



Girl Guides of Canada
Alberta Council

ALBERTA POLAR CHALLENGE

Introduction

The goal of this challenge is to learn more about the Polar Regions (Arctic and Antarctic) of the earth.

The purpose of this challenge is to enhance your knowledge of the Arctic and Antarctic Polar Regions.

Challenge Requirements:

Sparks and Brownies need to complete two of each.

Guides, Pathfinders and Rangers need to complete three of each.

Science

- **Polar Scientists** – Learn about being a polar scientists, and explore your own mini polar region.

Each girl or group of girls will need: a 3-4 ft piece of string or rope, a magnifying glass (optional), and 6-8 toothpicks with flags or other identifying feature on them. This is an outdoor activity for winter or early spring, so make sure the girls are properly dressed. Each girl/group will place her string in a circle to identify her exploration area. Then using her eyes and the magnifying glass identify interesting features and use the flags to mark them. Ideas of things girls could choose to identify are: vegetation, rocks, cracks in the snow, changes from ice to snow, pools of melting snow, etc. Girls should then give other girls in the unit a tour of their exploration area, including the names they gave to the locations marked with the toothpick.

- **Salt water in polar regions**

The sea near McMurdo Station, Antarctica, is -2 degrees Celsius, but the water is not frozen at that temperature. Why? In this activity girls can explore some of the properties of water and ice by making their own ice cream.

Materials (per girl):

- 2 heavy duty Ziploc bags per girl (1 large and 1 small)
- ½ cup milk, 1 tbsp sugar, ½ tsp vanilla
- Ice, salt, spoons and bowls to eat ice cream

Directions:

- Place the milk, vanilla and sugar in the small Ziploc bag and carefully close it, being sure there are no leaks.
- Place the small bag inside the larger one.
- Surround the small bag with ice to ½ the large bag capacity.
- Add enough salt to lower the temperature of the ice, but do not worry about the exact amount. Girls will add the salt to their ice, NOT to their ice cream mixture!
- Shake the bags until the ice cream freezes.
- While eating the “experiments”, discuss how it works.

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Science background: living in Canada, the girls live with ice and snow in the winter, thus the concept of melting ice with salt is not new. It is sprinkled on sidewalks and snowplows spread it on roadways to melt the ice. As salt is added to ice, the freezing point of the ice is lowered. Water will normally freeze at 0 Degrees Celsius (32 degrees Fahrenheit). A 10% salt solution freezes at -6.67 degrees Celsius, and a 20% solution freezes at -16.7 degrees Celsius (2 degrees Fahrenheit). By lowering the temperature at which ice is frozen, heat transfers out of the milk mixture into the brine solution and the milk freezes into ice cream.

- **Animals of the poles**

Watch a movie related to the poles (ex/ March of the Penguins, Happy Feet, Frozen Planet, Eight Below, Alaska). Talk about what life is like for the animals of the poles.

OR

Research the different types of animals that live in the poles and talk about what their life is like.

- **Climate change in polar regions**

There is a lot of snow and ice in the Polar Regions in the form of glaciers, icecaps, sea ice and icebergs. Complete the ice investigations below to determine if a warming climate that melts the snow and ice would cause a sea level rise.

Ice Investigation #1: If icebergs melt, will sea level rise?

Materials (per pair or team): deep dish pie or cake pan, toothpick, modelling clay, 2-3 ice cubes, water, clear plastic wrap.

- Give each team of girls a pan and a lump of clay.
- Mould the shape of a continent, pressing the edges flat against the pan.
- Pour in water to partially cover the clay continent.
- Put several ice cubes in the water to represent icebergs and sea ice. (note: the more ice you use, the easier it will be to see any changes in water level).
- Trace the water level into the clay with a toothpick or pencil.
- Cover the pan with clear plastic wrap to prevent evaporated of the water.
- Observe the marked water lines as the ice melts. Does the water level rise?

Why or why not?

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Ice Investigation #2: If glaciers and icecaps melt, will sea levels rise?

- Use the same pans and continents from investigation #1.
- Place 2-3 new ice cubes on top of the clay continent to represent glaciers or icecaps.
- Observe the marked water line as the ice melts. Does the water level rise? Why or why not?

- **Glaciers**

The Polar Regions have many glaciers, but so do the mountains near us! Take a trip to the mountains and visit a glacier in Banff, Jasper, or another park. Does it look like the glacier is growing or shrinking? If you visit in summer, can you see or hear the glacier melting? Take pictures of the glacier to document your visit.

OR

Make a photo essay to show the retreat of the glaciers.

Culture

- **People of the arctic and Antarctic**

People who live in the polar regions of the world experience long periods of complete darkness, and daylight. Thus when the sun reappears they are pretty excited. Create a song or dance to celebrate the return of sunlight in Polar Regions.

- **Polar games**

Learn to play some traditional Inuit games. Discuss how these games may relate to way of life in the Polar Regions.

Animal Sounds: place pictures of different animals in the middle of the circle ensuring there are two pictures of each animals. People jig around the circle. When the music stops everyone grabs a paper and starts to make the noise of their animals. The two people who have the same animal noise must find each other. Once the pair find search other they sit down although they can continue making the noise if they like. Continue until everyone is matched up then start again.

Dog Sled Race: the girls are lined up in teams at one end of the playing area. The first girl on each team runs down the length of the playing area on back, then picks up the second girl on her team (she holds onto the first girls waist). Together they run down the playing area and back, then pick up the third girl in their team, etc., until the whole team is running together.



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Back Bend: the object of this activity is to bend backwards as far as possible and return to a balanced upright position while holding a metre stick to your nose. The stick must touch the mat behind the girl without resting on it or bouncing. Once the mat is touched, you must return to a standing position without moving your feet! Proper stretching is a must!

Owl Hop: the goal is to hop as long as possible on one foot. The inside of one foot must be placed behind the knee of the hopping leg. The participant must only use one leg throughout the activity, and each hop must completely clear the floor. Set to music and with a crowd cheering, this is a popular activity – especially with younger children.

Frozen tag: Play a game of frozen tag while wearing snow shoes.

- **Countries of the arctic**

Canada is one of the countries with land in the Arctic, what other countries are in the Arctic? Look at a map or globe and identify other countries with land above the Arctic Circle (Greenland, United States, Russia, Finland, Iceland, Norway, Sweden). While Antarctica is not owned by any one country, several countries claim land there and even more countries conduct research there (United States, Japan, Russia, China, New Zealand, Italy, France, Germany, United Kingdom, Argentina, Chile, South Africa, and Australia).

Learn how to say “hello” in the language of countries within the Arctic Circle and that conduct research in Antarctica:

Argentina and Chile: Hola (Oh-la)

Canada, US, UK, South Africa, New Zealand, Australia: Hello

China: Ni hao (nee-Ha-OW)

Finland: Paivaa (PIE-vah)

France: Bonjour (bohn-Zhoor)

Germany: Hallo or Guten Tag (goo-tan tag)

Iceland: Hae (hi)

Japan: Konichiwa (koh-Nee-chee-wah)

Norway: Hei (hi)

Russia: dravstvuite (ZzDRAST-vet-yah)

Sweden: Tja (sha)

- **Food**

Make traditional dishes using traditional methods of a country that is located in the Arctic Regions.

- **Clothes**

Why do people who live in the Polar Regions wear the type of clothing that they wear? Explain with a sock puppet the type of aboriginal clothing that would wear to keep you warm.

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Program Tie-ins

Sparks: *Exploring and Experimenting Keeper*

Brownies: *Key to My Community #4.A. Celebrations, Aboriginal People in Canada interest badge. Special days interest badge, Fabulous Food interest badge*

Guides: *Cultural awareness interest badge #4 and 5, Heritage interest badge #5, Discover your creativity #2, Naturalist interest badge, Endangered Species interest badge, Folklore interest badge*

Pathfinders: *Winter wonder land #10. Your dream career, Broaden your horizon #2 and 3*

Ranger: *The challenges, like the programs, are flexible and may be completed in a variety of different ways. Feel free to modify the challenges to suit your unit.*