5th Grade Science
Day Length Graphing Activity

Standards:

- 5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

Purpose:

To explore the relationship between seasons and day length at different places on Earth, as well as to practice graphing skills.

Directions:

- Open SEPUP Seasons Interactive: https://sepuplhs.org/middle/iaes/students/simulations/sepup_seasons5.html
- This interactive shows you the relationship between the sun and the Earth at different times during the year. It also shows the effect on day length and temperature at different places on Earth. You can click the dots under "Show City" to see the latitude line of that city. Please keep in mind that this interactive is not to scale.

1. In the data table below, record the day length for each city in each month. Round to the nearest hour (remember, time is expressed differently. 5:31 is 5 hours and 31 minutes, so it would round to 6).

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Anchorage, AK	6	9	12	15	18	19	18	16	13	10	7	6
Chicago, IL	9	11	12	13	15	15	15	14	12	11	10	9
Quito, Ecuador	12	12	12	12	12	12	12	12	12	12	12	12
Melbourne, AUS	14	14	12	11	10	10	10	11	12	13	14	15

2. Graph the data you collected. Here are some tips to remember
    a. You want your data to take up as much space as you can on the paper (you can see patterns better than on a teeny tiny graph). Figure out about how many lines you have for your axis and then your biggest data point (should be no bigger than 24 hours in this situation). Then figure out how many each line should be worth to still fit.
    b. Since you will have four lines on your graph, one for each city, it is often easier to graph all the data points for one line and connect them, before graphing any data points for the others. You can also make the lines in different colors.
    c. Don't forget all your titles, labels and units.

3. How is seeing a graph of the data beneficial over just the table?
   Varied answers. It is easier to see trends. It is easier to make sense of than a whole bunch of numbers at once. It makes comparing all four lines easier.

4. What patterns did you notice?

   Varied answers.
   The two cities in the northern hemisphere got longer, peaked and then got shorter. The city in the southern hemisphere did the opposite. Quito had the same length all year. All cities had their peaks/lows at the same time.

5. How did the position of each city affect the length of days it experienced?
   Varied answers.
   The two cities in the northern hemisphere got longer, peaked and then got shorter. The city in the southern hemisphere did the opposite. Quito had the same length all year. All cities had their peaks/lows at the same time.

6. What is different about Quito, Ecuador? What do you think caused this?

   It has the same day length all year. It is on the equator.

7. Longer days are associated with summer and shorter days are associated with winter. How do the seasons in the northern hemisphere, southern hemisphere and equator compare?

   They are opposite.

Graphs will vary. This is just one example.