PreCalculus Name: Period: Date:

Warm Up 2/3

Lesson 6-2: Trigonometry of Right Triangles

Objectives

Students will…
- Be able draw, set up, and solve right triangles using trigonometric ratios.
- Be able to understand solve word problems involving right triangles using trigonometric ratios.

Trigonometric Ratios

Recall the trigonometric ratios we've learned in the past.

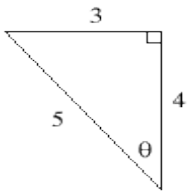
Trigonometric Ratios "S___ C___ T___"

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

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

Remember, these ratios only apply to _____ triangles.

Example

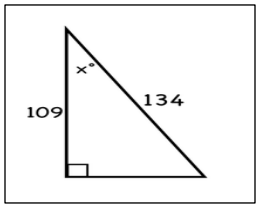


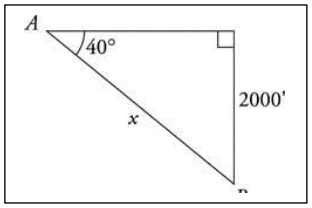
$\sin\theta =$ $\cos\theta =$ $\tan\theta =$

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

Solving Right Triangles

Using these ratios, we can solve for missing angles or sides of right triangle. (Be sure to identify whether the angles are in **radian or degree**)
Find x.





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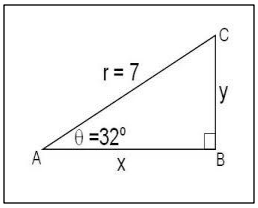
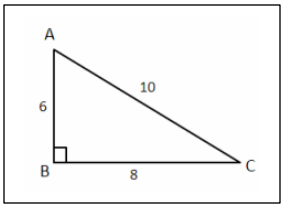




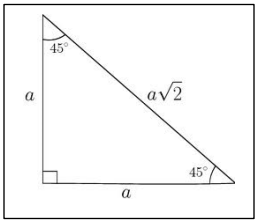
Sketch a triangle that has acute angle θ, and find the other five trigonometric ratios of θ.

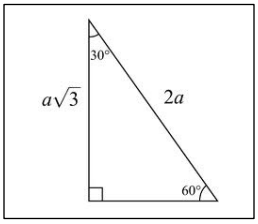
a) $\cos\frac{61}{80}$ b) $\tan\frac{373}{100}$ c) $\sin\frac{2}{3}$

Special Right Triangles

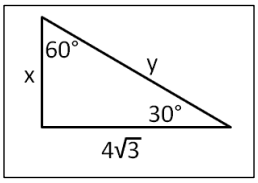
Also resulting from applying trigonometric ratios, we have what are called, **_____right triangles**.

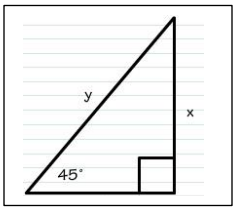
_____ Triangle **_____Triangle**





Example





Application of Trigonometric Ratios

We can also solve word problems using these ratios.

A giant redwood tree casts a shadow that is 532ft long. Find the height of the tree if the angle of elevation of the sun is $25.7°$.

A giant redwood tree has a height of 176ft. If the angle of elevation of the sun is $12.3°$, what is the length of the tree's shadow?

A 40ft ladder leans against a building. If the base of the ladder is 6ft from the base of the building, what is the angle formed by the ladder and the building?

A 50ft ladder leans against a building. If the base of the ladder is 7ft from the base of the building, what is the angle formed by the ladder and the ground?

Homework 2/3

TB pg. 484 #9, 11, 17, 18, 29, 31, 33, 45, 51