



Year 6 Geography Spatial Sense Reading Booklet

Lesson Series:

1. Latitude and Longitude
2. The Arctic and Antarctic Circles
3. Time Zones
4. Map Projection
5. Maps of the World
6. Assessment

Name: _____

Class: _____

Lesson 1

Latitude and Longitude



Cartographers draw imaginary lines and divide the world into sections in order to locate places accurately. The lines running parallel to the equator are called parallels or lines of latitude; they measure degrees of latitude north and south of the Equator. The lines that run from pole to pole are meridians, or lines of longitude; they measure degrees of longitude east and west of the prime meridian. Where the lines intersect, the points are co-ordinates.

The tropics are based on the sun's position in relation to the Earth at two points of the year. The Tropic of Cancer and the Tropic of Capricorn each lie at 23.5 degrees latitude.

The Tropic of Cancer is located at 23.5° North of the equator and runs through Mexico, the Bahamas, Egypt, Saudi Arabia, India, and southern China.

The Tropic of Capricorn lies at 23.5° South of the equator and runs through Australia, Chile, southern Brazil (Brazil is the only country that passes through both the equator and a tropic), and northern South Africa.

The tropics are the two lines where the sun is directly overhead at noon on the two solstices - near June and December 21. The sun is directly overhead at noon on the Tropic of Cancer on June 21 (the beginning of summer in the Northern Hemisphere and the beginning of winter in the Southern Hemisphere) and the sun is directly overhead at noon on the Tropic of Capricorn on December 21 (the beginning of winter in the Northern Hemisphere and the beginning of summer in the Southern Hemisphere).

The reason for the location of the Tropic of Cancer and the Tropic of Capricorn at 23.5° north and south respectively is due to the axial tilt of the Earth. The Earth is tilted 23.5 degrees from the plane of the Earth's revolution around the sun each year. The area bounded by the Tropic of Cancer on the north and Tropic of Capricorn on the south is known as the "tropics." This area does not experience seasons because the sun is always high in the sky.



Lesson 2

The Arctic and Antarctic Circles



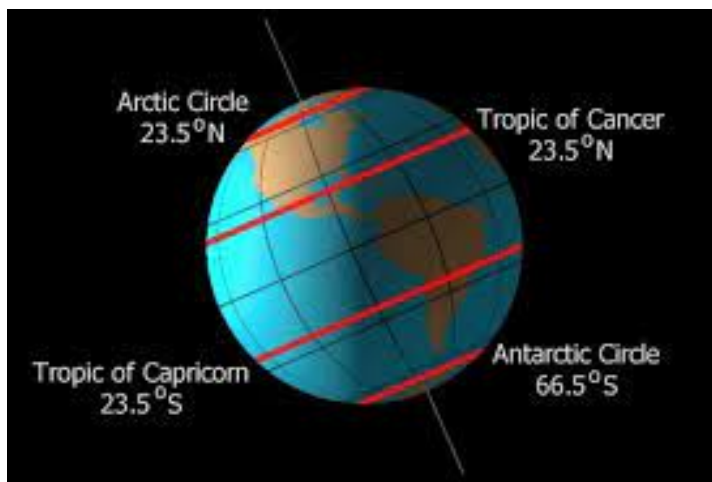
Lines of latitude or parallels tell us about the climate of regions, the further from the equator the region, the colder the climate will be. Far north, at about 67 degrees north, there is an imaginary boundary called the Arctic Circle.

Further north from this point, there will be at least one day in summer where the sun does not set, and one day in winter when it does not rise. The closer to the pole, the more such days there will be. The land and water to the north of the Arctic Circle are called the Arctic Region. There is a thick polar ice cap at the North Pole.

In 1958, a submarine called the **USS Nautilus** sailed beneath the frozen ice of the Arctic Ocean. This was proof that the enormous ice sheet rests on water and not land.

In the Southern Hemisphere, there is another imaginary circle called the Antarctic Circle located at about 67 degrees latitude. The Antarctic climate is even colder than the arctic. The Arctic is ocean surrounded by land, but the Antarctic is land surrounded by ocean. The land in Antarctica is colder than in the Arctic because the Arctic sea retains heat and warms the surrounding land slightly. Antarctica is also high, there are mountains, and the higher the land, the colder it is.

Antarctica is an ice covered continent surrounded by the Southern Ocean. Almost all of the continent's land is covered by a thick layer of ice. On average the ice is 1.9 km/6,200 ft deep. The inland ice-sheet has a thickness of up to 4 km/13,000 ft.

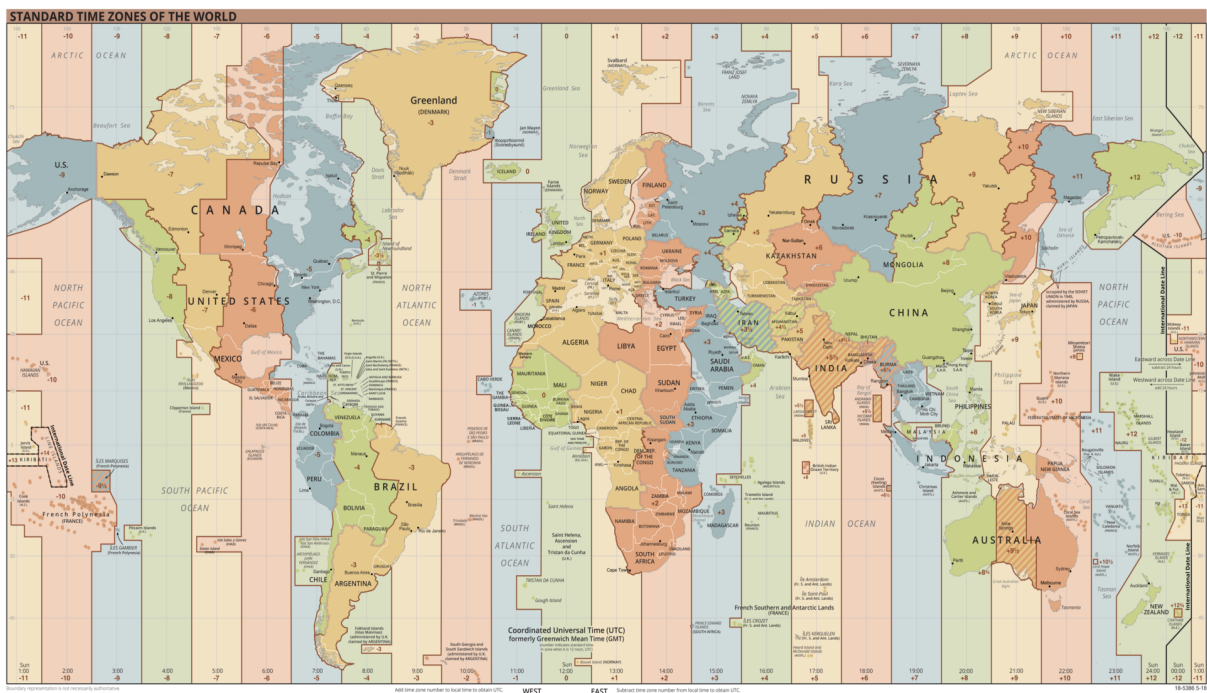


Lesson 3

Time Zones



As the Earth rotates on its axis, different parts of the earth point towards the sun. Only half of the Earth faces the sun at any one time, this half will experience daytime, whilst the other half experiences night time. When it is noon at the Prime Meridian, it is midnight on the opposite side of the Earth. The Prime Meridian is the point from which east and west are measured, and it is also a reference point for measuring time. The Prime Meridian is the point from which the world is divided into 24 hourly time zones. This matches the 24-hour cycle of the Earth's rotation on its axis. Within the 24-hour time zones, sometimes countries adjust their times for daylight saving schemes which involve putting the clock forward or backwards to get lighter mornings or longer evenings depending on the season. The line of longitude at 180 degrees is called the International Date Line. If you cross this line, going east, Monday becomes Sunday, if you cross it going west, Sunday becomes Monday. Greenwich Mean Time (GMT) is the standard time at the Royal Observatory in Greenwich, where the Prime Meridian line passes through London. British Summer time is GMT + 1 hour.



Lesson 4

Map Projection



'Projection' is the presentation of an image on a surface. The word comes from the Latin 'proicere' meaning to throw forth.

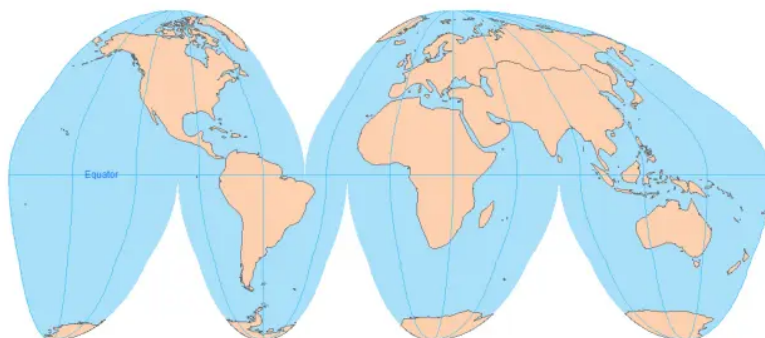
Map projection is a method that involves representing our round Earth onto a flat piece of paper. There are different approaches to map projection, each creating a slightly different end result. In the 1500s, Gerhardus Mercator was the first cartographer to project the Earth's surface onto a flat map. He projected the continents and oceans onto a cylinder, which can then be laid flat. This was a relatively accurate way to create a flat map of the earth, however this method makes landmasses nearer the poles look larger than they are, so Greenland looks larger than Australia, which is not the case. Other methods of map projection include the cone and the plane methods.

The Peters projection, the work of a German historian Arno Peters, is a map that tries to correct the distortion of traditional maps, the countries are all correct in size in relation to each other. The Peters projection also gets us to question our assumptions about the sizes of countries and helps us to see there are different ways to view the world.

Earth is a big blue marble that's the shape of a sphere (or close to it). This is why a globe is the best way to represent the Earth.

But globes are hard to carry in your suitcase and you can only see one side of the globe. On top of that, it's hard to measure distances and they're just not as convenient as paper maps.

This is why we use map projections on globes and flatten it out in two-dimensions. You can't represent Earth's surface in two dimensions without distortion.



Lesson 5

Maps of the World



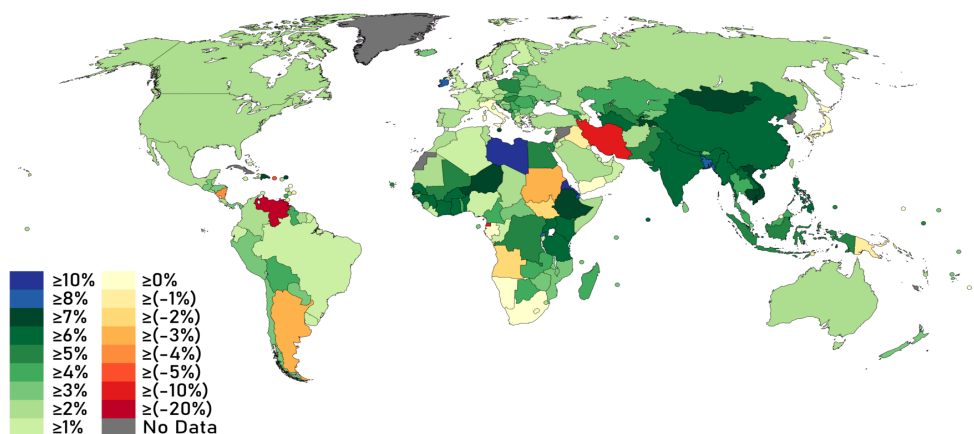
Today there are 197 countries in the world. The independent country is not only a self-governed nation with its own authorities, this status needs the international diplomatic recognition of sovereignty. Thereby, we can say that the total number of independent states in the world are 197, including fully recognized 193 members of the United Nations, 2 countries, Vatican City and Palestine, have the status of permanent observers in the UN. Another 2 states we include are Kosovo (recognized by 108 UN members) and Taiwan (recognized by 22 countries).

International trade is the exchange of goods and services across national borders. In most countries, it represents a significant part of GDP (Gross domestic product (GDP) is a monetary measure of the market value of all final goods and services produced in a period). International trade is governed by the World Trade Organization. The "fair trade" movement, also known as the "trade justice" movement, promotes the use of labour, environmental and social standards for the production of commodities, particularly those exported from the Third and Second Worlds to the First World. Such ideas have also sparked a debate on whether trade itself should be codified as a human right.

Geographers use the term, 'development' to describe the changes in standards of living and quality of life for the people of the world. Geographers look at data on wealth, literacy skills, life expectancy, food consumption and many other areas. Around the world, locations can be very different, but these indicators tell us something about the people living there. Data on areas such as these can be shown using a map.

Countries by Real GDP Growth Rate in 2018

Source: IMF World Economic Outlook Database, April 2020



Knowledge Organiser- Spatial Sense (Geography- Year 6)

Key Vocabulary	Definition
Longitude	Imaginary lines parallel to the prime meridian line that help map makers locate places with accuracy. (Vertical lines)
Latitude	Imaginary lines parallel to the equator that help map makers to locate places with accuracy. (Horizontal lines)
Axis	An imaginary line around which the Earth rotates.
The Poles	The two locations on the surface of the Earth that are at the Northern and Southern ends of the axis of rotation.
Tropic of Cancer	The line of latitude 23° north of the equator.
Tropic of Capricorn	The line of latitude 23° south of the equator.
Prime Meridian	The line of longitude at 0°.
Time Zone	A range of longitude that shares a common time.
Map Projection	A method that represents the Earth on a flat surface.



Gerhardus Mercator
Flemish Cartographer
Projected the Earth onto a flat surface in the 1500s.

