



Grade 8

English Language Arts

Midnight Sun and Polar Night

Scenario: Your geography class has been learning about the North and South Pole areas. Your teacher has asked you to research what it's like to live in these regions. You choose to focus your research on the midnight sun and polar nights phenomena, and you develop the following research question:

Would it be preferable to experience polar nights or midnight sun?

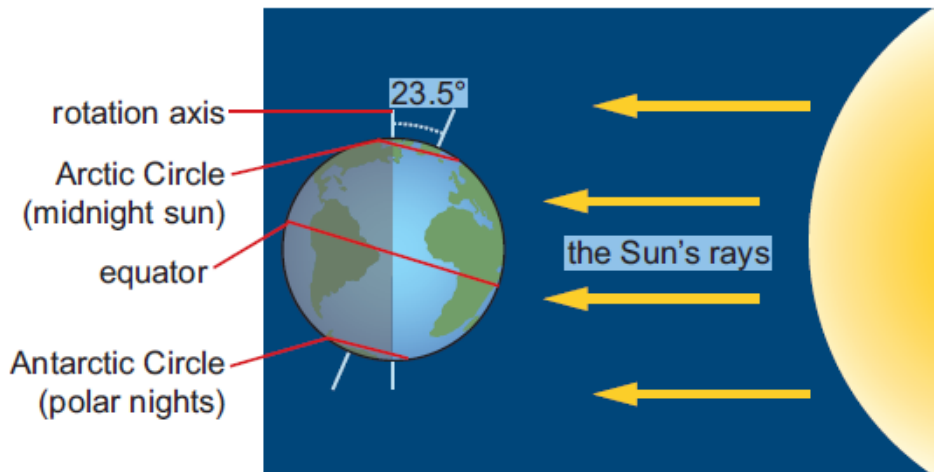
You have **three** credible sources on the **midnight sun and polar nights phenomena**. After you review these sources, you will answer four questions and construct a text that addresses the research question. You can review the sources as often as you like. Use the Notepad tool to take notes as you read and plan for writing.

Source #1

Listen to the audio clip about phenomena at Earth's poles.

 Please use your headphones and listen to the presentation.

What Causes Polar Nights and Midnight Sun?



The illustration shows why only polar regions experience these phenomena.

- 1 In Georgia, the sun sets later in the summer than in the winter. So summer days have longer periods of sunlight. In winter, the opposite is true. But what if summer days had 24 hours of sunlight, or winter days had 24 hours of darkness? This is what happens when midnight sun and polar nights occur in Earth's polar regions.
- 2 We have seasons because Earth's axis tilts at an angle of about 23.5 degrees. When the Northern Hemisphere is tilted closer to the sun, more of the sun's rays hit Earth, and we experience summer. When the Northern Hemisphere is tilted away from the sun, it is winter, and we receive less solar energy.

- 3 Earth's tilt is also responsible for the midnight sun and polar night phenomena. During the months around the summer solstice (June 20 or 21), the sun does not set near the North Pole in the Arctic Circle. Daylight lasts for 24 hours, and the midnight sun occurs. At the same time, near the South Pole in the Antarctic Circle, darkness lasts for 24 hours. The sun's rays do not hit this part of the globe, causing polar nights. During the months around the winter solstice on December 21 or 22, the opposite happens: the Arctic Circle experiences polar nights, and the Antarctic Circle gets midnight sun.
- 4 Except for some seasonal researchers and tourists, few people get to experience these phenomena at the Antarctic Circle because there are no permanent settlements there. However, closer to the North Pole, people living in parts of Norway, Sweden, Iceland, Greenland, Canada, and the U.S. state of Alaska can experience midnight sun and polar nights. Alaska, receives 85 consecutive days of constant sunlight from May 10 through August 2. Cities farther south, such as Stockholm, Sweden, and Helsinki, Finland, have summer days with 16 to 19 hours of sunlight.
- 5 How would you spend your time in around-the-clock sunlight or darkness?

Source #2

Read the blog post written by a sleep scientist about the challenges of living in a polar region.



Dealing with Extra-Long Days and Nights

by Evan Rutkoski, PhD

- 1 Last year, I visited some friends in Stockholm, Sweden. I had planned my visit for Midsummer, which is celebrated throughout the country every June. It was also the time of year that I could experience the midnight sun. When I arrived at the airport around 10:00 p.m., sunset was just beginning. Although the sun did set, it was dark for only a few hours each day.

Downsides of the Midnight Sun

- 2 I learned firsthand that the biggest downside to the midnight sun is that it makes sleep more difficult. The human body gets used to having a certain sleep cycle that is naturally aligned with hours of light and darkness. This is called a circadian rhythm, and it is responsible for a person's alertness, appetite, and body temperature. Extra-long days of light or darkness can throw off a person's circadian rhythm, leading to digestive issues and an inability to sleep.

Drawbacks of Polar Nights

- 3 While I didn't experience polar nights on this trip, these can also pose challenges. Triiodothyronine (tryeyeuhdoethighruhneen), or T_3 , is a hormone produced by the thyroid gland to help regulate the body's temperature. Researchers are studying whether a drop in T_3 levels may be caused by extremely low temperatures, a lack of light exposure, or a combination of both. One NASA study looked at what causes T_3 polar syndrome. This condition leads to increased forgetfulness and irritability among those working in places like Antarctica during the winter months. The study found that adding light boxes to rooms and taking a T_3 supplement helped participants. Mike Blachut, a refrigeration technician at McMurdo Station in Antarctica, took part in the study. "It just calmed my whole day," he said, noting that he had added extra lights to his room as a result of the study. It isn't easy living in these conditions, but fortunately scientists are finding solutions.

- 4 For any of my blog followers who are considering a trip to the land of the midnight sun or a place with polar nights, here is some advice from residents.

Tips for Managing Extra-Long Days and Nights

Midnight Sun	Polar Nights
• Set a consistent sleep routine and stick to it. • Use blackout curtains or a sleep mask to block out sunlight during sleeping hours. • Apply sunblock to avoid the negative effects of excess sunlight on the skin.	• Use lamps that provide artificial sunlight. • Participate in outdoor activities. • Get enough exercise; it helps your body produce serotonin, which in turn helps you feel better.

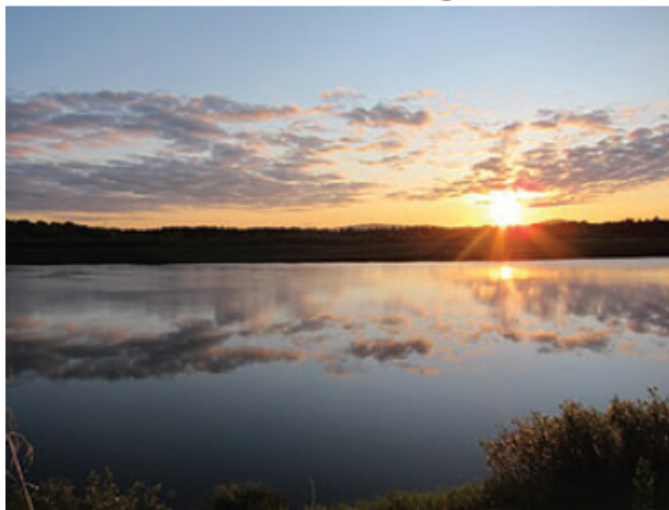
Source #3

Read the pamphlet about experiencing the midnight sun and polar night phenomena.

Unique Lifestyles in the Arctic

- 1 Can you imagine a summer where the sun doesn't set or a winter of total darkness? About four million people living in polar regions get to experience these phenomena every year. Read about what life is like in regions that experience the midnight sun and polar nights.

Life Under the Midnight Sun



This photo demonstrates the midnight sun experience. It was taken in an unidentified location within the Arctic Circle at 12:05 a.m. but appears as though it were taken during daytime hours.

- 2 Adi Scott, who works at a community greenhouse in Inuvik, Canada, says, “I think my favorite thing about the midnight sun is that you can just go out and be on the land at midnight or even three in the morning.” People can work in their gardens at all hours of the night, and many plants grow at a faster rate due to the increased amount of sunlight.
- 3 The midnight sun provides more opportunities for people to enjoy outdoor activities, such as hiking, bicycling, and camping. Many regions hold midnight sun sporting events, such as marathons and golf tournaments. Native communities such as the Sami in Norway and the Inupiaq (ihnoopeeawk) in Alaska hold festivals that celebrate the significance of the midnight sun to their cultures.
- 4 Polar researcher Christian Wild related an experience his team shared in Antarctica: “We [had] just returned from a late-night whale-spotting session,” he explained. “We saw Adélie penguins, Weddell seals, and even minke whales in the open water just in front of us—and all that while the midnight sun was shining in bright orange colors. What an unforgettable experience!”

Experiencing Polar Nights



This photo demonstrates the polar night experience. It was taken in Tromsø, Norway, during early afternoon but appears as though it were taken in the evening.

- 5 ↻ Eveline Lunde, a writer who lives in Longyearbyen, Norway, says that she experiences “more than 24 hours of total darkness for months each year.” She starts these days by putting on a reflective vest so that people can see her in the dark. She then heads to work. She often sees reindeer around town on her way to work. After work, Eveline enjoys hiking to the summit of Platåfjellet. She says the view is “breathtaking because the moonlight [lights] up the surrounding mountains.”
- 6 ↻ People can see the northern lights, also called the aurora borealis, during polar nights. These lights typically appear green and blue. This phenomenon is created from a collision between electrically charged particles from the sun that enter Earth’s atmosphere.
- 7 ↻ Fålun Strøm, a climate data collector who spends many months in remote areas of the Arctic, feels closer to nature during the polar nights. “This darkness is complete, so you have to sort of live with that and you have to see the beauty in that. And to me, that’s not hard at all. I kind of feel even more immersed [in] nature when I walk out into the darkness.”

WRITING TASK

Consider what you have learned about the midnight sun and polar nights phenomena from reviewing the three sources. You will now construct an original text using your own ideas to answer the research question for the specific purpose and audience shown below.

Research Question: *Would it be preferable to experience polar nights or midnight sun?*

Purpose: to argue whether it would be preferable to experience polar nights or midnight sun and support your argument

Audience: your geography teacher and classmates

Be sure to provide reasons for your claim, support these reasons with evidence from the sources, and include a counterclaim with a rebuttal. Refer to the Writer's Checklist as you write and edit your text.

Writer's Checklist

In my well-written **text**, I made sure to:

- ☐ provide an introduction that guides the focus.
- ☐ clearly establish my claim(s) and/or position on the topic.
- ☐ organize information in a way that makes sense for the specific purpose and target audience.
- ☐ use a style that is consistently appropriate.
- ☐ provide reasons that support my claim(s) and/or position on the topic.
- ☐ support my reasons and ideas with evidence from multiple sources to develop my claim(s).
- ☐ credit my sources when quoting or paraphrasing information.
- ☐ elaborate on my reasons and ideas by using multiple techniques to support my claim(s).
- ☐ include a counterclaim and rebuttal.
- ☐ use transition words, phrases, and clauses to connect reasons to my claim(s).
- ☐ provide a strong conclusion.
- ☐ use complete sentences and a variety of sentence structures.
- ☐ use correct verb tense.
- ☐ use active voice correctly for clarity.
- ☐ check my work and correct any errors in spelling, capitalization, punctuation, usage, or grammar.

Now create your text in the lines in your answer document. Refer to the Writer's Checklist as you write and edit your text.