Advanced Math Name ____________________________

Chapter 6 Objectives

Work these problems on a separate sheet of paper.

6.1 – Angle Conversion	
I can convert radians to degrees	1a) Convert $\frac{5\pi}{6}$ to degrees
I can convert degrees to radians	1b) Convert $220°$ to radians
I can find the length of an arc given the measure of the central angle $s = r\theta$	1c) Given a central angle of $220°$, find the length of its intercepted arc in a circle of radius 8 cm. Round to the nearest tenth.
I can find the area of a sector $A = \frac{1}{2}r^2\theta$	1d) Find the area of the sector if the central angle is $\frac{5\pi}{3}$ and the *diameter* of the circle is 11 cm. Round to the nearest tenth.
6.2 – Linear and Angular Velocity	
I can find the angular displacement of an object	2a) Determine the angular displacement IN RADIANS of 3.7 revolutions.
I can find the angular velocity $\omega = \frac{\theta}{t}$	2b) Determine the angular velocity if 5.2 revolutions are completed in 7 seconds.
I can find the linear velocity $v = r\varpi = r\left(\frac{\theta}{t}\right)$	2c) Determine the linear velocity of a point rotating at an angular velocity of 11π radians per second, at a distance of 7 cm from the center of the rotating object.
6.3-6.5 – Graphing Sine and Cosine Functions	
I can write the general sinusoidal equation for a sine or cosine function and identify each of its 4 variables	3a) Do it!
I can sketch the general *sine* graph and label the 5 critical points	3b) Do it!
I can sketch the general *cosine* graph and label the 5 critical points	3c) Do it!
I can graph a sinusoidal equation with a given amplitude, period, vertical shift and horizontal shift (phase displacement) *(Remember 5 critical points)*	3d) Graph $y = -2 + 3\sin\frac{\pi}{2}(x-2)$ 3e) Graph $y = 5\cos 30(\theta - 10°)$ 3f) Graph $y = 7 + \sin(x + \pi)$

Given an amplitude, period, vertical shift and horizontal shift (phase displacement), I can write a sinusoidal equation	3g) A =5, p=45, C=2, D= $15°$; cosine function 3h) A=0.25, p = 11π; sine function
6.6 Modeling real-world data using sine and cosine functions	
Given a real-world situation, I can write a sinusoidal equation to represent the situation	An average seated adult breathes in and out every 4 seconds. The average minimum amount of the air in the lungs is 0.08 liter, and the average maximum amount of air in the lungs is 0.82 liter. Suppose the lungs have a *maximum* amount of air at t=0, where t is the time in seconds. 6a) Write a function that models the amount of air in the lungs (use radians) 6b) Determine the amount of air in the lungs at 5.5 seconds
6.7 Graphing Other Trig Functions	
I can sketch the 4 other trig functions and identify the amplitude, period and phase shift of each	7a) Graph $y = \sec x; y = \csc x$ $y = \tan x; y = \cot x$ and identify the A, p and D of each
I can sketch a trig function by first sketching the functions reciprocal and then using it to sketch the correct trig function. Identify the amplitude, period and phase shift.	7b) Graph $y = \sec 2(x)$ 7c) $y = \cot \frac{1}{2}(x - \pi)$
6.8 Inverse Trig Functions	
I can identify the restricted range of $y = Sin^{-1}x; y = Cos^{-1}x; y = Tan^{-1}x$	8a) Do it!
I can explain why $y = Sin^{-1}x; y = Cos^{-1}x; y = Tan^{-1}x$ only has one solution	8b) Do it!
I can solve an inverse trig function.	**Solve** 8c) $Tan^{-1}(-1)$ 8d) $Arc\cos\left(-\frac{\sqrt{2}}{2}\right)$ 8e) $\tan\left(Sin^{-1}\frac{\sqrt{3}}{2}\right)$