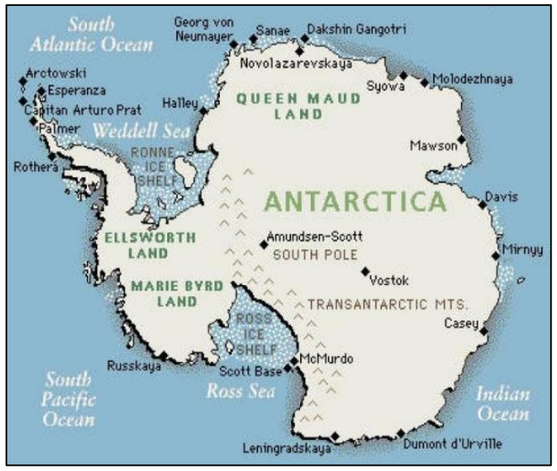
ANTARCTICA KNOWLEDGE ORGANISER

Map and Overview



-Antarctica is the world's southernmost continent. It is the location of the geographic South Pole.

-Antarctica is the fifth largest continent by size – it is 14.2 million km² about twice the size of Australia.

-About 98% of Antarctica is covered by ice – this averages about 1.9km in thickness.

-Antarctica is the coldest, driest and windiest continent, with the highest average elevation.

-The population is only around 2,000 people, who are temporary scientists and research teams (this fluctuates between summer-winter).

Places in Antarctica

Largest Settlements in Antarctica

1. McMurdo Station (USA)
2. Frei Station (Chile)
3. Amundsen-Scott (USA)
4. Mirny – (Russia)
5. Esperanze – (Argentina)

There are no countries in Antarctica, and no permanent residents. Antarctica is divided into foreign-run 'territories.'

Largest Territories in Antarctica

1. Australia – 5.9 million²
2. Norway – 2.7 million²
3. United Kingdom – 1.7 million²
4. Argentina – 1.5 million²
5. Chile – 1.3 million²

Antarctic Peninsula

The Antarctic Peninsula is the northernmost area of land on Antarctica. It is a part of Western Antarctica, and protrudes about 1,300km north towards South America. The northernmost tip of the peninsula is only about 1,000km away from the southernmost part of South America. Some sections contain little/ no sheet ice, the only place in Antarctica.

The South Pole

The South Pole is the most southerly place in the world, and is one of two places in the world upon which the earth's axis is centred. The South Pole was first reached by Norwegian Roald Amundsen and his team on December 11th, 1911. They were followed a month later by UK explorer Robert Scott and his team. The USA's permanently-manned Amundsen-Scott station is positioned at the pole.

Drake Passage

The Drake Passage is the body of water between the northernmost part of the Antarctic Peninsula and the southernmost tip of South America. It is known to be the quickest route to Antarctica from other land, but contains incredibly rough seas. Many ships have been destroyed here.

Victoria Land

Vitoria Land is the first known point at which man set foot on Antarctica. This was probably by Captain James Clark Ross in 1841. The region includes the Transatlantic Mountains, the Labyrinth flatlands, and also the McMurdo Valleys. It is situated just to the west the Ross Ice Shelf.

Longest Rivers

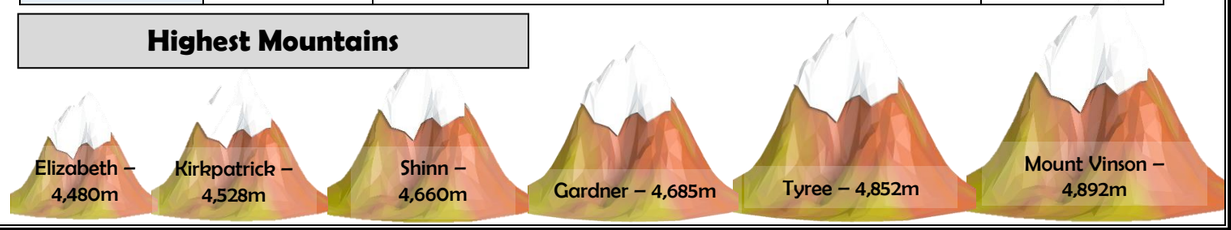
Human Geography Features

Race to the South Pole		In late 1911, Robert Scott's British team and Roald Amundsen's Norweigian team were in direct competition to reach the South Pole first. Amundsen's team won the race by 33 days. Amundsen landed at the Bay of Whales on the Ross Ice Shelf, whereas Scott landed at McMurdo – this gave Amundsen's team a shorter route by 95km. Amundsen had also mastered using sled dogs to make his journey quicker. Scott and his team died on their return from the pole, freezing to death in their tents.	**When?** At around 3pm on the 14th December 1941, Scott raised the Norweigian flag at the South Pole. Scott was disappointed to learn the race was lost upon reaching the pole on 17th January 1912.	**Key Fact:** Both teams were widely celebrated, with Amundsen receiving telegrams from the American President and British King. The Amundsen-Scott station at the pole is named after them.
Melting Ice		Antarctic ice has been rapidly melting over recent years, as a consequence of global warming. In recent years, even the ice in East Antarctica, the coldest area in the world, have begun to show signs of warming.	**What?** This is alarming news as it would raise sea levels, drowning low-lying countries	**Key Fact:** Some studies have shown the rate of melting has increased 280% in 40 years.
McMurdo Station		The McMurdo research station is the largest research centre in Antarctica. Situated on the southern tip of Ross Island, it is capable of housing 1,258 people. It is the largest of three US Antarctic research stations.	**Why?** The station takes its name from its geographic location – McMurdo Sound.	**Key Fact:** All trips to the Amundsen-Scott research centre pass through here.
Antarctic Treaty		The Antarctic Treaty was declared to end disputes over territory in Antarctica. The current claims are now fixed, and no country can claim any area south of 60° of latitude.	**When?** The treaty was signed in 1961.	**Key Fact:** Any treaty-state has legal access to the whole of Antarctica.

Physical Geography Features

Weather Extremes		Antarctica is the coldest place on earth. In the mountains, temperatures regularly drop below -60°C in the winter. It is slightly warmer around the coastal areas, but only rarely exceeds 0°C.	**Where?** It is coldest on mountain ridges. -93.2°C was once measured.	**Key Fact:** Precipitation is hard to measure, as it always falls as snow!
Ice Sheet		The Antarctic Ice Sheet is the largest on earth. In winter, it extends beyond the continent, growing from 3 million km² to 18 million km²	**Where?** Growth occurs mainly at coastal ice shelves.	**Key Fact:** The Ross and Ronne Ice Shelves grow the most.
Animals		Despite its hostile climate, including freezing temperatures, gale force winds, and perpetual winter darkness, Antarctica is home to many specially adapted animals. Emperor penguins are one of the best-known, and one of the only animals to remain on Antarctica throughout winter. A number of whale species live in the seas around Antarctica, whilst seals and many birds also call the coastal areas home.	**How?** All of the animals that live in and around Antarctica are specially adapted for the cold climate, with thick fur, feathers, or blubber to keep them warm.	**Key Fact:** There is far more life on the Antarctic Peninsula and around the coast than there are in the more central areas. There is almost no life on the mountains.
Southern Ocean		The Antarctic is surrounded by the Southern Ocean. It is a relatively deep ocean (up to 4,000m - 5,000m deep in places)	**What?** It is also known as the Antarctic Ocean.	**Key Fact:** The Southern Ocean is all ocean on earth below 60° south.
Mount Vinson		Mount Vinson is the highest mountain in Antarctica, at 4,892m above sea level. It is a part of the Vinson Massif, and lies in the Ellsworth Mountains. It overlooks the Arctic peninsula. It was not officially seen until 1958.	**When?** Vinson was first climbed in 1966 by a US team, led by Nicholas Clinch.	**Key Fact:** The Eastern route is so difficult to climb that it was not climbed until 2001.

Highest Mountains



PROPERTIES AND CHANGES OF MATERIALS

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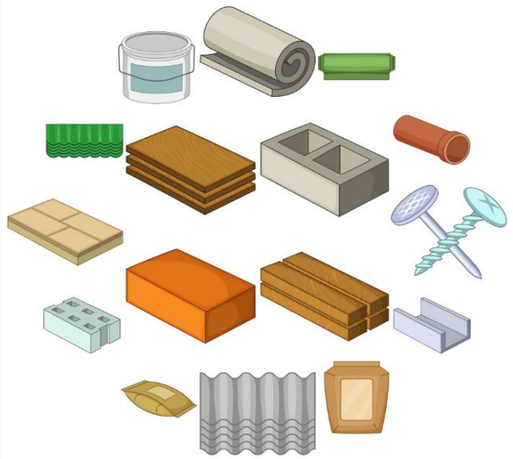
What you should already know…



-Materials are the substances that things are made from.

-The properties of materials make them useful for different purposes.

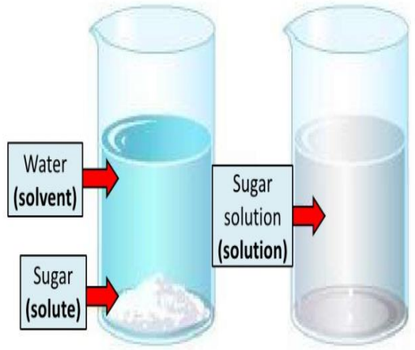
-Materials have more than one property and can be natural or man-made. Properties can include the hardness, whether it conducts electricity, the shininess, or whether it is magnetic.

-There are three main states of matter – solids, liquids, and gases.

-The state of matter of materials can change.

Solutions and Separation

A solution is a specific type of mixture where one substance is dissolved into another.



-A solvent is a substance that dissolves a solid, liquid, or gaseous solute.

-A solute is the substance dissolved in the solvent. When it dissolves, it looks as though it has disappeared, but in fact it has been broken down to become a part of the liquid.

-One example of a solution is salt water. You cannot see the salt, and the solution will remain if left alone.

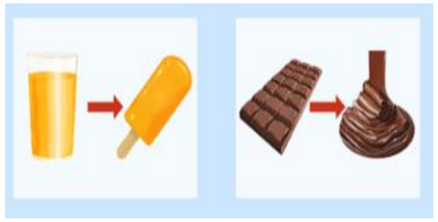
-Some mixtures and solutions can be separated, e.g.

Grouping Materials by Properties

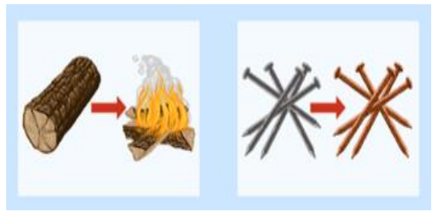
PROPERTY	YES	NO
ELECTRICAL CONDUCTOR	Copper, aluminum, gold, silver, steel, sea water	Glass, air, plastic, rubber, wood, oil, diamond
MAGNETIC	Steel, nickel, cobalt, iron, uranium, platinum	Paper, glass, plastic, rubber, wood, wool
TRANSPARENT	Glass, water, clear plastic	Wood, rubber, oil, steel, copper, iron, silver
WATERPROOF	Plastic, rubber, metal, glass	Tissue, sponge, fabric

Reversible and Irreversible Changes

REVERSIBLE CHANGES



IRREVERSIBLE CHANGES



-There are many ways in which materials can be changed, for example through heating, cooling, or mixing with other substances.

-Some changes can be reversed (e.g. the material can be returned to its previous form). These are known as reversible changes. An example of this is the freezing of water into ice – it can be melted to become water again.

-Other changes are irreversible. This means that that the changes cannot be 'undone.' Examples of this include cooking, baking, frying and burning materials. For example, you can fry a raw egg to cook it. You can't return it back to a raw egg again.

- Changes that involve the formation of new materials

Reversible Changes — Irreversible Changes

Dissolving · Mixing ·  · Changes of State · Burning ·  · Rusting · Decaying