GETTING READY TO GO!

Adapted from a lesson at http://www.tpt.org/newtons/10/antarctic1.html

OVERVIEW: Students plan an expedition to Antarctica, deciding on a route, transportation, provisions, and research topics.

Ohio Academic Content Standards addressed:

K-2 Geography Standard Benchmarks:
A. Identify the location of the state of Ohio, the United States, the continents and oceans on maps, globes and other geographic representations.
B. Identify physical and human features of places.
C. Explain how environmental processes influence human activity and ways humans depend on and adapt to the environment.

K-2 Math Standard Benchmarks:
A. Select appropriate units for length, weight, volume (capacity) and time
B. Develop common referents for units of measure for length, weight, volume (capacity) and time to make comparisons and estimates.
C. Apply measurement techniques to measure length, weight and volume (capacity).

K-2 Science Standard Benchmarks:
A. Ask a testable question
B. Design and conduct a simple investigation to explore a question

Materials needed:  - US Antarctic Program equipment list  
                  - Large world map  
                  - USAP Antarctica map  
                  - Cold weather gear  
                  - Bathroom scale, for weighing gear

Procedure
1. Using a large world map, point out Antarctica to students. Discuss why people would go there, how they would prepare, what they would do there, etc.
2. Break students into teams to **plan an expedition to Palmer Station** in Antarctica. Each team should:
   a. *Plan how they will get to Palmer:* there is no airstrip, only a monthly boat from Punta Arenas, Chile---each team should figure out **what route to take to Punta Arenas,** and when they will depart.
   
b. *Plan what they will bring:* steps include
   i. Brainstorming things they might need.
   ii. Researching (or being given) **weather conditions at Palmer Station**---a good chance to discover that the southern hemisphere’s summer is our winter, and why.
   iii. Looking at the enclosed **USAP equipment list,** and deciding which of those items they need
   iv. **Deciding how they will pack their items.** Travelers to Antarctica are allowed a maximum of two 70-lb bags. For a math exercise, students should weigh classroom items similar to their chosen items then use the estimated weights of each individual item to see if their luggage will comply.

c. *Decide what they will study while they are there:* At this point, you may have students choose their own topics for research, or adapt one of the other lessons provided here.

(Items below are excerpted from US Antarctic Program Participants Guide, 2004-2006…)}
**EXTREME COLD WEATHER (ECW) CLOTHING**

The clothing issued will vary depending on station, job and season. Here is a typical listing of clothing for personnel working outside in the summer at McMurdo Station. **Items in bold must be worn on the flight to and from Antarctica and during flights within Antarctica by all personnel regardless of job, station or season.**

- Bag, Clothing, Orange (2 ea)
- Balaclava, Polar Fleece (1 ea)
- Boot, Rubber, Thermal (1 pr)
- Bottle, Water (1 ea)
- Cap, Yahoo (1 ea)
- Carhartt (1 set)
- Carhartt, Parka, Siberian Arctic (1 ea)
- **Gaiter, Neck, Polar Fleece (1 ea)**
- Glove, Leather, W/Thinsulate Lining (4 pr)
- Goggles, Snow, Smith (1 pr)
- **Jacket, Polar Fleece (1 ea)**
- Liner, Glove, Polyply (2 pr)
- **Mitten, Fureback, Gauntlet (1 pr)**
- **Mitten, Kodiakite (1 pr)**
- **Mitten, Windproof, W/Pile (1 set)**
- Pants, Polar Fleece (1 pr)
- Pants, Wind, Bibbed (1 pr)
- Parka, Red (1 ea)
- Sock, Tube, Wool (6 pr, 1 pr worn)
- Sunglasses, non-polarized (1 pr)
- Underdrawers, Expedition (1 pr)
- **Underdrawers, Thermax (1 pr)**
- Undershirts, Expedition (1 ea)
- **Undershirts, Thermax (1 ea)**
- OPTIONAL
- Boots, Polar, FDX
- Jacket, Wind
- Trouser, Field

**PERSONAL ITEMS TO CONSIDER TAKING**

**CLOTHING ITEMS:**
- Boots or shoes; work, climbing, hiking, insulated as needed for your work
- Glasses; eye and sun, extra pair, record of prescription
- Gym clothes and shoes for athletics
- Jacket; pile and windbreaker
- Pajamas
- Pants; cotton, denim
- Shirts; light wool or cotton flannel, long-sleeve (machine washable)
- Slippers or soft shoes for indoor wear
- Sock liners; polypropylene or Thermax
- Socks; cotton and wool
- Sweaters; heavy and light
- Swimsuit (for sauna)
- Towel and washcloth
- Underwear

**MISCELLANEOUS:**
- Alarm Clock
- Batteries; rechargeable is best
- Camera/Camera batteries
- Day pack
- Hair Dryer
- Hobby, craft items (small)
- Holiday attire
- Laundry bag
- Lock, combination or key
- Prescription medications
- Sewing kit
- Skis; skate/cross country
- Small sentimental items
- Tape/CD player
- Toilet articles; sunscreen, toothpaste, dental floss, soap, comb, razor, shave cream, deodorant, cosmetics, skin lotion, tampons, a carrying case
Some Antarctic Basics...

Antarctica...

This land-based continent is the highest, driest, coldest, windiest, and emptiest place on earth. An ice sheet covers approximately 98% of Antarctica. At its thickest point the ice sheet is 4,776 meters deep. This ice is approximately 90% of all the world’s ice (by volume) and is 70% of all the world’s fresh water. There are many penguins and abundant sea life along the coast – but there is little life on the continent, and there are no indigenous peoples.

Temperatures...

The mean annual temperature at South Pole Station is minus 56°F. During the austral summer, temperatures at McMurdo Station may reach as high as 50°F, while at South Pole Station, the summer temperature may reach 0°F. Palmer Station has a milder climate, with summer temperatures reaching as high as 55°F.

Daylight and Darkness...

Simply put, much of the area below 66.5 degrees south enjoys one long day and one long night each year – with weeks of sunrise and sunset in between. There are spectacular displays of aurora australis (southern lights) during the winter darkness.

Ownership...

No nation owns Antarctica. The Antarctic Treaty, which has been signed by 45 countries, reserves the area south of 60 degrees south as a zone for the peaceful conduct of research. Treaty nations coordinate and cooperate to maximize research results and minimize logistics requirements.

Size and Distance...

The continent is roughly 14 million sq. kilometers (5.4 million sq. miles). The USA is smaller at 9.36 million sq. kilometers (3.6 million sq. miles). The area of sea ice around Antarctica varies from 4 million sq. kilometers (1.0 million sq. miles) in summer to 20 million sq. kilometers (7.7 million sq. miles) in winter. The distance from Washington, D.C., to McMurdo Station is approximately 14,830 kilometers (9,920 miles).

Science...

Antarctica provides excellent conditions for scientific research on such topics as global warming, ozone changes, climatology, earth sciences, glaciology, astronomy, UV radiation, oceanic circulation, marine ecosystems, meteorite studies, etc.

History...

The existence of Antarctica was only hypothesis until it was first sighted in 1820-21. No one set foot on the continent until 1895. The South Pole was first reached in 1911 and established as a year-round research station in 1956. Antarctica’s history is packed full of extraordinary stories of heroism and survival.