

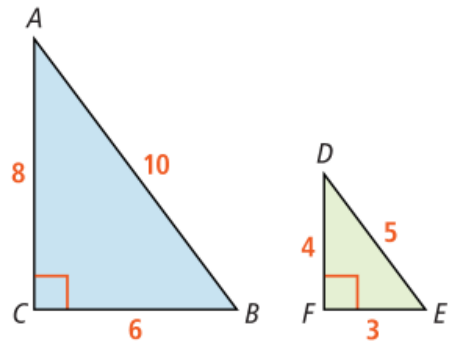
Trigonometric Functions and Acute Angles

Term	Definition	Picture
Right Triangle		
Acute Angle		
Hypotenuse		
Adjacent Side		
Opposite Side		
Similar Triangles		

Ratios of Sides of Similar Triangle: $\triangle ABC \sim \triangle DEF$

a) Write as many ratios as you can using two side lengths from $\triangle ABC$

b) Write as many ratios as you can using two side lengths from $\triangle DEF$



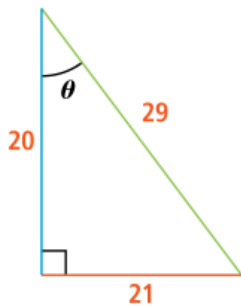
c) The ratios of side lengths of similar triangles are _____ .

Trig Ratios

$\sin\theta =$	$\cos\theta =$	$\tan\theta =$
$\csc\theta =$	$\sec\theta =$	$\cot\theta =$

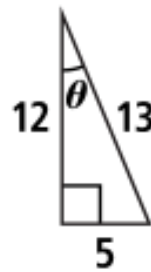
Examples: Given the triangle below, write the six trig ratios for angle θ .

1.



$\sin\theta =$	$\cos\theta =$	$\tan\theta =$
$\csc\theta =$	$\sec\theta =$	$\cot\theta =$

2.



$\sin\theta =$	$\cos\theta =$	$\tan\theta =$
$\csc\theta =$	$\sec\theta =$	$\cot\theta =$

Example 3: Knowing that $\tan\theta = \frac{15}{8}$ what are the other trig ratios for θ ?

$\sin\theta =$	$\cos\theta =$	$\tan\theta =$
$\csc\theta =$	$\sec\theta =$	$\cot\theta =$

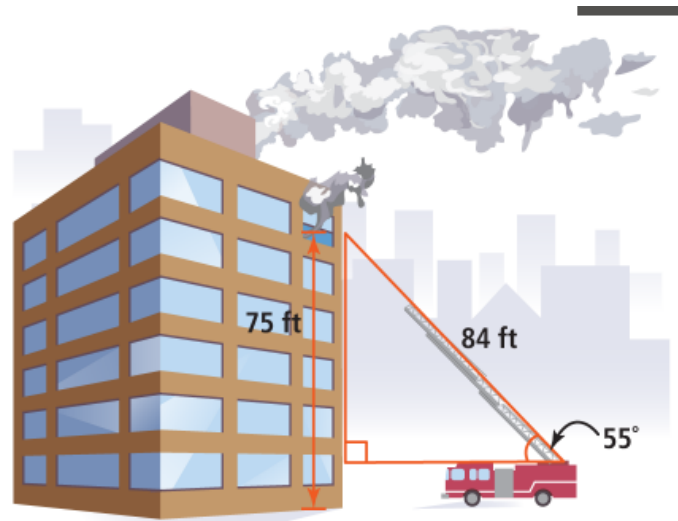
Example 4: Given that $\sin\theta = \frac{24}{25}$ what are the other trig ratios for θ ?

$\sin\theta =$	$\cos\theta =$	$\tan\theta =$
$\csc\theta =$	$\sec\theta =$	$\cot\theta =$

Example 5: Find a missing side length.

A fire truck has an 84 ft ladder extended against a building forming a 55° angle with the top of the truck. The truck is 8 ft tall. The firefighters are trying to reach a window that is 75 ft above the ground. Will they be able to reach the window using the ladder set at this angle?

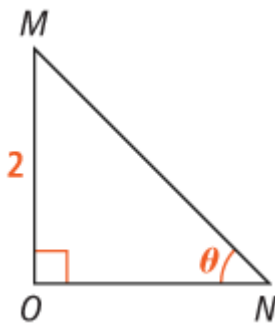
SOLUTION



Example 6: The sun shines at a 60° angle to the ground. How long is the shadow cast by a 20 foot tall flagpole?

Example 7: $\triangle MNO$ is a $45^\circ - 45^\circ - 90^\circ$ triangle with side length $OM = 2$. Find the six trig ratios for angle θ .

$\sin\theta =$	$\cos\theta =$	$\tan\theta =$
$\csc\theta =$	$\sec\theta =$	$\cot\theta =$



Example 8: The length of the hypotenuse in a $45^\circ - 45^\circ - 90^\circ$ triangle is $5\sqrt{2}$. What are the sine and secant ratios for a 45° angle?