<name>
Class: Honors Geometry
Date: <date>
Topic: Lesson 9-2 (Sine and Cosine Ratios)

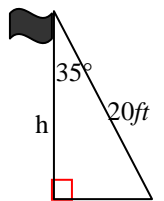|	
Sine Ratio	$\sin A = \dfrac{opposite}{hypotenuse}$
Cosine Ratio	$\cos A = \dfrac{adjacent}{hypotenuse}$
SOH-CAH-TOA	SOH: **S**ine **O**pposite over **H**ypotenuse CAH: **C**osine **A**djacent over **H**ypotenuse TOA: **T**angent **O**pposite over **A**djacent
Inverse Sine	$\sin^{-1}(\dfrac{opp}{hyp})$: The angle whose sine is $\dfrac{opp}{hyp}$.
Inverse Cosine	$\cos^{-1}(\dfrac{adj}{hyp})$: The angle whose cosine is $\dfrac{adj}{hyp}$.
Examples	1. Use the triangle to find sin T, cos T, sin G, and cos G. $$\sin T = \frac{opp}{hyp} = \frac{12}{20}; \cos T = \frac{adj}{hyp} = \frac{16}{20}; \sin G = \frac{opp}{hyp} = \frac{16}{20}; \cos G = \frac{adj}{hyp} = \frac{12}{20}$$ 2. A 20 *ft* wire supporting a flagpole forms a 35° angle with the flagpole. To the nearest foot, how high is the flagpole? We are looking for *h* which is adjacent to the angle. Use cosine. $$\cos 35 = \frac{h}{20}; h = 20 \cdot \cos 35 = 16.38 \approx 16\,ft$$ 3. A right triangle has a leg 1.5 unit long and a hypotenuse 4.0 units long. Find the measures of its acute angles to the nearest degree. Pick the angle with the 1.5 unit leg opposite it. That means we'll need to use the inverse of the sine ratio: $$m\angle A = \sin^{-1}(\frac{1.5}{4.0}) = 22.02 \approx 22°$$ Now pick the angle with the 1.5 unit long leg adjacent to it. That means we'll use the inverse of the cosine ratio: $$m\angle B = \cos^{-1}(\frac{1.5}{4.0}) = 67.97 \approx 68°$$