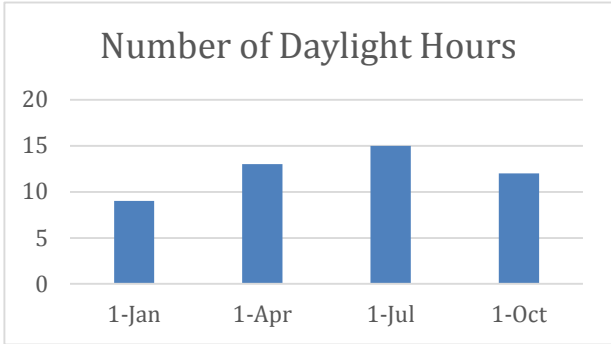**Science Instructional Activity** – *page 1 of 2*

Target Level: Represent and interpret data on a picture, line, or bar graph to show seasonal patterns in the length of daylight hours	Precursor Level: Recognize patterns about length of daylight hours over time (e.g., week to week, month to month)	Initial Level: Order events in daily routine including sunrise and sunset	Accessibility Considerations for Science and Engineering Practice: Analyzing and Interpreting Data • Data may be presented in graphical and/or tactile representations or by using objects for key visuals that represent concepts • Provide brief verbal description of visual phenomena, results, or patterns in the data
Activity Title: The daylight hours	Estimated Classroom Time Needed: One hour	Essential Questions: • Does the student observe patterns of sunrise and sunset? • Does the student understand that daylight hours change across seasons?	

Suggested Materials
- Data for the length of daylight hours over a period of time (weeks/months for precursor, a year for target)
- Chart paper, markers
- Graphing calculator or other computer graphing application, such as http://nces.ed.gov/nceskids/createAgraph/

Engage Students in the Activity
Ask students about when it gets dark at night. Does it always get dark at the same time? Are there times of the year when the days are longer or shorter? Do changes in the length of the day follow a pattern?

Activity Description
Give students a table of the length of daylight hours. Have the students create a bar graph with their data. Get data for your city (or other places students want to know about) from: http://aa.usno.navy.mil/data/docs/Dur_OneYear.php Round the number of daylight hours to the nearest hour before giving data to students.

For example, this data for Kansas City, Kansas in 2015:

Number of Daylight hours

1-Jan	Winter	9
1-Apr	Spring	13
1-Jul	Summer	15
1-Oct	Fall	12

After students have created a graph, have the students answer questions using the graph.

Example graph:

Which week/month/season had the most daylight hours?

Which week/month/season had the least daylight hours?

What happened to the number of daylight hours from _____ to _____ (use two different places on the graph with at least three points between them)?

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Ideas for differentiating the activity		
At the target level:	*At the precursor level:*	*At the initial level:*
Create a bar graph of seasonal variations in the number of daylight hours. Interpret the graph to answer questions about the maximum, minimum, or trend between points in time.	Interprets graphs or tables with data on weekly or monthly variations of the number of daylight hours to answer questions about the maximum, minimum, or trend between points in time.	Given two events which include sunset and/or sunrise, identify which is first or last.
Checks for Understanding		
At the target level, students will:	*At the precursor level, students will:*	*At the initial level, students will:*
The student correctly represents data for seasonal variations in the number of daylight hours on a graph. The student can answer questions about the graph (most/least/trend) correctly.	The student recognizes patterns for weekly or monthly variations in the number of daylight hours on a graph. The student can answer questions about the graph (most/least/trend) correctly.	The student can identify which events in a daily routine (waking up, going to bed, eating lunch, going to school, etc.) come before or after sunrise or sunset.