

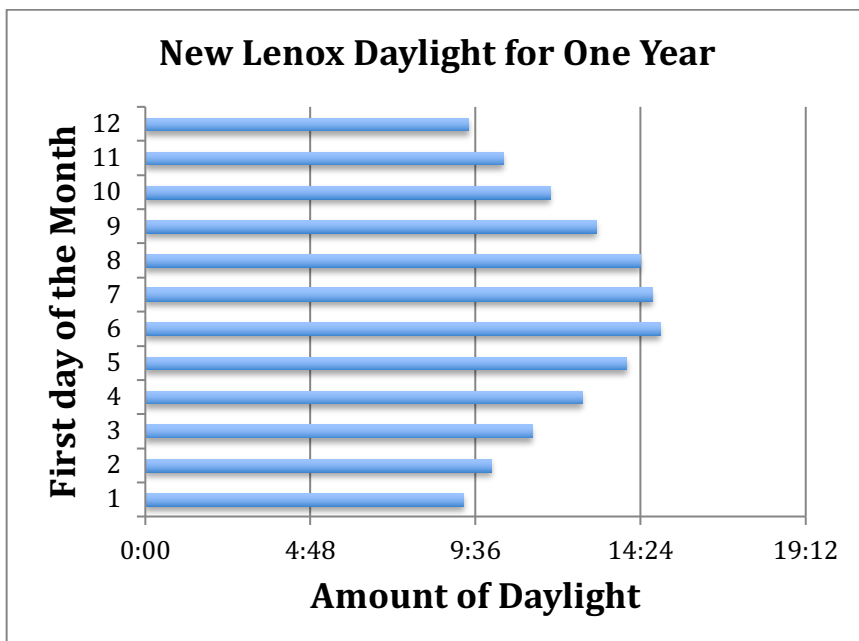
## Student Directions for Investigating Daylight

### Part 1

1. You will collect sunrise and sunset times for our hometown over a period of one year. Fortunately, there is a Web site where you can get this information so you don't have to wait a year to collect it all.
2. Open an Excel spreadsheet and put your name and block as a header. Close header and save as **yourinitialsdaylight**
3. Using any font or size, make an excel sheet with the titles, going across row 1: Date, Sunrise, Sunset & Daylight. **Bold** these titles. Under your titles **Format your columns as below:**
  - a. Highlight Column A – go up to Format > Cells > Date > 3/14/12 Click ok
  - b. Highlight Column B & C go up to Format > Cells > Time > 1:30 PM Click ok
  - c. Highlight Column D go up to Format > Cells > Time > 13:30 Click ok
4. Under the Date column, type in this year's first day of every month. (1/1/18, 2/1/18)....
5. Click on the link below to go to this Web site:  
[http://aa.usno.navy.mil/data/docs/RS\\_OneYear.php](http://aa.usno.navy.mil/data/docs/RS_OneYear.php)
6. Choose Illinois in the State drop down menu and then type in New Lenox as the city. Record the sunrise and sunset data for the first day of each month on your Excel sheet in the correct column. Use a colon for the times.
7. You will have to put in a formula, in column D, to calculate the amount of daylight.  
**The formula for column D is: =Sunset – Sunrise**  
 Your chart should look like the example to the right:
8. **Create a bar chart of the daylight column only** when you have finished entering the data. Click on Charts > bar (You can use any one of the graphs.)
9. Click on Chart Layout tab and put in a **Chart Title** and **Axis Titles** for the bottom and side. When done, put this chart on the same page as your data. It should look something like below.

Date	Sunrise	Sunset	Daylight
1/1/03	7:58 AM	4:28 PM	8:30
2/1/03	7:36 AM	5:10 PM	9:34
3/1/03	6:50 AM	5:54 PM	11:04
4/1/03	5:48 AM	6:39 PM	12:51
5/1/03	5:53 AM	8:21 PM	14:28
6/1/03	5:16 AM	8:59 PM	15:43
7/1/03	5:15 AM	9:11 PM	15:56
8/1/03	5:46 AM	8:44 PM	14:58
9/1/03	6:28 AM	7:50 PM	13:22
10/1/03	7:08 AM	6:49 PM	11:41
11/1/03	6:53 AM	4:52 PM	9:59
12/1/03	7:36 AM	4:20 PM	8:44

Above and to the left are examples only.  
Do not use these figures.



## Part 2

1. Open the Internet and go to these Web sites to help answer any of the below questions. If you cannot find the answer to the questions search for yourself.  
<http://wxguys.ssec.wisc.edu/2013/10/28/what-determines-the-amount-of-daylight/>  
  
<http://earthsky.org/earth/everything-you-need-to-know-december-solstice>  
  
<http://climate.ncsu.edu/edu/Tilt>  
  
<https://www.quora.com/Why-do-the-poles-experience-6-months-of-continuous-days-and-nights>
2. Create a Word document to answer the following questions, in as much detail as possible. Make sure your answers are in complete sentences. Save this document as **yourinitialsdaylight**      **\*\*Put your name and block in the header**
  - a. Look at the chart you just made in Excel. What can you tell me about the pattern for the amount of daylight during the course of a year for your hometown? When does it occur the most?
  - b. What roles do the earth and sun play in determining the amount of daylight?
  - c. How long and what is the daylight pattern for the North Pole? (When does it occur and for how long)
  - d. How long and what is the daylight pattern for the South Pole? (When does it occur and for how long)
  - e. If your location was near or on the equator, How many hours of sunlight would you have every day? Why?
3. Drop both your Excel sheet and Word document into the correct drop box.