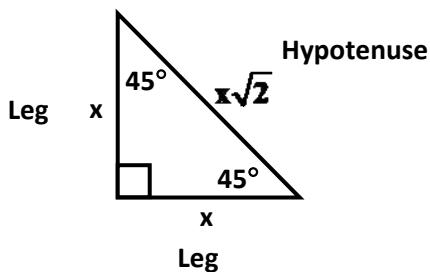
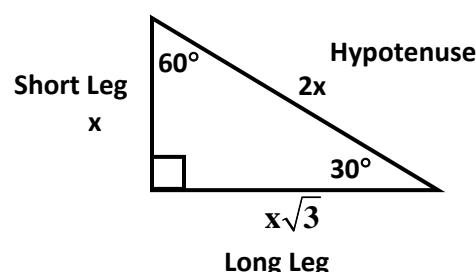


Pg. 308 4.3A – Right Triangle Trigonometry

Triangle Properties : $45^\circ - 45^\circ - 90^\circ$



$$\text{Leg} \cdot \sqrt{2} = \text{Hypotenuse}$$



$$\text{Short Leg} \cdot \sqrt{3} = \text{Long leg}$$

$$\text{Short Leg} \cdot 2 = \text{Hypotenuse}$$

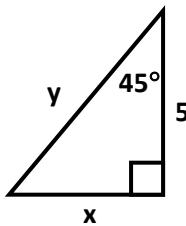
Methods for solving for a side of a right triangle given 1 or 2 sides:

1. Apply Pythagorean Theorem with 2 sides - $a^2 + b^2 = c^2$ always works
2. Apply Pythagorean Triples with 2 sides – 3,4,5, or 5, 12, 13 works sometimes
3. Apply 45-45-90 or 30-60-90 properties – 45-45-90 or 30-60-90 works sometimes

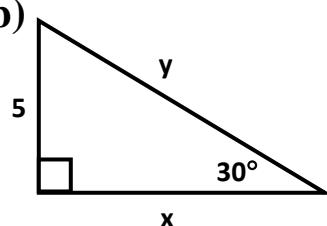
Ex 1:

Find the values of x and y.

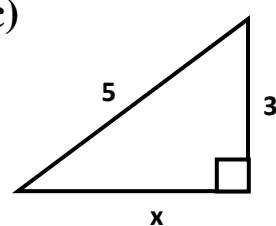
a)



b)



c)



6 Trigonometric Ratios: sine cosine tangent cosecant secant cotangent

Acronym to help remember trig ratios: **Soh Cah Toa** or $\sin \theta = \frac{\text{O}}{\text{H}}$ $\cos \theta = \frac{\text{A}}{\text{H}}$ $\tan \theta = \frac{\text{O}}{\text{A}}$

$$\sin \theta = \frac{\text{O}}{\text{H}}$$

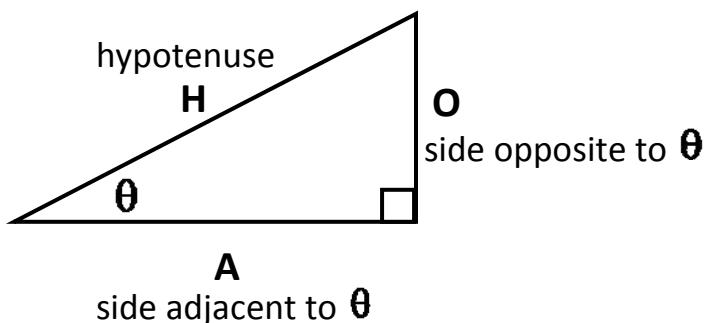
$$\cos \theta = \frac{\text{A}}{\text{H}}$$

$$\tan \theta = \frac{\text{O}}{\text{A}}$$

$$\csc \theta = \frac{\text{H}}{\text{O}}$$

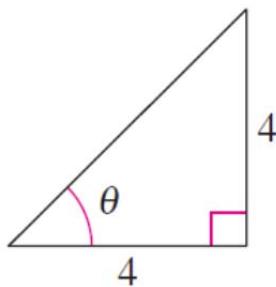
$$\sec \theta = \frac{\text{H}}{\text{A}}$$

$$\cot \theta = \frac{\text{A}}{\text{O}}$$



Ex 2:

Find the exact values of the six trigonometric functions of the angle θ shown in the figure. **Note:** Always rationalize the denominator.



$$\sin \theta = \quad \cos \theta = \quad \tan \theta =$$

$$\csc \theta = \quad \sec \theta = \quad \cot \theta =$$

Ex 3:

Sketch a right triangle corresponding to the trigonometric function of the acute angle θ . Label all the side lengths.

$$\cos \theta = \frac{5}{7}$$

Ex 4:

Construct an appropriate triangle to complete the table.

Note: Construct your own triangles.

Sketch Triangles:

Function	θ (degrees)	θ (radians)	Function Value
\cos	45°		
\sec		$\frac{\pi}{4}$	
\csc			$\sqrt{2}$
\sin		$\frac{\pi}{4}$	
\tan			$\frac{\sqrt{3}}{3}$

Ex 7:

Use the given function value(s), and trigonometric identities (including the cofunction identities), to find the indicated trigonometric functions.

$$\sin 30^\circ = \frac{1}{2} \quad \tan 30^\circ = \frac{\sqrt{3}}{3}$$

- (a) $\csc 30^\circ$ (b) $\cot 60^\circ$ (c) $\cos 30^\circ$ (d) $\cot 30^\circ$

Ex8:

Use the given function value(s), and trigonometric identities (including the cofunction identities), to find the indicated trigonometric functions.

$$\tan \beta = 5$$

- (a) $\cot \beta$ (b) $\cos \beta$ (c) $\tan(90^\circ - \beta)$ (d) $\csc \beta$

Assignment 4.3A

Pg. 308 **REQUIRED:** Vocab #'s 1,2 Problem Set #'s 1-31 ODD