

HISTORY & GEOGRAPHY

STUDENT BOOK

► **4th Grade** | Unit 6

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HISTORY & GEOGRAPHY 406

THE POLAR REGIONS

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LIFEPAC Test |Pull-out



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THE POLAR REGIONS

In this LIFEPAC® you will learn about the two coldest places on earth — the **polar regions**. You will learn many facts about the North Pole and the South Pole. You will learn how men explored these areas, what animals live there, and how people can survive there.

Objectives

Read these objectives. The objectives tell you what you will be able to do when you have successfully completed this LIFEPAC. Each section will list according to the numbers below what objectives will be met in that section. When you have finished this LIFEPAC, you should be able to:

1. Tell how the two polar regions are alike and how they are different.
2. Describe glaciers and pack ice.
3. Tell how icebergs are formed and why they are dangerous.
4. Describe the land and oceans around the poles.
5. Tell about the exploration of the polar regions.
6. Identify and describe polar animals.
7. Tell how Arctic people can live off their land.
8. Tell how the polar regions are used today.

1. THE POLAR REGIONS: COLDEST PLACES IN THE WORLD

The two polar **regions**, the Arctic and Antarctic, are alike in many ways. The way they are most alike is that both have huge areas of year-round ice. The ice is the first thing you would notice about the poles if you saw them from outer space.

Objectives

Review these objectives. When you have completed this section, you should be able to:

1. Tell how the two polar regions are alike and how they are different.
2. Describe glaciers and pack ice.
3. Tell how icebergs are formed and why they are dangerous.
4. Describe the land and oceans around the poles.

Vocabulary

Study these new words. Learning the meanings of these words is a good study habit and will improve your understanding of this LIFEPAC.

floe (flō). A sheet of floating ice.

glacier (glā' shər). A large mass of ice created by packed snow.

iceberg (īs' berg'). A large mass of ice floating in the sea.

polar region (pō' lər rē' jən). The area near the North or South Pole.

radar (ra' dār). Instrument used for telling the distance and direction of unseen objects.

region (re' jən). Any large part of the earth's surface.

Note: All vocabulary words in this LIFEPAC appear in **boldface** print the first time they are used. If you are unsure of the meaning when you are reading, study the definitions given.

Pronunciation Key: hat, āge, cāre, fār; let, ēqual, tērm; it, īce; hot, ōpen, ōrder; oil; out; cup, pūt, rüle; child; long; thin; /TH/ for then; /zh/ for measure; /u/ or /ə/ represents /a/ in about, /e/ in taken, /i/ in pencil, /o/ in lemon, and /u/ in circus.

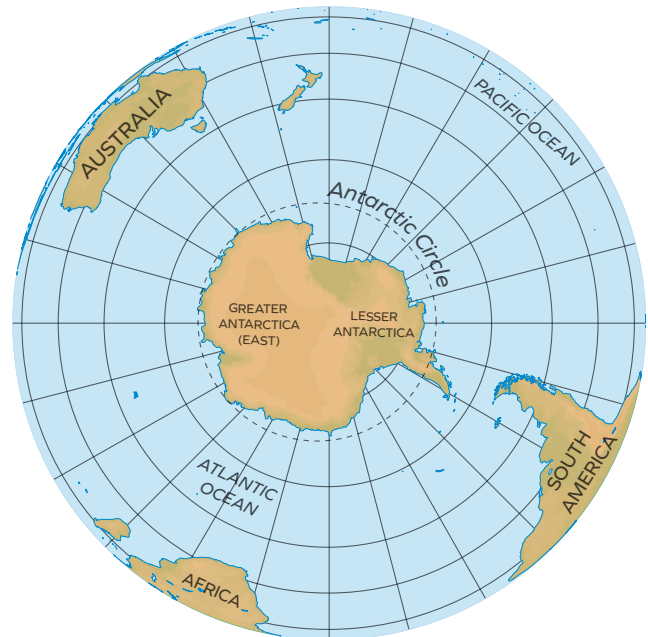
The Polar Regions

Look at the globe in your classroom. Put your finger on the North Pole. All around the North Pole is water — the Arctic Ocean. Along the coast of the Arctic Ocean are the continents of North America, Europe, and Asia.

Through the northern part of these continents, a circle is marked on the globe. This line marks what is called the Arctic Circle. Find it on the map of the Northern Hemisphere.



| Northern Hemisphere



| Southern Hemisphere

Now look at the bottom of your globe. At the South Pole you will see a large piece of land. This is the continent of Antarctica, which is surrounded by oceans. The Atlantic, Pacific, and the Indian Oceans all flow together at the bottom of the earth. There is another circle around the continent of Antarctica. This line marks what is called the Antarctic Circle. Find it on the map of the Southern Hemisphere.

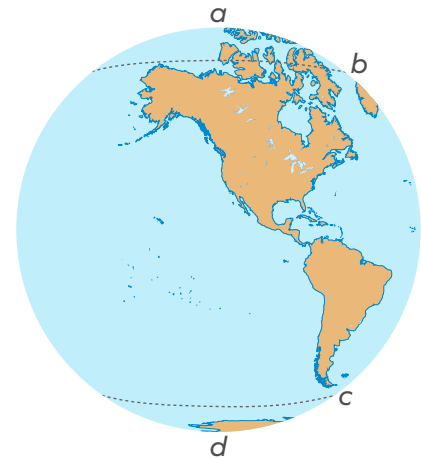
The top region of the world is an icy ocean. The bottom region of the world is an ice-covered piece of land. The two areas are alike in many ways. But God never makes any two things or places exactly the same, and the Arctic and Antarctic are different, too.



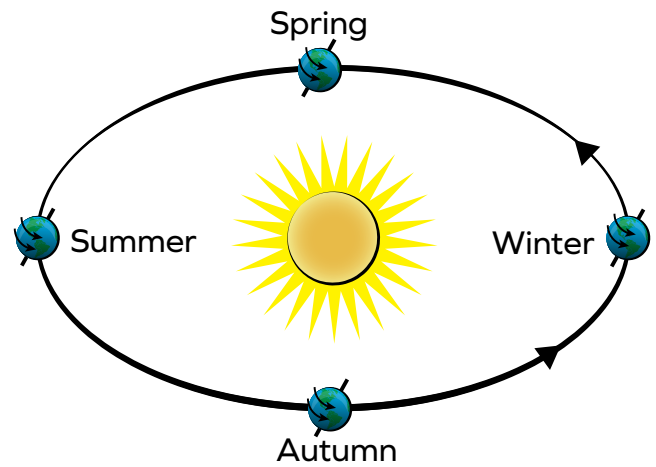
Complete this activity.

1.1 Write the names of the places marked on the globe.

- a. _____
- b. _____
- c. _____
- d. _____



Our earth orbits (circles) the sun once a year. As it moves around the sun, the North Pole is always tilted toward the North Star. In summer the North Pole leans toward the sun. Inside the Arctic Circle, the sun can be seen all day and all night at least once a summer. The sun does not heat up the Arctic Circle ice because the sun's rays hit the earth at a slant. When you are closer to the North Pole, you will more often see the sun shining at midnight. If you were at the North Pole, you would see the midnight sun for six months! As you move south from the North Pole toward the Arctic Circle, the midnight sun is seen for fewer nights. Right on the Arctic Circle the sun shines all night only once a year (June 21).



| Seasons in the Northern Hemisphere

South of the equator, seasons are exactly opposite to those north of the equator. When the North Pole has summer, the South Pole has winter. There are six months of darkness at the bottom of the world while the North Pole has sunshine day and night. The long days of darkness and light are one way that the Arctic and Antarctic are alike.

Another way the two polar regions are alike is very surprising. Neither area gets very much rain or snow! It is so cold at the poles that the air cannot hold much moisture. Without moisture in the air, there cannot be much rain or snow. The two poles are dry

enough to be called deserts. When it does snow, it never melts at the poles and will not melt for months on the edges of the polar regions. So, while there is often snow there; it is still unusual to see new-falling snow.

There are some very beautiful and unusual lights that can be seen during the polar nights in both the Arctic and Antarctic regions. They are called the Northern (or Southern) Lights. They shine like long, wavy strips across the dark sky. They can be dim or bright. They shine in many different colors. Sometimes they are unusually bright and can be seen far to the south of the Arctic.



| Northern Lights

The lights are caused by the sun and the earth together. Tiny pieces of the sun hit the earth all the time. Most of the time we cannot see these pieces; but sometimes, near the poles, the pieces light up as they hit the air around our earth. They do that because near the poles, the earth acts like the end of a magnet. A compass will point at the North or South Magnetic Pole from anywhere in the same hemisphere. This *magnetic field* makes the pieces of the sun light up. That way God allows people in the long polar darkness to see beautiful lights.



Complete these statements.

- 1.2** When the North Pole has summer, the South Pole has _____.
- 1.3** In summer you can see the _____ at night in the Arctic region.
- 1.4** The sun doesn't heat up the polar lands because the sun's rays are _____.
- 1.5** The sun can be seen all day and night at least once during the summer inside the _____.

- 1.6 The beautiful lights seen during the polar darkness are called the _____
_____ in the Arctic.
- 1.7 The place where compasses point in the Antarctic is called the _____
_____.
- 1.8 The poles are dry enough to be called _____.

Ice and Icebergs

The first thing anyone would notice about the poles is that they are covered with ice all year around. Even with the sun shining all the time in the summer, it never gets warm enough to melt the ice at the poles. The ice may melt on the edge of the polar regions, but not in the center.

The ice on the edges changes through the year. As winter nears, more of the ocean freezes solid, making the polar “land” bigger. This same ice melts in the summer, and the area of solid ice gets smaller. From outer space it looks as if the poles grow and shrink each year!

This frozen ocean water is called *pack ice*. It freezes and is “packed” together by the wind and currents to form a large solid piece. Sometimes the waves and currents will cause cracks of water called *leads* to open up in the ice. Leads may not stay open very long, so ships that try to sail up a lead may suddenly be trapped if the ice moves. If pack ice stays frozen for a whole year, the salt in it seeps out. That means people can melt it and use it to drink.

The ice helps keep it cold at the poles. Ice reflects sunlight just like a mirror. That means the sunlight does not stay to make things warmer and melt the ice. The ice also makes it very bright for people who go there. They must wear sunglasses or a mask to protect their eyes. If they do not, they can get “snow blindness.” That happens when a person’s eyes are hurt by the brightness, so they cannot see.

When ice sheets cover a whole land, they are called continental **glaciers**. Glaciers are not, however, created of frozen sea water. The ice in these glaciers started as snow. Polar regions do not have much snow falling each year, but the snow that does fall never melts. It is packed down and forms thick ice. These continental glaciers often hide the

land, so ice is all that people can see there. Other glaciers, called valley glaciers, only fill up valleys in cold areas, while nearby land is ice-free.

The icy glaciers are very heavy. Their weight causes them to move slowly downhill toward the ocean. The ice on a glacier often cracks or breaks as it moves. These cracks form deep holes called crevasses (kre vas'ez). They can be covered with a thin layer of snow or ice, so people cannot see them. Many polar explorers died when they fell into crevasses they did not see in time.

Over a long time, many glaciers will move into the ocean. The water and the waves hitting the glacier will cause pieces of the ice to break off. When a big piece breaks off, it is called calving. A huge piece of ice that calves off a glacier becomes an **iceberg**, a floating island of ice. Some can be the size of a city! Around Antarctica people often find icebergs that are 10 miles long! Icebergs will slowly melt in the water, like an ice cube. Sometimes they break apart into smaller pieces called ice **floes**.

Occasionally, ocean currents carry the icebergs into warmer waters. Only a small part of an iceberg shows above water. The part below the surface is many times larger than the part above. This makes icebergs very dangerous to ships which may get too close and hit the part underwater. Before **radar** was used, icebergs caused many shipwrecks.

The most famous iceberg accident happened in April of 1912. A new passenger ship named the *Titanic* had been built in Great Britain. It was one of the largest and most beautiful ships ever built. It had ball courts, a swimming pool, and a palm garden.



| The *Titanic* hits an iceberg.



| An iceberg

Enough rooms were available for two thousand, five hundred passengers. The builders believed the ship was unsinkable.

The ship sailed proudly from its British port across the Atlantic Ocean. Close to midnight on April 15, the cruiser came to a halt with a loud crash! The jagged point of an iceberg had torn a long hole down the side of the *Titanic*. The ship began to sink.

The ship owners were so sure the ship could not sink that they did not provide enough lifeboats for all the passengers. Only about 700 people of 2,200 were able to escape on the boats. Most of those were women and children. Because of that accident, ships now always carry enough lifeboats for all their passengers, and no one ever assumes a ship to be unsinkable!



For each statement put an “I” if it describes an iceberg, a “P” if it describes pack ice, or a “G” if it describes a glacier.

- 1.9 _____ caused the wreck of the *Titanic*
- 1.10 _____ created by packed down snow that never melts
- 1.11 _____ frozen sea water
- 1.12 _____ makes the poles look like they grow and shrink every year
- 1.13 _____ flows slowly downhill to the ocean
- 1.14 _____ many around Antarctica can be 10 miles long
- 1.15 _____ cracks form called leads with open water in them
- 1.16 _____ only a small part is above the water
- 1.17 _____ dangerous, deep holes called crevasses may be difficult to see.



Write true or false.

- 1.18 _____ Ice reflects sunlight like a mirror.
- 1.19 _____ Ice at the poles melts every summer.
- 1.20 _____ When a piece of a glacier breaks off to form an iceberg, it is called division.
- 1.21 _____ Pack ice stays salty all the time it is frozen.



Review the material in this section to prepare for the Self Test. The Self Test will check your understanding of this section. Any items you miss on this test will show you what areas you will need to restudy in order to prepare for the unit test.

SELF TEST 1

Match these items (2 points each answer).

- | | | | |
|-------------|-------|-----------|------------------------------|
| 1.01 | _____ | pack ice | a. North Pole region |
| 1.02 | _____ | icebergs | b. South Pole region |
| 1.03 | _____ | glacier | c. frozen sea water |
| 1.04 | _____ | Arctic | d. snow packed down into ice |
| 1.05 | _____ | Antarctic | e. ice islands |

Complete these statements (4 points each answer).

- 1.06** The area where the sun shines at least once all day and all night in June is called the _____ .
- 1.07** The North Pole is on an ocean; the South Pole is on _____ .
- 1.08** The bright, wavy lights seen in Antarctica during the darkness are called the _____ .
- 1.09** The place where a compass points to is called either the North or South _____ Pole.
- 1.010** Both the South and North Poles are covered all year by _____ .

Write the correct letter in the blank (4 points each answer).

- 1.011** During summer at the South Pole, the season at the North Pole is _____.
 a. fall b. spring c. winter
- 1.012** Ships now use _____ to warn them of icebergs.
 a. lights b. radar c. guns
- 1.013** Antarctica is a(n) _____.
 a. island b. continent c. glacier
- 1.014** A crack of open water in the pack ice is called a _____.
 a. crevasse b. calf c. lead

- 1.015** Glaciers move _____.
a. downhill b. not at all c. toward the sun
- 1.016** Many polar explorers died when they fell into a _____ they did not see on a glacier.
a. crevasse b. calf c. lead
- 1.017** The poles look as if they get bigger and smaller each year because of _____.
a. icebergs b. glaciers c. pack ice
- 1.018** Smaller packs of ice are called _____.
a. floes b. glaciers c. icebergs
- 1.019** The *Titanic* sank after hitting _____.
a. pack ice b. an iceberg c. Antarctica
- 1.020** The sun does not heat up the polar regions because the rays hit the earth _____.
a. too slowly b. too quickly c. at a slant

Answer true or false (2 points each answer).

- 1.021** _____ Icebergs can be as big as a city.
- 1.022** _____ Antarctica is surrounded by oceans.
- 1.023** _____ There is no land in the Arctic Circle.
- 1.024** _____ Most of an iceberg is under the surface of the water.
- 1.025** _____ There are six months of darkness at the equator each winter.

Answer these questions (5 points each answer).

- 1.026** Why did the *Titanic* not have enough lifeboats?

1.027 Why does the sun not set at the North Pole in the summer?

1.028 In what ways are the North Pole and the South Pole alike?

1.029 How are icebergs formed?

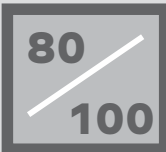


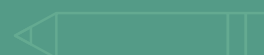
Teacher check:

Score _____

Initials _____

Date _____





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