



Top of the World

Grade Level: *Grades 4–8*

Time: *1–2 hours for all activities.*

Materials

For Activity 1:

- Arctic map (one per student)
- Large world map
- Globe
- Colored pencils, markers, or crayons
- Pencils and erasers

For Activity 2:

- 66 Degrees and Me! Chart
- Local Newspapers
- Computers with Internet Access
- Almanac (optional)
- World Map
- Globe
- Pencils and erasers

Key Words

Arctic: The northernmost polar region. The Arctic region consists of the Arctic Ocean surrounded by treeless permafrost.

Arctic Circle: The Arctic Circle is an imaginary line of latitude located at 66 degrees 33 minutes (66°33' above the equator). Here the sun never sets on the summer solstice (June 21) nor rises on the winter solstice (December 21).

Antarctica: Earth's southernmost continent, encapsulating the South Pole.

Isotherm: A type of contour line

that connects points of equal temperature.

Permafrost: Ground that is permanently frozen, often to great depths, the surface sometimes thawing in the summer.

Tundra: A cold, treeless area between the arctic sea ice and the tree line. The lower layers of soil are permanently frozen, but in summer the top layer of soil thaws and can support low-growing mosses, lichens, grasses, and small shrubs.

Objective

Students will identify, locate, outline, and map the Arctic Circle, including the countries that lie within its boundaries. Students will define the Arctic region by latitude, temperature, and tree line. Students will compare and contrast the human and environmental characteristics of the North and South Poles, the equator, and their home town.

Background Information

The Arctic is a vast and surprisingly diverse region of land and ice. The Arctic Circle is an imaginary line of latitude located at 66 degrees 33 minutes (66°33' above the equator). The following countries exist within the Arctic Circle: United States (Alaska), Russia, Canada, Norway, Sweden, Finland, Iceland and Greenland (Denmark). In the Arctic Circle, here the sun never sets on the summer solstice (June 21) nor rises on the winter solstice (December 21). The average temperature of the warmest month (July) in the Arctic is below 50°F (10°C), and the arctic tree line is the northern limit of stands of trees on land. Above this line of latitude, trees do not grow. There are many misconceptions about the Arctic, especially when compared to Antarctica. For example, polar bears and penguins do not live in the same regions; polar bears live in the Arctic only, while penguin species are found in Antarctica, South Africa, and South America. The following myth-busting pre-lesson will help you explore the geography of the land before exploring who and what lives there.

Teacher Prep Notes

This lesson contains several activities. Timing for all activities will take 1-2 hours total. Students will benefit from having an Arctic Notebook or folder for this unit for storing maps, activities, notes, ongoing vocabulary and assessments. For Activity 1, download teacher and student copies of the Arctic map. For Activity 2, download 66 Degrees and Me! table for students. As a resource, visit polardiscovery.whoj.edu/arctic/geography-en to see a map of the Arctic Circle as defined by latitude, temperature, and tree line.

Pre-Lesson: The Arctic vs. Antarctica

To Do

Make a chart with two columns: The Arctic and Antarctica. Have students list each characteristic they can think of for each area, or call out a fact about either the Arctic or Antarctica and have students decide which column it should be listed under. See the chart below to help you get started.

The Arctic

- An ocean surrounded by land
- Contains the North Pole
- Elevation: 3 feet of sea ice
- Bedrock: 1,400 feet below sea level
- Average mean temperature: 0° F
- Tundra, flowering plants, shrubs, tree line
- Land mammals (caribou, fox, polar bear)
- No penguins
- Marine mammals
- Several indigenous cultures
- Population: More than 2 million people
- Extensive exploitation of natural resources

Antarctica

- An ice-covered continent surrounded by ocean
- Contains the South Pole
- Elevation: 9,300 feet above sea level
- Bedrock: 100 feet above sea level
- Average mean temperature: -58° F
- No tundra or tree line
- No land mammals
- Penguins
- Marine mammals
- No record of primitive humans or native groups
- Population: Seasonal scientific researchers
- No exploitation of natural resources



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Activity 1: Mapping the Arctic

To Do

1. Ask students what they know about the Arctic and record their ideas on poster paper to reference later. Encourage all students to respond whether or not they are certain of their answers.
2. On a classroom map of the world, ask a student to locate the Arctic. Meanwhile, ask another student to locate the Arctic on a globe. Compare and contrast these two views. As a class, discuss which view (map or globe) shows the Arctic region in a format that is easier to see.
3. Discuss each definition of the Arctic (by latitude, temperature, and tree line) using a large classroom map of the world or a globe; discuss longitude and latitude as needed.
4. Have students copy all three definitions on lined paper to keep in their Arctic folder.
5. Emphasize that the Arctic is a “region” consisting of seven countries and is a unique and harsh habitat that people, plants, and animals call home.
6. Pass out copies of the Arctic map.
7. As a class, locate each country that lies within the Arctic Circle.
8. Have students label the following countries on their Arctic Circle maps: Norway, Finland, Sweden, Russia, Iceland, Greenland (Denmark), United States (Alaska), and Canada.
9. Trace the Arctic Circle (66 degrees latitude) using colored pencils, markers, or crayons.
10. Return to the students’ ideas of the Arctic. Confirm correct ideas and change incorrect ideas. Leave unanswered ideas from this lesson to address later and tell students that they will continue to learn more about the Arctic in the following lessons.

Activity 2: 66 Degrees and Me!



To Do

1. Ask students to think about the area around them. What natural features surround them? What is the weather outside? What did they have for breakfast and what will they have for lunch and dinner?
2. Have students complete the 66 Degrees and Me! table in pairs or small groups.
3. Compare and contrast as a class what they discovered about the Arctic through their comparison of their home town and the other countries. How is the Arctic the same? How is it different? How does the environment affect the people who live there?

Arctic Map



66 Degrees and Me Table

| | | | | |
|---|---|---|--|-------------------|
| | Svalbard Norway | McMurdo Base Antarctica | Quito, Ecuador (South America) | My town: _____ |
| Latitude: | 74-81 N latitude | 72 S latitude | 0 S latitude | |
| Longitude: | 10-35 E longitude | 116 W longitude | 78 W longitude | |
| Average January low/high temperature | Low: -20C/-4F High: -13C/10F | Low: -5C/22.1F High: -0.2C/31.6F | Low: 10C/50F High: 18.8C/66F | |
| Average July low/high temperature | Low: 4C/39F High: 6C/43F | Low: -30.1C/-22F High: -21C/-7.1F | Low: 9.4C/49F High: 19.4C/67F | |
| Average January hours of sunlight | 0 | 24 | 12 | |
| Average July hours of sunlight | 24 | 0 | 12 | |
| Typical breakfast, lunch, and dinner menu | B: bread, butter, jam, meats, milk L: sandwiches, milk D: fish, meatballs, potatoes, milk | Scientists bring their own food from their own countries of origin. Most is canned, freeze dried or frozen. | B: bread filled pastries L: biggest meal of the day: stews, rice, avocados D: meat stews, rice, beans | |
| What I would wear to school in September | Winter coat, hat, gloves and gloves | There are no schools in Antarctica but students to visit to study the region. Every part of the body is layered, covered and protected from the elements. | Light shirts, pants, skirts or dresses. Only a light jacket or sweater. | |
| What I would wear in July | Lots of layers including hats, gloves and winter coats and boots | Same as January! | Shorts, t-shirts, sundresses and sandals. Perhaps a light jacket or sweater in the evening. | |
| Wild animals in my state or province | Polar bears, foxes, caribou (reindeer), whales, walruses, seals, fish, sea birds | There are no land animals but you will see sea mammals, penguins and other sea birds. | Ocelots (a wild cat), lizards, giant tortoise, exotic birds, butterflies, deer | |
| When I look out the window, I see... | Oceans, mountains, and snow covered | Ocean, snow and ice covered land, mountains | A big city with a volcano, lots of parks, trees, | |

