

# Periodic Behavior and Models

NAME:

PER:

Using the link <https://www.timeanddate.com/> (also posted in Google Classroom), complete the table below for a location as given by your teacher. After you have recorded the data and computed the decimal values, plot 2 sets of all 12 points in Desmos (using “month number” for the x-axis and “day length” for the y-axis. See instructions below for using a TABLE in Desmos.

\*\*\*\*Note: choose your data from 2021 and for the 15<sup>th</sup> of each month.\*\*\*\*

x			y
MONTH NUMBER	SUNRISE TIME	SUNSET TIME	DAY LENGTH (# of hours and minutes of sunlight)
1 (Jan)			
2 (Feb)			
3 (Mar)			
4 (Apr)			
5 (May)			
6 (June)			
7 (July)			
8 (Aug)			
9 (Sep)			
10 (Oct)			
11 (Nov)			
12 (Dec)			
13 etc...	Do not enter any more values into this table. However, ENTER 2 SETS of these points into Desmos to create 2 periods/cycles (so the x-axis will include 1-24.)		

**LOCATION:**





→ Example for decimal value:  
 10:38 = 10 hours, 38 minutes  
 = 10.63 hours  
 (round to the nearest hundredth)

After your scatterplot is completed, create two possible models:

1.  $y =$

2.  $y =$

Directions for creating a table and scatterplot in Desmos:

- Go to <https://www.desmos.com/calculator>. Create an account so you can save your work by using an option from the upper right corner: log in or sign up. (Suggestion: use your school Google account to do so.)
- Click on + toward the upper left corner and choose TABLE. Enter your points into the table. Edit color and shape of points using wheel icon  then click on colored dot at top of table for options.   $y_1$
-  Click on tools icon in upper right corner to choose RADIAN mode, label your axes, then size your window:  $-1 \leq x \leq 25$  (step= $\pi$ ) and  $-1 \leq y \leq 25$  (no step). **SAVE YOUR GRAPH...title it with location and your name!**
- Now create a model (equation) of the data using what you know about trig functions and their graphs. Click on box 2 in left column (below your table) to enter equation, okay to use pi, decimals, fractions. Use this format:  $y = A\cos k(x - b) + h$  and  $y = A\sin k(x - b) + h$  (record equations in box provided above.)
-  Click on the share button in the upper right corner, copy the link, then submit it in Google Classroom (assignment listed under ch.7 in Classwork tab.) Be sure **location** is included in your Desmos title!