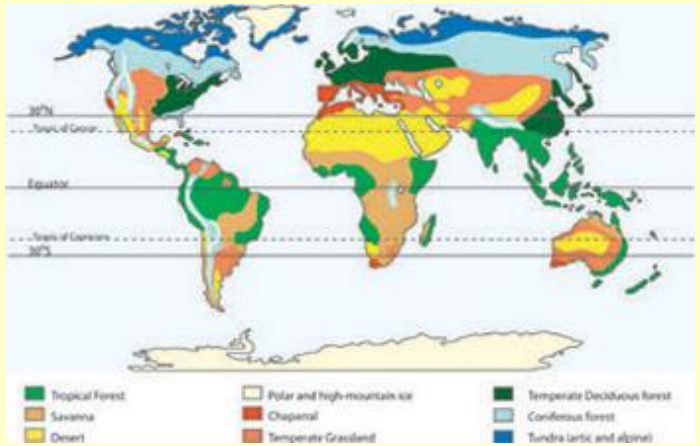
Knowledge Organiser	Subject	Year	Term	KO n.o.	Title
	Geography	9	1		Extreme Environments

Biome map of the World

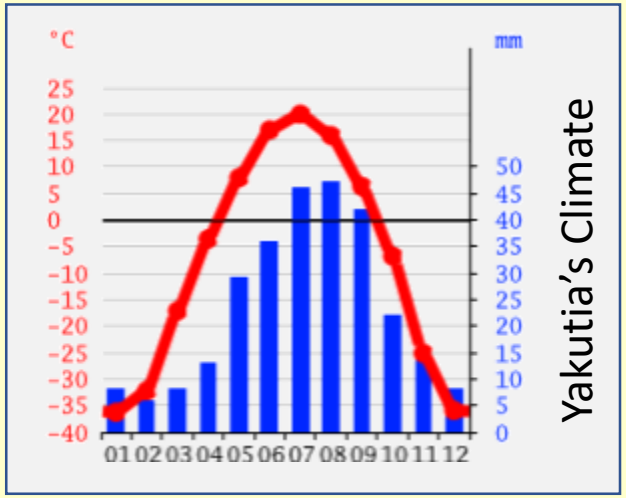


Adaptations – flora and fauna

	Hot arid	Polar
Flora (vegetation)	Cacti have widespread root systems that can collect water from a large area Cacti have spines instead of leaves. These minimise the surface area and so reduce water loss by *transpiration*	Conifer trees have downward sloping branches to allow snow to slip off – this means that the branches will not break under its weight. Conifers have thick bark in order to provide protection from high winds and extremely low temperatures.
Fauna (animals)	Camels have humps that store fat so that they can survive the lack of vegetation Camels can close their nostrils to prevent getting sand up there!	Polar Bears have Clear fur to camouflage in icy landscape and conserve heat Black skin to regulate and conserve heat.

Climate graphs

Blue bars represent rainfall
Red line represents temperature



Key term	Definition
Arid	Dry
Flora	Plants/trees - vegetation
Fauna	Animals
Adaptations	Changes made to survive
Biomes	Large, global scale ecosystems eg. Deserts, rainforests, tundra
Insulation	Measures taken to protect something from extreme hot/cold
Permafrost	Permanently frozen ground
Threat	Something which could harm or destroy something
Climate	The usual temperature and rainfall for an area
Glaciers	Large slowly moving body of ice found in a U-shaped valley

Impacts of climate change on hot deserts

- Bushfires will become more common in hotter and drier climates- risks lives of people and animals
- Droughts becoming more frequent- reducing water supply for farmers and people

Impacts of climate change on polar regions

- Tundra is being flooded as a result of permafrost melt
- Melting permafrost can lead to buildings sinking
- Arctic and Antarctic sea ice is melting threatening the survival of species like the polar bear that relies on sea ice for hunting

Global climate agreements – The Paris Agreement

- 195 countries signed up to agreement
- Goal is to limit global temperature increase to no more than 2 degrees Celsius
- Countries set their own goals to reach net zero carbon emissions
- There are no punishments for countries who fail to meet targets

Adaptations made by people

Polar

- Insulating clothing such as animal furs
- House built on stilts to not melt permafrost
- Steep roofs so that snow slides off and does not collapse roof
- Travel by dog-led sleigh

Hot arid

- Loose light coloured clothing to reflect heat
- Use of solar panels to run air conditioning
- 4 x 4 vehicles to travel over sand
- White walls to reflect heat

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Homework 1

1. Using the biome map, write a paragraph describing the location of deserts, tundra and rainforests. Include:
   - Latitude
   - Continents
   - Nearby oceans
2. Explain **one way** fauna adapts to both polar and hot arid environments
3. Explain **one way** flora adapts to both polar and hot arid environments
4. Explain **one way** people adapt to both polar and hot arid environments

Homework 2:

- Learn the key terms from the sheet you were given in class.
- Practice recalling both the definition and key term.
- Get someone to test you
- Write up 4-6 sentences including the key words

Homework 3

1. Explain how climate change threatens people in extreme environments
2. Explain how climate change threatens the environment in extreme environments
3. Explain whether the impacts of climate change will be worse in hot arid places or polar places

	I can…	Tick
What are extreme environments? Where are they located?	Describe the climate of both polar and hot arid areas, including precipitation/rainfall levels and temperature range	
	Construct and read a climate graph – identify the blue bars, red line. Be able to calculate the maximums, minimums and range of rainfall and temperature.	
	Locate the biggest hot desert in the world – The Sahara Describe the location of the world's deserts using latitude	
	Locate the biggest polar areas in the world – The Antarctic and Greenland Describe the location of the world's polar areas using latitude	
How have people and environments adapted to the challenges of extreme environments?	Explain, using named examples, how flora (plants) and fauna (animals) have successfully adapted to the extreme climates. • Two flora adaptations for a polar environment • Two flora adaptations for a hot arid environment • Two fauna adaptations for a polar environment • Two fauna adaptations for a hot arid environment	
	Explain how people have adapted to live in both polar and hot arid areas, including through: 1) Farming methods 2) Building styles 3) Clothing 4) Transport 5) Energy use	
What threatens extreme environments and how is this managed?	Explain how climate change could threaten natural systems, including: 1) Desertification (spreading of desert) 2) Species migration 3) Loss of sea ice 4) Melting permafrost and the impact of these on traditional economies.	
	Explain the possible reasons for conflict over the Arctic	
	Describe the global actions and goals taken to manage climate change	
	Evaluate the effectiveness of global actions (e.g. Paris agreement) to protect extreme environments from the threat of climate change.	