	K	T	C	A	
Math 11U Sinusoidal Unit Test:	15	12	3	9	Name_____

Multiple Choice: Please circle your choice. ___5K

1. What are the peaks of a periodic function?

   a. the extremes of the graph
   b. the lowest points of the graph
   c. the highest points of the graph
   d. the *x*-intercepts of the graph

2. What is the equation of the central axis?

   a. the horizontal line that intersects the maximum value of a periodic function
   b. twice the sum of the maximum and minimum functional values
   c. the *y*-intercept of a periodic function
   d. the horizontal line halfway between the maximum and minimum value of a periodic function

3. What is the amplitude?

   a. the distance between the maximum and minimum values of the function
   b. the length of one cycle
   c. the distance between the equation of the axis and either a maximum or minimum value of the function
   d. the number of cycles shown

4. Which of the following could be modelled by a sinusoidal function?

   a. the height of a bouncing ball as it declines with respect to time
   b. the height of a point on a bicycle wheel spinning at a constant rate with respect to time
   c. the height of a point on a bicycle wheel as it slows to a halt with respect to time
   d. the height of a person over a lifetime

5. The height of a passenger on a Ferris wheel with respect to time is given by a sinusoidal function. How would you increase the amplitude of the function?

   a. slow the rate of the Ferris wheel rotation
   b. increase the height of the platform used to load passengers
   c. increase the radius of Ferris wheel
   d. increase the rate of the Ferris wheel rotation

True or False: Circle your choice for each statement. ___5K

6. A Periodic Function only repeats sometimes. True False

7. Given $y = -3\sin(2x) + 5$, the amplitude is -3. True False

8. Sinusoidal functions have a domain of "all real numbers" True False

9. Cosine graphs can start at the max or min. True False

10. A sinusoidal function is not a periodic function. True False

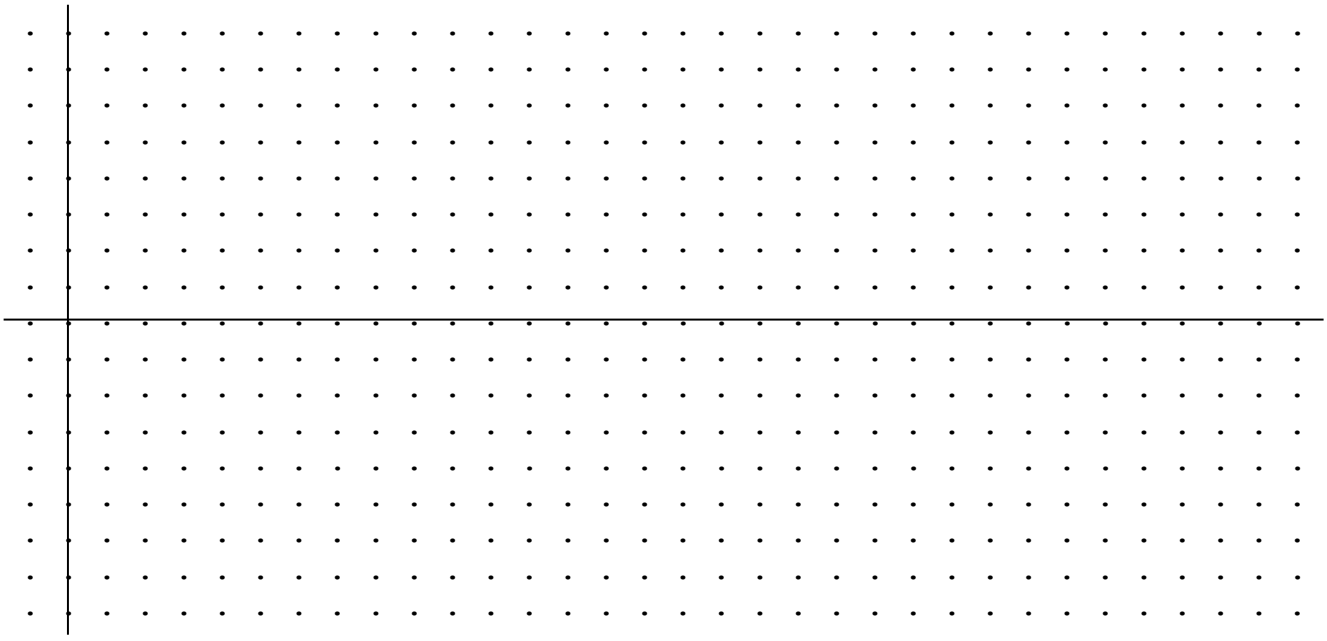
11. What is the difference between a sine graph and a cosine graph? ___1C

12. State the transformations, the table for the parent function, the table for the transformed function, then graph the function below for 2 cycles.

___ 5A ___2C

$f(x) = -2\sin(3(x-30)) + 4$

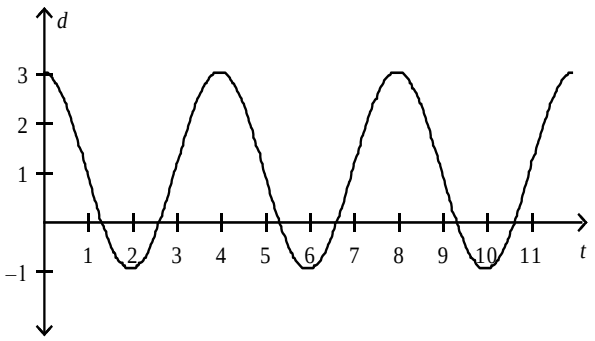
**NOTE* Have each dot on the x-axis represent 15°*



13. Without graphing, fill out the chart for the following equation: $y = 919\cos(5x - 80) - 100$ ___4T

Proper Function	Amplitude	Period	Phase Shift	Eqn of Central Axis	Max	Min

14. A scientist records the motion of a particle. A graph of that motion is shown below. ___5K



a) What is the period of one complete cycle?

b) What is the range of this function?

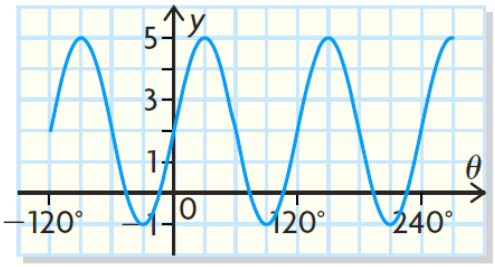
c) If the particle can survive for twenty complete cycles before deteriorating, determine the domain of the function.

d) Determine the equation of the central axis.

e) Determine the amplitude.

f) Is this a sine graph or a cosine graph?

15. Determine an equation of the function that models this graph. ____ 4T



16. Determine an equation of a sine or cosine function that satisfies the given data. ____ 4T

x	-60º	-30º	0º	30º	60º	90º	120º
y	10	8	6	8	10	8	6

17. A certain town has a 20 m tall windmill with a tip of one of the blades painted red. Over a time of 15 seconds, that red tip moves from a maximum of 20 m from the ground down to a minimum of 2 m from the ground. Write the equation that models the red tip's distance from the ground in terms of time. (TRICKY!) Draw a picture. State all the properties. ___4A