

How Much Sun?

A real data webquest · mrsajdak.com/webquest · Data: timeanddate.com · © Ryan Sajdak · CC BY-NC-SA 4.0

Name _____

Date _____

Period _____

Sunlight is the energy that drives climate. You will find how many hours of daylight three places get today and across the year, read a year of sunlight on a graph, and connect it to the biome in each place.

- ☐ I can find real sunlight data on a website. ☐ I can read a graph of daylight across a year. ☐ I can explain how Earth's tilt changes daylight and climate.

How to work: Keep this sheet next to you. Open mrsajdak.com/webquest and tap **How Much Sun?** Every city and month has its own button. Ads may pop up. Close them with the X. Do not click on them.

Buffalo, New York	Quito, Ecuador	Fairbanks, Alaska
43° north of the equator. Temperate deciduous forest.	On the equator (0°). High in the mountains, mild all year.	65° north of the equator. Taiga: cold forest.

Part 1. Today (about 6 minutes)

SEP 4 Analyzing and Interpreting Data

1. Tap each city's **Today** button. Near the top, find **Sunrise Today** and **Sunset Today**. Then find the box that says **Daylight** and read its **Total**.

	Buffalo	Quito	Fairbanks
Sunrise today			
Sunset today			
Daylight total (hours:minutes)			

2. Rank the three places from the most daylight today to the least.

Most: _____ Middle: _____ Least: _____

3. It is late October. Is the North Pole tilted toward the sun or away from it right now? How does your ranking show that?

Part 2. Across the year (about 8 minutes)

CCC Patterns

4. Tap a city's **Mar**, **Jun**, **Sep** and **Dec** buttons. Each one opens a table for that month. Find the row for the date below. Copy the day **Length** (the first column after Sunset). Round to the nearest hour.

	March 20	June 21	September 22	December 21
Buffalo (hours)				
Quito (hours)				
Fairbanks (hours)				

Part 3. Read the sun graph (about 7 minutes)

SEP 4 Analyzing and Interpreting Data

Each city's Today page has a **Sun Graph** below the Daylight box. Click **Day/Night Length** above it. Months go across. Hours go up the side.

Light blue	Gray bands	Darkest color (at the bottom)
Daylight. The more of the graph that is light blue, the longer the day.	Twilight: the sun is down, but the sky is not dark yet.	True night: the sky is fully dark.

5a. Open the sun graph for **Quito**, then **Buffalo**, then **Fairbanks**. Describe the shape of the light blue part in each one.

	What shape does the daylight make across the year?
Quito	
Buffalo	
Fairbanks	

5b. On the Fairbanks graph, the darkest color goes away completely for part of the year. About which months? From _____ to _____

5c. What is the sky like in Fairbanks at midnight in those months? Does Buffalo's graph ever lose its darkest color?

Part 4. Connect it to climate (about 9 minutes)

6. Which place has almost the same daylight all year? _____ Which changes the most?

7. In Fairbanks, how many more hours of daylight are there on June 21 than on December 21? Show your math.

8. Earth's axis is tilted. Use the tilt to explain why Fairbanks gets so much more daylight in June than in December.

9. On March 20, Quito and Fairbanks both get about 12 hours of daylight. But at noon that day, the sun is almost straight overhead in Quito (about 90° high) and only about 25° high in Fairbanks. Why is Quito so much warmer? Answer in three parts.

Claim

Evidence Use numbers from your tables or from this question.

Reasoning Think about the Same Sun, Different Climates Lab: how does the sun's angle spread out its energy?

Done early? Fairbanks gets almost 22 hours of daylight in June. So why is it a cold taiga and not a warm forest? Use the December numbers too.