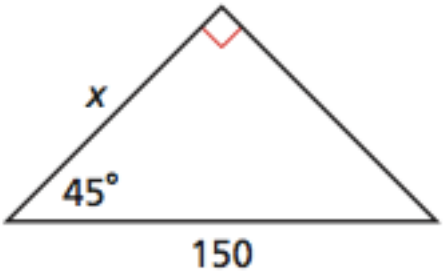
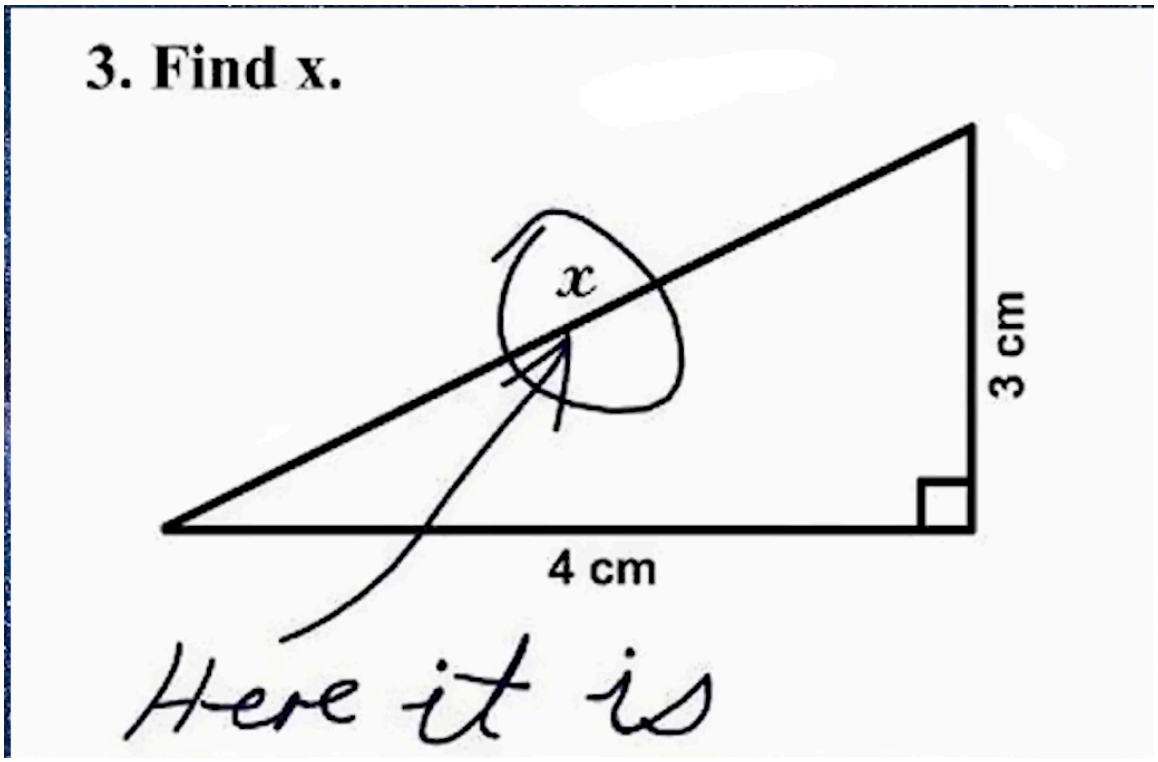
SOH CAH TOA
Lesson 24
Warm up

1)

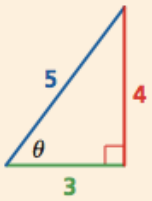


2)



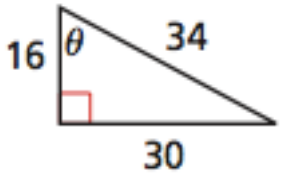
Reciprocal Trigonometric Functions

WORDS	NUMBERS	SYMBOLS
The **cosecant** (csc) of angle θ is the reciprocal of the sine function.	$\csc\theta = \frac{5}{4}$	$\csc\theta = \frac{1}{\sin\theta} = \frac{\text{hyp.}}{\text{opp.}}$
The **secant** (sec) of angle θ is the reciprocal of the cosine function.	$\sec\theta = \frac{5}{3}$	$\sec\theta = \frac{1}{\cos\theta} = \frac{\text{hyp.}}{\text{adj.}}$
The **cotangent** (cot) of angle θ is the reciprocal of the tangent function.	$\cot\theta = \frac{3}{4}$	$\cot\theta = \frac{1}{\tan\theta} = \frac{\text{adj.}}{\text{opp.}}$



There are actually six trigonometric properties.
Sine, Cosine, Tangent.
Cosecant, Secant, Cotangent

I try:
Find the Sine, Cosine, and Tangent functions for θ.



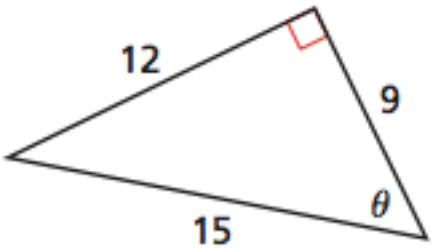
Adjacent=
Opposite=
Hypotenuse=

Sine $\theta = \frac{Opposite}{Hypotenuse}$= Cosecant = $\frac{hypotenuse}{opposite}$ =

Cosine θ =$\frac{Adjacent}{Hypotenuse}$ = Secant=$\frac{hypotenuse}{adjacent}$ =

$Tangent\theta = \frac{Opposite}{Adjacent}$= Cotangent=$\frac{1}{tangent\theta}$ =

We Try



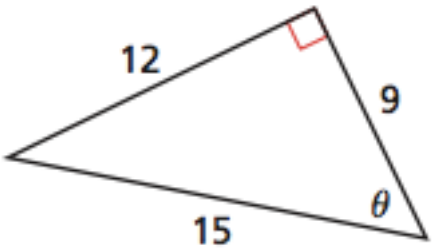
Find the Sine, Cosine, and Tangent functions for θ.
Adjacent=
Opposite=
Hypotenuse=

Sine $\theta = \frac{Opposite}{Hypotenuse}$= Cosecant = $\frac{1}{sin\theta} =$

Cosine $\theta = \frac{Adjacent}{Hypotenuse} =$ Secant=$\frac{1}{cosine\theta} =$

$Tangent\theta = \frac{Opposite}{Adjacent}$= Cotangent=$\frac{1}{tangent\theta} =$

You Try on whiteboards: Even Talk, Odd write



Find the Sine, Cosine, and Tangent functions for θ.
Adjacent=
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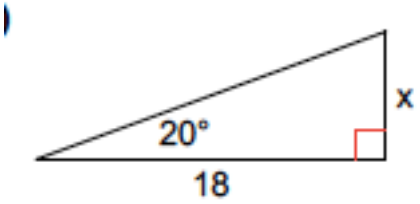
Sine $\theta = \frac{Opposite}{Hypotenuse}$= Cosecant = $\frac{1}{sin\theta} =$

Cosine $\theta = \frac{Adjacent}{Hypotenuse} =$ Secant=$\frac{1}{cosine\theta} =$

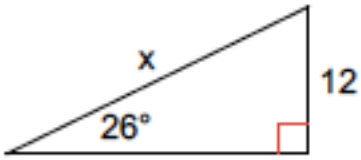
$Tangent\theta = \frac{Opposite}{Adjacent}$= Cotangent=$\frac{1}{tangent\theta} =$

Solve for x



Identify Adjacent, Opposite, Hypotenuse	Adjacent: 18 Opposite: x Hypotenuse:
Setup ratio	$tan20 = \frac{opp}{adj}$ $\tan 20 = \frac{x}{18}$
Solve for $tan20°$	$tan20° = .364$
Substitute	$.364 = \frac{x}{18}$
Solve for x	$18(.364) = x$ $6.551 = x$

We Try:



Identify Adjacent, Opposite, Hypotenuse	Adjacent:? Opposite:12 Hypotenuse: x
Setup ratio	$Sin\theta = \frac{opp}{hyp}$ $sin26° = \frac{12}{x}$
Solve for $sin26°$	$sin26° = .438$
Substitute	$.438 = \frac{12}{x}$
Solve for x	$x = \frac{12}{.438}$ $x = 27.398$

You Try:

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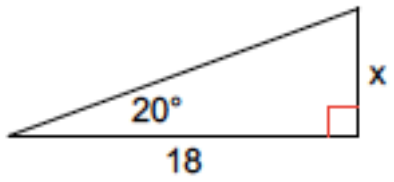
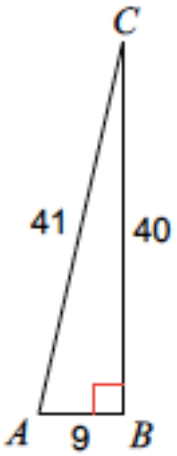


Identify Adjacent, Opposite, Hypotenuse	Adjacent: Opposite: Hypotenuse:
Setup ratio	
Solve for	
Substitute	
Solve for x	

A builder is constructing a wheelchair ramp from the ground to a deck witl a height of 18 in. The angle between the ground and the ramp must be 4.8°. To the nearest inch, what should be the distance *d* between the end of the ramp and the deck?

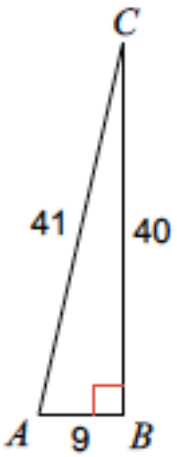
I Try:

Solve for $Sin(C)$



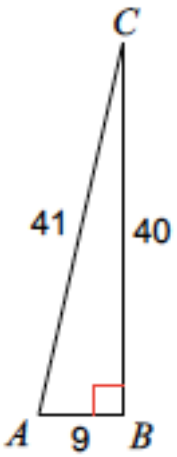
Identify Adjacent, Opposite, Hypotenuse	Adjacent:40 Opposite:9 Hypotenuse: 41
Setup ratio	Sin=$\frac{opposite}{hypotenuse}$ $sin(x) = \left(\frac{9}{41}\right)$
Use $\sin^{-1} x$	$\sin^{-1}(9/41) = x$ $12.680 = x$

We Try:
Solve for $Cos(A)$



Identify Adjacent, Opposite, Hypotenuse	Adjacent:9 Opposite:40 Hypotenuse: 41
Setup ratio	
Use $\cos^{-1} x$	

You Try:
Solve for $Cos(C)$



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Setup ratio	
Use $\cos^{-1} x$	