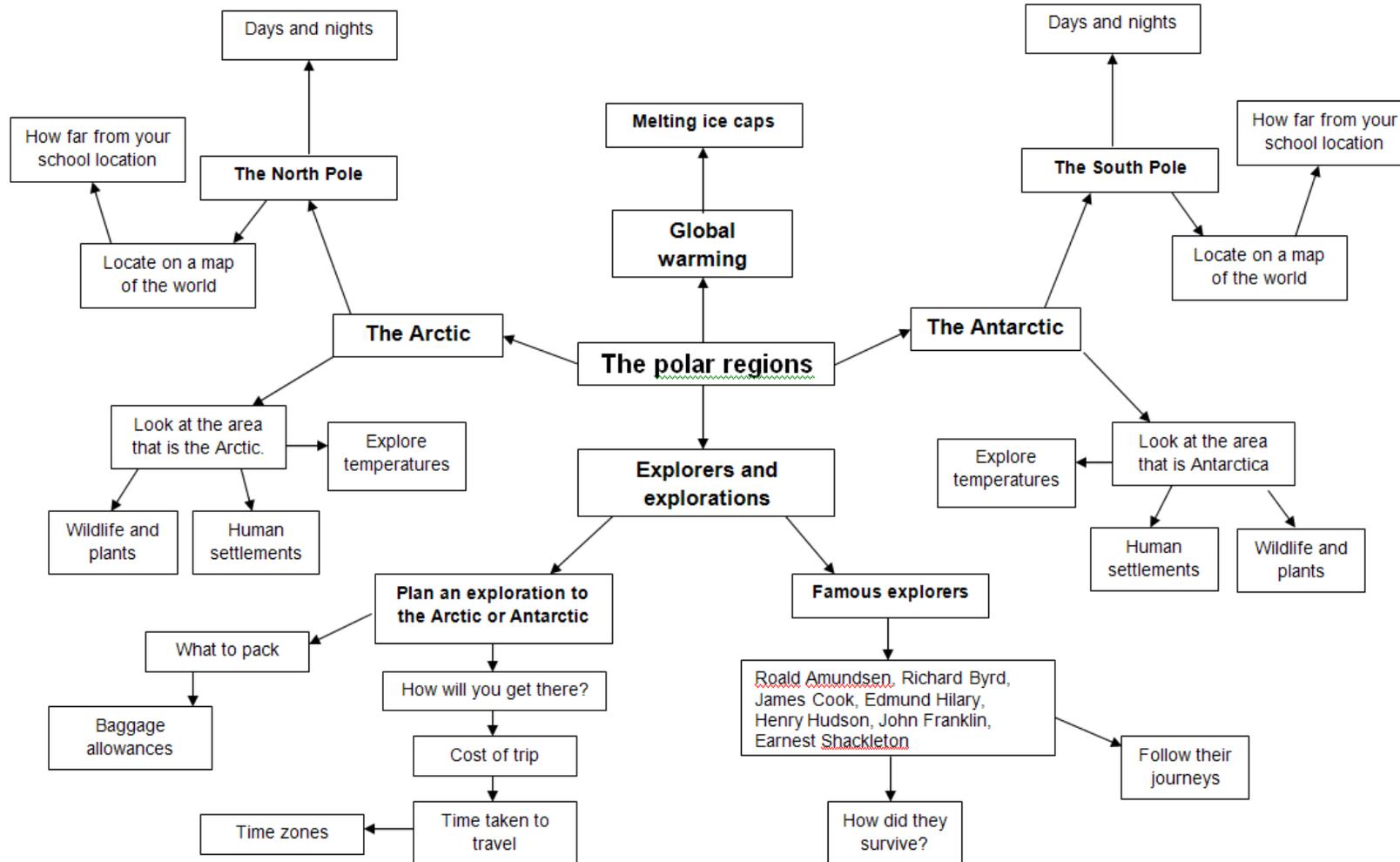


Polar Regions Mind Map



Global warming:

Melting ice caps:

- You could ask the children to research the effect of global warming on the [polar ice caps](#)
- You could ask the children to find data related to this and to make graphs of their findings.

The Arctic

The North Pole:

Locate on a map of the world:

- Shade the Arctic region on the map.
- Identify and highlight the degrees latitude where the Arctic begins.
- Mark on the North Pole.
- Find the distance from the North Pole to the timber line.
- Construct a circle using this distance as the radius. Cut it out and make your own version of the Arctic Circle, plot on the Arctic Ocean and the countries that are within this region.

How far from your school location:

- Provide a map with a scale and ask the children to work out the distance from your school or nearest town/city as the crow flies using string and then convert according to the scale. This is a good opportunity to work on scale and ratio.
- You could also use maps to plan routes that involve directional vocabulary including compass work and coordinates
- You could ask them how long it would take them to get there if they flew in a helicopter or other aircraft at 100/150/200etc. mph
- You could think about departure and arrival times for travel e.g. If I left at 10:35 am what time would I arrive? if I wanted to arrive at 23:00 pm what time would I need to leave? This is a good way for quick practice at analogue and digital time.

Days and nights:

- In the winter, the sun doesn't rise. Find out how long the winter lasts and from this, how many hours of darkness there are.
- In the summer, the sun doesn't set. Find out how long the summer lasts and from this how many hours of sunlight there are.
- Talk about the length of the days at other times during the year – how many hours/minutes do they last?
- You could do some calendar work that involves marking days when there is complete light and darkness and days when there is half light half dark etc. They could count these.
- You could show pictures of the Aurora Borealis or watch [Joanna Lumley's account](#) of her visit to see this spectacular light show. The best time to see this is between the autumn and spring equinoxes between 6:00 pm and 1:00 am. You could ask the children to find when these occur (21 September and 21 March) and do some time- and calendar-related work

Look at the area that is the Arctic:

- Identify the countries within the Arctic Circle and shade on [the map](#)
- The average depth of the Arctic Ocean is 3 953ft. What is this in metres/km? Compare this with the other oceans of the world.

- Find the distance from various places to where you live and work this out in metres/km and miles.

Explore temperatures:

- Find the warmest and coldest time of the year in each of the countries on the coastline and also those at the North Pole.
- Construct line graphs to show these and work out modes, medians, means and ranges.
- Ice covers most of this region for most of the year – explore how cold it must be for ice to form and remain.

Wildlife and plants:

- Give pairs of children an animal from this part of the world to research. They could make a fact-file of mathematical information to do with their animal e.g. adult male/female weight, adult male/female height, how many young, types of food eaten, where they live, life span, special characteristics to help them cope in these conditions. Animals include: polar bear, caribou, musk ox, wolf, wolverine, arctic fox, ermine, lemming, arctic hare, arctic ground squirrel, whales, harp seal, walrus and various birds.
- Repeat for plant life e.g. height, growth periods, how they have adapted to these conditions. Flowering plants include: purple saxifrage, wild crocus, arctic poppies, buttercups, cinquefoil, moss campion, campanulas, arctic azaleas and arctic lupine. Other plants include: mosses, grasses, herbs, lichens and small shrubs like the dwarf willow and arctic willow.

Human settlements:

- Plot the settlements in Alaska (US), Greenland, Russia and Canada on the map, look at populations. Where do most people live?

The Antarctic

The South Pole

Locate on a map of the world:

- Shade the Antarctic region on the map.
- Identify and highlight the degrees latitude where the Antarctic begins.
- Mark on the South Pole.
- Find the distance from the South Pole to the closest inhabited countries e.g. Falkland Islands, Argentina, South Africa, New Zealand, Chile.

How far from your school location:

- Provide a map with a scale and ask the children to work out the distance from your school or nearest town/city as the crow flies using string and then convert according to the scale. This is a good opportunity to work on scale and ratio.
- You could also use maps to plan routes that involve directional vocabulary including compass work and coordinates.
- You could ask them how long it would take them to get there if they flew in a helicopter or other aircraft at 100/150/200etc. mph.
- You could think about departure and arrival times for travel e.g. If I left at 10:35 am what time would I arrive, if I wanted to arrive at 23:00 pm what time would I need to leave. This is a good way for quick practice at analogue and digital time.

Days and nights:

- In the winter the sun doesn't rise. Find out how long the winter lasts and from this, how many hours of darkness there are.
- In the summer the sun doesn't set. Find out how long the summer lasts and from this, how many hours of sunlight there are.
- Talk about the lengths of the days at other times during the year – how many hours/minutes do they last?
- You could do some calendar work that involves marking days when there is complete light and darkness and days when there is half light half dark etc. they could count these.

Look at the area that is Antarctica:

- Identify the countries that surround Antarctica and shade on [the map](#)
- Average depth of the Southern Ocean is between 4000 and 5000 ft. What are these in metres/km? Compare with the other oceans of the world.
- Find the distance from various places to where you live and work this out in metres/km and miles.
- You could ask the children to research some of the research stations on Antarctica e.g. how many people work there at a time, how long do they spend there, what do they research, how do they get there?

Explore temperatures:

- Find the warmest and coldest time of the year and work out the difference.
- Construct line graphs to show monthly average temperature and work out modes, medians, means and ranges.
- Ice covers most of this region for most of the year – explore how cold it must be for ice to form and remain.

Wildlife and plants:

- Give pairs of children an animal from this part of the world to research. They could make a fact-file of mathematical information to do with their animal e.g. adult male/female weight, adult male/female height, how many young, types of food eaten, where they live, special characteristics to help them cope in these conditions. Animals include: fish, whales, sharks, seals, arctic terns, and penguins.
- Repeat for flora and fauna e.g. height, growth periods. Plants include: lichen, liverwort, moss and fungi.

Explorers and explorations

Famous explorers

- Ask the children to research some of the famous explorers of these polar regions, for example: Roald Amundsen, Richard Byrd, James Cook, Edmund Hillary, Henry Hudson, John Franklin, Earnest Shackleton.
- For each one they could make a mathematical fact-file with information such as when they were born/died, how long they lived, their achievements.
- Make a timeline of their life and achievements and use this to rehearse counting along a number line to find differences.

Follow their journeys:

- This site shows the journeys of famous Arctic explorers: <http://www.athropolis.com/map6.htm>
- This site gives some details of famous Antarctic explorers: <http://library.thinkquest.org/CR0215022/explorers.htm>

- You could ask the children to research what they discovered.

How did they survive?

- Did you know that an explorer needs 6000 calories a day to be able to generate enough heat to keep their internal organs warm enough? The average male usually needs 2300! You could explore calorie intakes of other people and investigate different foods to see how many calories certain weights contain. You can find other survival details at this website: <http://www.globalclassroom.org/antarct8.html>

Plan an exploration to the Arctic or Antarctic

What to pack:

You will need:

- waterproof jacket
- rubber boots
- waterproof trousers (good quality)
- pile jacket and/or down sweater and/or wool sweater
- socks - heavy wool or synthetic blend (2 pairs minimum)
- gloves or mittens (ski type)
- comfortable walking shoes or running shoes
- thermal, wool, or synthetic underwear, medium or heavy weight (2 sets)
- hat (warm) - wool, pile or synthetic blend and/or balaclava
- sweatpants
- sweatshirt
- sun hat or visor
- short-sleeved shirts
- lightweight trousers
- underwear
- pile trousers (optional)
- swimsuit (optional - for sauna on ship or swimming in Antarctica)
- shorts (optional, some people find the ship warm and wear shorts)

You could ask the children to look at catalogues and work out the cost.

Baggage allowances:

- You could explore various airlines and see what their baggage allowances are.
- You could pack a bag of what the children would take on holiday, then estimate and weigh it.

Polar Regions Mind Map

How will you get there?

- Explore whether you can fly directly there or whether you also have to travel by boat.
- Using maps and atlases, plan various routes to the Arctic and Antarctic from your closest airport.

Time taken to travel:

- You could find flight times and work out when you need to leave home to get to the airport in time for the flight.
- This could include driving to the airport and working out how long this would take at an average of 60mph.

Time zones:

- You could explore the time zones of the world and find differences between these and those of the polar regions.
- Work out the time difference between the UK and these areas.