

Details



Completion Time: Less than a week

Permission: Download, Share, and Remix

Family Polar Fun Day

Overview

Plan and run a family fun afternoon or evening with several hands-on activities. Students help run the activity stations and share what they have learned about the Polar Regions. A great culminating activity for a unit on the Arctic, Antarctica, or both, and a fun way to involve families in the learning experience.

Objectives

The students will be able to identify adaptations that help animals survive in polar habitats. The students will know the key differences between the Arctic and Antarctica.

Lesson Preparation

For the 8 activity stations, I did all the activities except “Game Table” and “Snow Cones” with my 4th grade students in the days before our Family Polar Fun Day. We sent out parent letters requesting donations of the necessary items. I made sign-up sheets and asked my students to sign-up for a time to run the different stations. We sent home letters inviting the parents and families to attend our early evening (5:30-7:30 pm) event. We made large posters to identify each station and printed direction sheets for each activity (see attached), as well as recording sheets for “Deep Freeze.”

Procedure

Arctic Animal Match Up – Can you match the fur to the animal?

1. Observe the animal fur. Notice how thick it is.
2. Look at the fur with a hand lens. Notice the different types of hairs. Why is this important?
3. Match the fur with the animal it came from.

Feel The Chill – Test the effectiveness of different forms of insulation.

1. Cover your hand with one of the gloves or fur pro-

Materials

- See Resources section for materials related to each individual activity

vided.

2. Place your covered hand against the block of ice.
3. See how long you can hold your hand on the block of ice (use the sand timer).
4. Which type of protection insulated your hand the best? Why?

Vocabulary Words

Effectiveness- producing the intended or expected result.

Insulation- material used to stop heat from escaping.

Deep Freeze – How do seals and whales survive the frigid waters of the Polar Regions?

1. Hold the thermometer in your right hand and place in ice water for 30 seconds. Record temperature on record sheet.
2. Now hold the thermometer in your left hand, place hand inside the “blubber mitt.” Carefully place the mitt in the ice water, but don’t let water get inside the mitt! Hold it there for 30 seconds. Record the temperature.
3. Was there a difference in temperature? Why?

Build an “Ice Shelter” or “Igloo” – Students use sugar cubes and white glue to build “ice structures” or “Ice sculptures.” As a math extension they calculate the area and perimeter of outer walls, as well as complete paper worksheets which reinforce these concepts.

Polar Opposites – How well do you know the Arctic and Antarctica?

Discuss each Polar Picture Card and decide where it belongs on the Venn Diagram. Check your answers on the answer key.

Seal Snacks – Students make an “edible” Seal Snack – see the attached picture. Our Nutrition Network club ran this table.

Game Table – Students play “Break the Ice” – a commercially available game

Snow Cone machine – Parent volunteers make snow cones for everyone – donations are accepted to defray the cost of supplies

Other polar related art, maps, and projects on display in and around the classrooms.

Extension

Students can research their favorite polar animal and create a written, oral, or PowerPoint presentation about the animal.

Resources

[www. andrill.org](http://www.andrill.org)

Materials for each activity:

Arctic Animal Match Up - Different types of Arctic animal furs (I got mine from a leather and

fur shop in Alaska), pictures of the same arctic animals, hand lens

Feel The Chill – rubber glove, wool glove, fleece glove, block of ice, minute timer

Deep Freeze - plastic Ziploc bags (sandwich size), vegetable shortening, duct tape, thermometers, plastic storage containers or buckets, lots of ice cubes, water

Build an “Ice Shelter” or “Igloo” - sugar cubes, white glue, paper plates, pictures of igloos and ice structures

Polar Opposites – cards with features found in the Arctic, Antarctica, or both (I used the cards available from the Andrill “Antarctica’s Climate Secrets” curriculum - available at www.andrill.org)

Seal Snacks – wheat bread, cream cheese spread, thin carrot sticks, bell pepper slices, olive slices, sunflower seeds (unshelled), diagram for students to follow

Game Table – “Break the Ice” children’s game, available at most toy stores

Snow Cone machine – available for rent (we got ours donated and had parent volunteers make the snow cones)

Assessment

Students were assessed in the classroom lessons by their written work for “Deep Freeze” and the math worksheets that accompanied “Build an Igloo,” their oral responses to discussions about “Arctic Animal Match Up,” “Feel the Chill,” and “Polar Opposites.” They were also assessed by observing their participation and knowledge exhibited as they ran the activity stations.

Credit

Anne Marie Wotkyns, Academic Coordinator Internationella Engelska Skolan, Huskvarna, Sweden, amwotkyns@aol.com

National Science Education Standards (NSES):

Content Standards, Grades K-4

Content Standard A: Science As Inquiry

- a. Abilities necessary to do scientific inquiry
- b. Understandings about scientific inquiry

Content Standard B: Physical Science

- a. Properties of objects and materials

Content Standard C: Life Science

- a. Characteristics of organisms
- b. Organisms and environments

Content Standard E: Science and Technology

- c. Abilities to distinguish between natural objects and objects made by humans

Content Standard F: Science In Personal and Social Perspectives

- a. Personal health
- d. Changes in environments
- e. Science and technology in local challenges

Content Standards, Grades 5-8

Content Standard A: Science As Inquiry

- a. Abilities necessary to do scientific inquiry
- b. Understandings about scientific inquiry

Content Standard B: Physical Science

- a. Properties and changes of properties in matter
- c. Transfer of energy

Content Standard C: Life Science

- a. Structure and function in living systems
- e. Diversity and adaptations of organisms

Content Standard F: Science In Personal and Social Perspectives

- a. Personal health
- c. Natural hazards

California State Science Standards

Grade 3

Life Sciences

3. Adaptations in physical structure or behavior may improve an organism's chance for survival. As a basis for understanding this concept:
 - a. Students know plants and animals have structures that serve different functions in growth, survival, and reproduction.
 - b. Students know examples of diverse life forms in different environments, such as oceans, deserts, tundra, forests, grasslands, and wetlands.
 - c. Students know living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and some are beneficial.
 - d. Students know when the environment changes, some plants and animals survive and reproduce; others die or move to new locations.

Investigation and Experimentation

5. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:
 - a. Repeat observations to improve accuracy and know that the results of similar scientific investigations seldom turn out exactly the same because of differences in the things being investigated, methods being used, or uncertainty in the observation.
 - b. Differentiate evidence from opinion and know that scientists do not rely on claims or conclusions unless they are backed by observations that can be confirmed.
 - c. Use numerical data in describing and comparing objects, events, and measurements.

Grade 4

Life Science

2. Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:
 - a. Students know ecosystems can be characterized by their living and nonliving components.
 - b. Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all

Grade 5

Earth Sciences

3. Water on Earth moves between the oceans and land through the processes of evaporation and condensation. As a basis for understanding this concept:
 - a. Students know most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface.

- b. Students know when liquid water evaporates, it turns into water vapor in the air and can reappear as a liquid when cooled or as a solid if cooled below the freezing point of water.
- c. Students know water vapor in the air moves from one place to another and can form fog or clouds, which are tiny droplets of water or ice, and can fall to Earth as rain, hail, sleet, or snow.

Arctic Animal

Match Up

Can you match the fur to the animal?

1. Observe the animal fur. Notice how thick it is.
2. Look at the fur with a hand lens. Notice the different types of hairs. Why is this important?
3. Match the fur with the animal it came from.

Feel the Chill

Test the effectiveness of different forms of insulation.

1. Cover your hand with one of the gloves or fur provided.
2. Place your covered hand against the block of ice.
3. See how long you can hold your hand on the block of ice. (Use the sand timer)
4. Which type of protection insulated your hand the best? Why?

Vocabulary Words

Effectiveness- producing the intended or expected result.

Insulation- material used to stop heat from escaping.

Deep Freeze

How do seals and whales survive the frigid waters of the Polar Regions?

1. Hold the thermometer in your **right hand** and place in ice water for 30 seconds. Record temperature on record sheet.

2. Now hold the thermometer in your **left hand**, place hand inside the “blubber mitt.” Carefully place the mitt in the ice water, but don’t let water get inside the mitt! Hold it there for 30 seconds. Record the temperature.

3. Was there a difference in temperature? Why?

Polar Opposites?

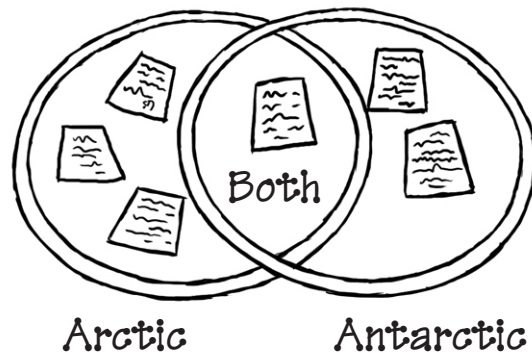
Preview

The “ends” of Earth are its **polar** regions. The region around the North Pole is called the **Arctic**. Its name comes from the fact that the stars above it form a constellation once known as **Arctos**.

The region surrounding the South Pole is directly opposite from the Arctic, so it is called the anti-Arctic, or **Antarctic**. Though their names are opposites of each other, the two regions have similarities as well as differences.

Take a look at both polar regions on a globe. Everything inside the Arctic Circle is part of the Arctic region; everything inside the Antarctic Circle is in the Antarctic region.

You may have learned about something called a **Venn diagram** in school. If so, you know that it’s a graphical way of showing how two things are different and how they are the same. A Venn diagram is usually drawn as a pair of overlapping circles. The area where the circles overlap represents what the two things have in common. Things in the separate parts of the circles only apply to one of the groups.



In this activity, you’ll get a stack of pictures and descriptions of polar features. You’ll sort them into a Venn diagram to show if they represent the Arctic, Antarctic, or Both polar regions.

Time

⌚ 30 minutes

Tools & Materials

- 📖 Polar Picture Cards (pages 11-28)
- 🌐 Globe
- ✂ Scissors (or paper cutter)
- + Two overlapping circles, each about 1 meter in diameter (hula hoops, chalk, white board, tape, etc.)
- + Optional: Double-stick tape, velcro, or stick-on magnetic strips.

📖 Items found in this book

- 🌐 Items included in the Flexhibit Kit, available from <http://www.andrill.org/flexhibit>.
- + Additional items

Prepare

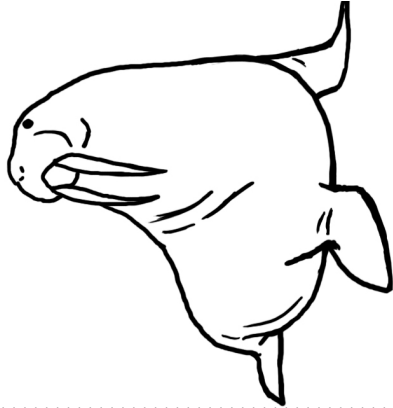

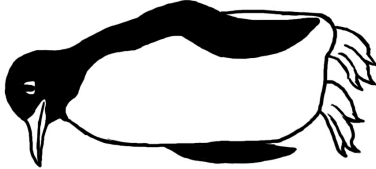
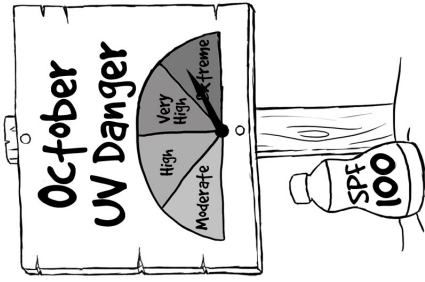
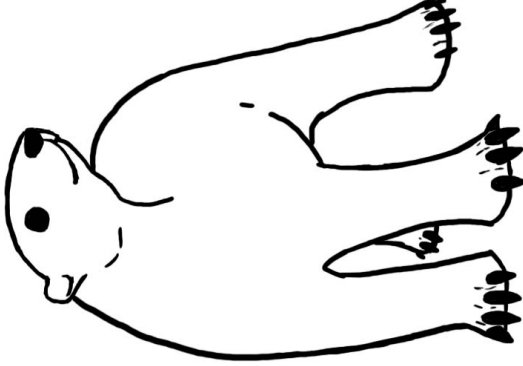

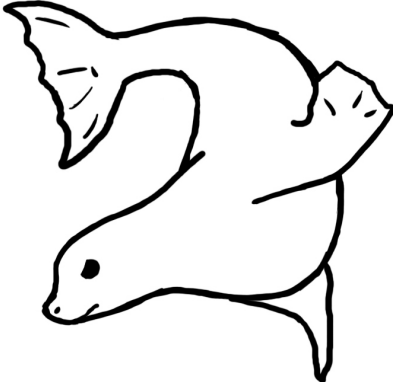

1. Cut out the Polar Picture Cards along the dotted lines.
2. Decide on a place to make your Venn Diagram. You'll want circles that are about 1 meter (1 yard) in diameter. You might draw them on a chalk board or a white board, or outline them with chalk or string on a table or the floor. Set up your two circles so that about one-third of their areas overlap.
3. One circle will contain things found in the **Arctic** and the other will contain things found in the **Antarctic**. The area of overlap represents things that are found in **Both** polar regions. Make these three labels and place them in appropriate areas of the diagram.
4. Distribute the Polar Picture Cards among your group members. Participants should consider where their pictures belong in the Venn diagram, then check themselves by reading the information on the back.
5. One at a time, show/describe your card to your group and ask them for ideas about where it belongs in the diagram. After a brief discussion, share the information from the back of the card and place it in the appropriate area on the diagram. Use a rolled piece of masking tape on the back of the card if you need to stick it to a board.

White Board Trick

Most white boards have a metal backing that magnets will stick to. If you use a white board for your circles, you can stick a small adhesive magnet (available separately or in rolls, from most hardware and craft stores) to the back of each card, to hold the cards to the white board.

Cut out cards along the dotted line...



	Walrus		Volcanoes
	Penguins		Regularly experiences an ozone hole
	Polar bears		Icebergs
	Seals		Whales

Arctic

Walruses, with their long white tusks, live only in northern waters

Antarctic

Penguins live around the coasts of Antarctica and other southern continents and islands

Arctic

Polar Bears live only in the Arctic

Both

Seals live in both the Arctic and the Antarctic

Antarctic

Mt. Erebus in Antarctica is the world's southernmost active volcano

Antarctic

Every October since 1985, instruments have detected a reduction in the ozone concentration over Antarctica

Both

Icebergs form in both polar regions—they are chunks of ice that originally formed from fresh water snow on land

Both

Whales live in waters of both the Arctic and Antarctic


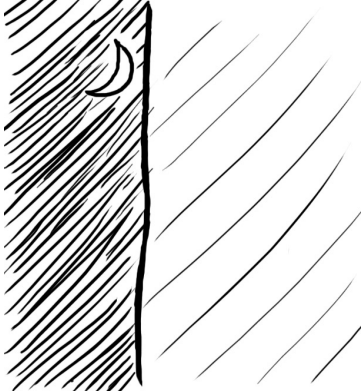
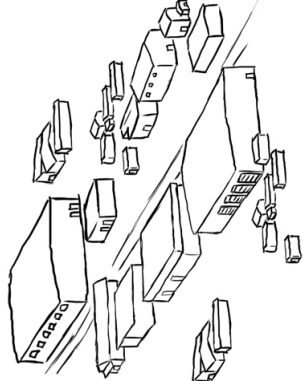

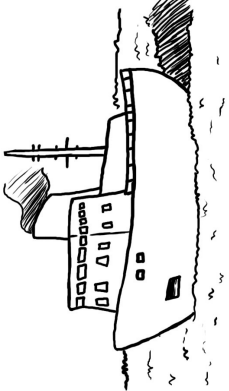
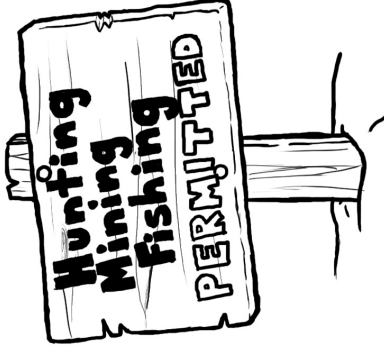
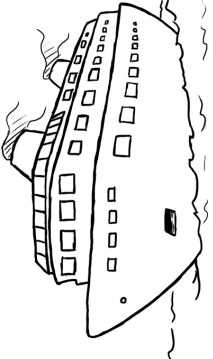
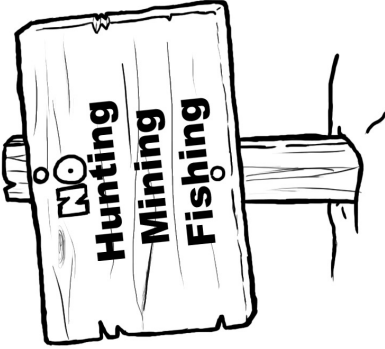
Activity 1C - Polar Opposites?

Unit 1 - Antarctica Today

Cut out cards along the dotted line...



Activity 1C - Polar Opposites?

	<p>Permanent home to zero humans</p>  <p>6 months of darkness</p>
	<p>Permanent home to over 3 million humans</p>  <p>6 months of daylight</p>
	<p>Ice breaker</p>  <p>Not Protected</p>
	<p>Cruise Ship</p>  <p>Protected</p>

Unit 1 - Antarctica Today

Antarctica

Arctic

Both

Both

There are no permanent residents in Antarctica, only temporary visitors

Cities inside the Arctic Circle have a total population over 3 million

Icebreakers are used in both polar regions to carve through sea ice.

Cruise ships regularly take passengers to see the beauty of both polar regions.

Both

Both

Arctic

Antarctic

The Arctic and the Antarctic both experience approximately 6 months of darkness in the winter

Both the Arctic and the Antarctic experience approximately 6 months of daylight in the summer

Except in specially set-aside areas, hunting, fishing, and mining are permitted in the Arctic

Hunting, fishing, and mining are prohibited in the Antarctic

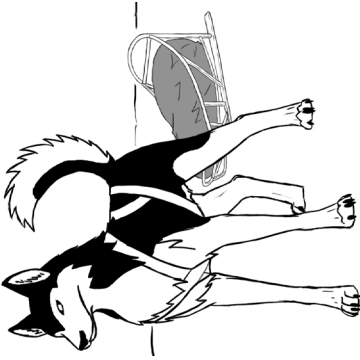
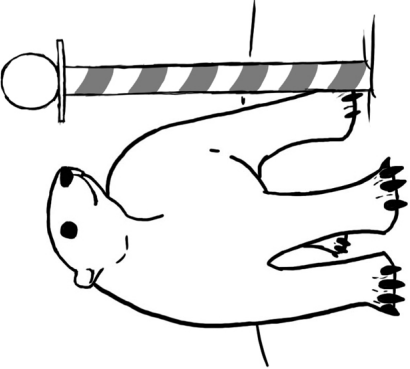
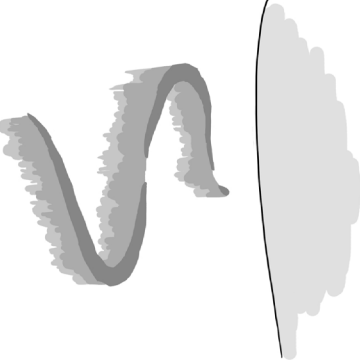
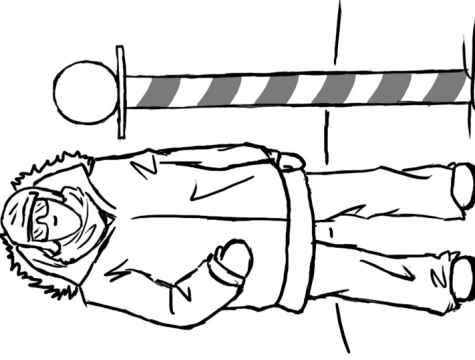

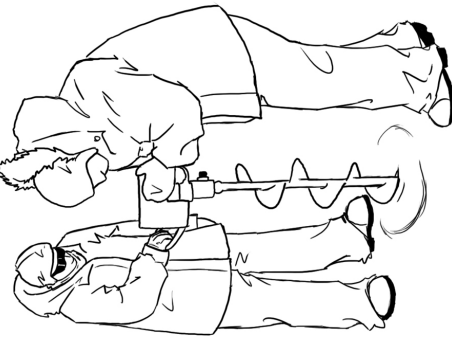

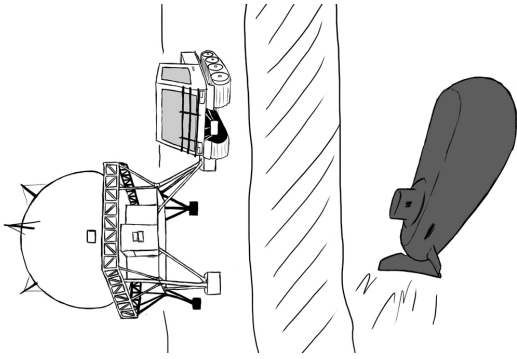
Activity 1C - Polar Opposites?

Unit 1 - Antarctica Today

Activity 1C - Polar Opposites?

Cut out cards along the dotted line...



	 <p>The North Pole</p>
	 <p>The South Pole</p>
	 <p>Scientists</p>
	 <p>Military Presence</p>

Arctic

Since 1993, sled dogs have been banned in Antarctica because the canine disease distemper can spread to Antarctica's seals.

Both

Auroras - bright, shimmering sheets of light caused by interactions between particles from the sun and Earth's magnetic field - are seen in both hemispheres.

Antarctic

Antarctica is land surrounded by ocean.

Arctic

The Arctic is ocean surrounded by land.

Arctic

The North Pole is located in the Arctic. (There are no polar bears in Antarctica.)

Antarctica

The South Pole is located in Antarctica. (A permanent scientific research station is located at the South Pole.)

Both

Scientists actively study both of Earth's polar regions.

Arctic

Military bases and operations are common in the Arctic, but are prohibited in Antarctica.

Activity 1C - Polar Opposites?

Ponder

Movies, television shows, and commercials occasionally show unlikely pairings of animals from the Arctic and Antarctic together. Think of some of the pairs of animals that you would never expect to see together, and list them.

Make up a fun sentence that will help you remember that the continent of Antarctica is at the South Pole where penguins live. Include some of the other Antarctica-only details in your sentence.

Practice

Polar Animals

Find out more about the animals in the Polar Picture Cards at <http://animals.nationalgeographic.com/animals/>.

Got the big idea?

Both of Earth's polar regions are cold and icy. Each region experiences several months of darkness followed by months of sunlight each year. The Arctic includes the North Pole; it is an ocean surrounded by land. The Antarctic includes the South Pole; it is land surrounded by an ocean. Each location has a unique set of wildlife.

Get ready to present

Think of a question or comment you can use with visitors that will invite them to interact with the Polar Picture Cards and the Venn Diagram. You may want to cover the answer on the back side of each card with a sticky note.

Present

Set up or draw the two circles of your Venn Diagram and label the three areas of your diagram. Place a few of the cards into the correct locations as examples and spread the remaining cards face up on a table. If necessary, provide tape or magnets to keep the cards in place.

Encourage Flexhibit visitors to choose a card and decide where to place it. Don't tell them to look at the back until after they have given it some thought.



Polar Day Pictures of Activity Stations

