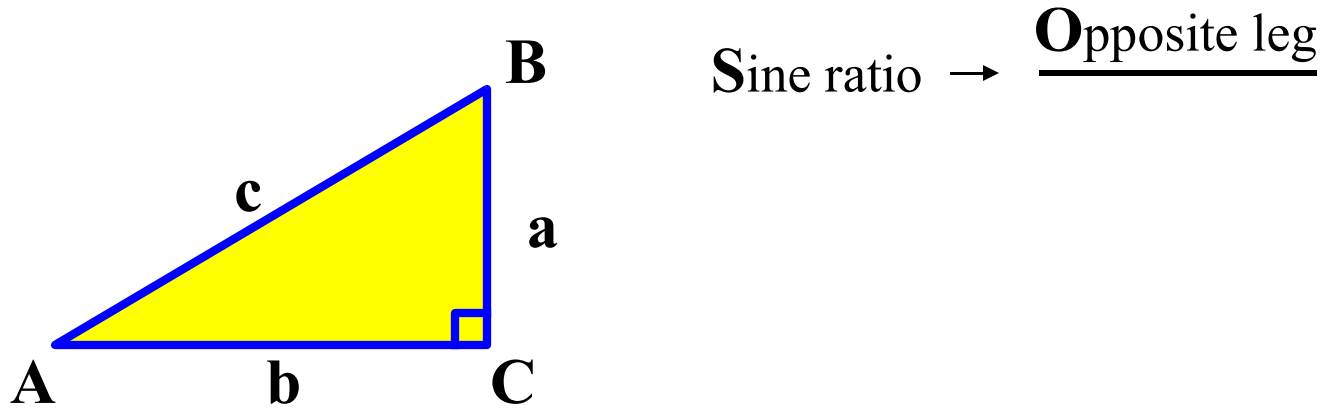


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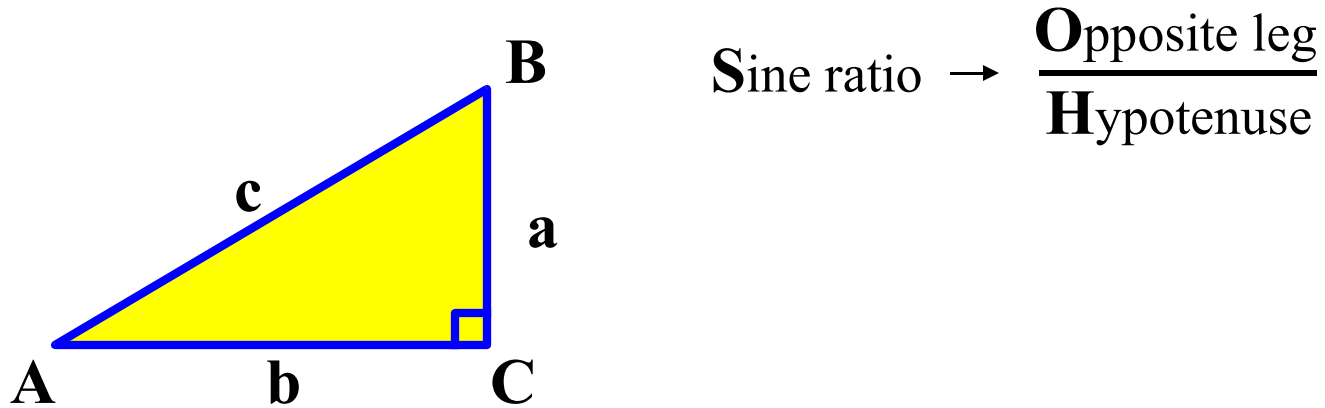


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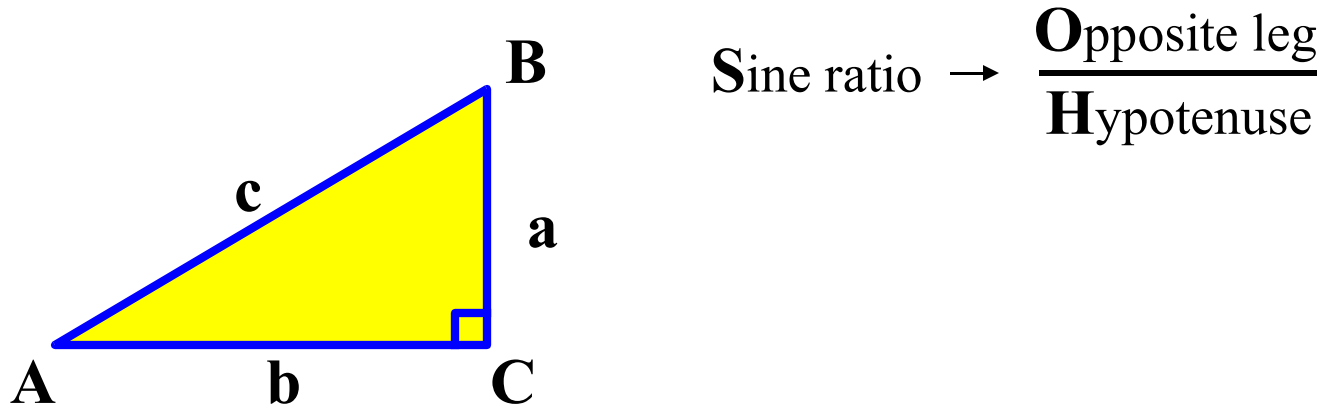


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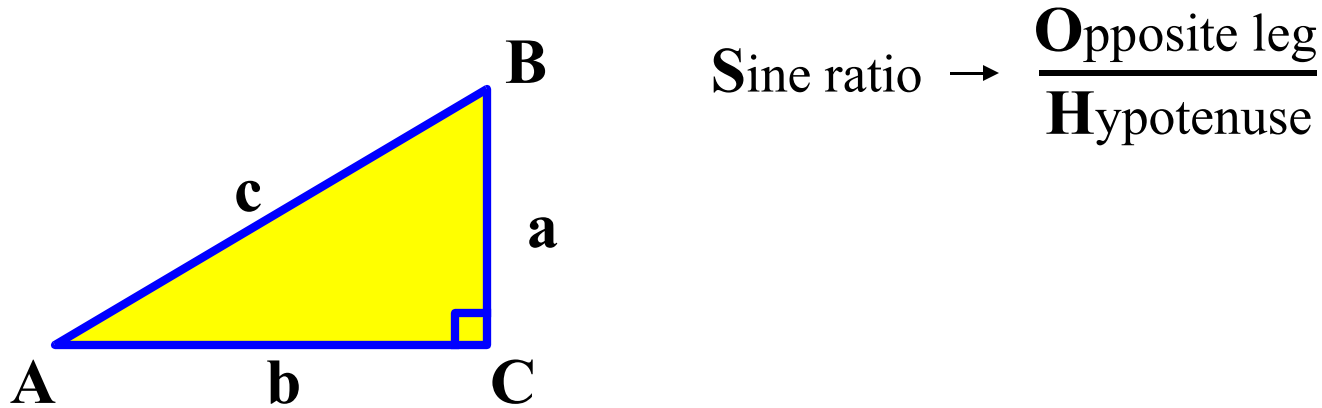
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The **cosine ratio**

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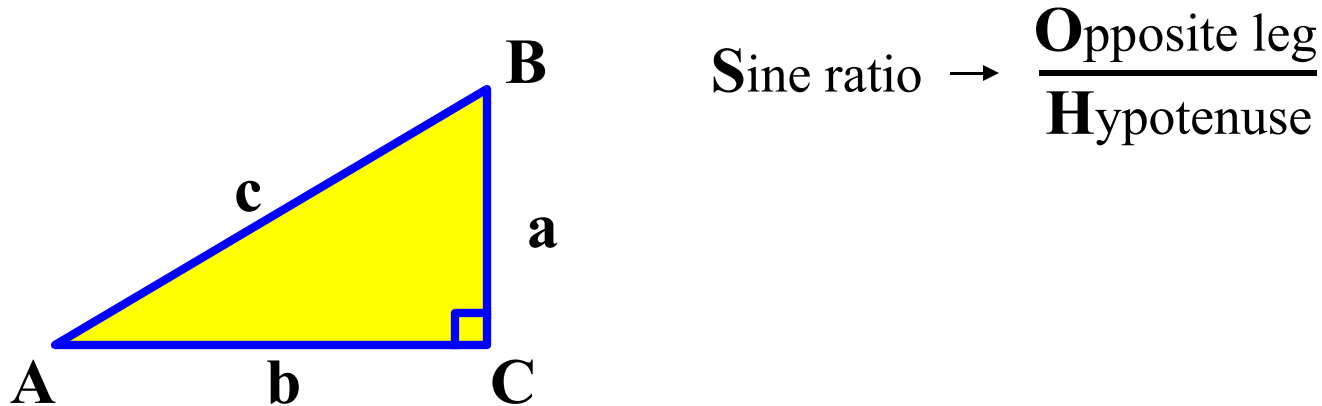
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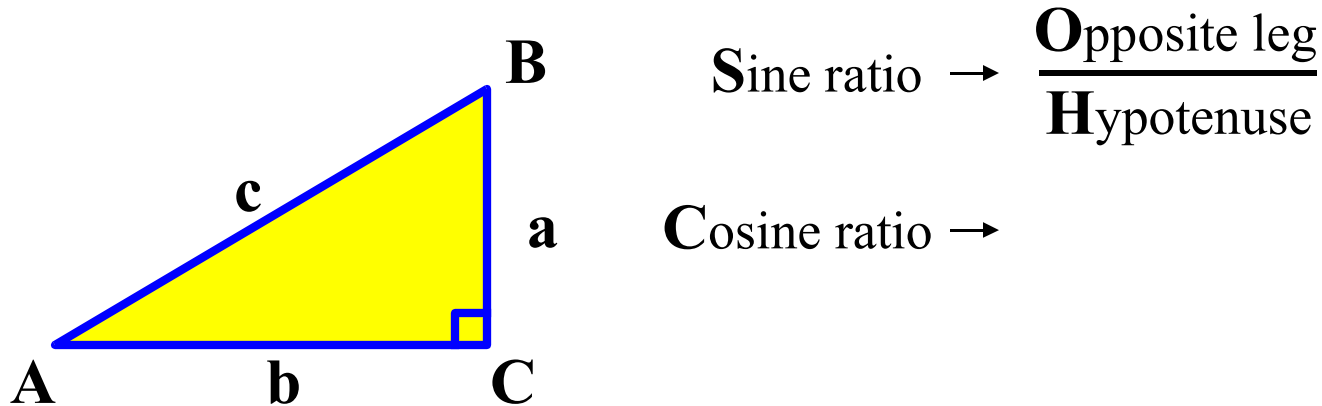
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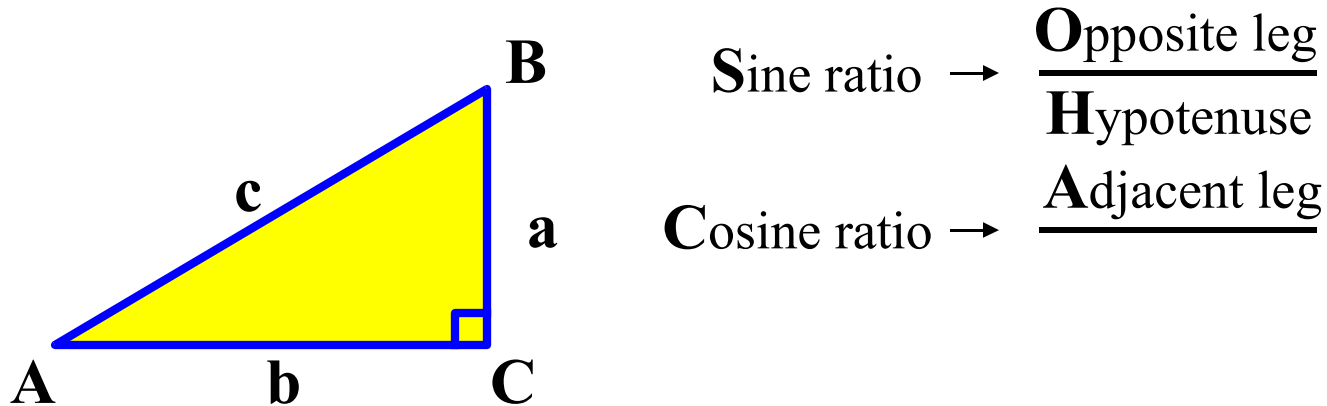
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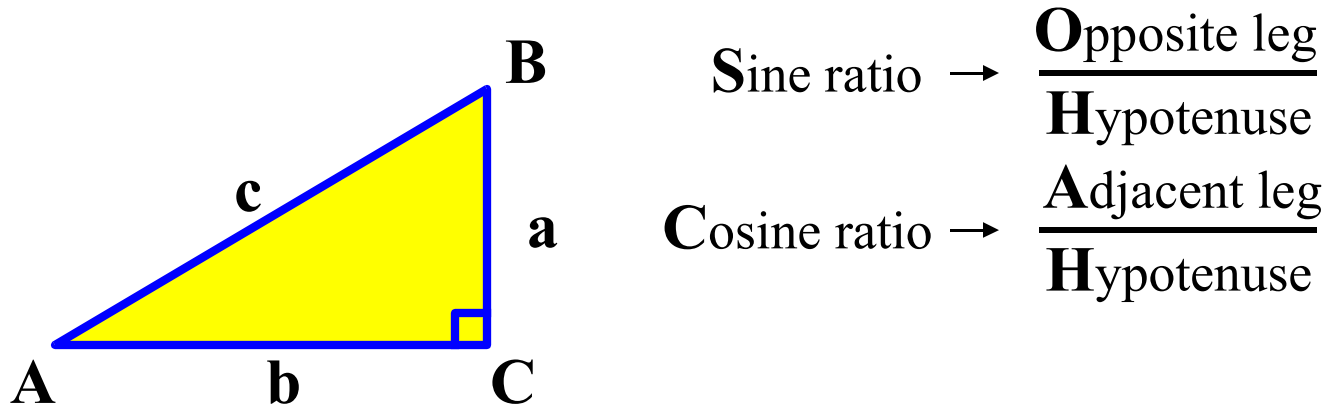
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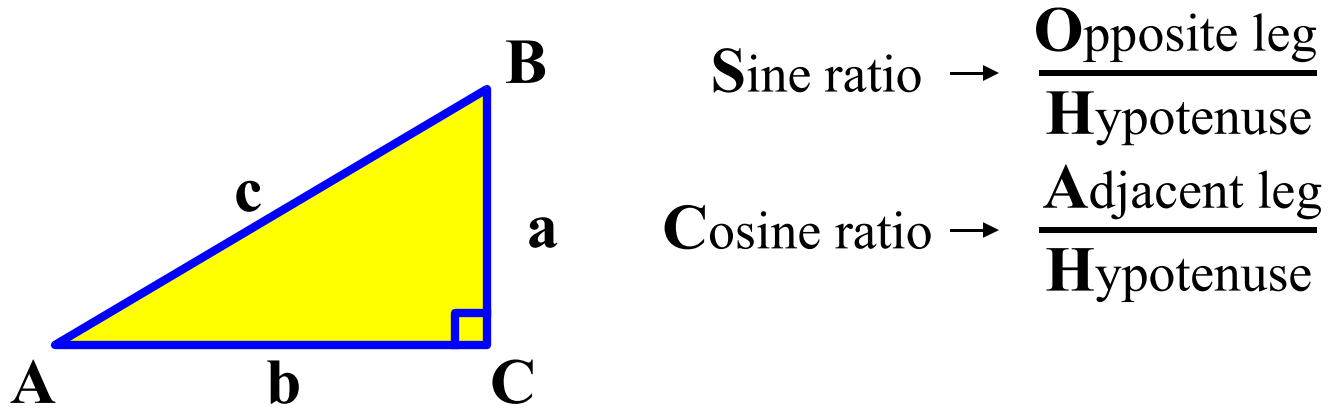
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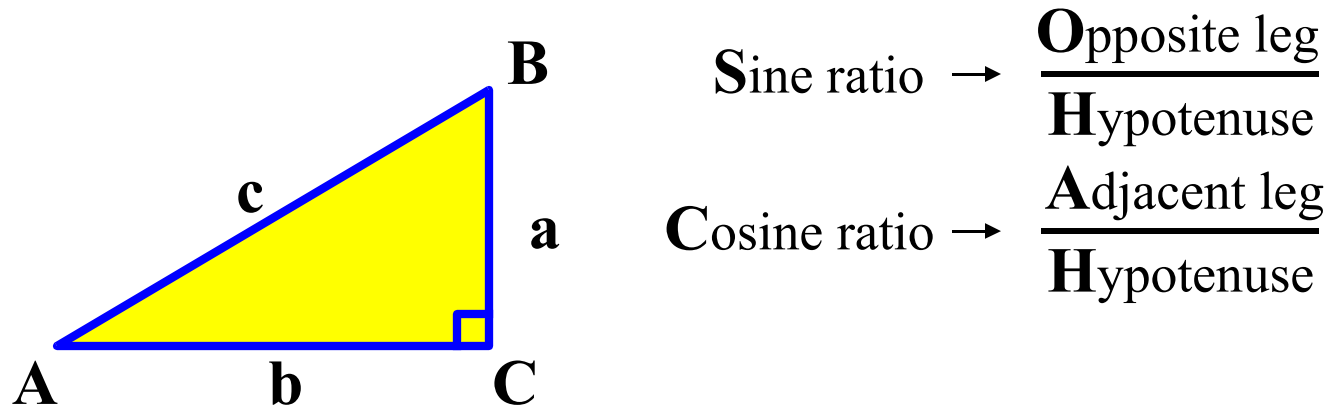
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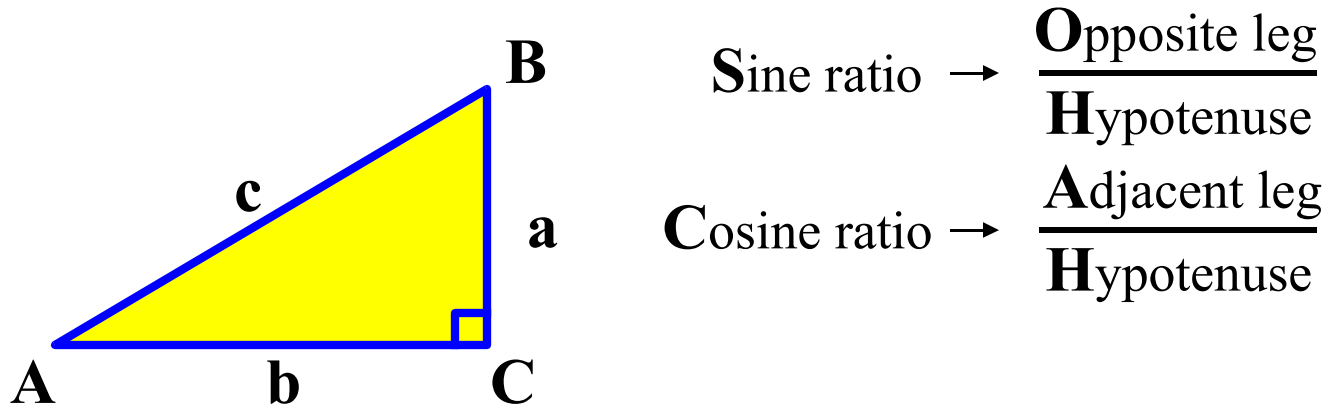
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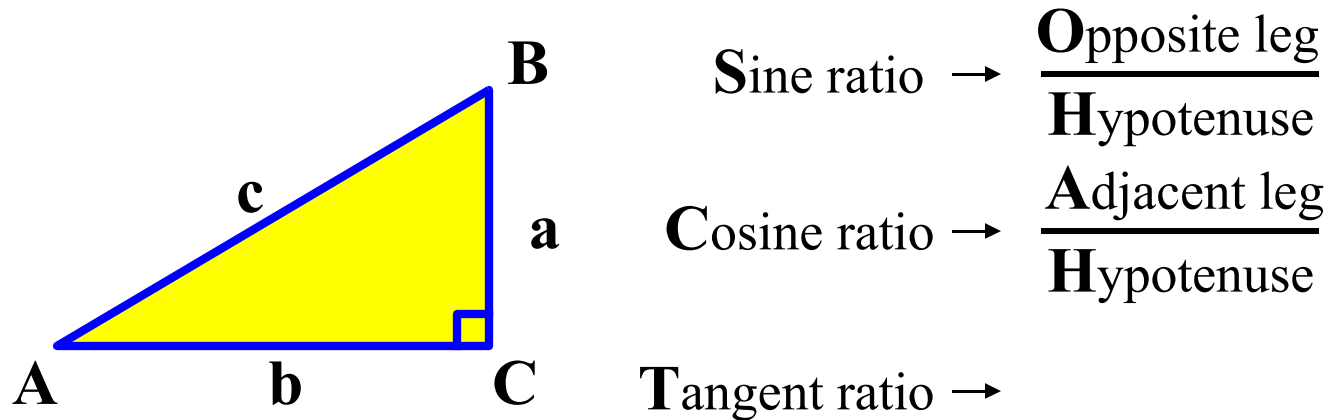
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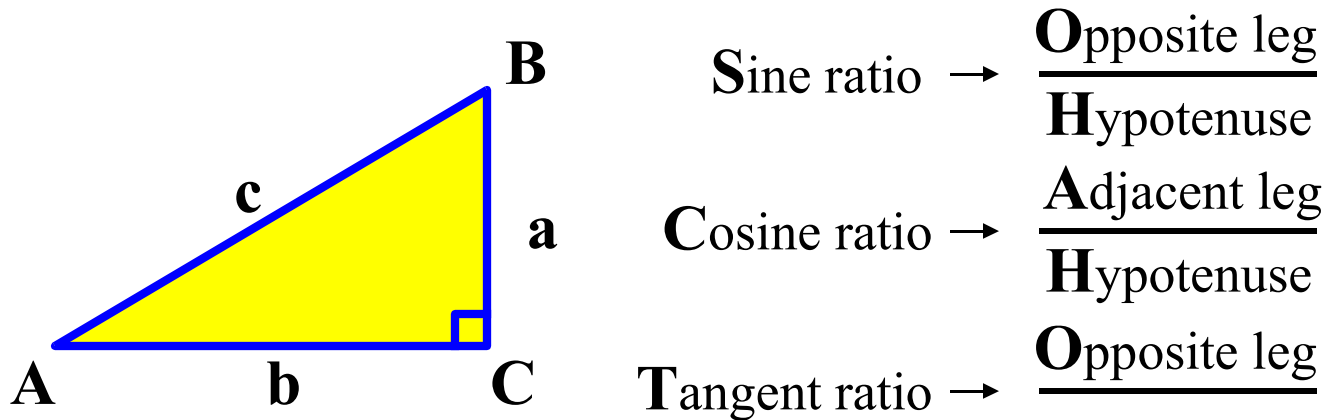
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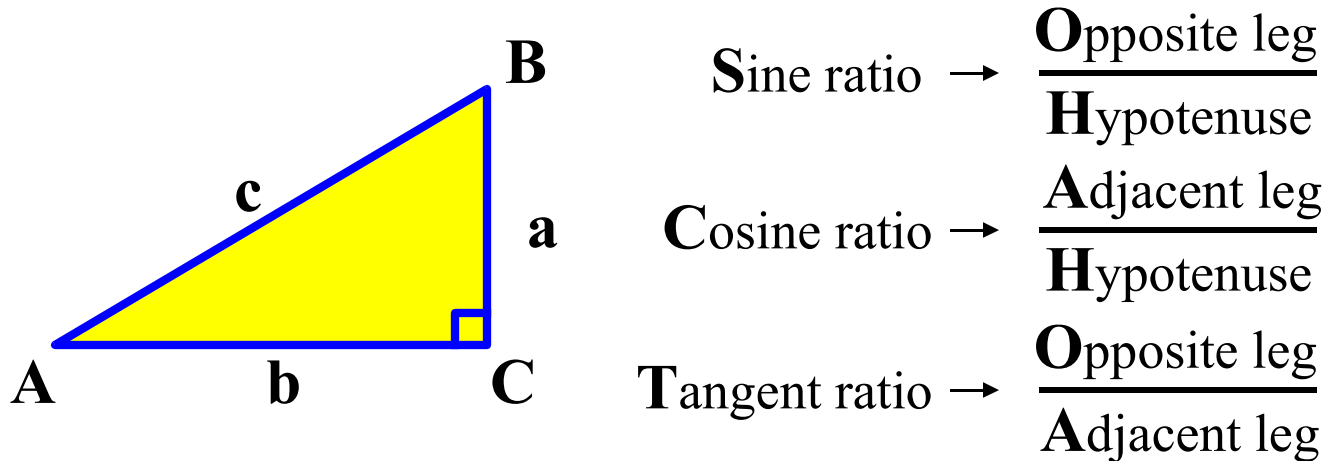
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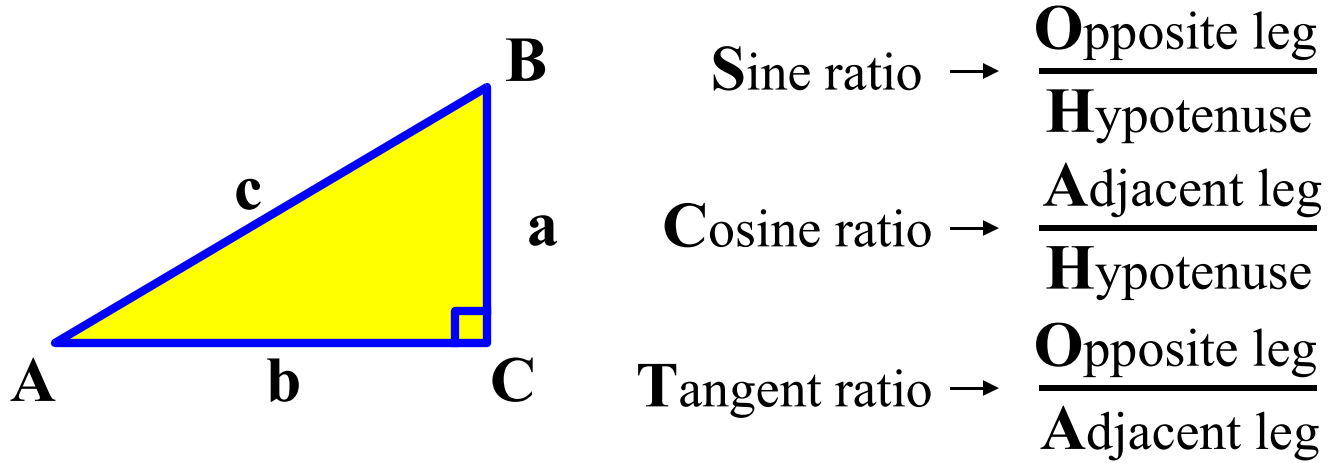
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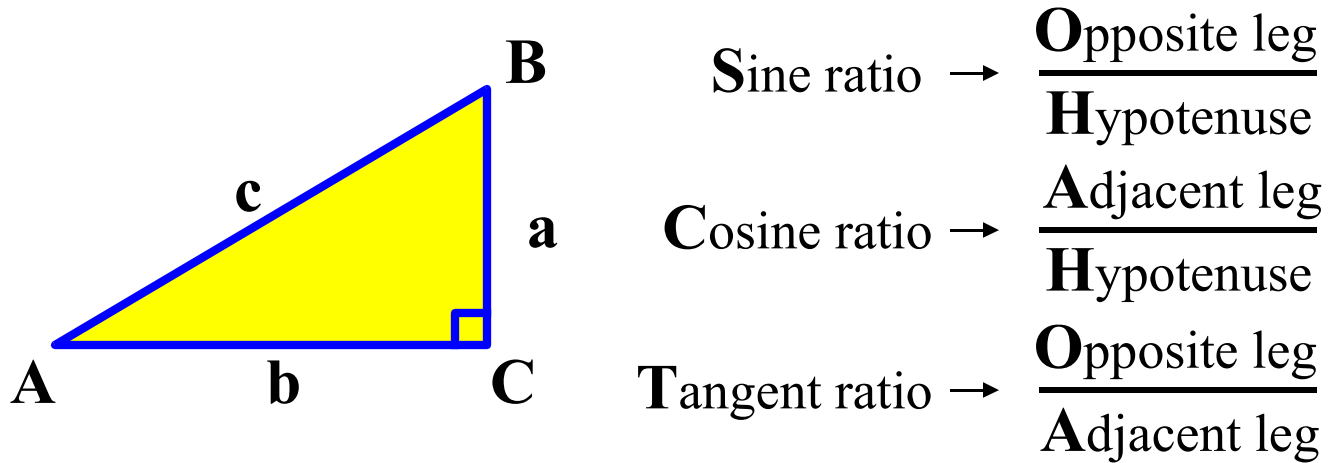
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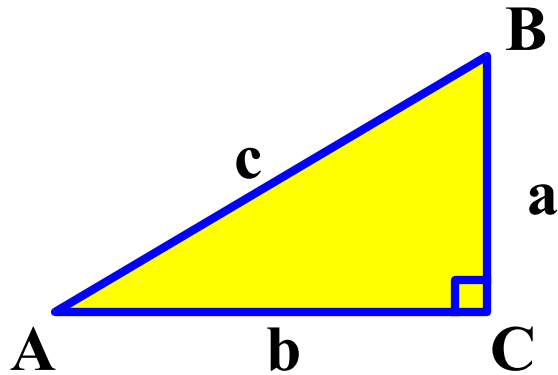
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These three letter combinations can be used to help remember this.

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$$\text{Sine ratio} \rightarrow \frac{\text{Opposite leg}}{\text{Hypotenuse}} \rightarrow$$

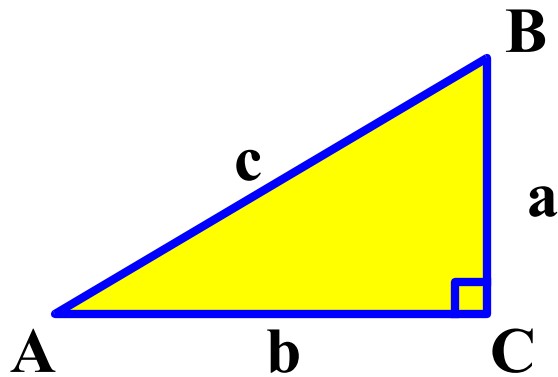
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**Sine ratio** →  $\frac{\text{Opposite leg}}{\text{Hypotenuse}}$  → **S**

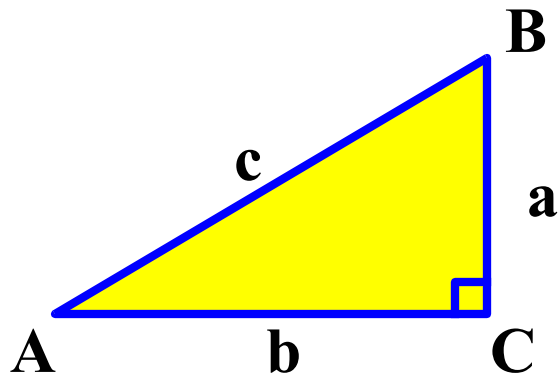
**Cosine ratio** →  $\frac{\text{Adjacent leg}}{\text{Hypotenuse}}$

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Sine ratio  $\rightarrow \frac{\text{Opposite leg}}{\text{Hypotenuse}} \rightarrow \text{SO}$

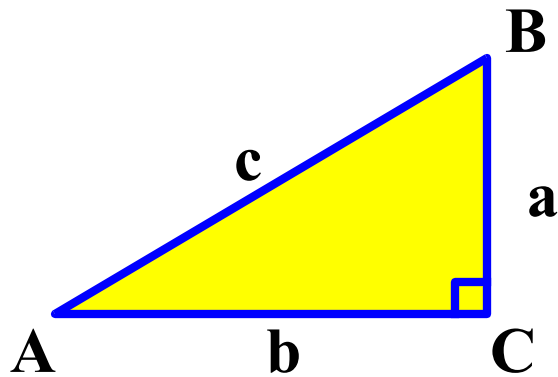
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## Part 2 : Applying the Right Triangle Trigonometric Ratios



Sine ratio  $\rightarrow$   $\frac{\text{Opposite leg}}{\text{Hypotenuse}}$   $\rightarrow$  **SOH**

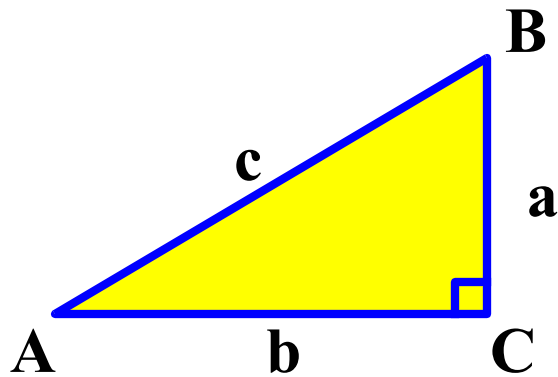
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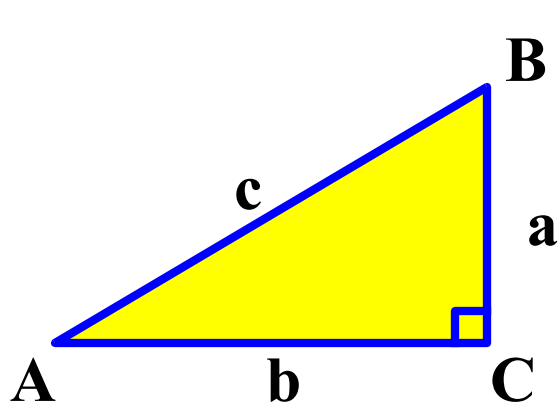
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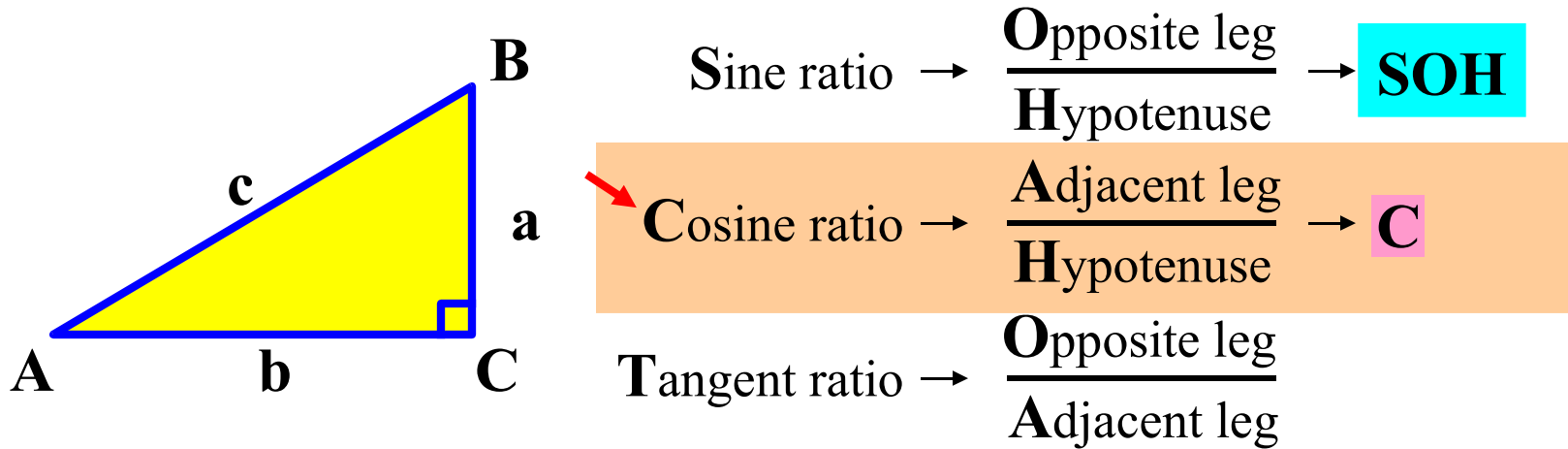
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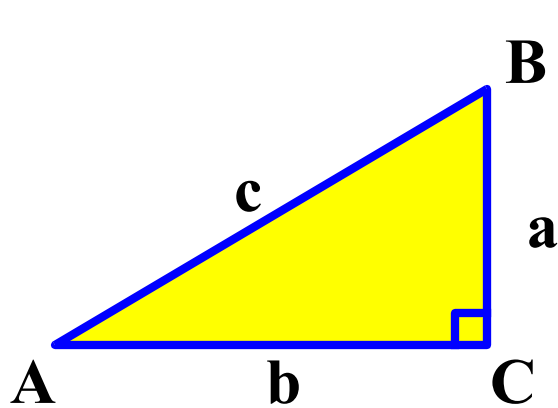


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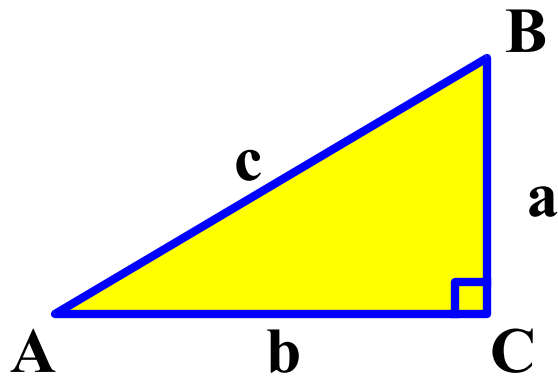
Cosine ratio  $\rightarrow \frac{\text{Adjacent leg}}{\text{Hypotenuse}} \rightarrow$  **CA**

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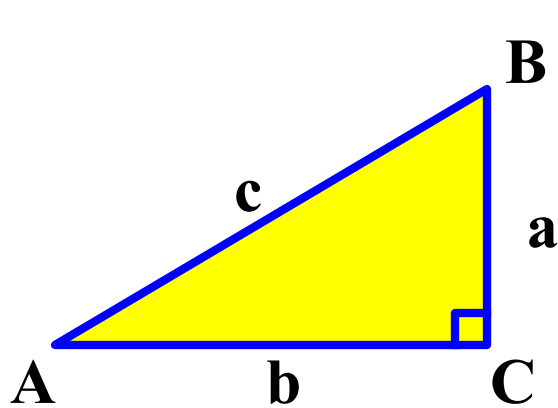
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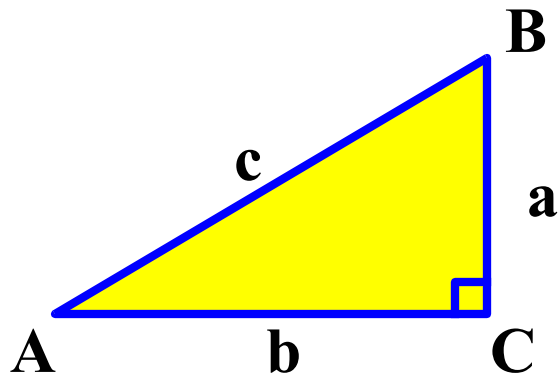
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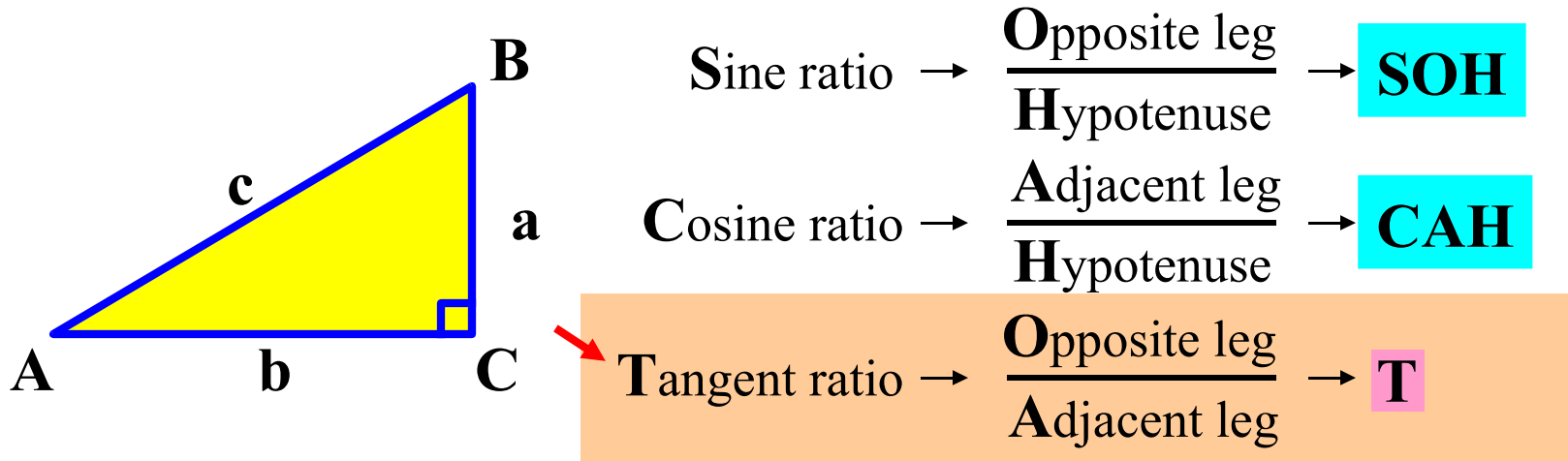
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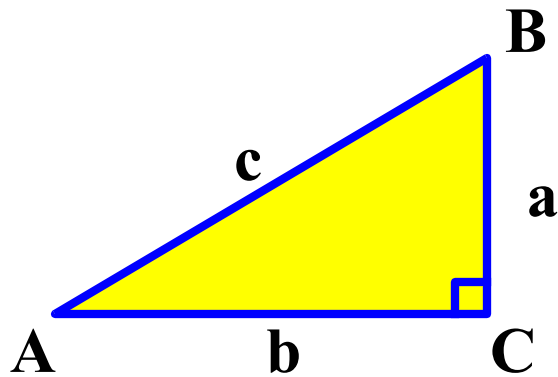
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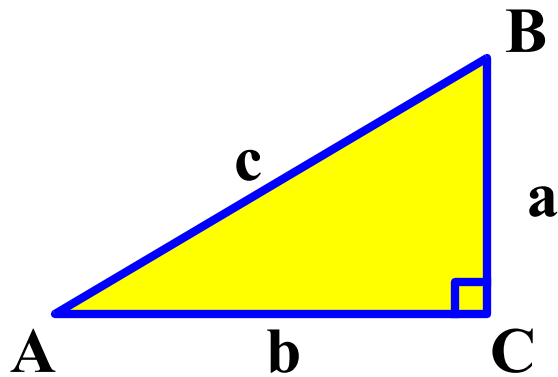
Cosine ratio  $\rightarrow \frac{\text{Adjacent leg}}{\text{Hypotenuse}} \rightarrow$  **CAH**

Tangent ratio  $\rightarrow \frac{\text{Opposite leg}}{\text{Adjacent leg}} \rightarrow$  **TO**

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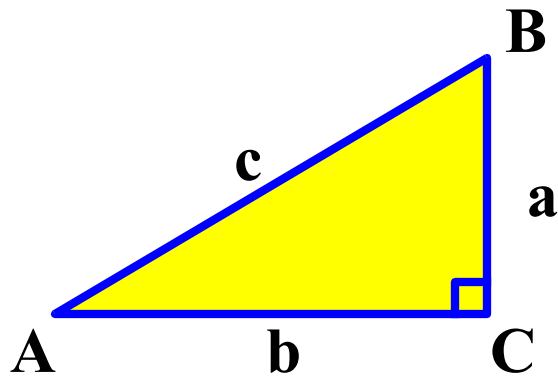
Cosine ratio  $\rightarrow \frac{\text{Adjacent leg}}{\text{Hypotenuse}} \rightarrow$  **CAH**

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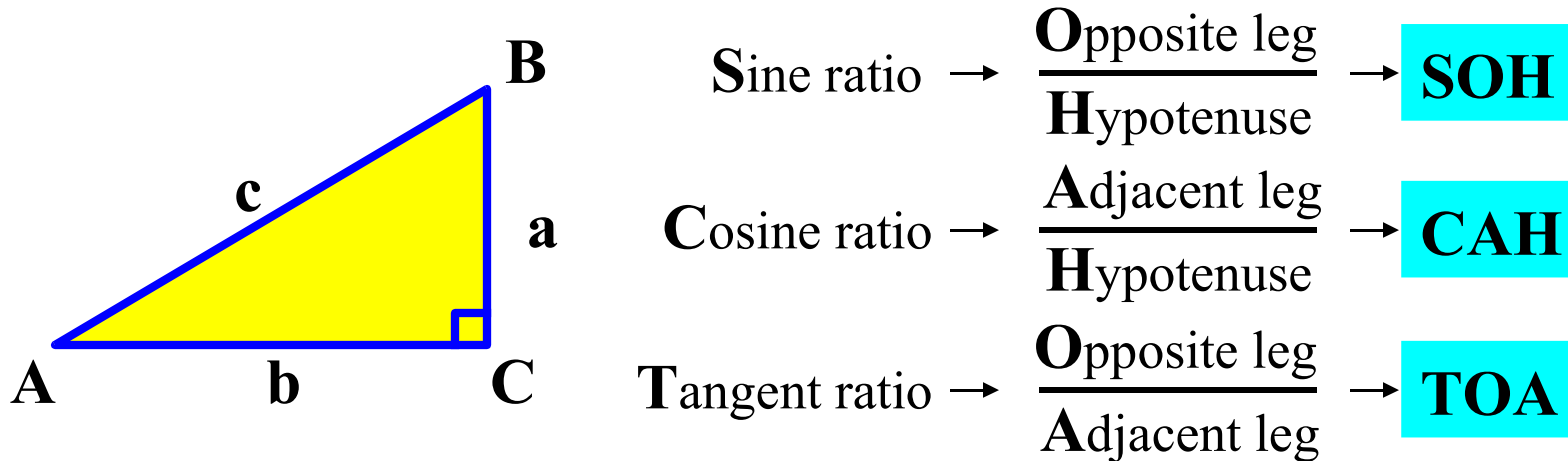
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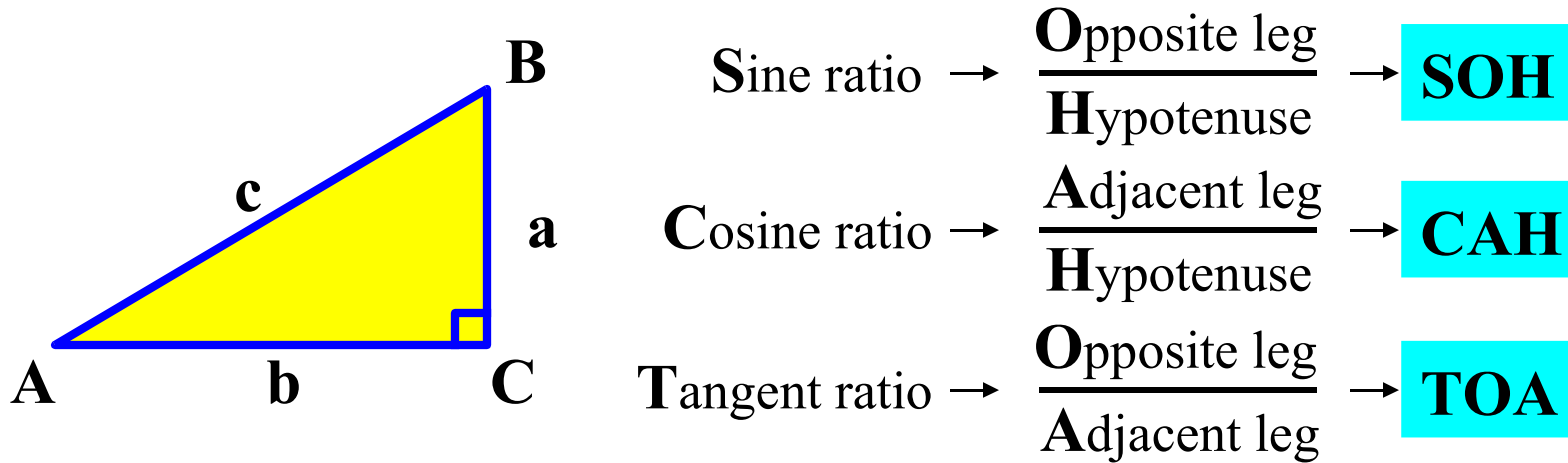
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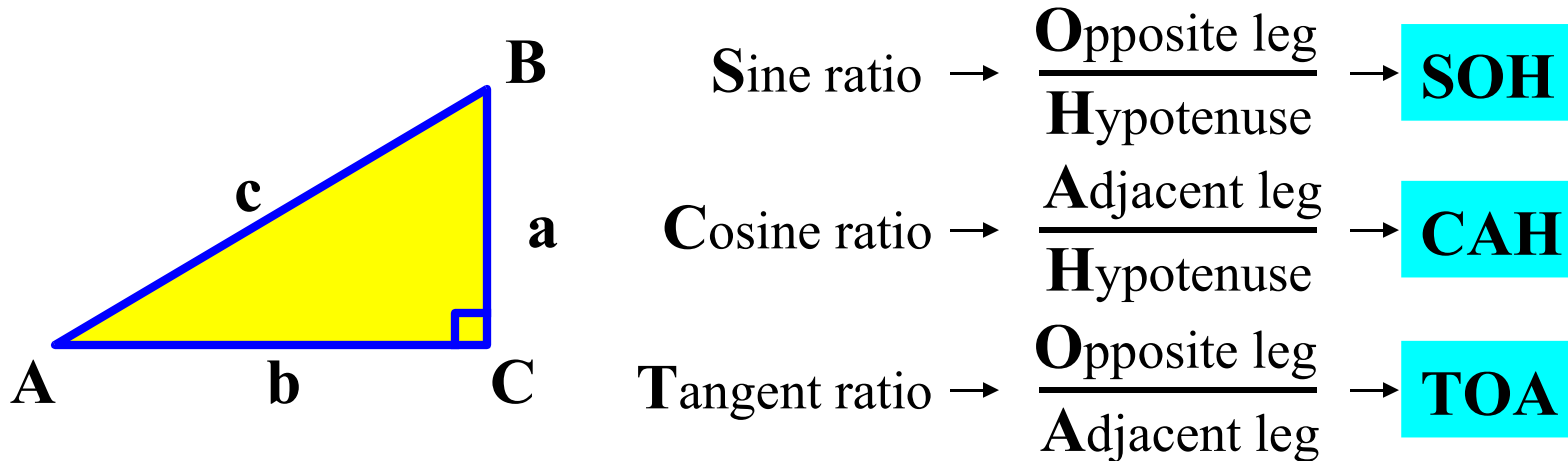


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These can be written in a phrase of sorts.

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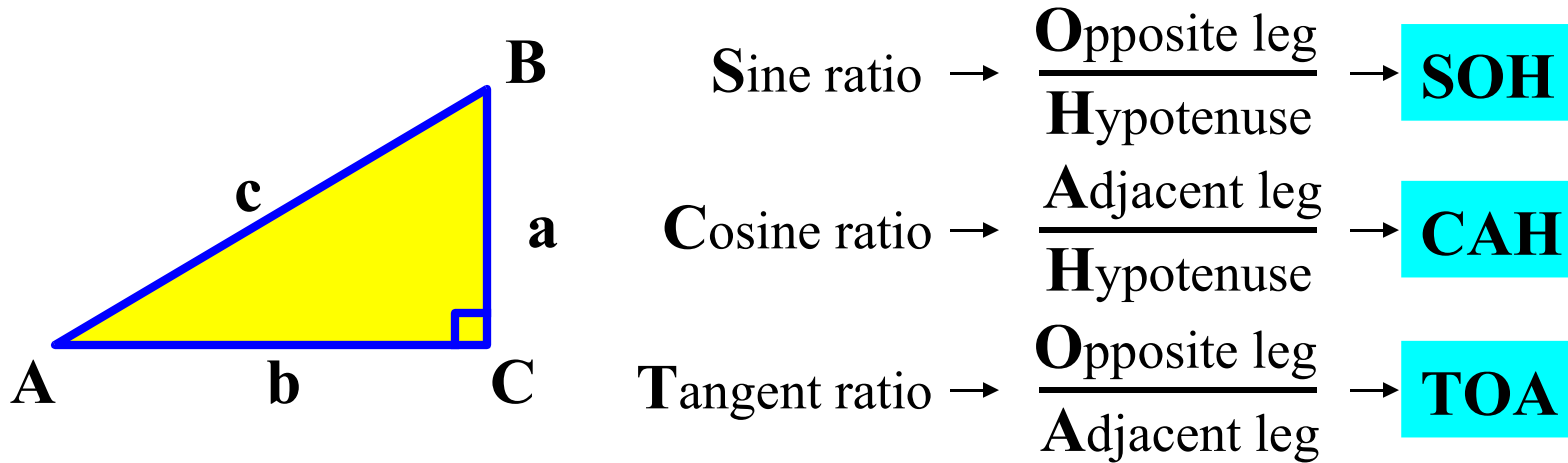
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## Part 2 : Applying the Right Triangle Trigonometric Ratios



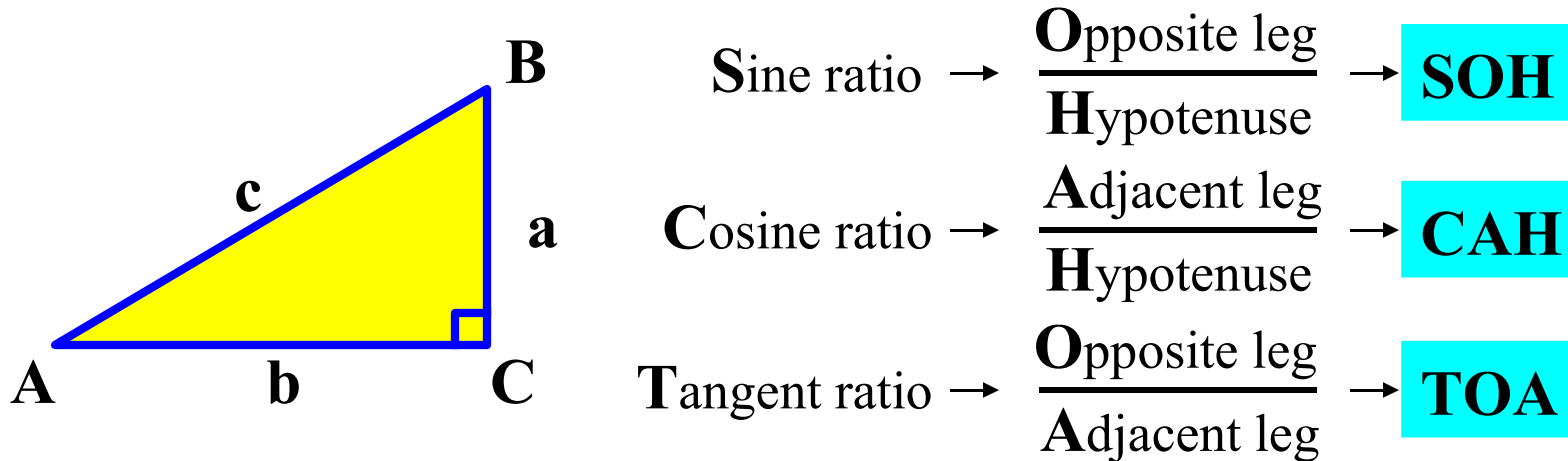
These three letter combinations can be used to help remember this.

These can be written in a phrase of sorts.

**SOH - CAH**

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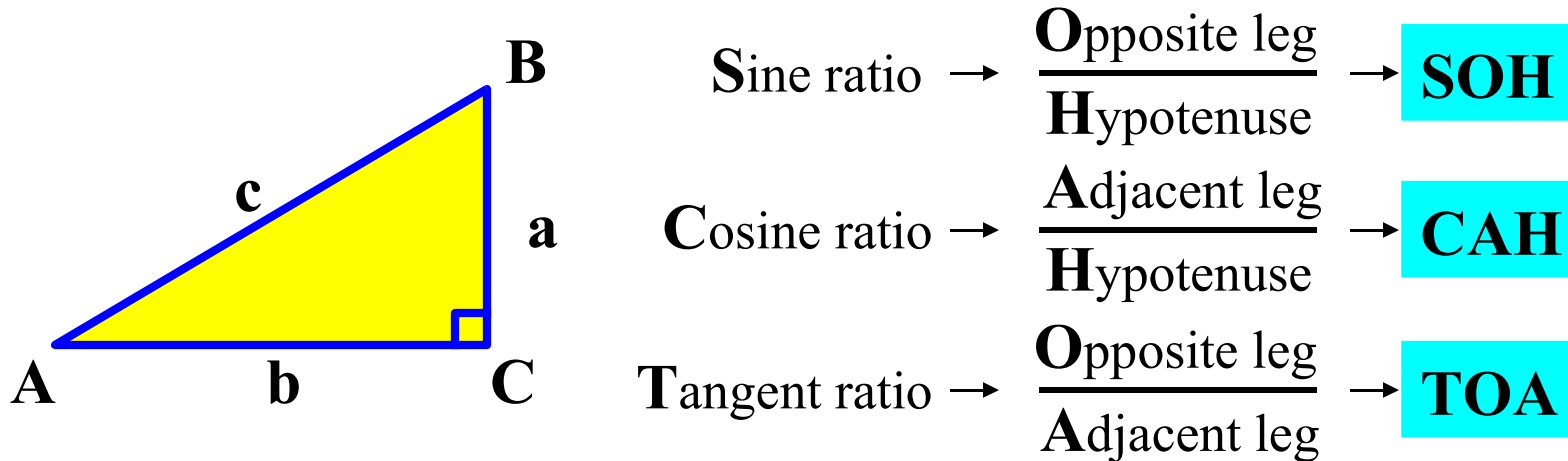
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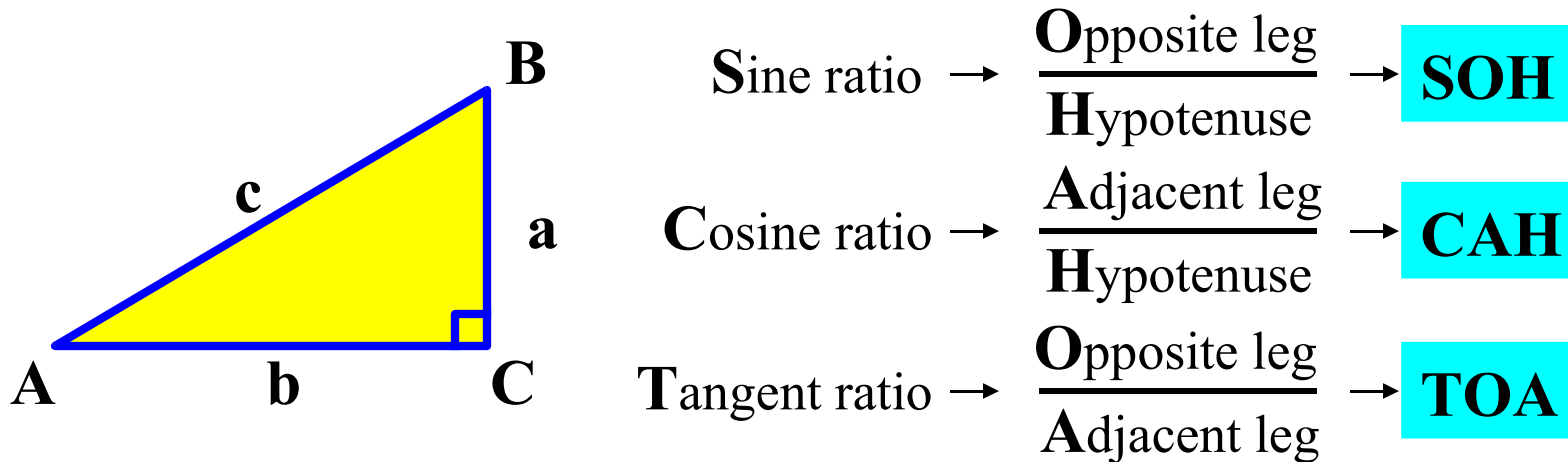
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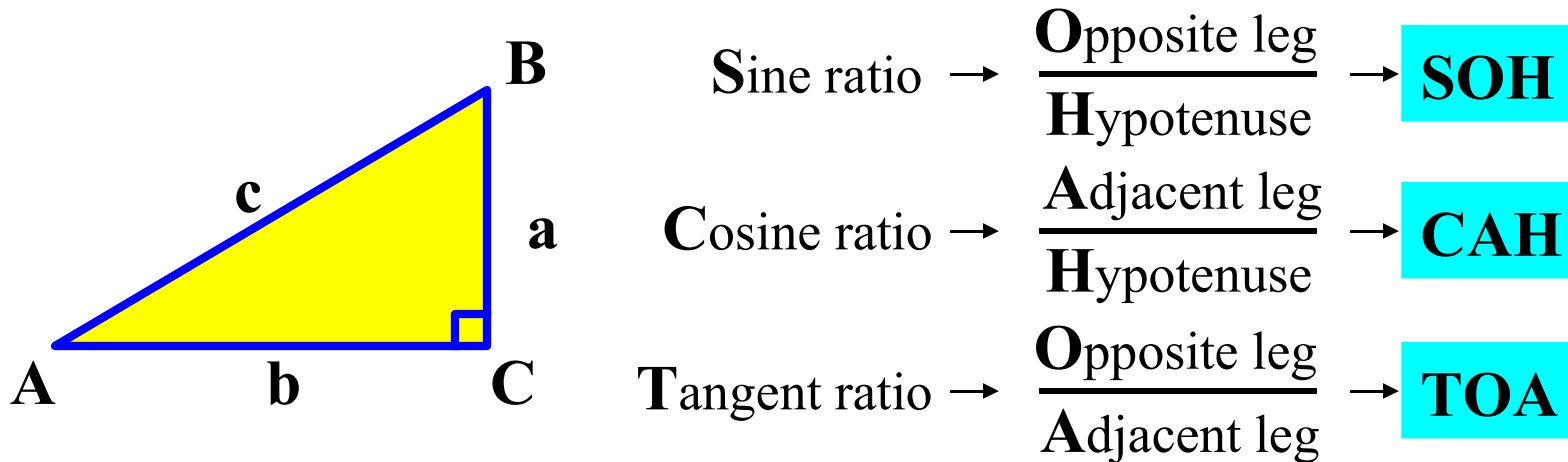
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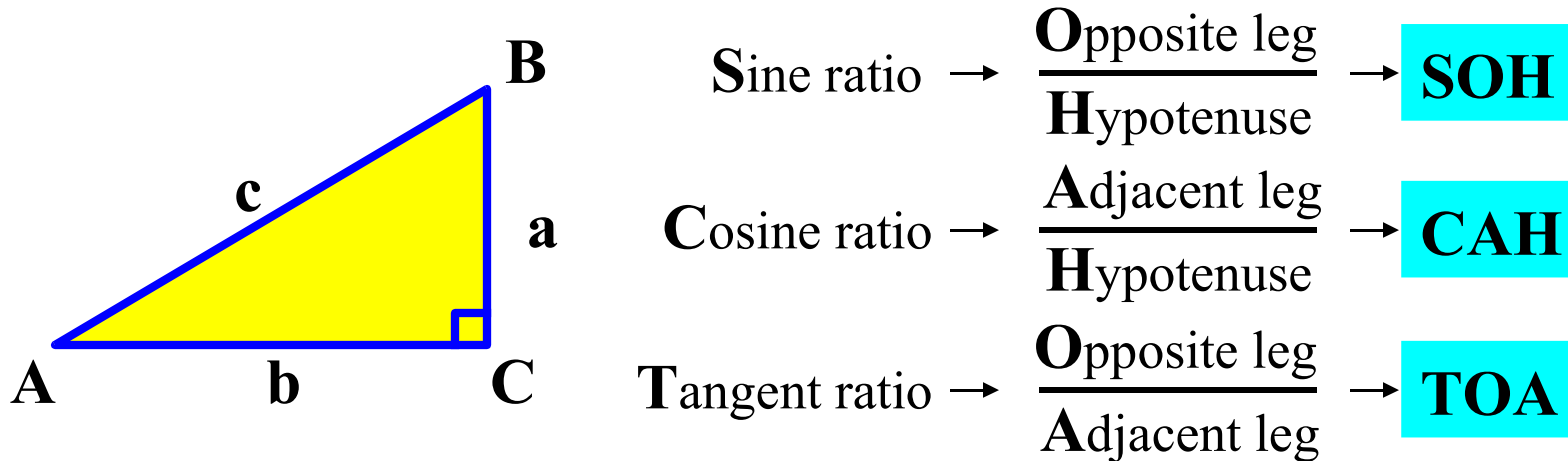
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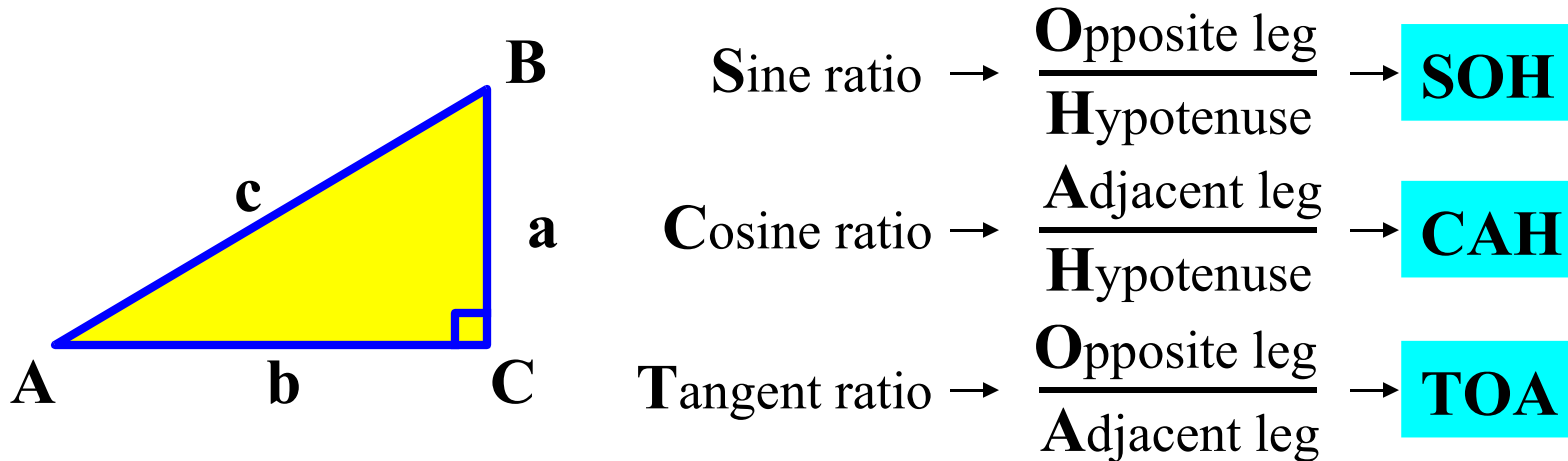
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**Sample Problem #1**

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## Part 2 : Applying the Right Triangle Trigonometric Ratios

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### Sample Problem #1

An airplane takes off on level ground with a constant speed of 275 feet per second.

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An airplane takes off on level ground with a constant speed of 275 feet per second. If its flight path makes an angle of 20 degrees with the ground,

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**Step 1: Sketch a right triangle showing the key parts of the problem.**



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**Make your own sketch. Label the key parts, using a variable for the 'unknown'.**

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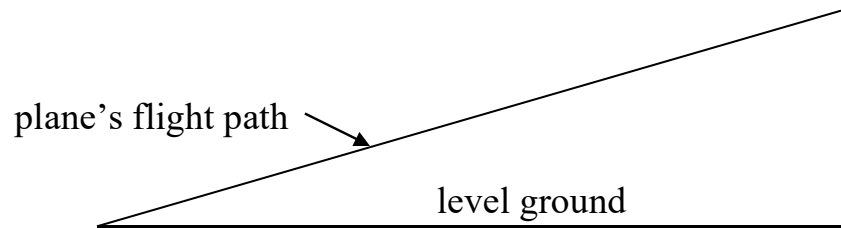
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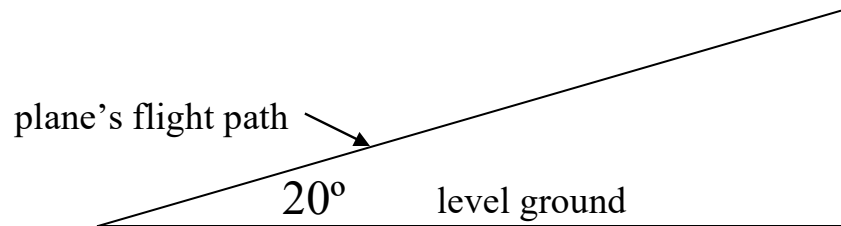
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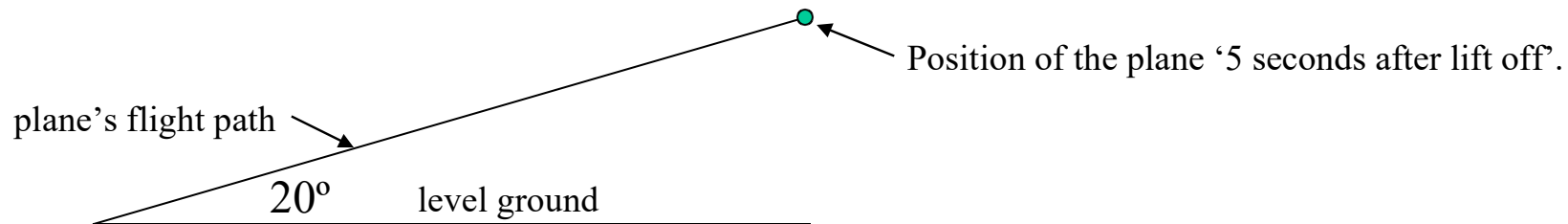
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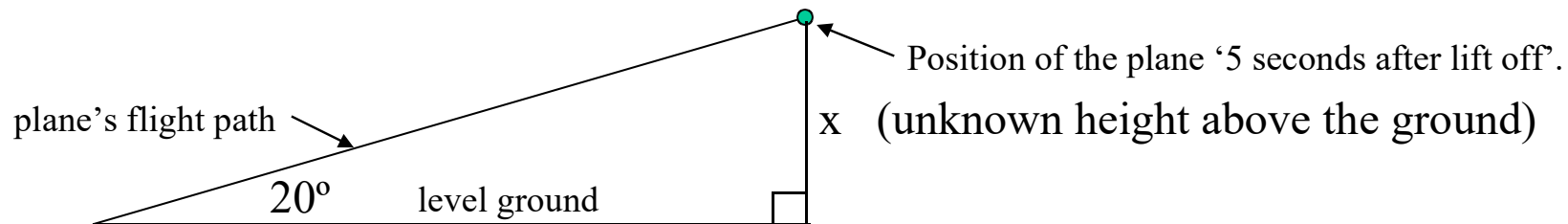
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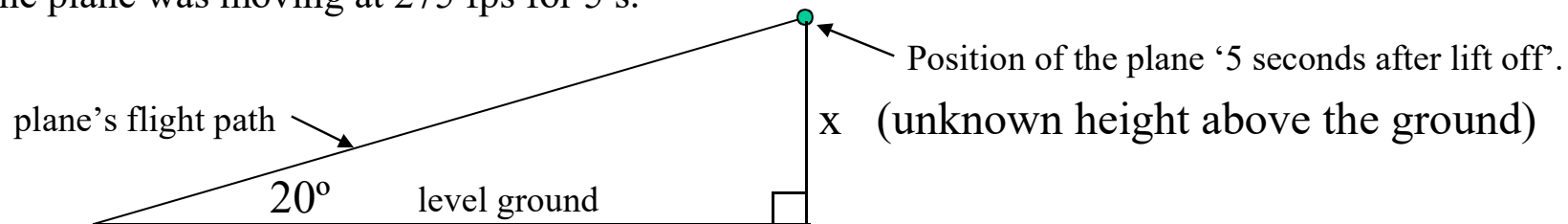
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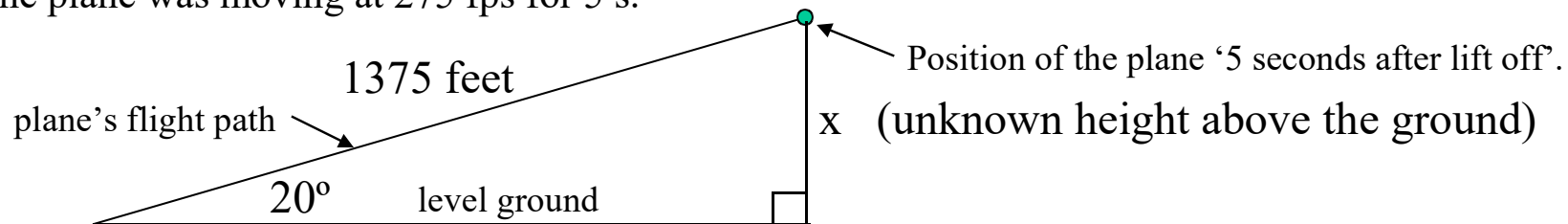
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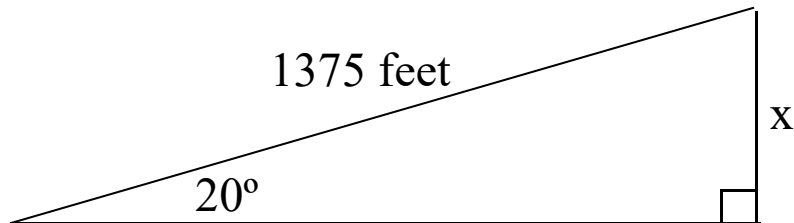
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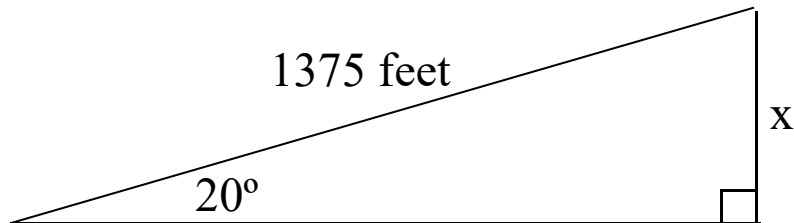
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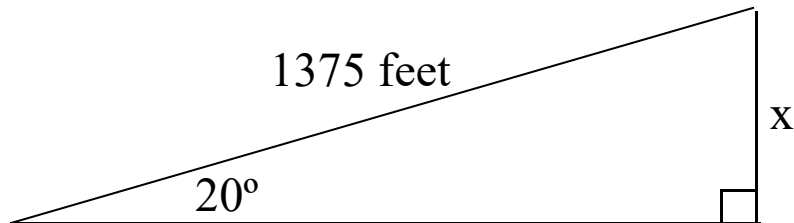
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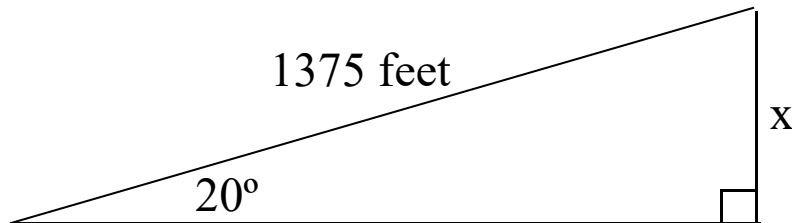
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Can you figure that out yourself before you advance to the next slides?

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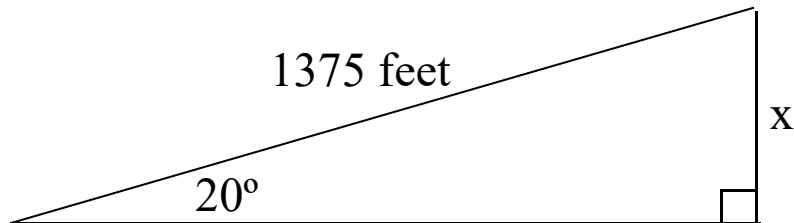
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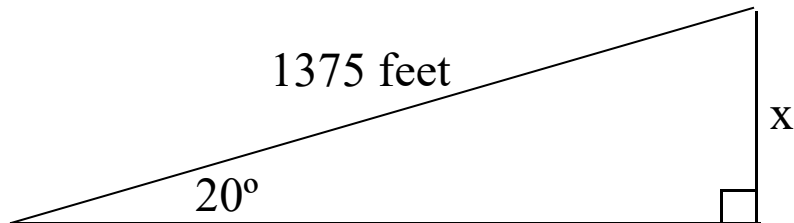
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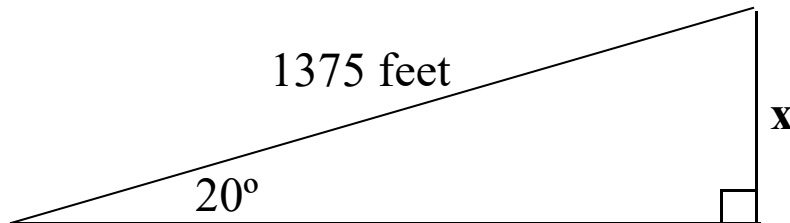
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The unknown distance,  $x$ ,

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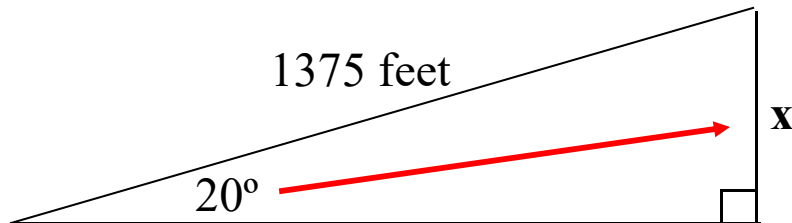
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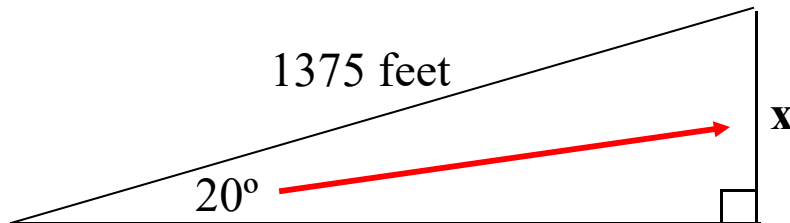
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The unknown distance,  $x$ , is the length of the **leg opposite** the  $20^\circ$  angle.

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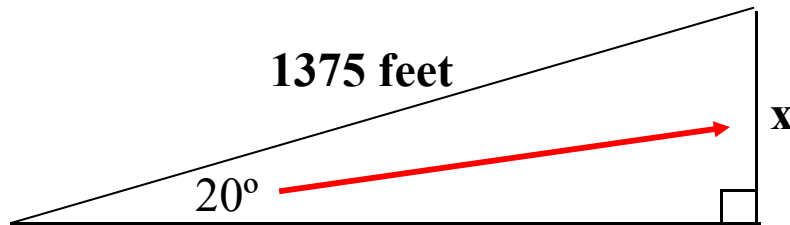
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The unknown distance,  $x$ , is the length of the **leg opposite** the  $20^\circ$  angle.

The distance the plane flew along its flight path, 1375 feet,

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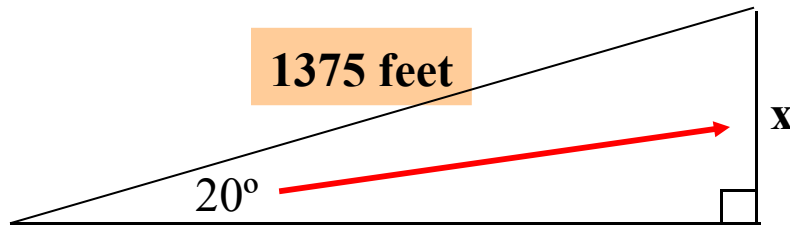
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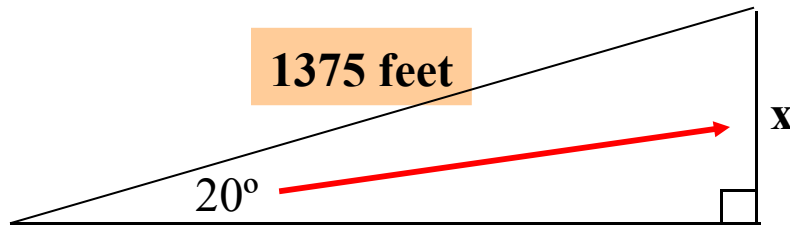
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The unknown distance,  $x$ , is the length of the **leg opposite** the  $20^\circ$  angle.

The distance the plane flew along its flight path, 1375 feet, is the length of the **hypotenuse**.

Step 2: **Determine which trigonometric ratio applies** and write an equation.

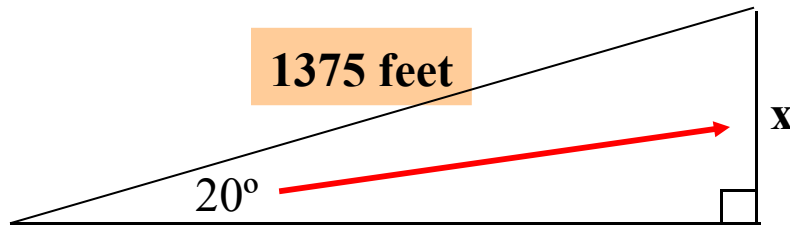
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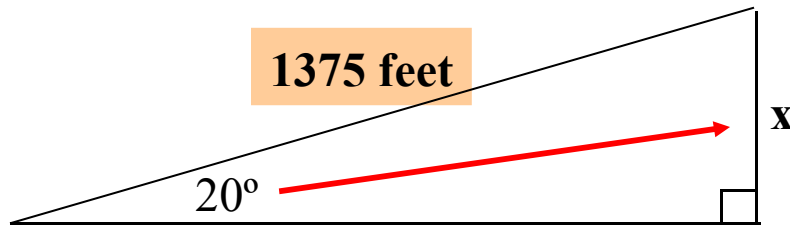
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The unknown distance,  $x$ , is the length of the **leg opposite** the  $20^\circ$  angle.

The distance the plane flew along its flight path, 1375 feet, is the length of the **hypotenuse**.

Therefore, the **sine ratio** should be used.

**Step 2:** Determine which trigonometric ratio applies and write an equation.



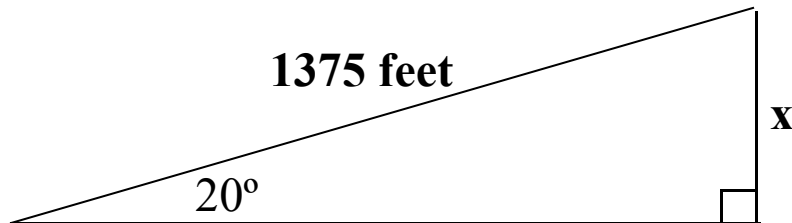
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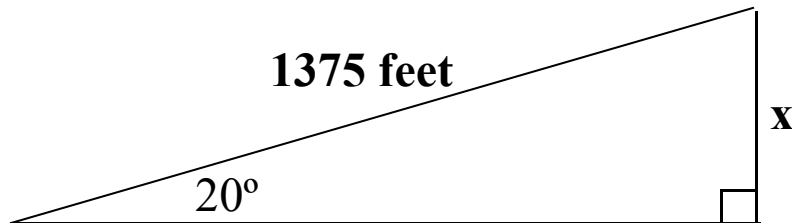
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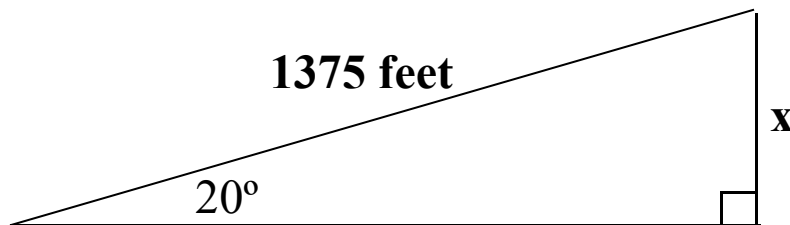
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Sine ratio  $\rightarrow$   $\frac{\text{Opposite leg}}{\text{Hypotenuse}}$

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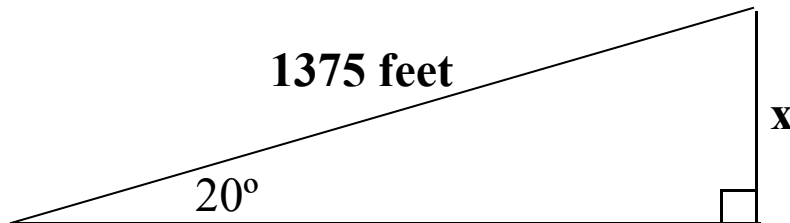
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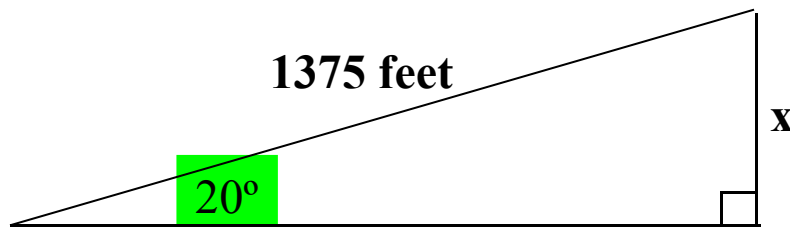
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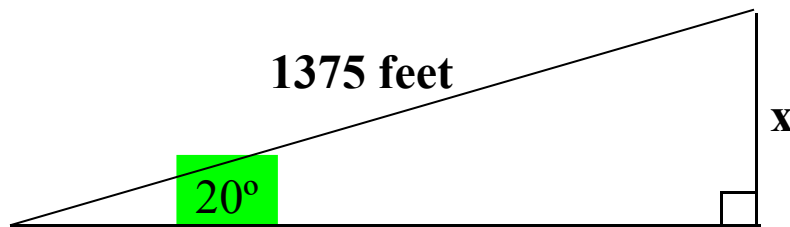
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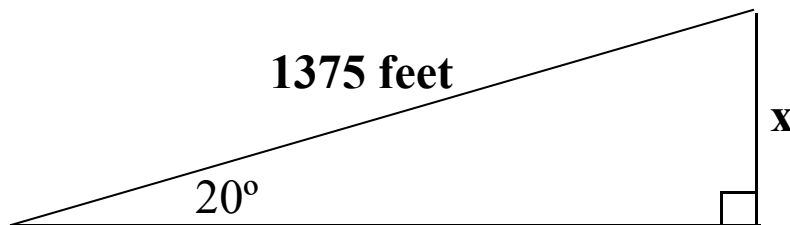
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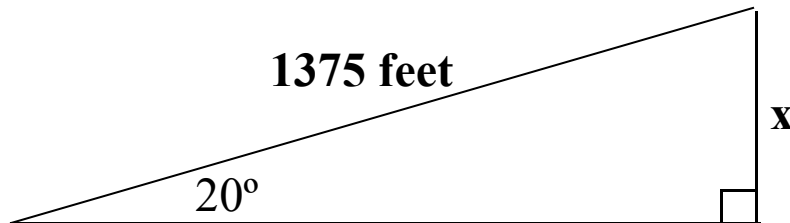
# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

**SOH - CAH - TOA**

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An airplane takes off on level ground with a constant speed of 275 feet per second. If its flight path makes an angle of 20 degrees with the ground, then how high above the ground will it be 5 seconds after 'lift off'?



Sine ratio →  $\frac{\text{Opposite leg}}{\text{Hypotenuse}}$

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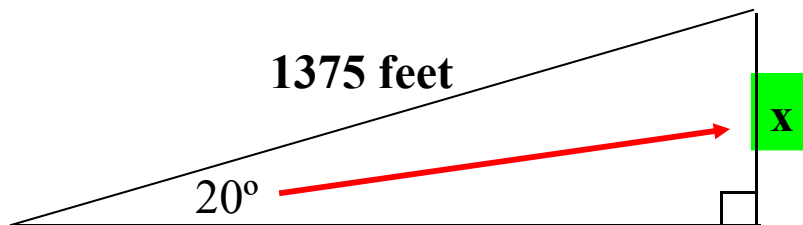
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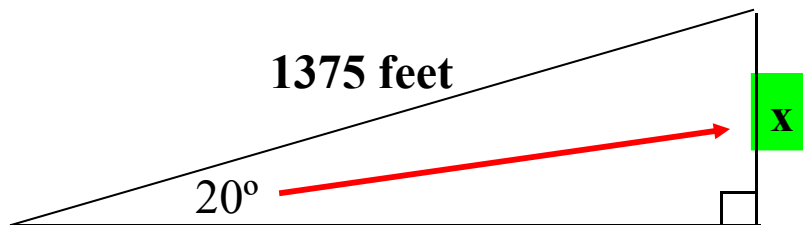
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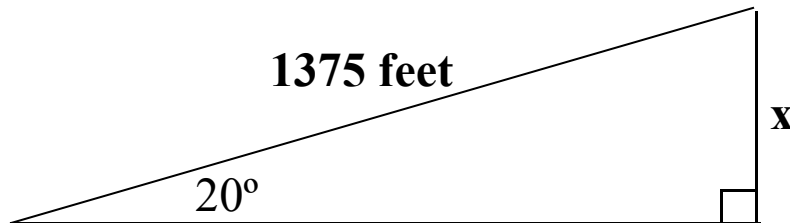
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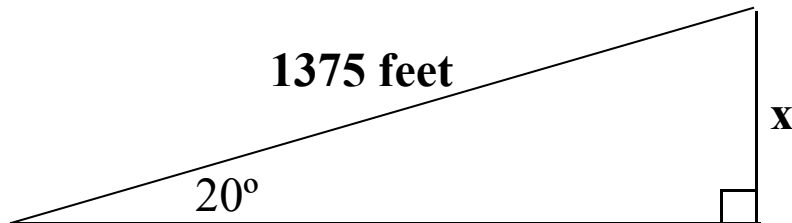
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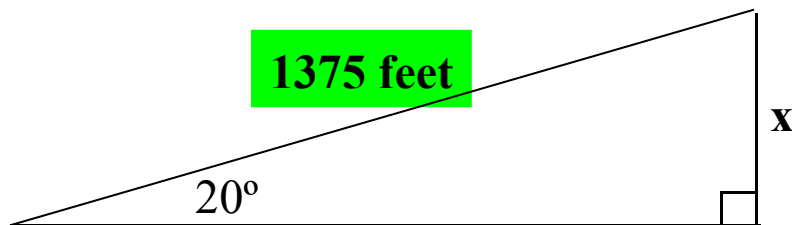
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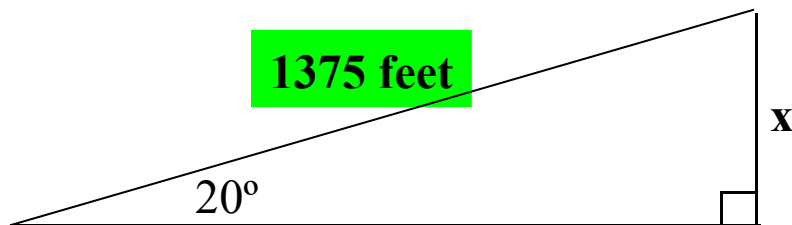
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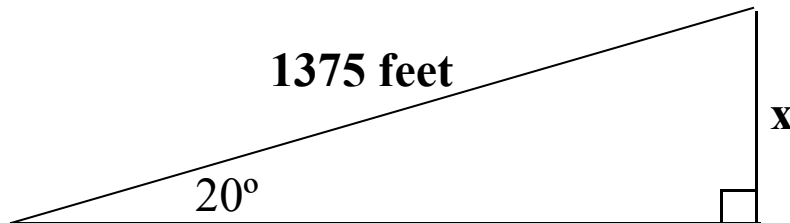
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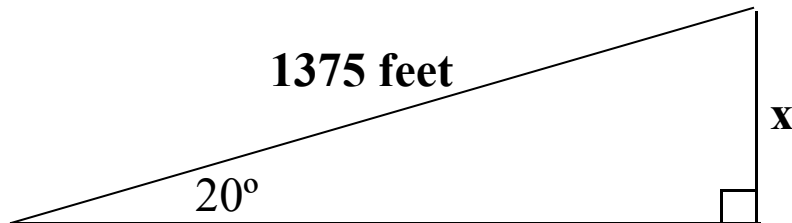
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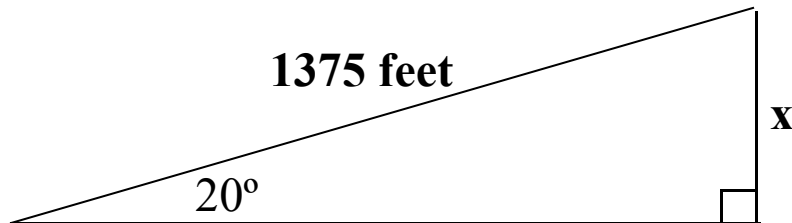
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**Step 3: Solve for x and answer the question.**

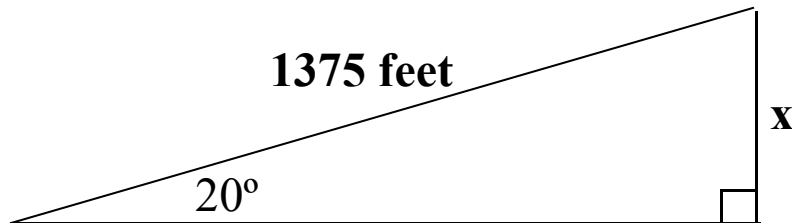
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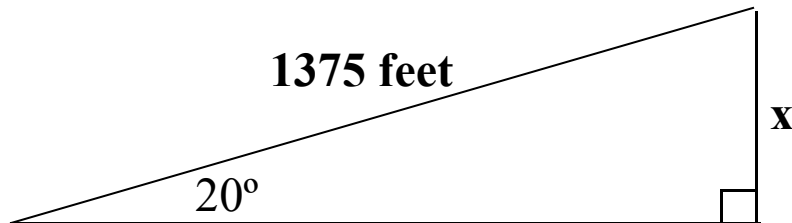
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Multiply both sides of the equation by 1375.

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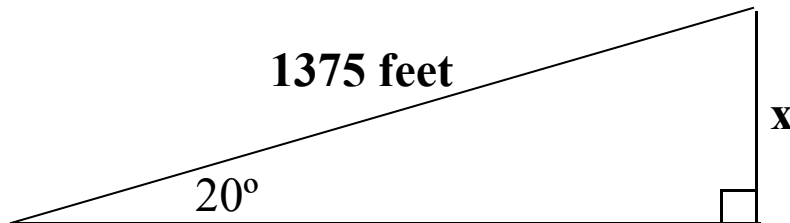
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$$x =$$

Multiply both sides of the equation by 1375.

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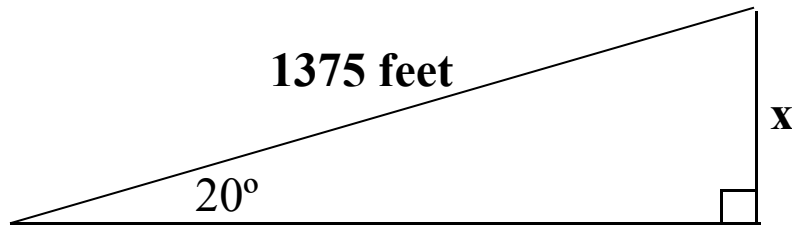
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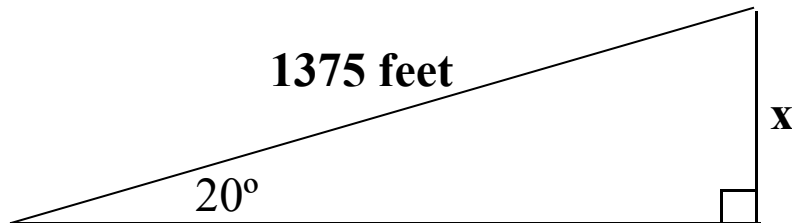
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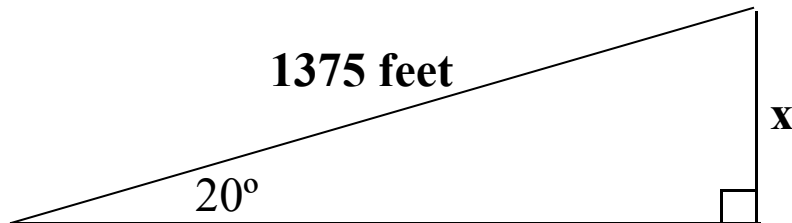
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$$\sin(20^\circ) = \frac{x}{1375}$$

$$x = 1375 \sin(20^\circ) \approx 470$$

Step 3: **Solve for x** and answer the question.

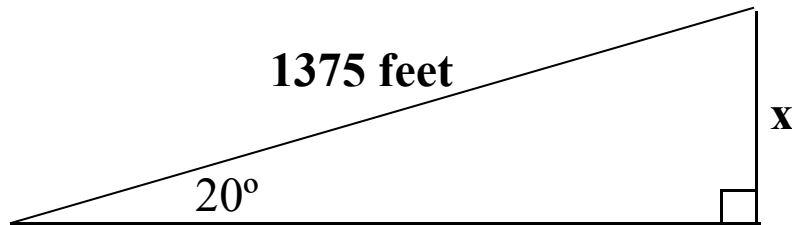
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I rounded off to three significant figures.

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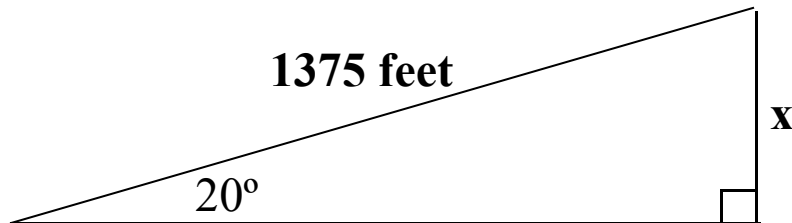
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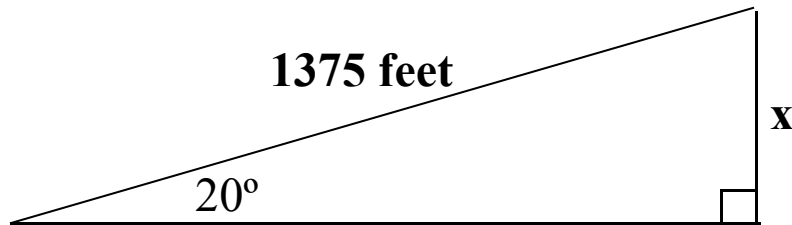
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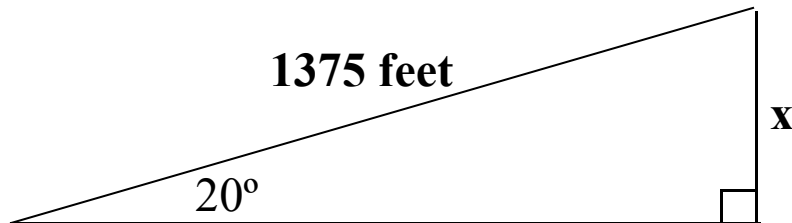
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$$x = 1375 \sin(20^\circ) \approx 470$$

The plane will be about 470 feet above the ground.

Step 3: Solve for x and answer the question.

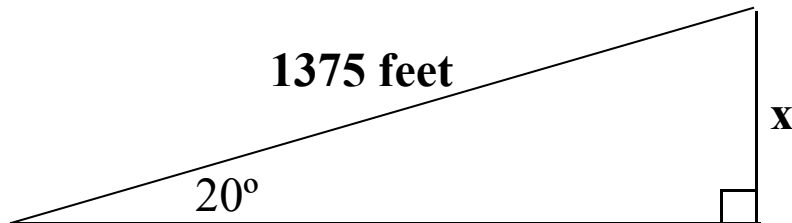
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## Part 2 : Applying the Right Triangle Trigonometric Ratios

**SOH - CAH - TOA**

**Sample Problem #2**



# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

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### Sample Problem #2

A ladder that is 18 feet long leans up against a vertical wall.

# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

**SOH - CAH - TOA**

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A ladder that is 18 feet long leans up against a vertical wall. If the foot of the ladder is 5 feet from the wall on level ground,

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**Step 1: Sketch a right triangle showing the key parts of the problem.**

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Once again, see what you can do before you move on to the next slide.

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\_\_\_\_\_ level ground

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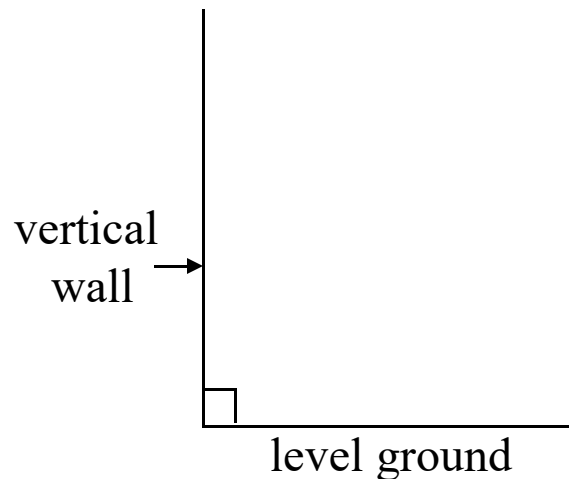
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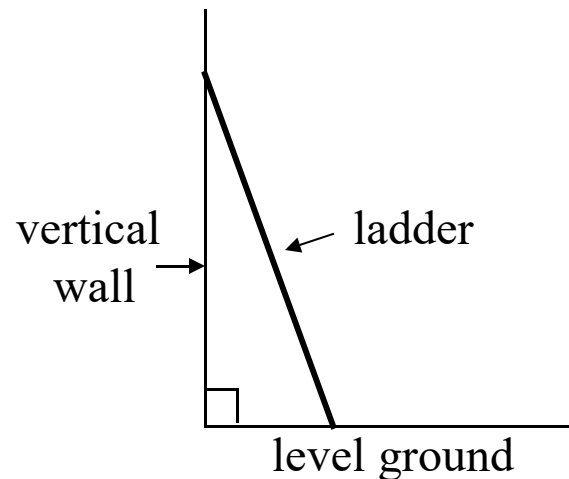
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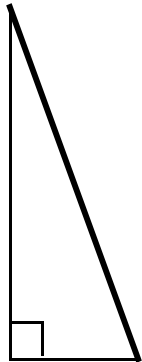
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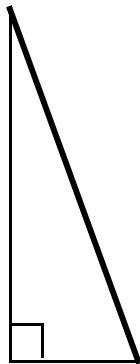
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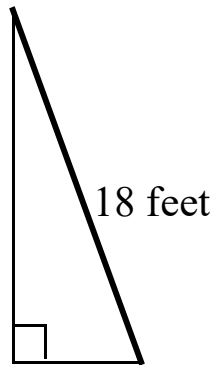
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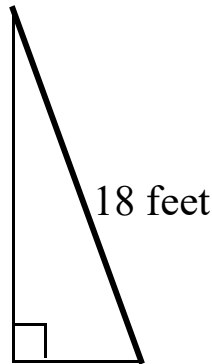
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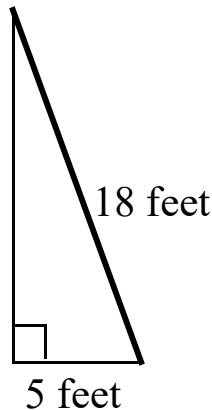
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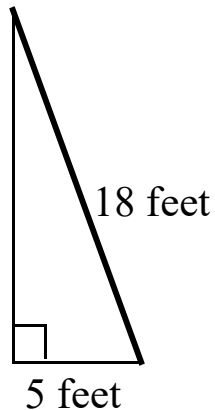
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The ladder is 18 feet long.

The foot of the ladder is 5 feet from the wall.

We are asked to find the angle between the ladder and the ground.

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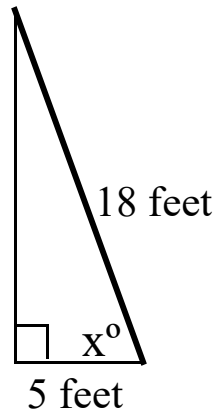
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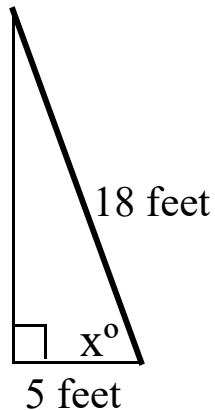
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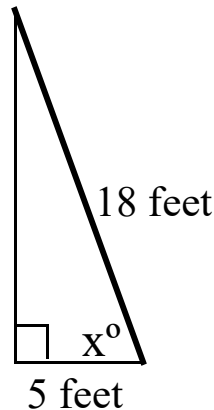
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**Step 2: Determine which trigonometric ratio applies and write an equation.**

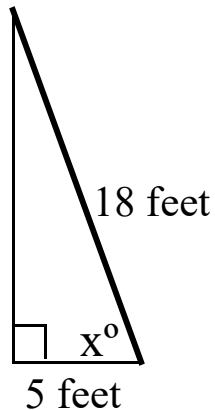
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Remember to try it yourself first.

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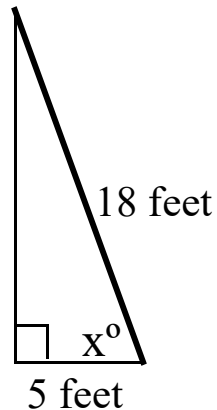
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**SOH - CAH - TOA**

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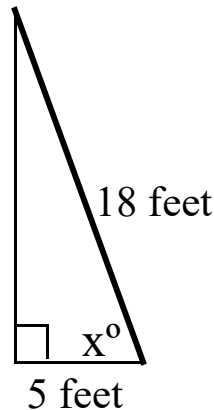
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**SOH - CAH - TOA**

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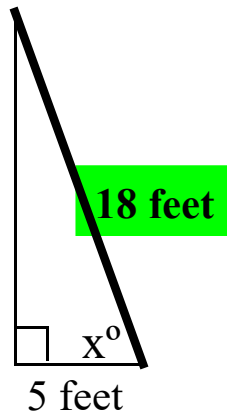
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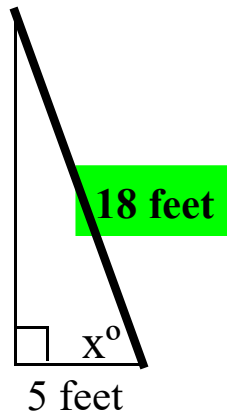
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The **hypotenuse** of the triangle is 18 feet long.

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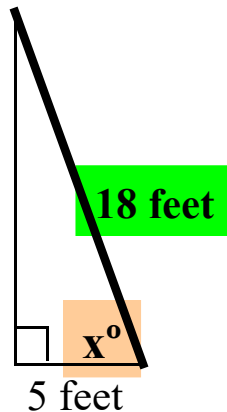
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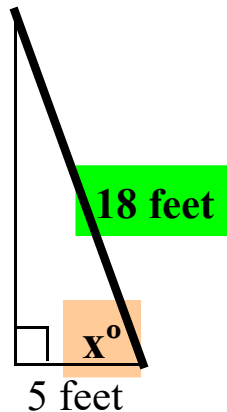
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We are asked to find one of the acute angles.

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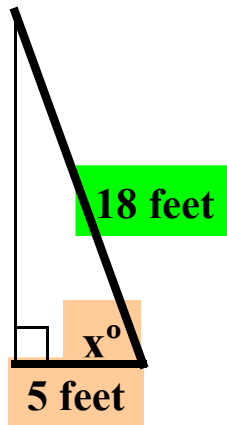
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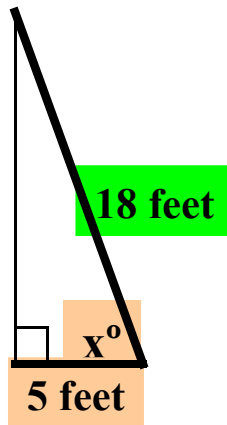
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We are asked to find one of the acute angles.

We are given the length of the **leg adjacent** to that angle.

**Step 2: Determine which trigonometric ratio applies and write an equation.**



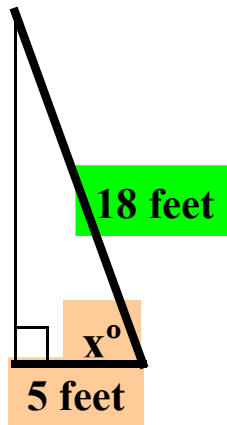
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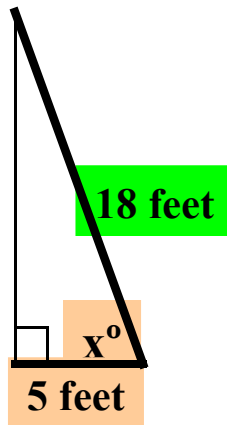
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The **hypotenuse** of the triangle is 18 feet long.

We are asked to find one of the acute angles.

We are given the length of the **leg adjacent** to that angle.

Therefore, the **cosine ratio** should be used.

**Step 2: Determine which trigonometric ratio applies and write an equation.**

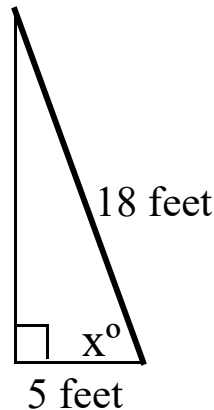
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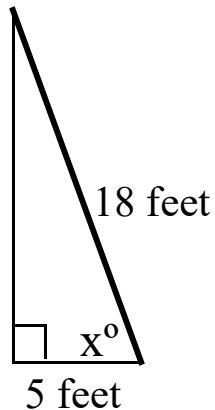
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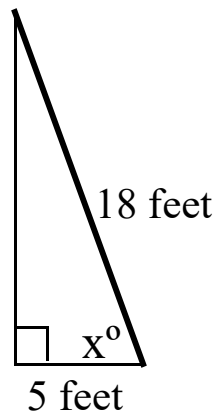
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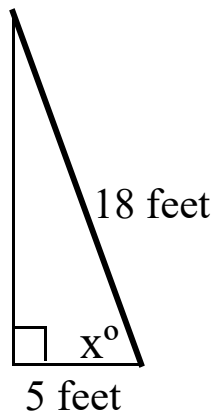
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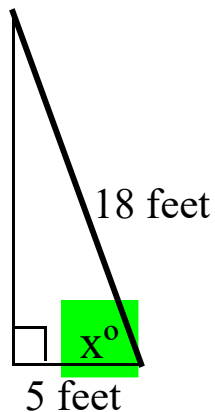
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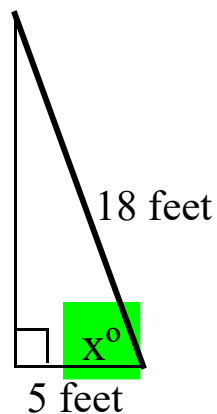
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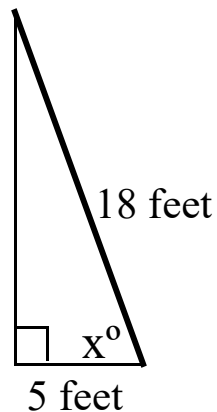
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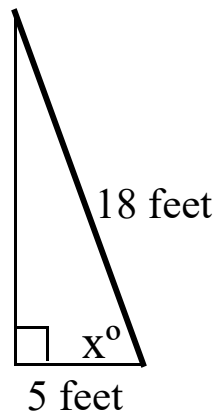
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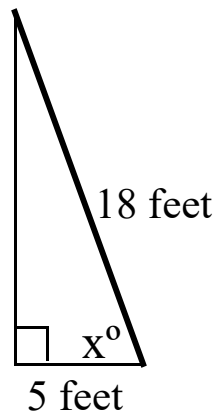
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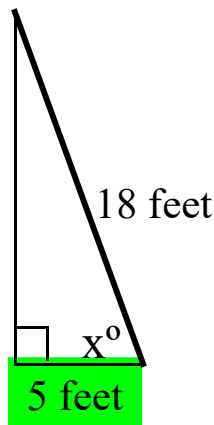
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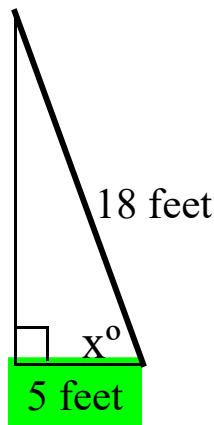
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$$\cos x^\circ = \frac{5}{18}$$

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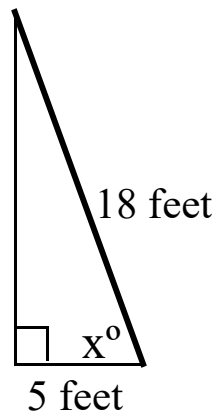
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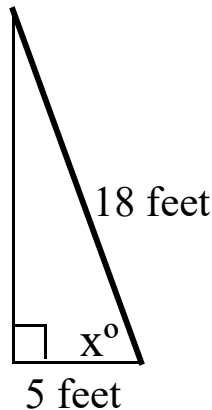
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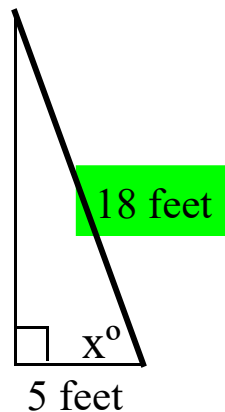
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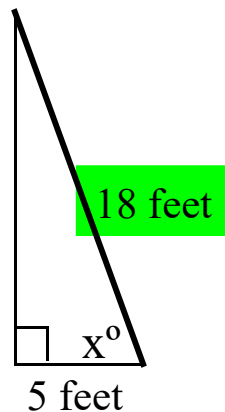
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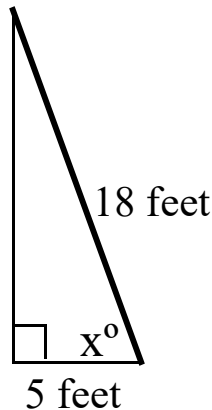
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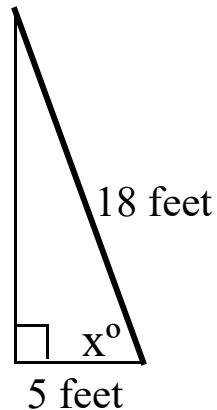
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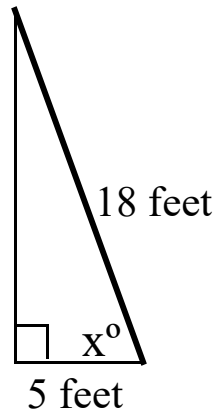
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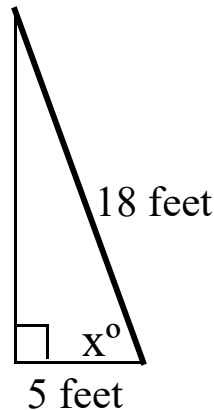
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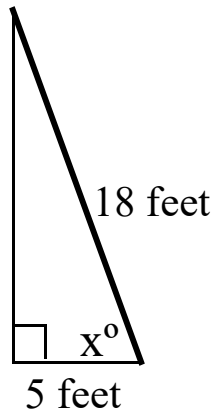
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You may need some help with this.



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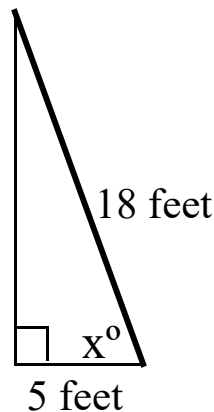
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You may need some help with this.

In this case, we know the cosine of the angle, and we need the angle measure.

Step 3: **Solve for x** and answer the question.

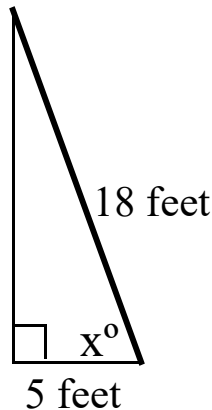
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You may need some help with this.

In this case, we know the cosine of the angle, and we need the angle measure.

That is, we need the measure of the **acute angle whose cosine is 5/18**.

**Step 3: Solve for x and answer the question.**



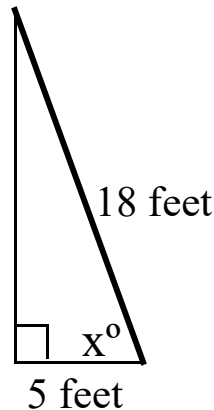
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That is, we need the measure of the acute angle whose cosine is  $\frac{5}{18}$ .

Step 3: **Solve for x** and answer the question.

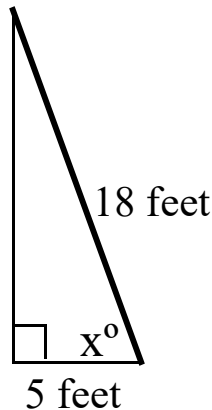
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That is, we need the measure of the **acute angle whose cosine is 5/18**.

The calculator function that we need to use is called the **inverse cosine function**.

Step 3: **Solve for x** and answer the question.

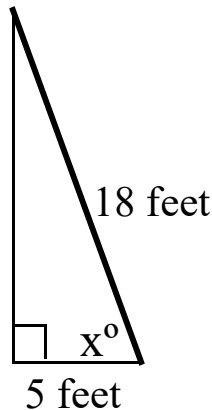
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That is, we need the measure of the **acute angle whose cosine is 5/18**.

Most calculators have this as a **'second function'** of the cosine button.

**Step 3: Solve for x and answer the question.**

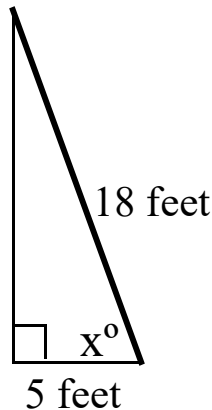
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That is, we need the measure of the **acute angle whose cosine is 5/18**.

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**Step 3: Solve for x and answer the question.**

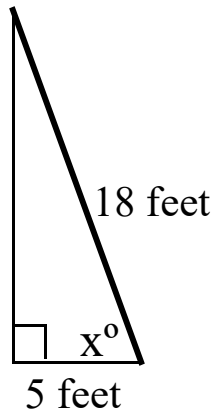
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That is, we need the measure of the **acute angle whose cosine is 5/18**.

Most calculators have this as a **'second function'** of the cosine button. The symbol looks like this  $\cos^{-1}$ . This is the correct way of writing the notation when you **'solve for x'**.

**Step 3: Solve for x and answer the question.**

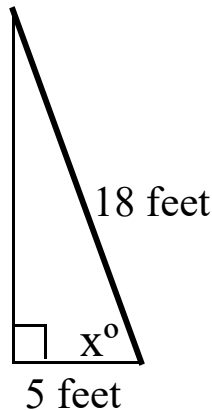
# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

### SOH - CAH - TOA

#### Sample Problem #2

A ladder that is 18 feet long leans up against a vertical wall. If the foot of the ladder is 5 feet from the wall on level ground, then what is the angle between the ladder and the ground?



$$\cos x^\circ = \frac{5}{18}$$

$x =$

That is, we need the measure of the **acute angle whose cosine is 5/18**.

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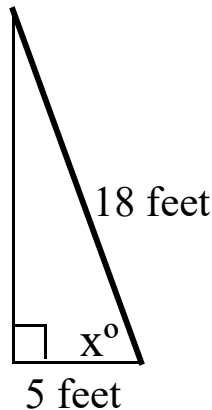
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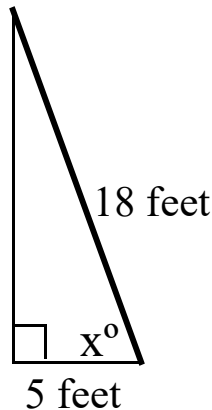
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$$\cos x^\circ = \frac{5}{18}$$
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That is, we need the measure of the **acute angle whose cosine is 5/18**.

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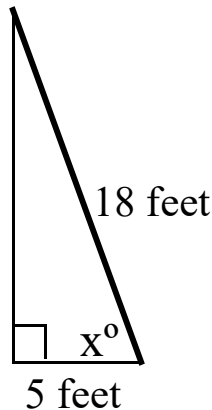
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That is, we need the measure of the acute angle whose cosine is  $5/18$ .

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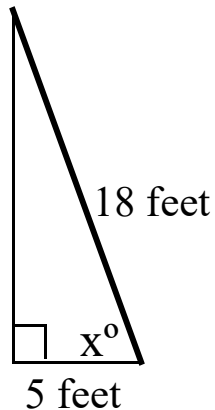
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Make sure your calculator is in degree mode.

Step 3: Solve for x and answer the question.

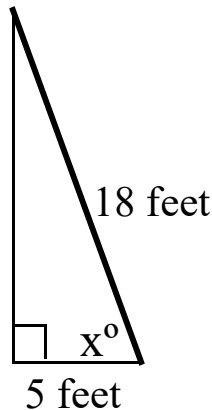
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$$\cos x^\circ = \frac{5}{18}$$

$$x = \cos^{-1}(5/18) \approx 73.9^\circ$$

That is, we need the measure of the acute angle whose cosine is 5/18.

Make sure your calculator is in degree mode. You should get this.

Step 3: **Solve for x** and answer the question.

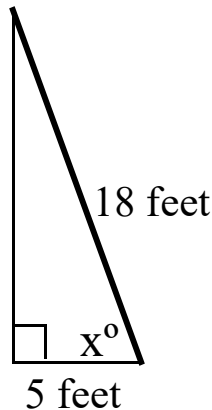
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That is, we need the measure of the acute angle whose cosine is 5/18.

Make sure your calculator is in degree mode. You should get this.

Once again, I rounded to three significant digits.

Step 3: Solve for x and answer the question.

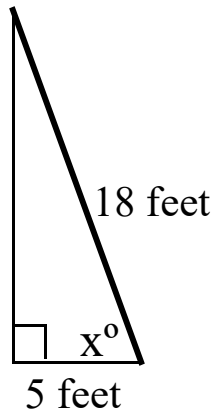
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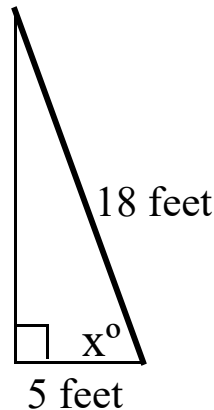
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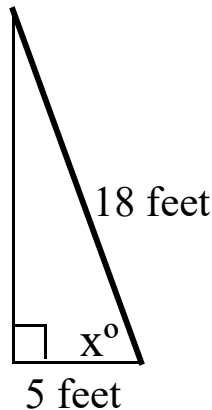
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$$x = \cos^{-1}(5/18) \approx 73.9^\circ$$

The angle is about 73.9 degrees.

Step 3: Solve for x and **answer the question.**

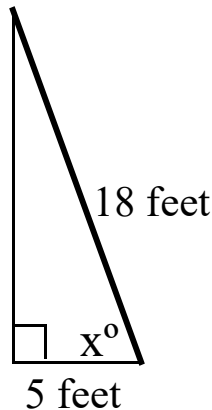
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**The angle is about 73.9 degrees.**



# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

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**Sample Problem #3**



# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

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### Sample Problem #3

The shadow of a flag pole on level ground is 64 feet long

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## Part 2 : Applying the Right Triangle Trigonometric Ratios

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### Sample Problem #3

The shadow of a flag pole on level ground is 64 feet long when the angle of elevation to the sun is 28 degrees.

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## Part 2 : Applying the Right Triangle Trigonometric Ratios

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### Sample Problem #3

The shadow of a flag pole on level ground is 64 feet long when the angle of elevation to the sun is 28 degrees. How tall is the flag pole?

# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

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### Sample Problem #3

The shadow of a flag pole on level ground is 64 feet long when the angle of elevation to the sun is 28 degrees. How tall is the flag pole?

**Step 1: Sketch a right triangle showing the key parts of the problem.**

# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

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### Sample Problem #3

The shadow of a flag pole on level ground is 64 feet long when the angle of elevation to the sun is 28 degrees. How tall is the flag pole?

See if you can make a sketch for this problem.

Step 1: Sketch a right triangle showing the key parts of the problem.

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level ground

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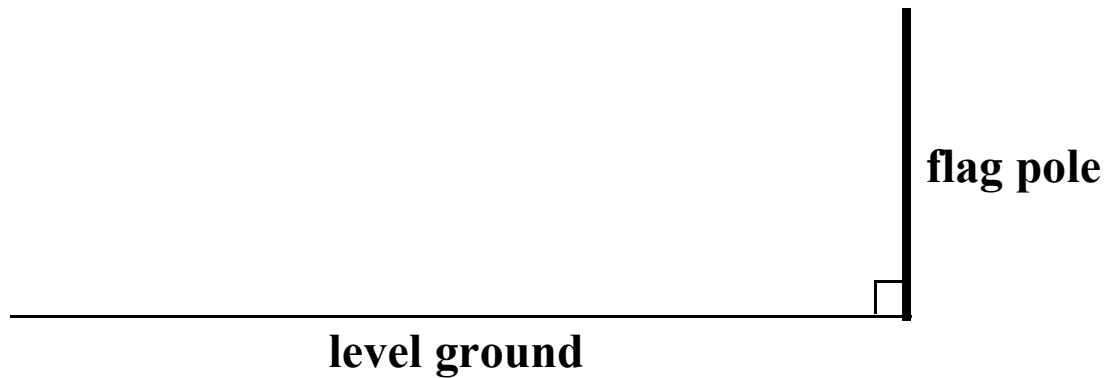
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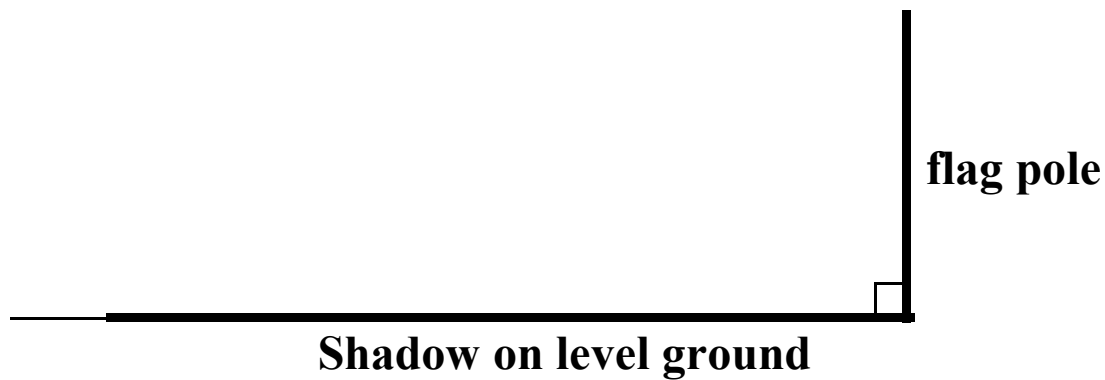
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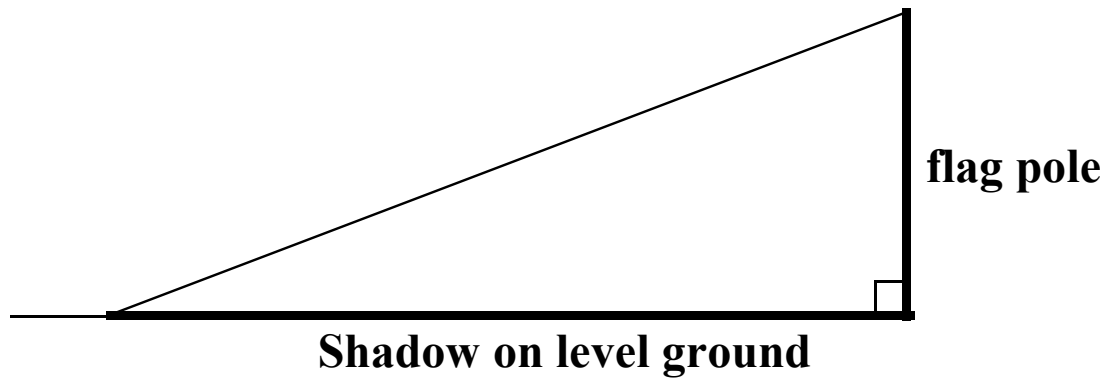
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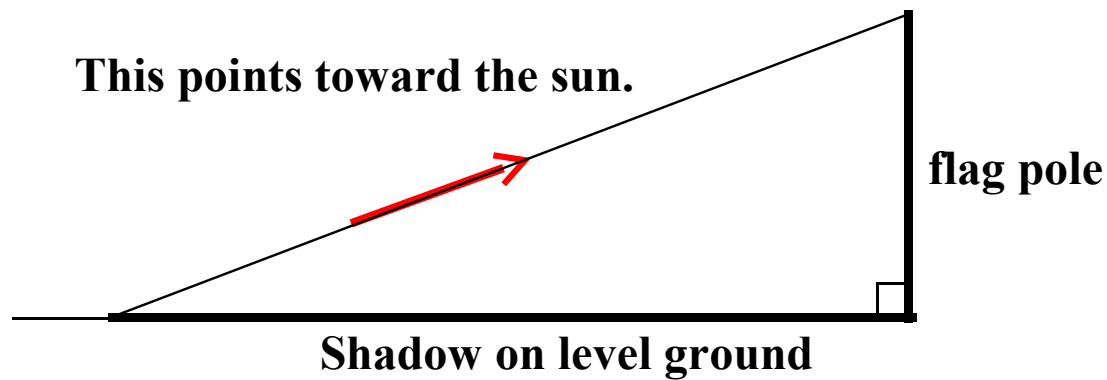
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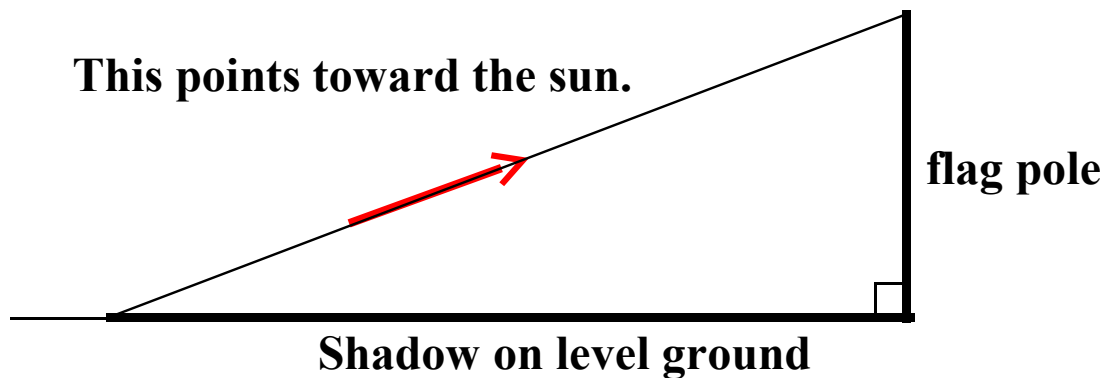
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The angle of elevation is measured from the horizontal.

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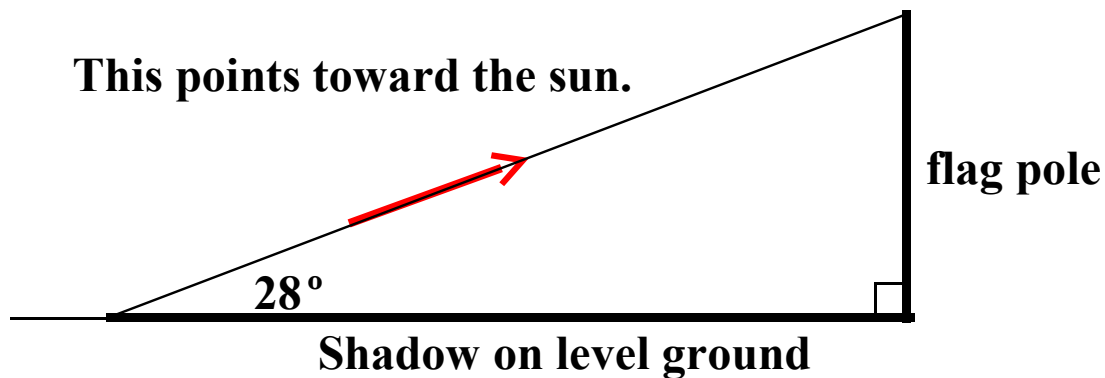
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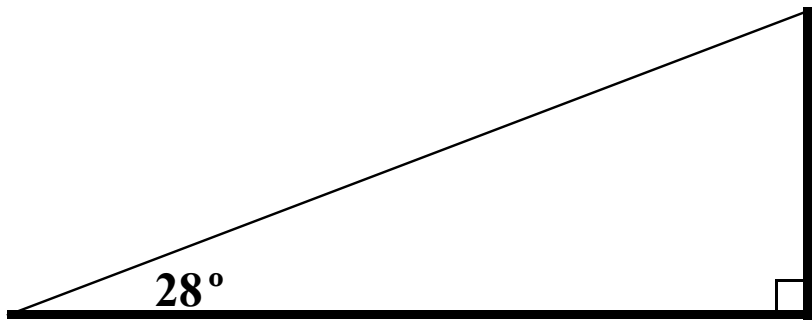
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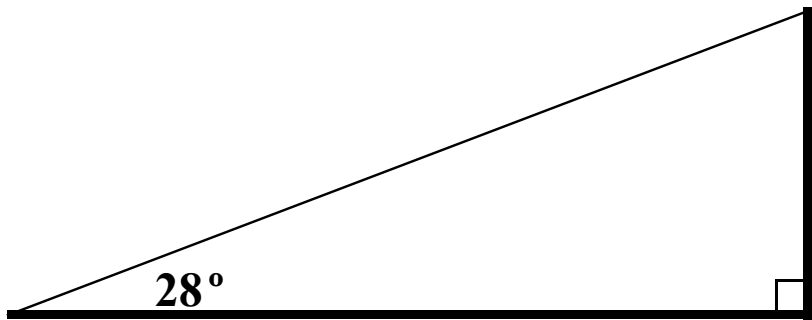
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The shadow of a flag pole on level ground is 64 feet long when the angle of elevation to the sun is 28 degrees. How tall is the flag pole?



We are asked to find the height of the flagpole.

Step 1: Sketch a right triangle showing the key parts of the problem.



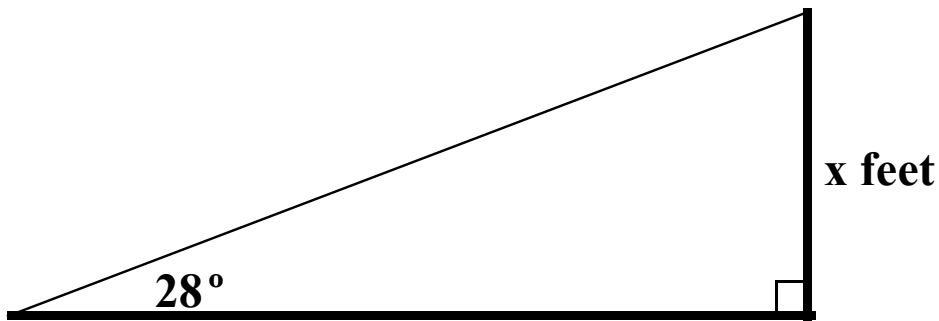
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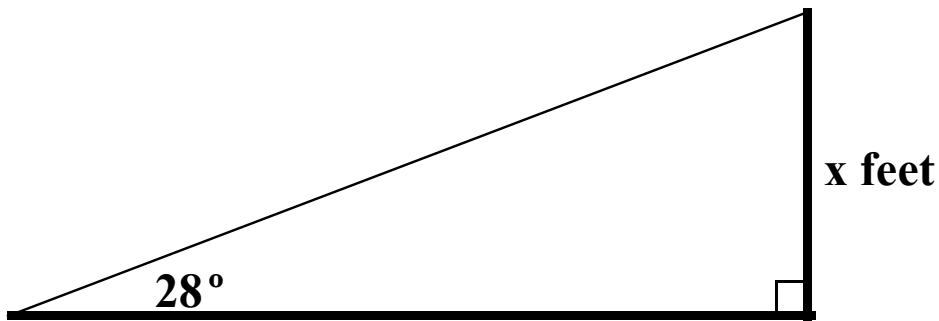
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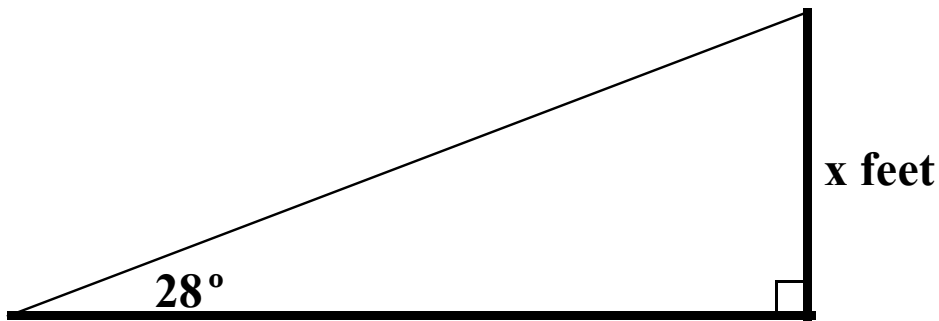
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The shadow is 64 feet long.

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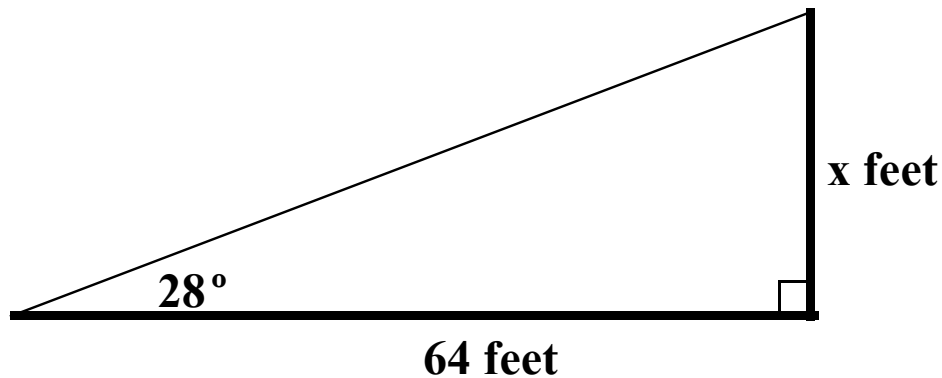
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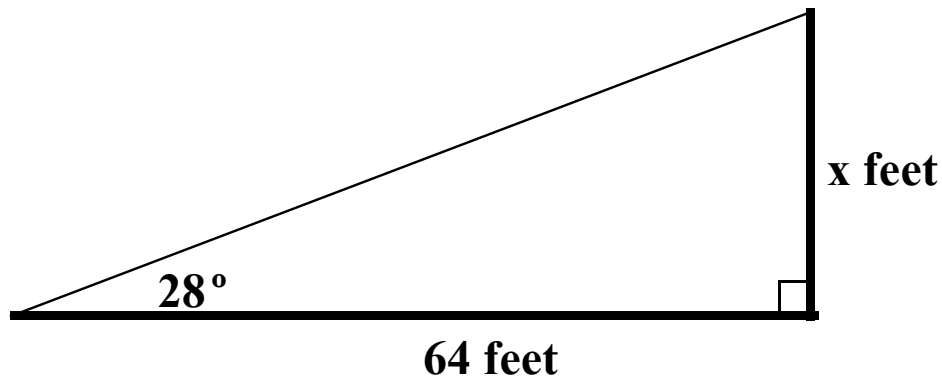
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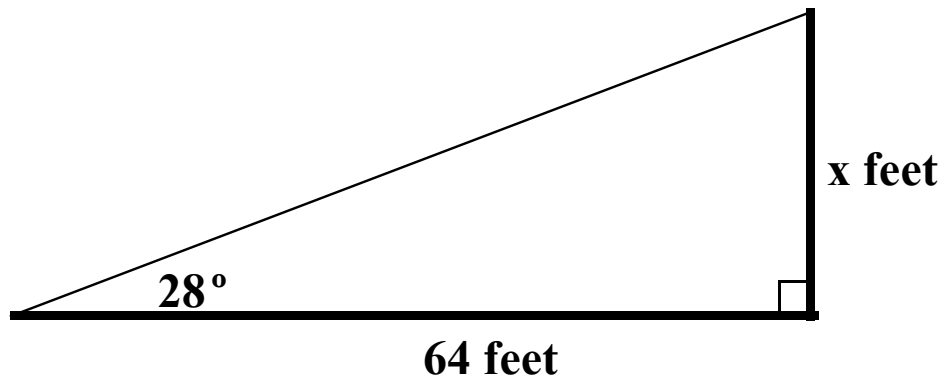
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**Step 2: Determine which trigonometric ratio applies and write an equation.**

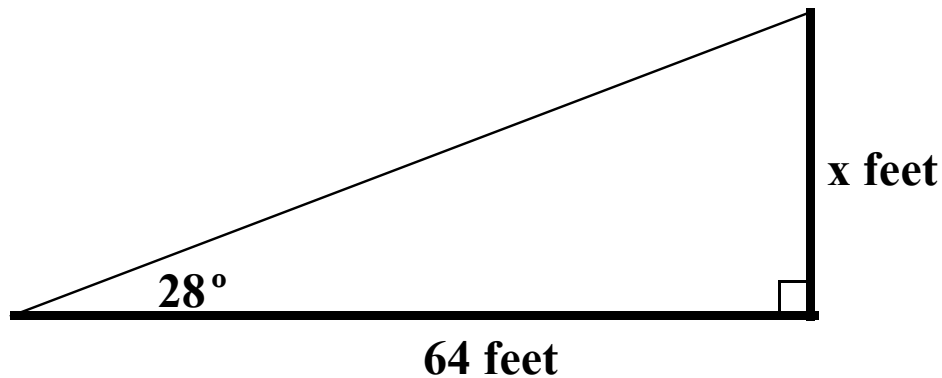
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Please try it yourself before moving on.

Step 2: Determine which trigonometric ratio applies and write an equation.

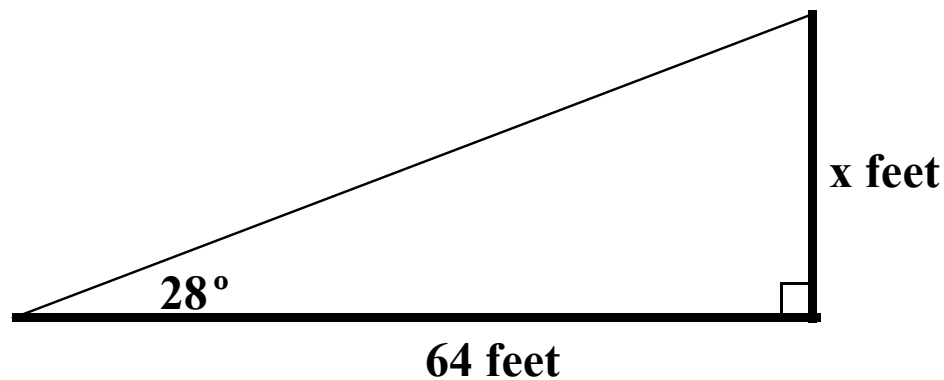
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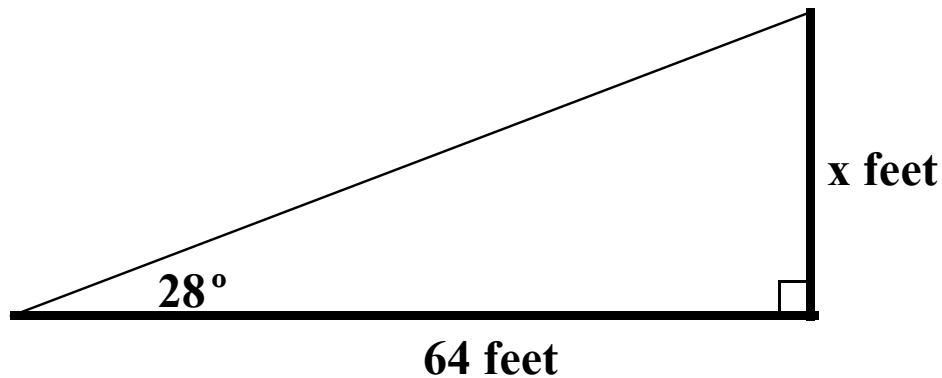
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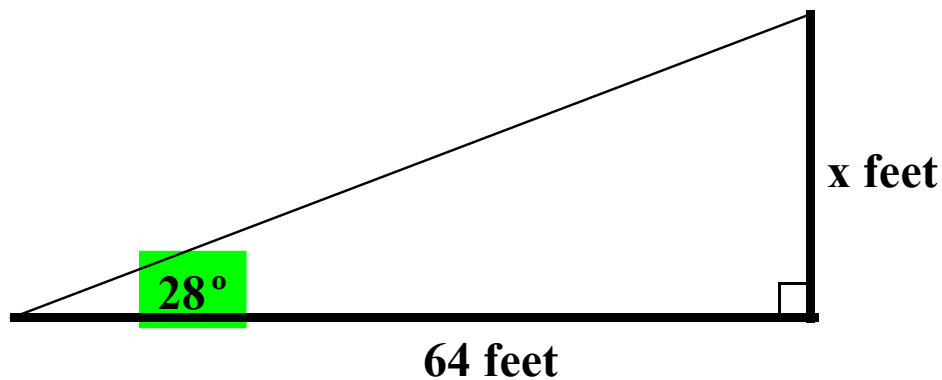
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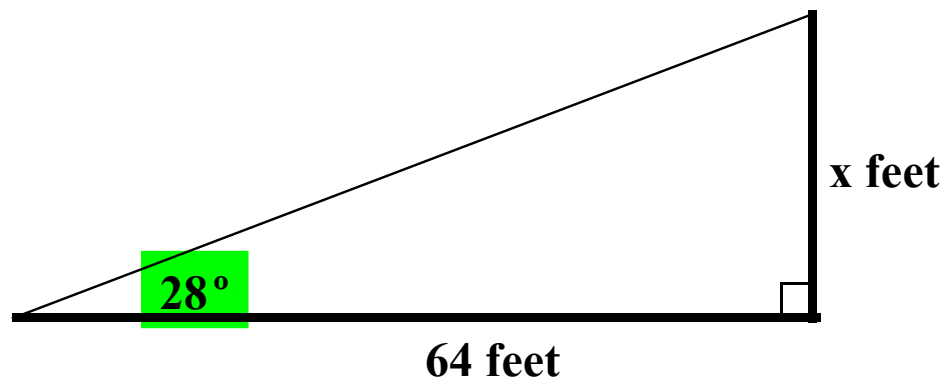
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We are given an acute angle.

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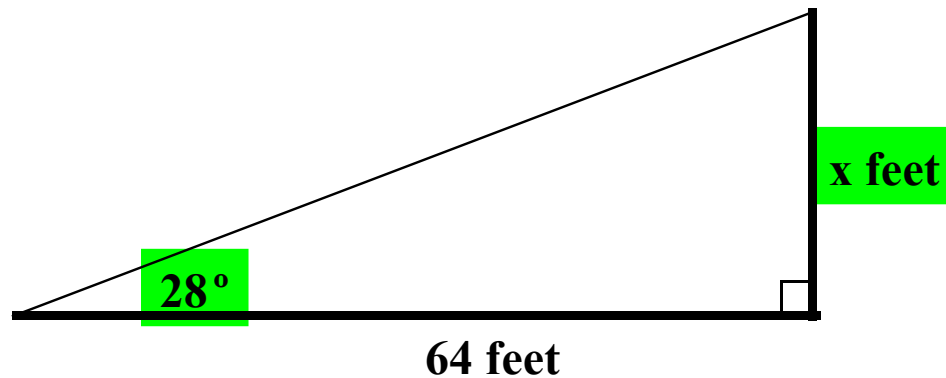
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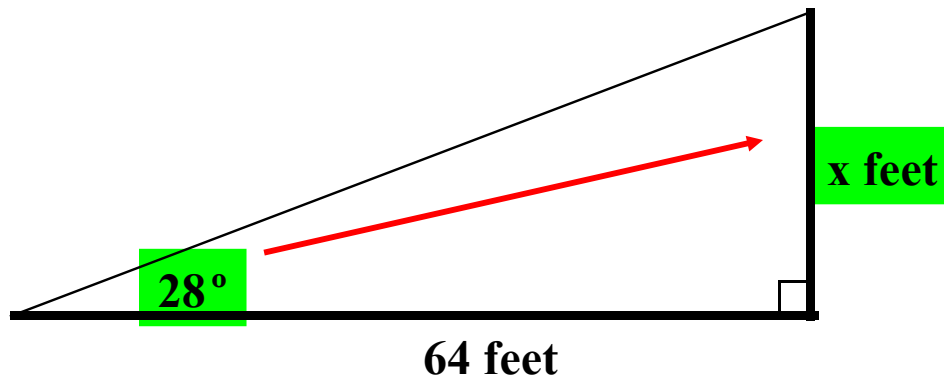
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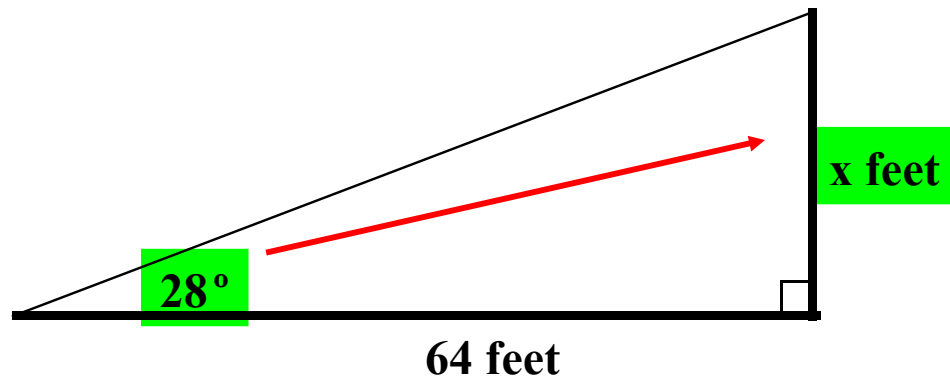
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**SOH - CAH - TOA**

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We are given an acute angle.  
We are asked to find the length of the leg opposite the angle.

Step 2: Determine which trigonometric ratio applies and write an equation.

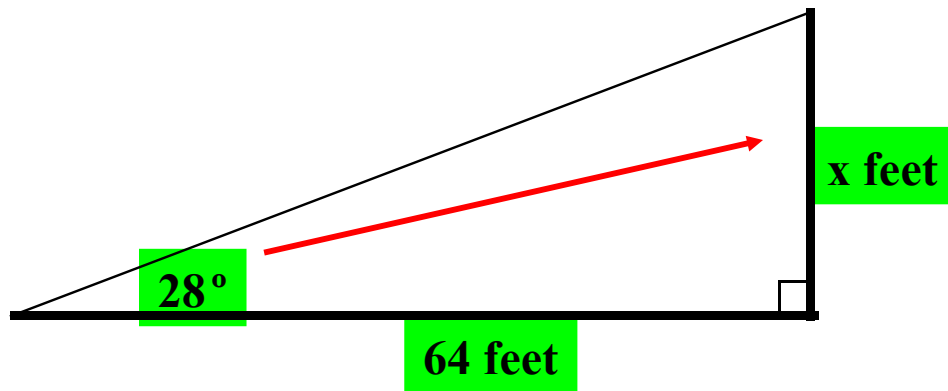
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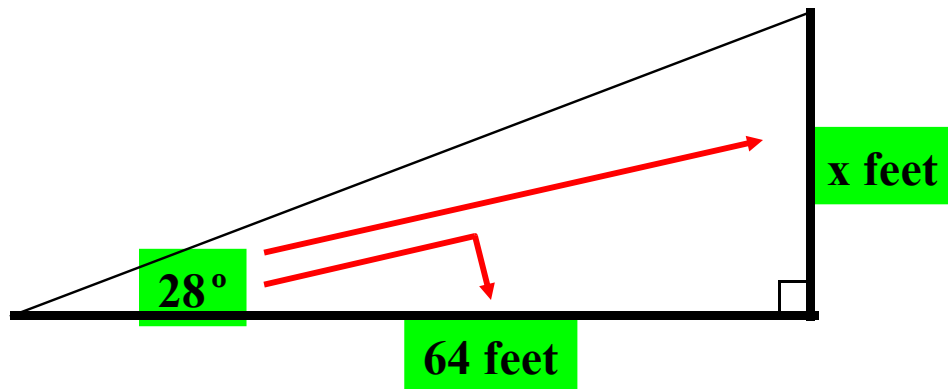
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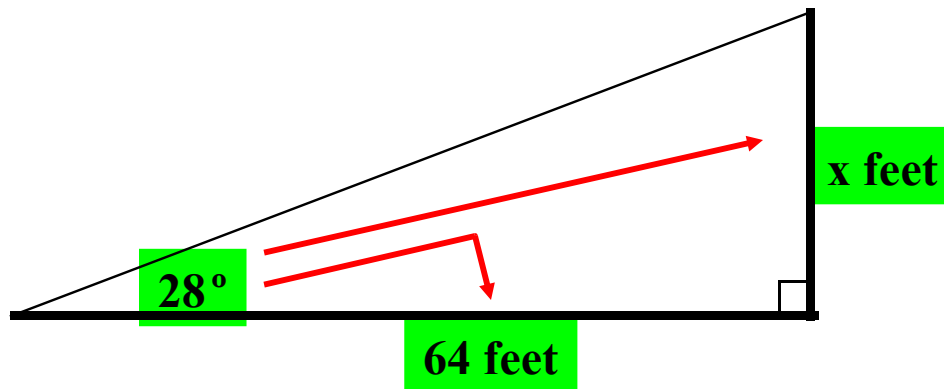
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## Part 2 : Applying the Right Triangle Trigonometric Ratios

**SOH - CAH - TOA**

### Sample Problem #3

The shadow of a flag pole on level ground is 64 feet long when the angle of elevation to the sun is 28 degrees. How tall is the flag pole?



We are given an acute angle.

We are asked to find the length of the leg opposite the angle.

We are given the length of the leg adjacent to the angle.

Step 2: Determine which trigonometric ratio applies and write an equation.

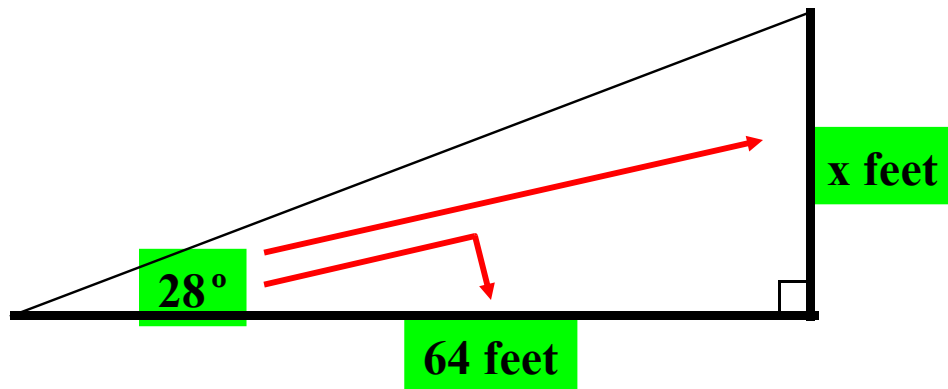
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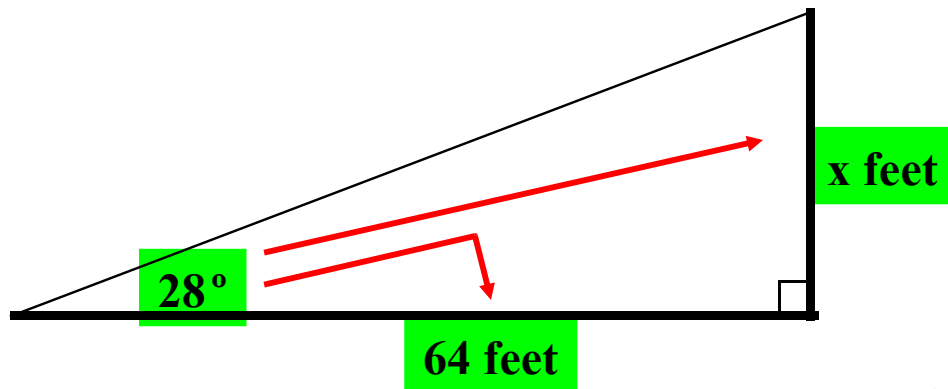
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We are given an acute angle.

We are asked to find the length of the leg opposite the angle.

We are given the length of the leg adjacent to the angle.

Therefore, the tangent ratio should be used.

Step 2: Determine which trigonometric ratio applies and write an equation.

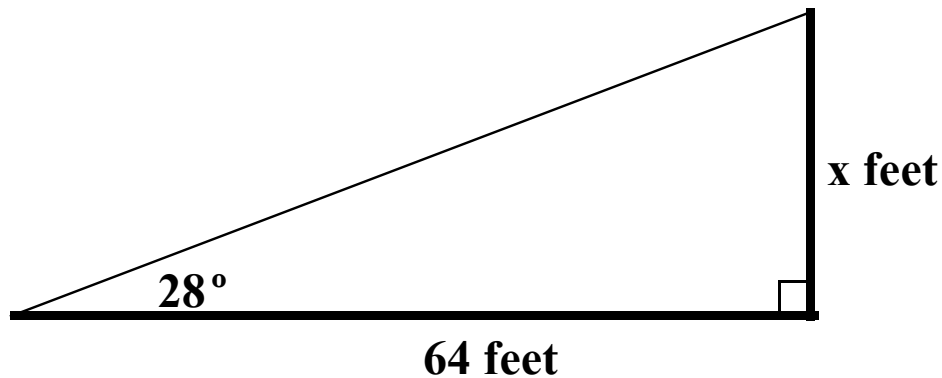
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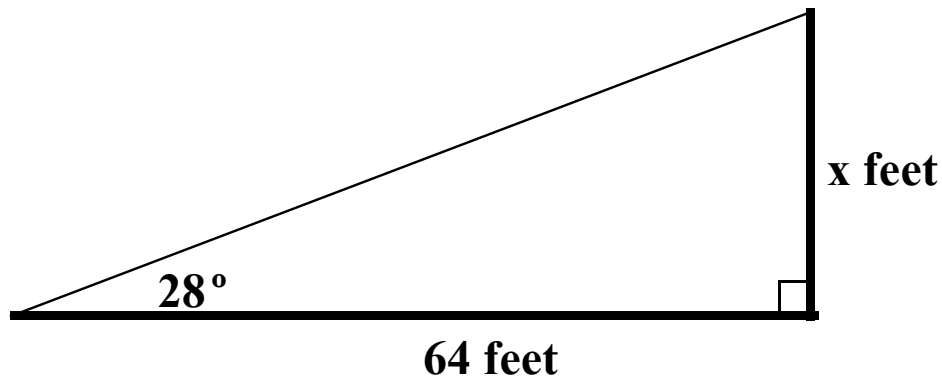
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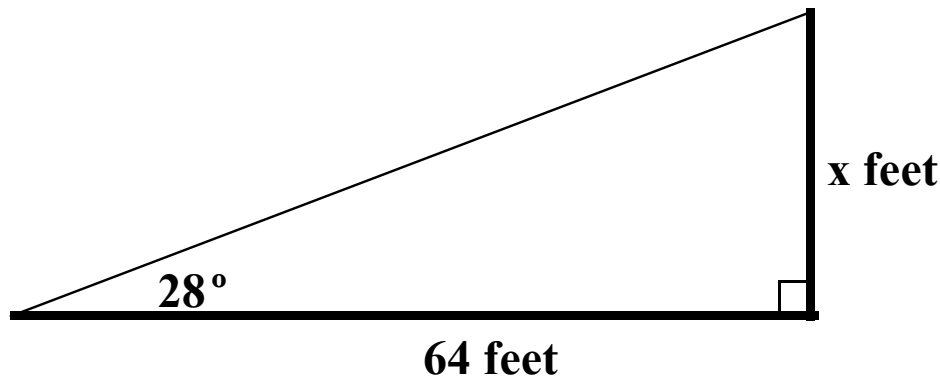
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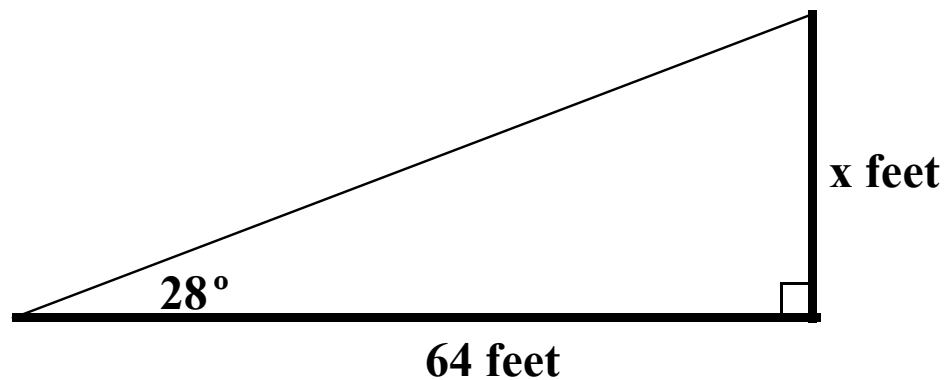
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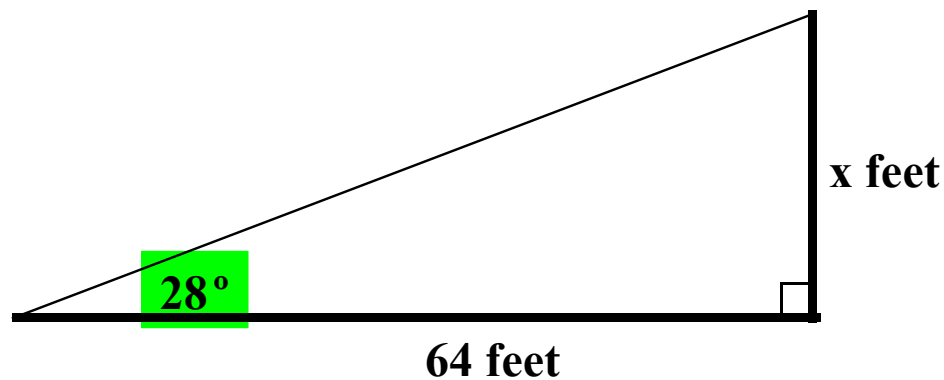
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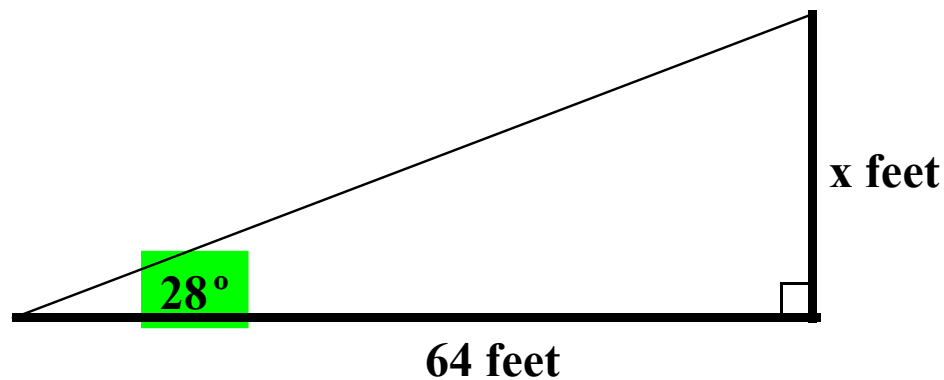
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$\text{Tan}(28^\circ)$

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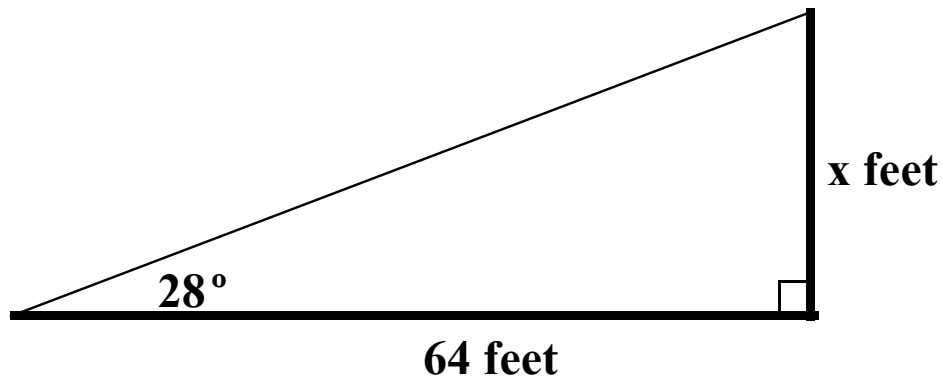
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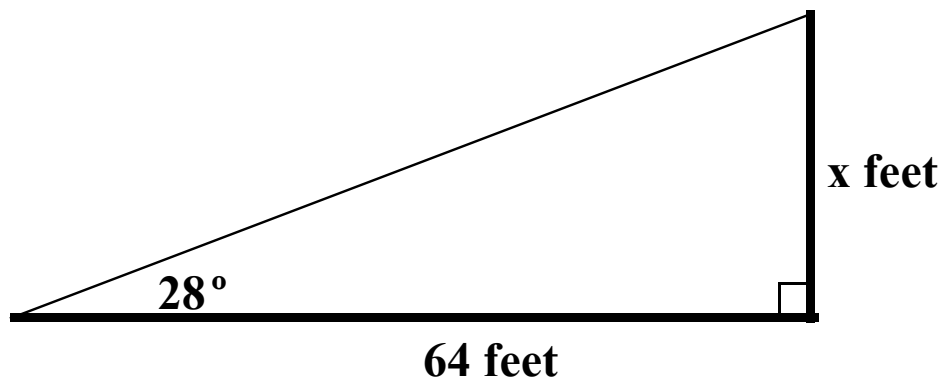
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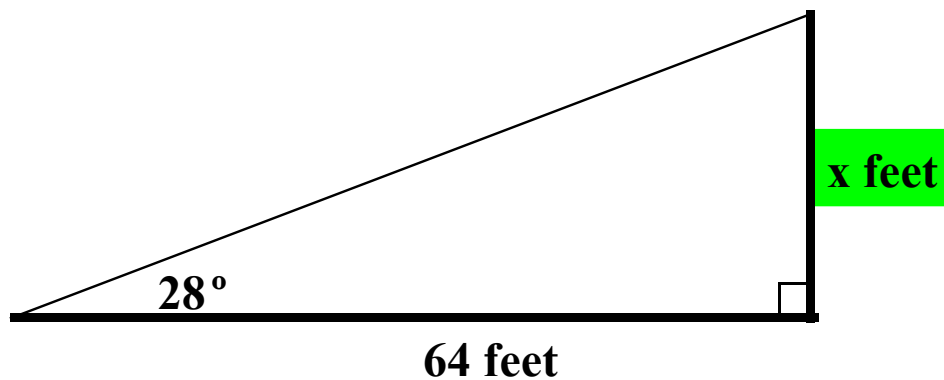
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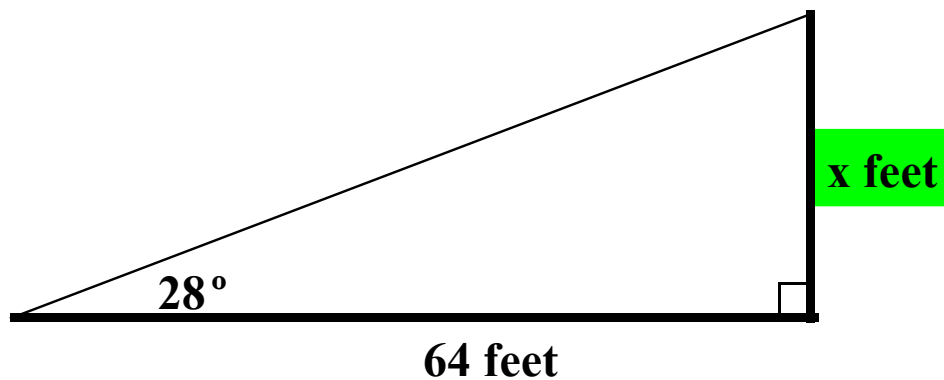
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Tangent ratio →

**Opposite leg**

Adjacent leg

$$\tan(28^\circ) = \frac{x}{64}$$

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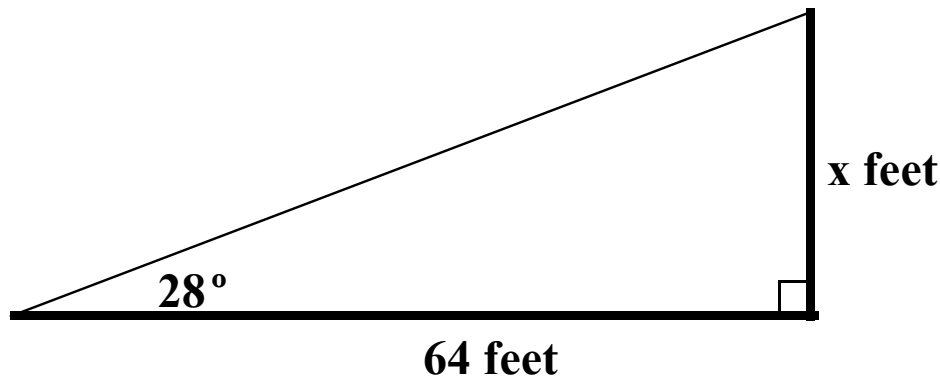
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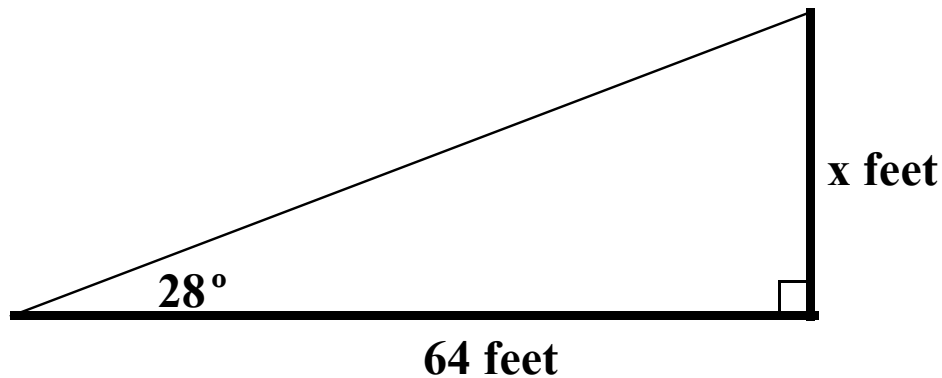
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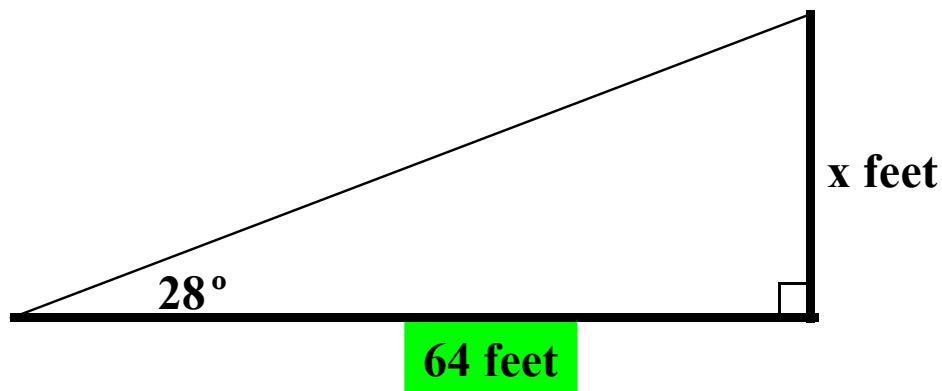
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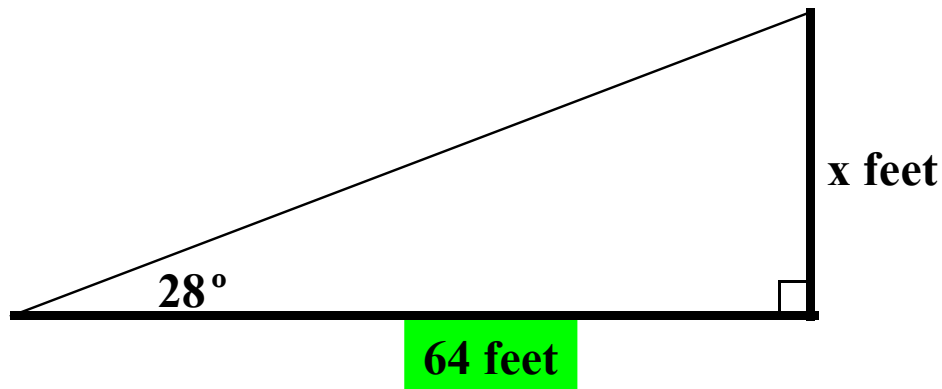
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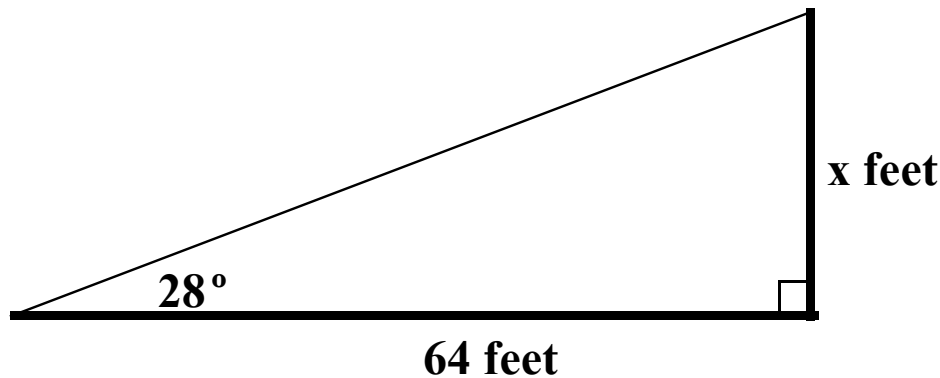
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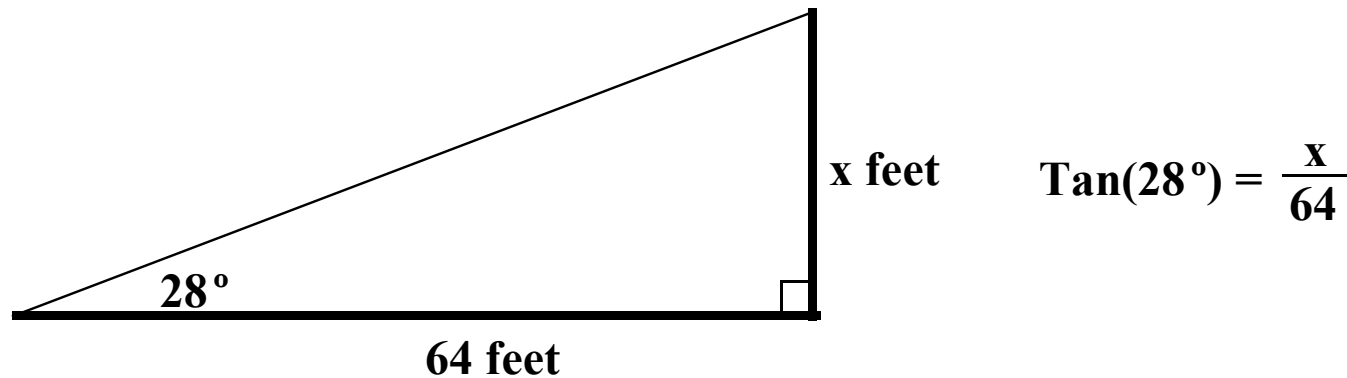
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**Step 3: Solve for x and answer the question.**

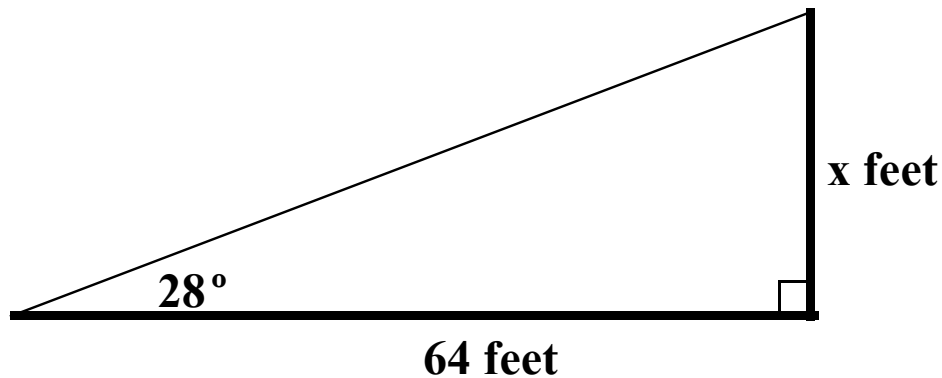
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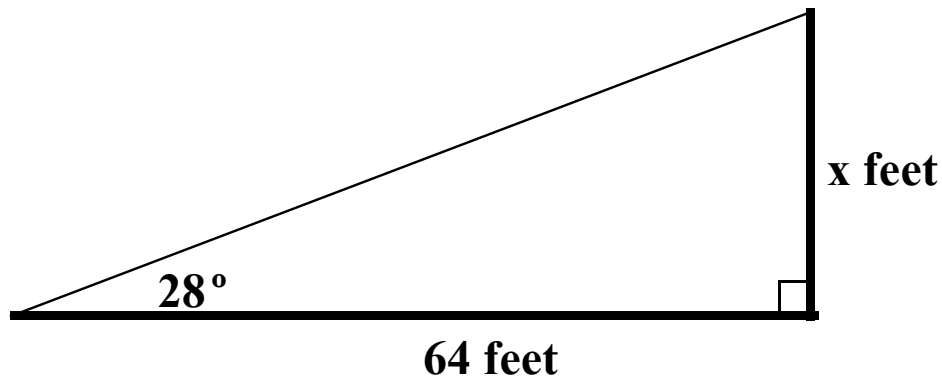
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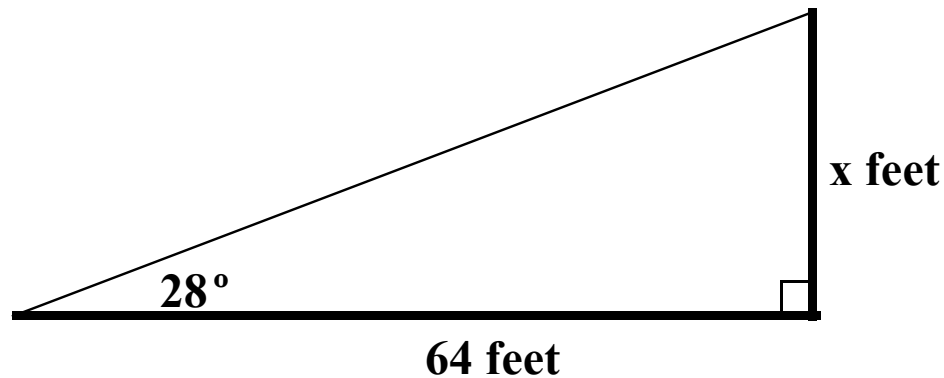
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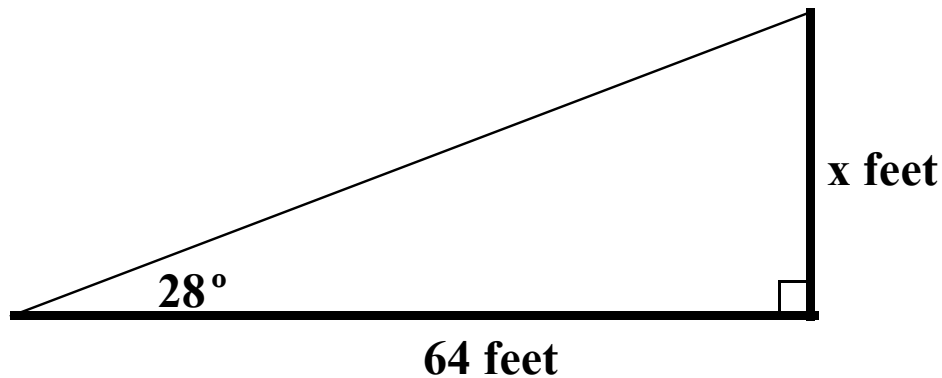
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$$\tan(28^\circ) = \frac{x}{64}$$

$$x = 64 \tan(28^\circ) \approx 34$$

Step 3: **Solve for x** and answer the question.

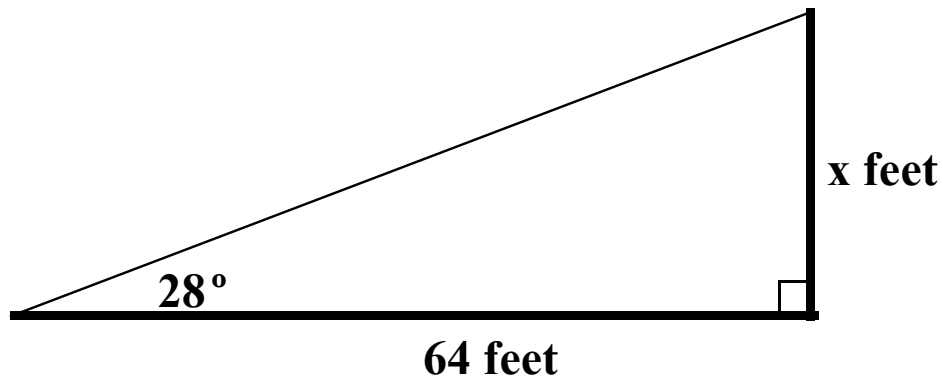
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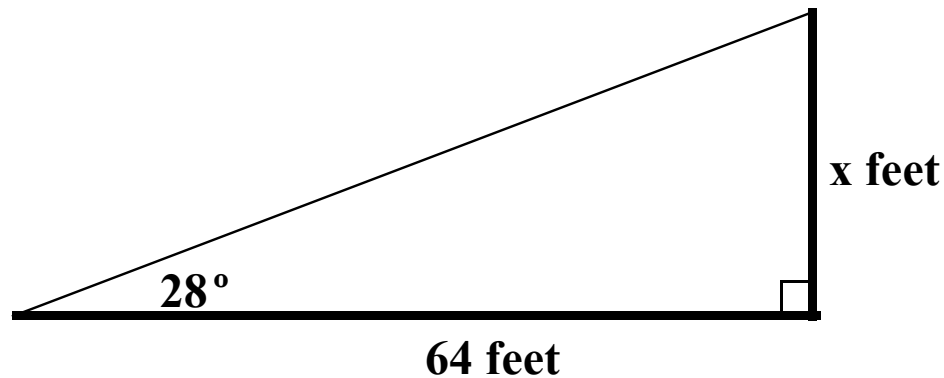
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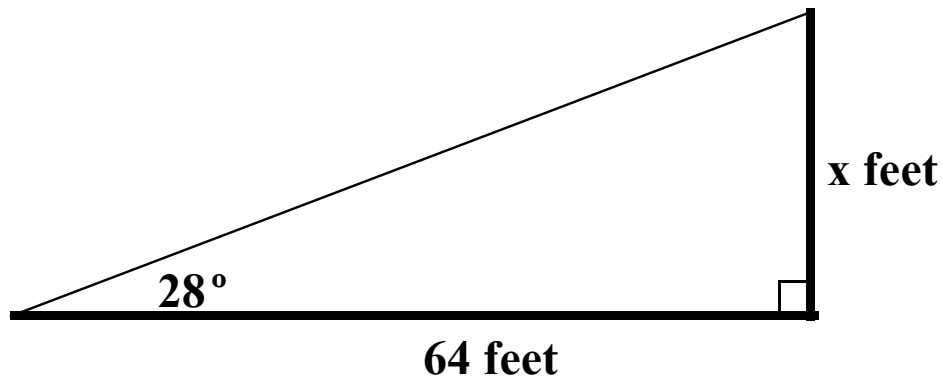
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The flag pole is about 34 feet tall.

Step 3: Solve for x and **answer the question.**

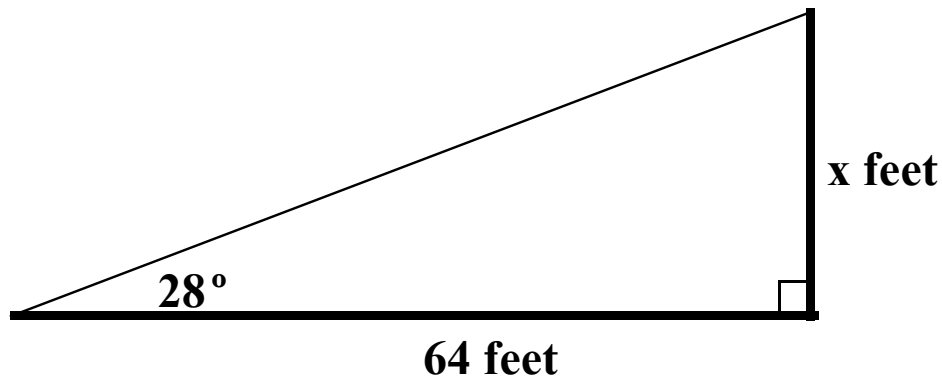
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## Part 2 : Applying the Right Triangle Trigonometric Ratios

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**Sample Problem #4**



# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

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### Sample Problem #4

A guy wire goes from the top of a vertical pole to a point that is 12 feet from the base of the pole on level ground.

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## Part 2 : Applying the Right Triangle Trigonometric Ratios

**SOH - CAH - TOA**

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A guy wire goes from the top of a vertical pole to a point that is 12 feet from the base of the pole on level ground. If the wire makes an angle of 72 degrees with the ground,

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**Step 1: Sketch a right triangle showing the key parts of the problem.**



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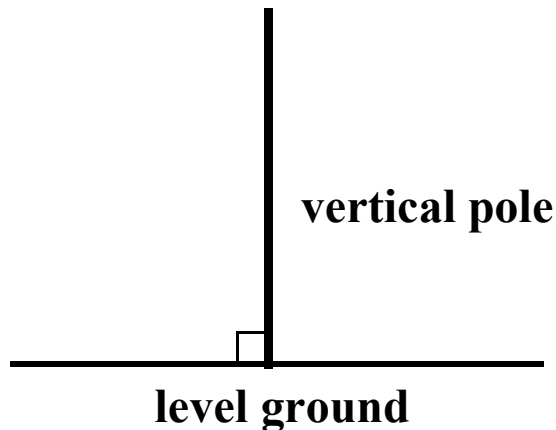
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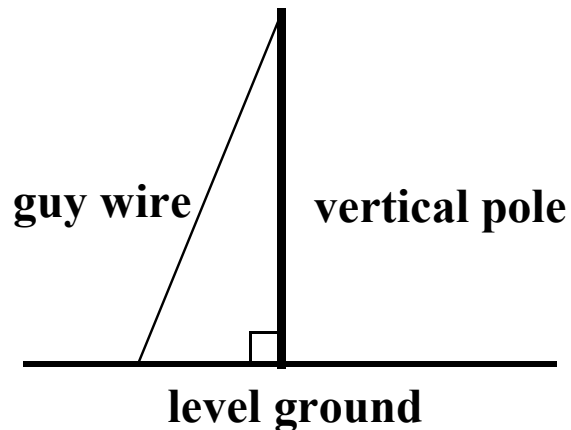
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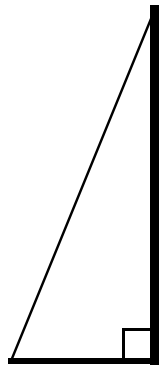
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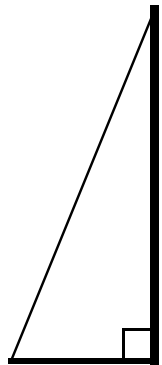
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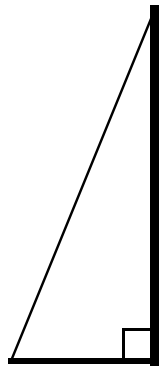
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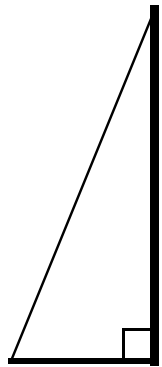
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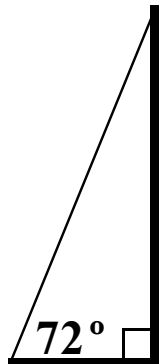
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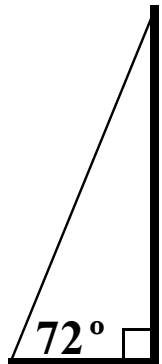
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We are asked to find the length of the wire.

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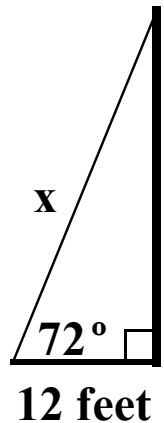
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### SOH - CAH - TOA

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A guy wire goes from the top of a vertical pole to a point that is 12 feet from the base of the pole on level ground. If the wire makes an angle of 72 degrees with the ground, then how long is the wire?



The guy wire goes to a point that is 12 feet from the base of the pole on the ground.

The wire makes an angle of 72 degrees with the ground.

We are asked to find the length of the wire.

**Step 1: Sketch a right triangle showing the key parts of the problem.**

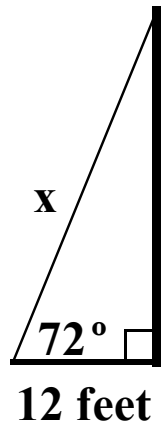
# Teach Yourself Trigonometry

## Part 2 : Applying the Right Triangle Trigonometric Ratios

**SOH - CAH - TOA**

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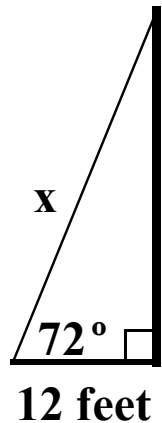
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We are assuming that the wire is 'straight'.

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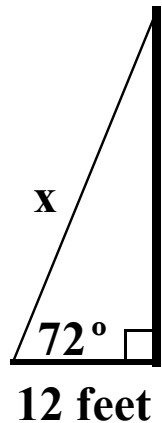
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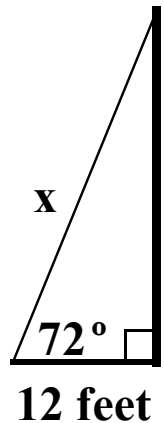
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**Step 2: Determine which trigonometric ratio applies and write an equation.**

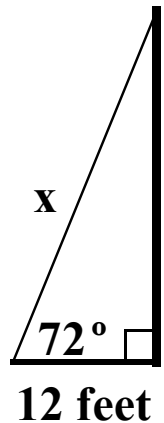
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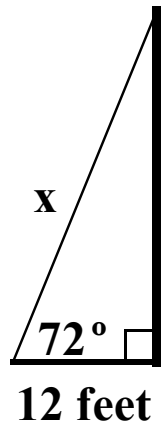
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We are given an acute angle.

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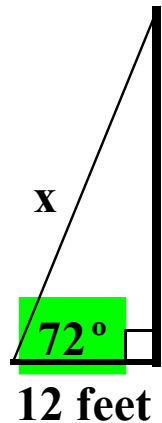
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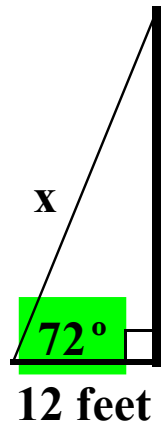
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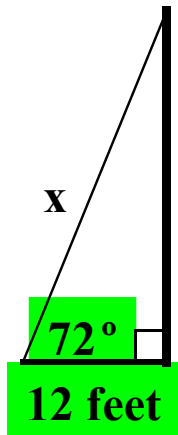
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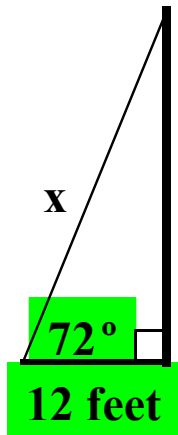
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We are given an acute angle.

We are given the length of the leg adjacent to the angle.

We are asked to find the length of the hypotenuse.

Step 2: Determine which trigonometric ratio applies and write an equation.

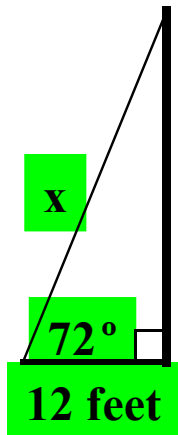
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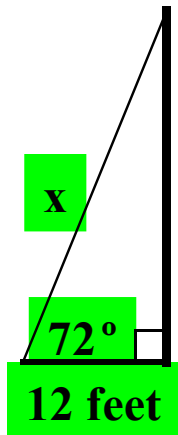
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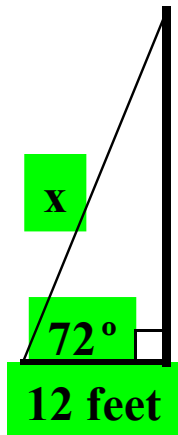
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We are given an acute angle.

We are given the length of the leg adjacent to the angle.

We are asked to find the length of the hypotenuse.

Therefore, the cosine ratio should be used.

Step 2: Determine which trigonometric ratio applies and write an equation.

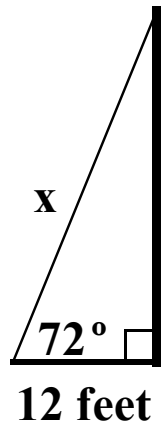
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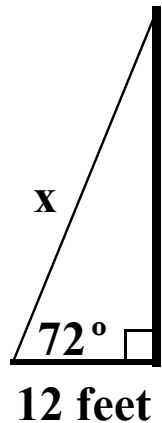
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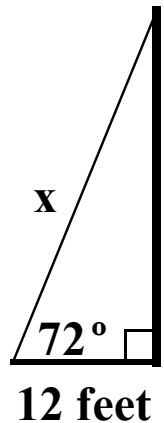
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Cosine ratio  $\rightarrow \frac{\text{Adjacent leg}}{\text{Hypotenuse}}$

Step 2: Determine which trigonometric ratio applies and **write an equation.**

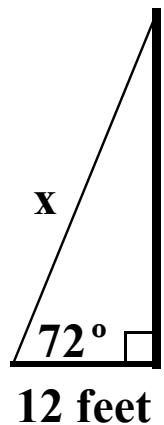
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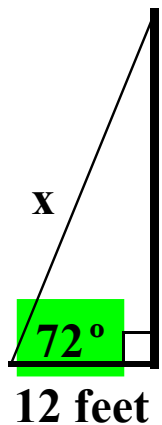
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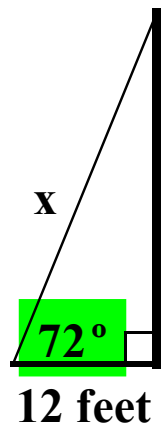
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$\cos(72^\circ)$

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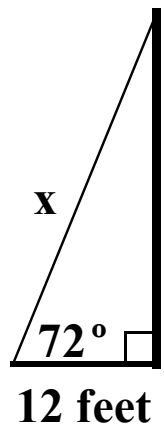
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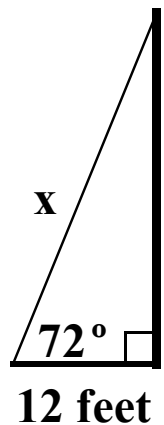
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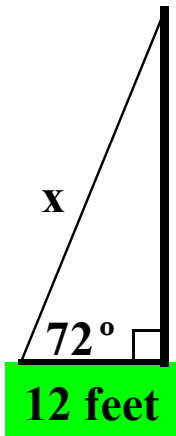
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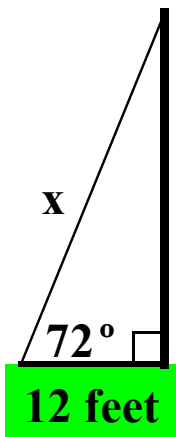
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Cosine ratio →  $\frac{\text{Adjacent leg}}{\text{Hypotenuse}}$

$$\cos(72^\circ) = \frac{12}{x}$$

Step 2: Determine which trigonometric ratio applies and write an equation.

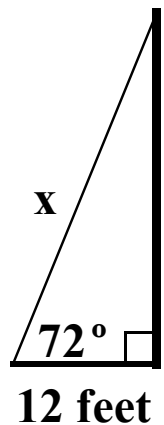
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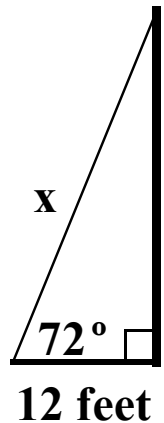
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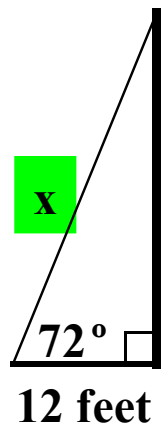
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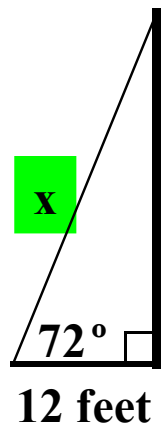
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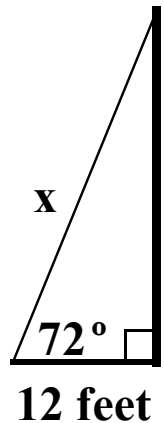
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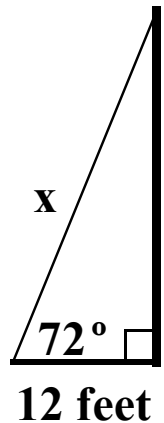
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**Step 3: Solve for x and answer the question.**

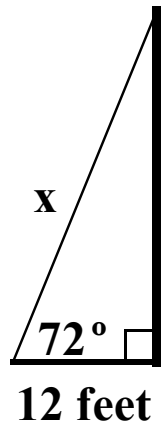
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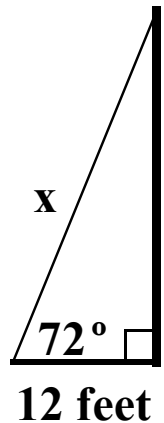
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Multiply both sides of the equation by  $x$ .

Step 3: **Solve for  $x$**  and answer the question.

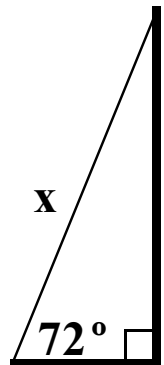
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12 feet

$$\cos(72^\circ) = \frac{12}{x}$$

$$x \cos(72^\circ)$$

Multiply both sides of the equation by x.

Step 3: **Solve for x** and answer the question.

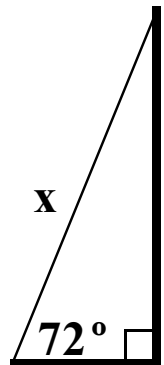
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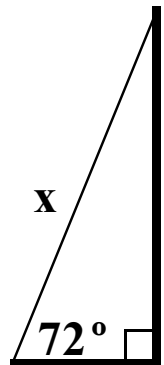
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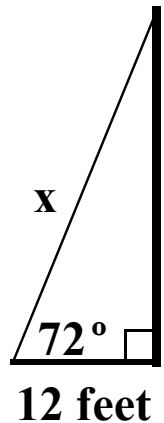
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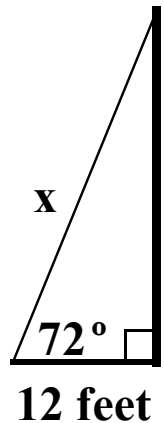
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$$\cos(72^\circ) = \frac{12}{x}$$

$$x \cos(72^\circ) = 12$$

Divide both sides of the equation by  $\cos(72^\circ)$ .

Step 3: **Solve for x** and answer the question.

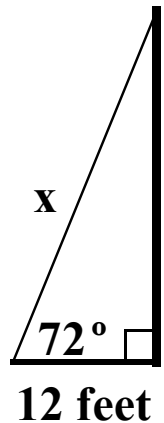
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## Part 2 : Applying the Right Triangle Trigonometric Ratios

**SOH - CAH - TOA**

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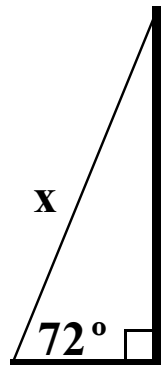
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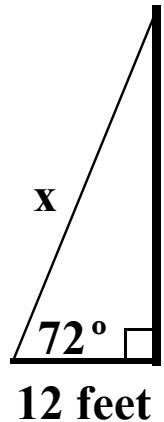
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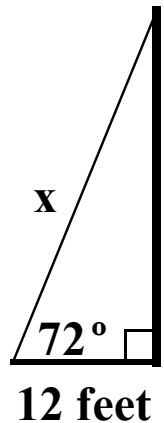
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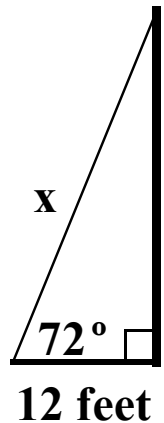
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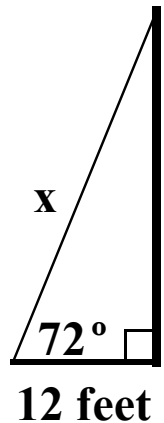
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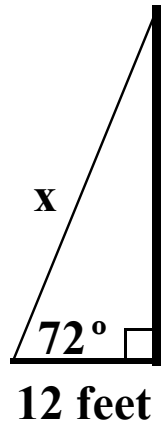
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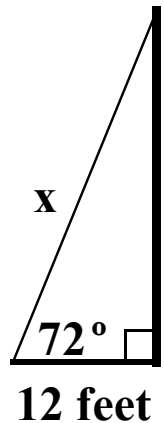
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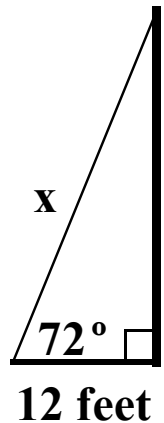
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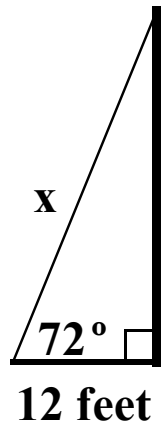
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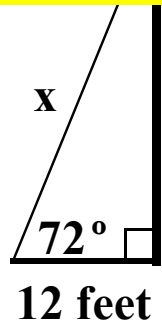
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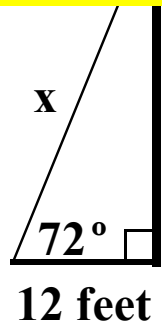
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