YEAR 8 GEOGRAPHY KNOWLEDGE ORGANISERS 2021-2022

Geography

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World Geography

European Geography

Rivers

Population

Weather and Climate

Russia

8

World Geography

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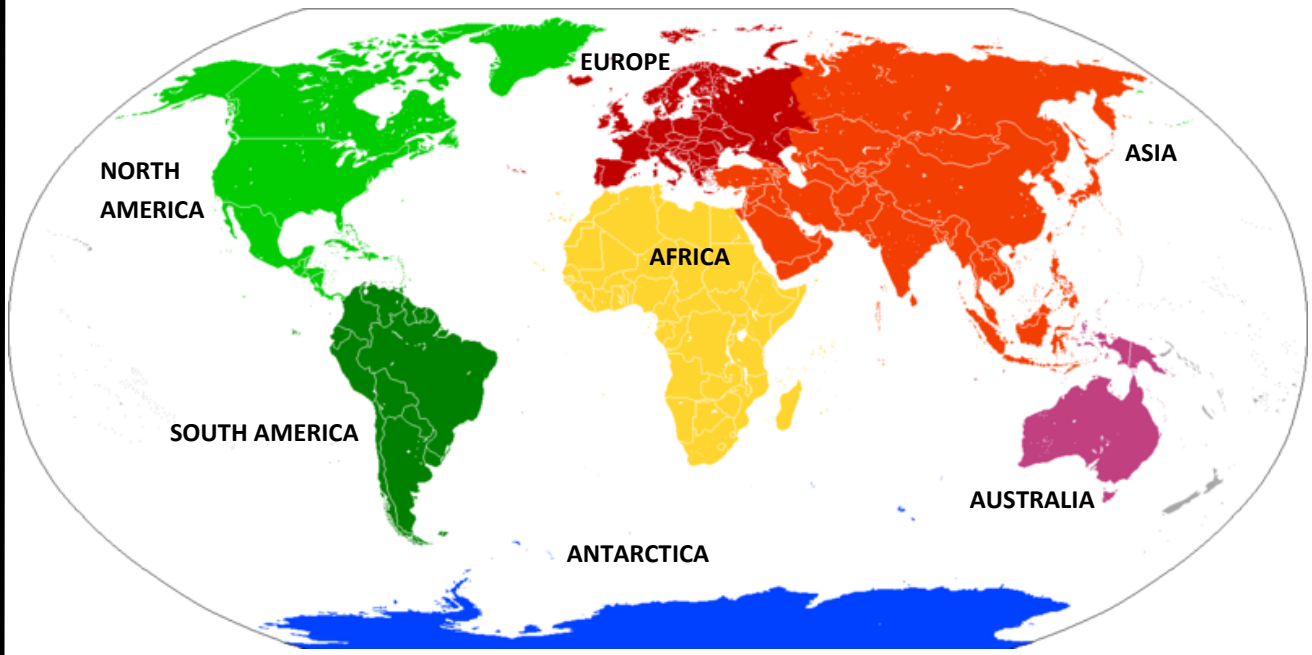
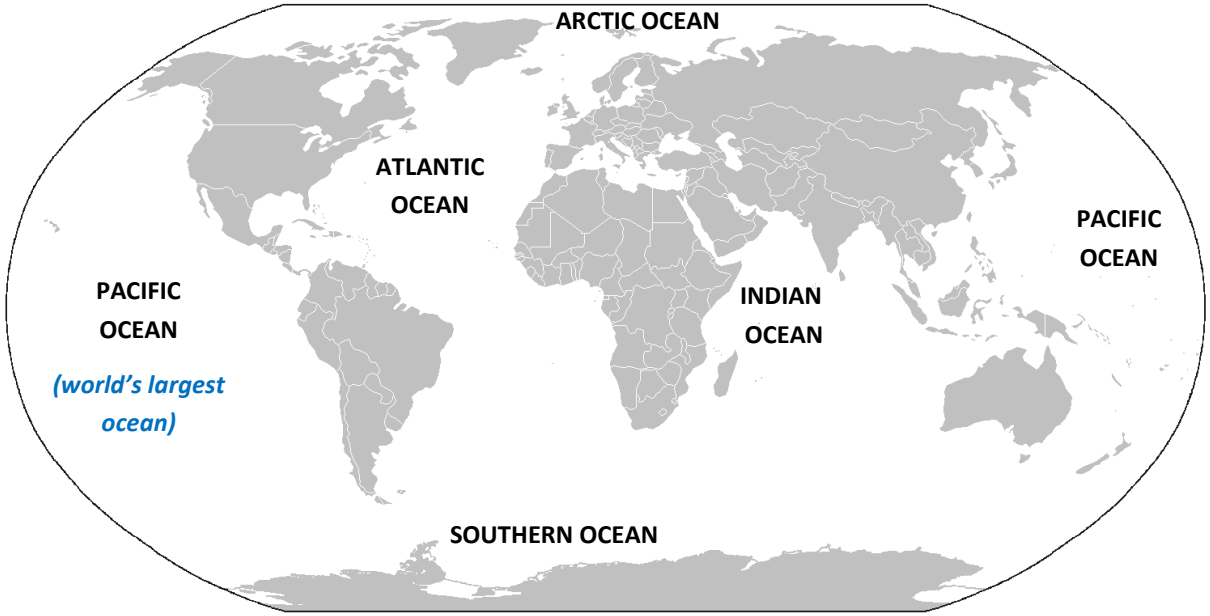
1. CONTINENTS

There are SEVEN continents



2. OCEANS



3. MAJOR MOUNTAIN RANGES

MOUNTAIN RANGE	WHERE IN THE WORLD
Alps	EUROPE
Andes	SOUTH AMERICA
Atlas	AFRICA
Himalayas	ASIA
Rocky Mountains	NORTH AMERICA
Ural Mountains	ASIA

Mount Everest is the tallest mountain in the world (8,848metres) and K2 is the second tallest (8,611m) both in the Himalaya range.

4. MAJOR RIVERS RANGES

MOUNTAINS	WHERE IN THE WORLD
Amazon	SOUTH AMERICA (second longest river in the world)
Danube	EUROPE (source in Germany)
Ganges	ASIA (India / Bangladesh)
Mississippi	NORTH AMERICA (USA)
Mekong	ASIA (starts in Tibet)
Nile	AFRICA (Longest river in the world—starts in Tanzania (White Nile) and Ethiopia (Blue Nile) and ends in Egypt
Volga	EUROPE (longest river in Europe) - Russia
Yangtze	ASIA (China) - third longest river in the world
Zambezi	AFRICA (starts in Zambia)

5. MAJOR DESERTS AND RAINFORESTS

Sahara Desert—AFRICA
Thar Desert—ASIA (India)
Kalahari Desert—AFRICA
Gobi Desert—ASIA
Arabian Desert— ASIA

The Amazon Rainforest
SOUTH AMERICA
The Congo
AFRICA

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6. COUNTRIES (to explore all the countries of the world see Google Earth https://earth.google.com/web/)

The most populated city in the world is **Tokyo** (Japan) - the greater Tokyo area has around 39 million people living there!

7. CAPITALS (major capitals to learn) - to practice these use this quizlet https://tinyurl.com/KS3WorldCapitals

ARGENTINA	Buenos Aires	CHILE	Santiago	IRAN	Tehran	NEW ZEALAND	Wellington	SPAIN	Madrid
AUSTRALIA	Canberra	CHINA	Beijing	ITALY	Rome	PERU	Lima	UK	London
BANGLADESH	Dhaka	FRANCE	Paris	JAPAN	Tokyo	PHILIPPINES	Manila	USA	Washington D.C.
BOLIVIA	Sucre	ICELAND	Reykjavik	KENYA	Nairobi	PORTUGAL	Lisbon	VENEZUELA	Caracas
BRAZIL	Brasilia	INDIA	New Delhi	MALAYSIA	Kuala Lampur	RUSSIA	Moscow		
CANADA	Ottawa	INDONESIA	Jakarta	MEXICO	Mexico City	SOUTH AFRICA	Cape Town / Pretoria	/Bloemfontein	

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EUROPEAN GEOGRAPHY

1. EUROPEAN COUNTRIES (for ALL European countries see https://earth.google.com/web)

What is the European Union? A political and economic union of 27 member states that are located primarily in Europe. Aim is to promote peace, follow EU values and improve the well being of member nations.

EUROPE FACTS:

Longest River in Europe— **Volga** (second longest—Danube)

Highest Mountain in Europe— **Mt Elbrus** (Russia)

Largest city in Europe: **Istanbul** **(over 11 million)**

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2. EUROPEAN CAPITALS

A full list of ALL European capitals can be found here https://www.countries-ofthe-world.com/capitals-of-

Austria	Vienna	Lithuania	Vilnius
Belgium	Brussels	Netherlands	Amsterdam
Bulgaria	Sofia	Norway	Oslo
Czechia	Prague	Poland	Warsaw
Denmark	Copenhagen	Portugal	Lisbon
Estonia	Tallinn	Romania	Bucharest
Finland	Helsinki	Russia	Moscow
France	Paris	Serbia	Belgrade
Germany	Berlin	Spain	Madrid
Greece	Athens	Sweden	Stockholm
Hungary	Budapest	Switzerland	Bern
Iceland	Reykjavik	Turkey	Ankara
Ireland	Dublin	Ukraine	Kiev
Italy	Rome	United Kingdom	London
Latvia	Riga		

To test yourself Read, Cover, Write, Check OR try this quizlet https://tinyurl.com/KS3Europeancapitals

Some major Mountain Ranges in Europe

The Alps (go through 8 countries including France / Switzerland)

The Dolomites (Italy)

The Apennines (Italy)

Some major Rivers in Europe

The Rhine (runs through Koblenz)

The Thames (runs through London)

The Danube (runs through Hungary)

The Seine (runs through Paris)

The Volga (Russia)

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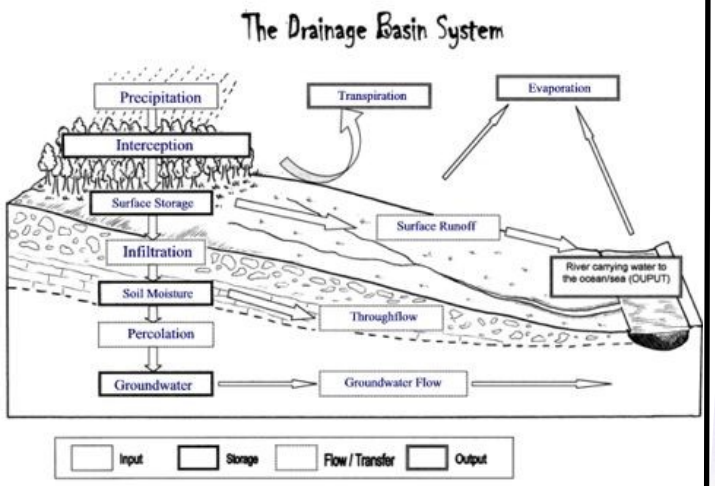
RIVER LANDSCAPES

1. Why are rivers Important?

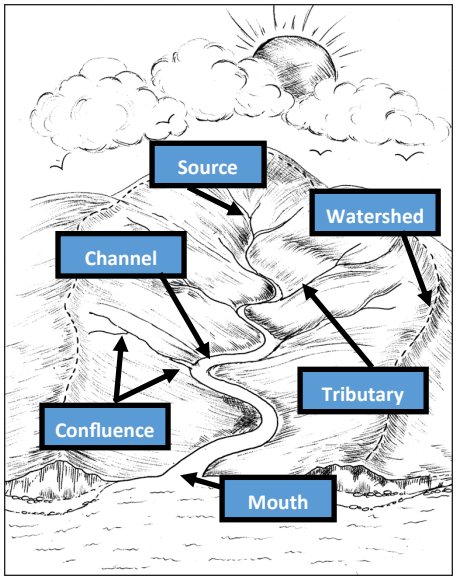
Rivers are important because they **shape the landscape, supply us with water**, influence the location of settlements and provide us with a means of **travel, power** and **recreation**.

2. How does water flow into rivers?

The water cycle is the journey water takes between the **hydrosphere** (water), **atmosphere** (air) **and lithosphere** (land). At it's most simple, this involves evaporation, condensation and precipitation



A drainage basin is an area of land which feeds a river. The rain falling in this area will flow into the **river channel** and travel from **source** to **mouth**. The division between drainage basins is called the **watershed**. Where two rivers meet is called the **confluence** and smaller rivers feeding a bigger one is known as a **tributary**.



3. What work do rivers do?

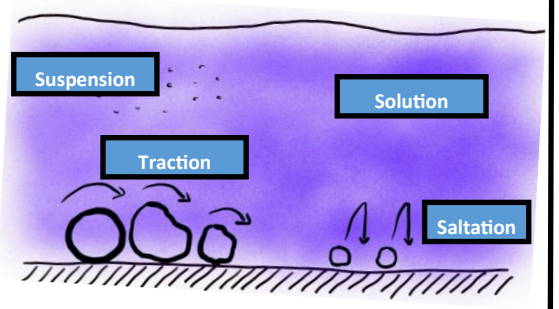
Rivers flow downhill due to gravity. Where the gradient of a river is steep, more energy is provided to erode the landscapes. Material found within a river is known as the **load** and this material is **transported** and **deposited** downstream.

1. River Erosion.

There are four types of river erosion: **abrasion, attrition, hydraulic action** and **corrosion**. (see key term glossary)

2. River Transport

The greater the volume of water in the river, the more energy it will have to transport material. There are four different ways in which a river may transport material: **suspension, solution, saltation** and **traction** (see key term glossary)



3. Deposition

Deposition takes place when the river no longer has the
energy to carry material, so it is dropped. The larger rocks are dropped first due to the greatest weight.

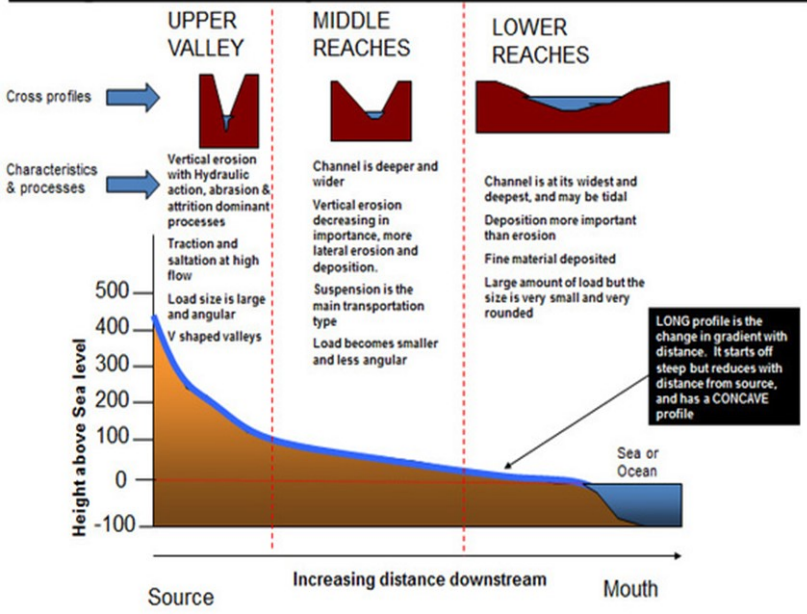
Deposition will occur where:

- the gradient of the river or the volume of water decreases
- the water slows down on the inside bend of a river
- the river channels becomes shallower
- the river enters a lake or the sea.

4. How do rivers change from source to mouth?

Although no two rivers are the same, many share a similar **long profile,** which shows a change in the gradient of a river from source to mouth. A **cross profile** shows the gradient of slopes across the valley.

Long and cross profiles on a TYPICAL river



Changes in the Valley Downstream

In the upper course of a river the gradient is steeper and the valley have steep v-shaped valley sides and narrow valley floors, as it moves further downstream the valley gets flatter and much wider.

Upper Course— steep sided / narrow

Lower Course— flatter and wider

Changes in the River Channel Downstream

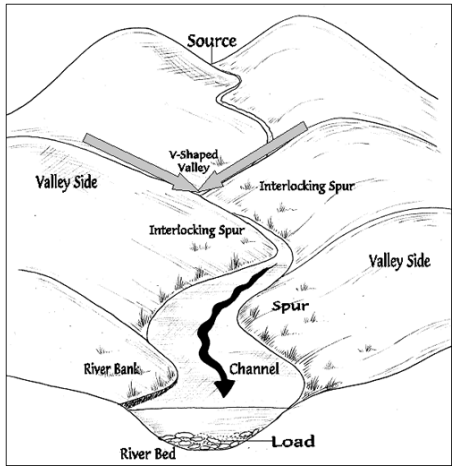
RIVER LANDSCAPES continued..

5. How do rivers shape the land?

The processes of erosion, transport and deposition also have a key role in the formation of other river landscapes such as **v-shaped valleys, waterfalls** and **meander, flood plains** and **oxbow lakes.**

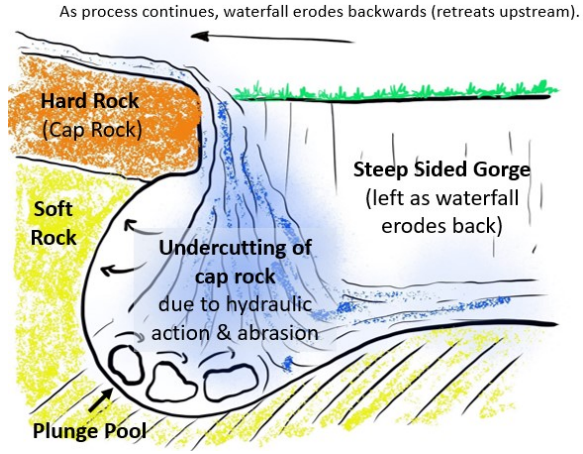
1. V-Shaped Valleys

In the upper course, the river cuts down **vertically** into the bed, creating **v-shaped valleys**. Where the river does not have the power to cut through hills it winds around them leaving **interlocking spurs**



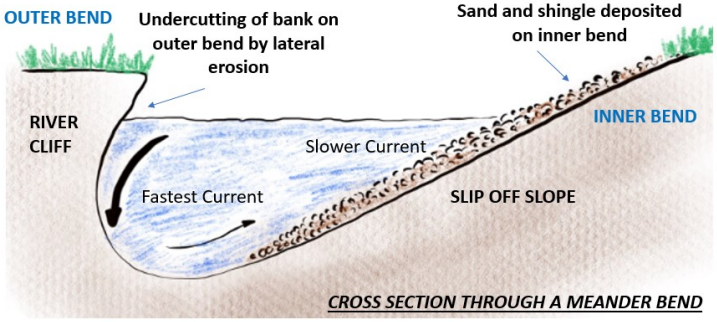
2. Waterfalls

A waterfall forms at a steep drop in the long profile of a river, **where a hard layer of rock lies over a softer, less resistant rock.** A deep pool forms at the base of the waterfall called a **plunge pool.**



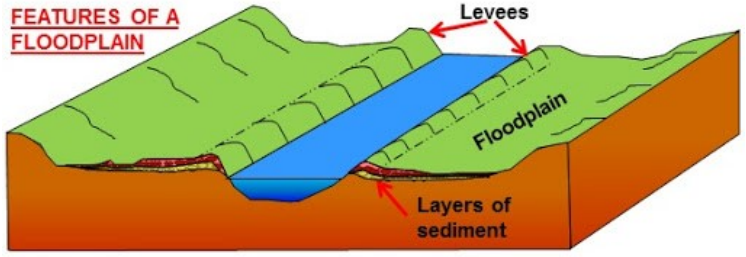
3. Meanders

A meander is a bend in the course of a river. On the outside of a meander the water is deeper and the current flows faster. The force of water undercuts the bank of the outside bend, forming a steep bank. This is called a **river cliff.** On the inside bend the current is slower, sand and pebbles are deposited forming a gentle **slip off slope.**



4. Floodplains

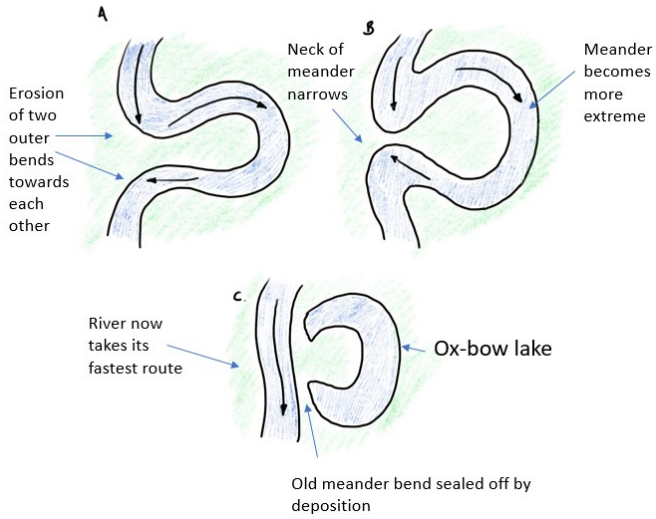
Lateral erosion (where the river is eroding into its banks) occurs at the lower stage of the river, forming a wide flat valley called a **flood plain**. As a river floods it deposits material, continuing to build up a flat wider floodplain.



5. Ox-Bow Lakes

Sometimes when the loop of a meander becomes extreme, two erosion banks can meet at a narrow neck. Eventually the channel can cut through leaving an **ox-bow lake.**

OX-BOW LAKE FORMATION



6. How are rivers important to people?

Historically settlements grew up next to rivers. River water supplied drinking water, narrow points along a river channel provide bridging points and a focus for roads, where people could trade, leading to a growth of a settlement. The mouth of a river can also provide a deep and wide natural harbour. For example, the mouth of The River Tees has developed into a large port which brings in raw materials for industries located in the area.

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RIVER LANDSCAPES continued..

7. How do river floods create problems?

A flood occurs when a river has too much water in its channel. The water in the river overflows its banks and spreads out onto the surrounding area.

The Causes of River Flooding

PHYSICAL CAUSES	HUMAN CAUSES
Heavy, prolonged rainfall	River Management
Saturated Soil	Deforestation
Impermeable rock	Urbanisation
Steep Gradient	

8. The effects of Flooding

Flooding can have the follow types of effects:

ECONOMIC EFFECTS—cost of damage to buildings, loss of crops, insurance costs, damage to cars.

ENVIRONMENTAL EFFECTS—loss of habitats, land flooded, pollution of freshwater

SOCIAL EFFECTS—deaths, stress and anxiety, closure of schools etc.

9. Managing Floods

The Environment Agency (EA) is a governing body that has responsibility for the protection and enhancement of the environment in the England.

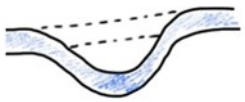
They also manage the risk of flooding and making people aware of how they can protect themselves and their property, using a combination of **hard and soft engineering approaches. Hard Engineering** being man-made artificial structures which try and control rivers.eg. building a raised bank. **Soft Engineering** being where more natural methods are used.eg. planting trees which uptake water.

Hard Engineering

1. Build dams and reservoirs

2. Raise banks & dredge the river bed

3. Straighten rivers to speed up flow



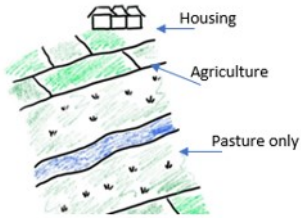
4. Build Concrete Walls.

Soft Engineering

1. Warn and educate people

2. PLANTING TREES (more interception)

3. LAND–USE ZONING



APPLYING YOUR KNOWLEDGE...

- Describe the main changes in a river and its valley as it moves from source to mouth.
- Describe and explain how a meander is formed.
- Outline the ways in which the risk of flooding can be re-

Now Challenge yourself even further!

- ***Try and find out what is meant by the Bradshaw Model***
- ***Investigate the causes, effects and responses to flooding in York or Bangladesh.***
- ***Through research create a poster to show how the River Severn changes from source to mouth.***

Challenge Question: In what ways can an increasing population lead to an increased flood risk?

OTHER RESOURCES

BBC KS3 Bitesize—Rivers and Water https://www.bbc.co.uk/bitesize/topics/zs92tfr

River Flooding https://www.bbc.co.uk/teach/class-clips-video/geography-ks3-river-flooding/zmdq7nb

KS3 Schoology

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Key Term	Definition
Abrasion	Rocks hitting into and scraping against the river bank wearing it away
Attrition	Rocks hitting into each other becoming smaller & rounded
Biological Weathering	The breakdown of rocks caused by living plants and creatures (e.g. roots forcing themselves into rock).
Chemical weathering	The breakdown of rocks by chemicals in the rock reacting with air and water
Condensation	The change in state from a gas to a liquid
Confluence	The point where two or more river channels join
Drainage Basin	The area of land drained by a river (i.e. land where a river gets its water from.
Evaporation	The change in state from liquid to gas
Groundwater Flow	The transfer of water through the ground back to the sea or river
Hydraulic Action	The force of water hitting the bank and squeezing air into cracks in rocks causing mini explosions
Infiltration	The movement of water into the ground from the surface
Interception	Where leaves on trees / plants stop rain reaching the ground
Mouth	The point at which a river meets the sea
Physical Weathering	The breakdown of rock caused by the effects of changing temperature in rocks & the effects of wind and rain.
Precipitation	Any moisture falling from the sky—including rain, snow, sleet and hail
River Channel	The path through which the river flows (consisting of bed and banks)
Saltation	Medium sized rocks 'bounced' along bed
Solution	Where minerals in rocks are dissolved by the water
Source	Starting point of a river
Surface Runoff	The movement of water over the surface of land into the rivers (also known as overland flow)
Suspension	Small material actually carried in the flow of the water
Throughflow	The horizontal movement of water through the soil
Traction	Large material rolled along bed of river.
Transpiration	The evaporation of water from the leaves of trees and plants
Tributary	A small river or stream which joins a larger river
Watershed	The invisible land (marked by high land) marking the edge of a drainage basin.

To test yourself Read, Cover, Write, Check OR try this quizlet https://tinyurl.com/KS3Rivers

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Population

Key Idea: The human population of the planet has grown rapidly

Population: The number of 'inhabitants' of a particular place.

Birth Rate: (BR) The number of babies born per 1000 people per year.

Death Rate: (DR) The number of deaths per every 1000 people per year.

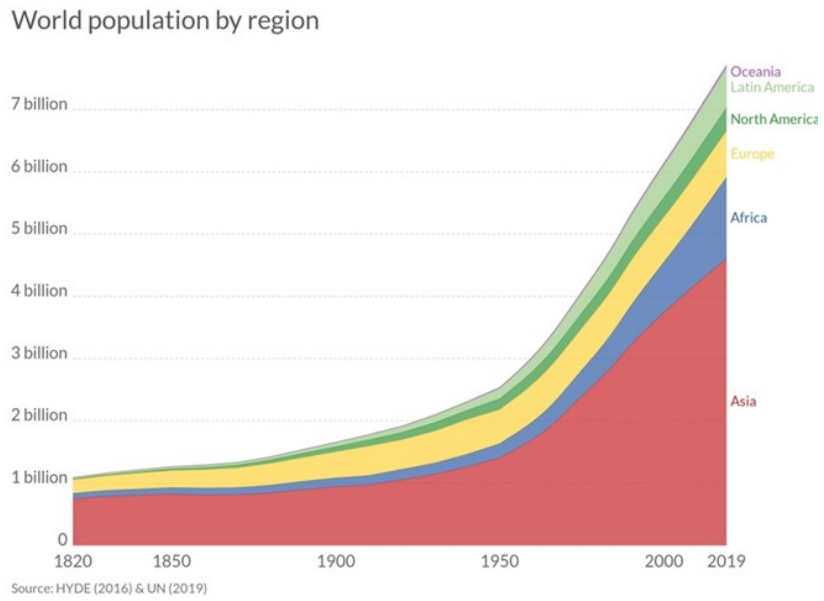
Population growth or 'natural change' (NC): calculate "BR - DR = NC"

Natural Increase: when the birth rate exceeds the death rate.

Natural Decrease: when the death rate exceeds the birth rate.

Country	Birth rate	Death rate	Natural increase
UK	11	10	1

Growth was slow and steady until 1900 at which point **death rates** across the world started to fall. **Natural increase** was rapid causing a **population explosion.**



The world population increased from 1 billion in 1800 to 7.7 billion today.

Whilst all continents show growth, some individual countries are increasing rapidly, while others are stable or even declining.

While the number of births and deaths is always a factor, other factors such as war, disease, migration, policies, and natural disasters others can affect a population's growth.

	FACTORS RESULTING IN HIGH RATES	FACTORS RESULTING IN LOW RATES
Factors affecting birth rates:	• Children work to help the family income. • Children care for grandparents • Low availability/knowledge /Fear of **contraception** and family planning • High infant mortality, many born so some survive. • Certain religions encourage large families. • Large families can show high status for men.	• Women's rights increased so can choose to not have children. • Contraception/family planning available and affordable. • Careers before family so fewer children • Later marriage reduces **childbearing years** • Children increasingly expensive, prefer to have more disposable income
Factors affecting death rates:	• Lack of food/malnutrition from **famine**. • Poor sanitation and lack of **potable** water. • Natural disasters destroying crops/ incomes. • High levels of disease, eg malaria. • Lack of doctors, medicines and healthcare. • War and genocide.	• High food availability and storage • Advances in medicine and technology • **Vaccinations** against disease childhood • Improved water provision and **sanitation**. • Lower infant death rates.

Higher income countries have lower birth and death rates, (10-20 per thousand people per year), whereas **lower income countries have higher birth and death rates** (40-50 per thousand people, per

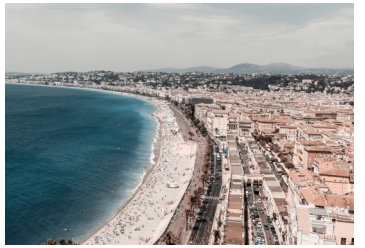
Key Idea: The world's population is not evenly distributed

Population Distribution = The pattern or 'spread' of where people live in the world.

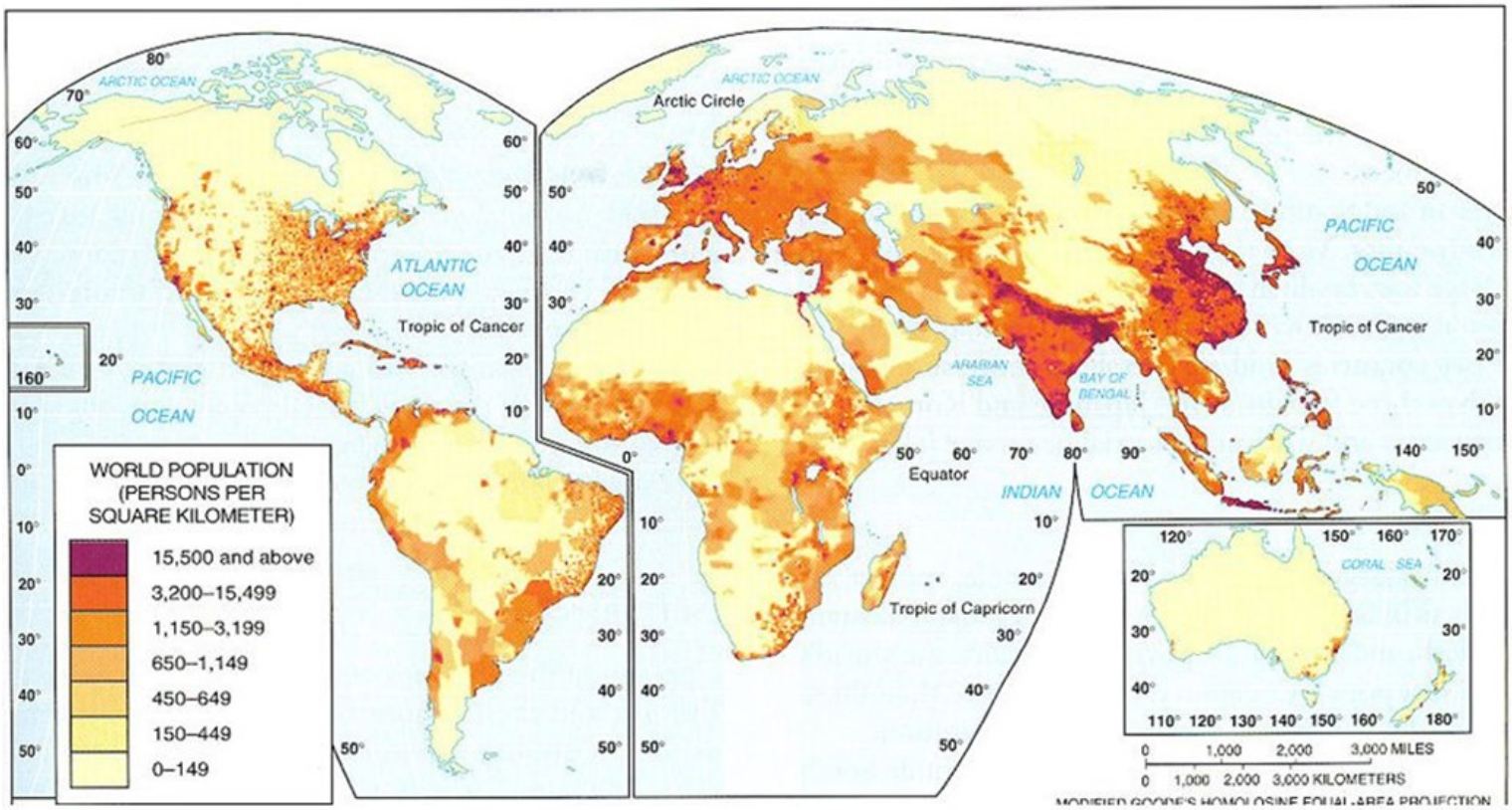
Population Density = A measurement of how many people there are per square kilometre.

Densely populated = The population is high and very close together. Typically, in the mid-latitude climates, lowlands and near coastal areas, beside major rivers, easy to develop and grow food to feed large populations.

Sparsely populated = The population is low and very spread out. Typically, in extreme climates or high-altitude locations where it is difficult to live and grow enough food to support large populations.



Population continued...



Physical factors affecting population density

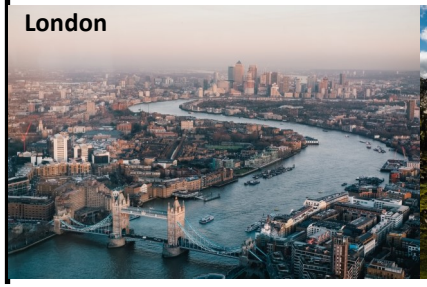
- Available water supply
- Relief
- Climate
- Nearness to coast
- Soil type (how fertile)
- Access to resources (e.g. minerals)
- Vegetation

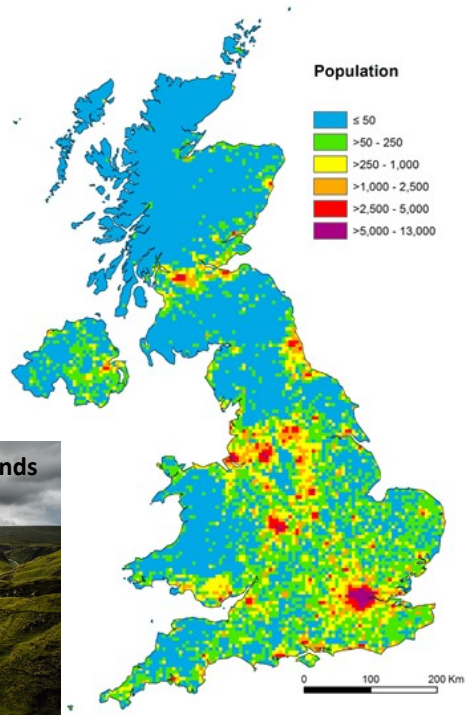
Human factors affecting population density (*may result in migration)

HIGH DENSITY REASONS	LOW DENSITY REASONS
ECONOMIC: diverse financial market, developed business infrastructure, trade links, jobs in all sectors. Important city	ECONOMIC: limited trade, unstable economy, lack of financial and business services. Rural area.
SOCIAL: good housing, school and health provision or opportunities, choice, and freedoms	SOCIAL: isolated populations with lack of infrastructure, to support employment, schooling, and services
*POLITICAL: stable fair government, good global standing, respect for law and civil rights	*POLITICAL: Unstable government, civil war, lack of personal liberty, or civil rights.

THE UK'S POPULATION DENSITY

- England is more densely populated than Scotland, Wales, and Northern Ireland.
- There are few people in all the highland areas of the UK. Dense clusters around major cities in the North of England where industry is located.
- Most dense area is London and the surrounding area.





Population continued...

Key Idea: Population size and structure is important for governments and decision makers

Underpopulation = Too few people to make best use of their resources of food, water, minerals, and energy, so it can limit the standard of living because a lack of. (Australia, Canada, and Mongolia) There can sometimes be many unfilled job positions and a need to use migrant labour to help the economy.

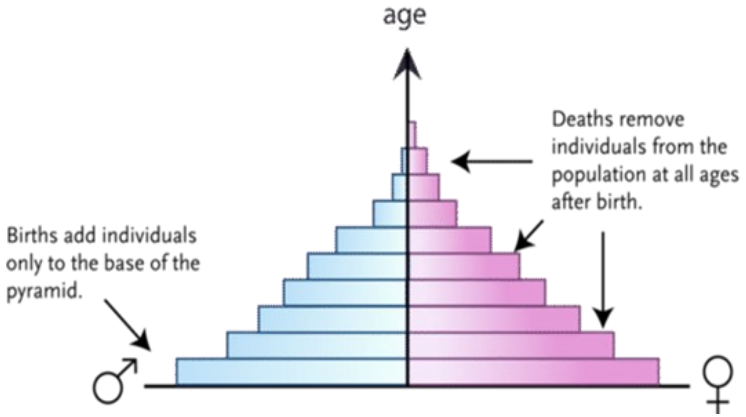
Overpopulation = The size of the population exceeds a country's own supply of **resources** (food, water minerals and energy,) and therefore puts pressure on the systems of society and **reduces the standard of living**. (Singapore, Israel, Kuwait). This is not the same as a place being 'densely populated'. The ability of a place to support the population is what determines over or under population.

Population policy a set of laws or strategies put in place by a government aimed at 'managing' the number of people in a country. A population policy may be **'pro-natal'** (encouraging births) or **'anti-natal'** (discouraging births). A famous anti-natal policy was **China's One Child Policy (OCP).** Overall, it is estimated to **have prevented 400 million births**. This is more than the entire population of the United states of America!

China's One Child Policy (OCP).

The Issue:	The policy (OCP)	The penalties	Problems
In the early 1970s, the government feared famine, and over-population was reducing the quality of life and standard of living. Many families lived in poverty with few jobs available and no income. They felt a policy of strict population control was required.	OCP introduced in 1979. Couples should delay marriage until 25 or over. Must be sterilised after the first child or abort any future pregnancies. Would receive a 5-10% salary rise for limiting their family to one child. Reduced education and healthcare costs for family.	For disobeying the policy, a 10% salary cut Significant fines designed to be too high for most households pay for the education of both children and health care for all the family Second children born abroad were not penalised, but they were not allowed to become Chinese citizens	Forces abortions Gender imbalance due to preference for boys in society (30 million more males than females) Abandoned baby girls left in orphanages Government had too much control over people's lives Spoilt and lonely male children known as 'Little Emperors'.

Population Pyramid: A horizontal bar graph that represents the 'structure' or composition of a place's population by age and sex. They indicate the proportion of the population who are dependents (too young or old to work) or economically active (a country's eligible workforce) as this can affect a country's wealth and income.



UNDERSTANDING POPULATION PYRAMIDS:

Width of the base - indicates high or low birth rates. High birth rate is shown with a wide base.

Symmetry - pyramids should be symmetrical. Any asymmetry indicates a difference in the male and female population.

Shape of sides - Concave sides (curving inward) with a narrow top, indicate a high death rate and convex sides (bulging outward) and a wide top, indicate a low death rate.

Bumps in the sides - irregularities in the sides indicate an anomaly, bulges in the middle indicate migrants moving for work. Dents in the middle side indicate emigration. side is a sign of migrant.

High pyramids indicate - Long life expectancy. Average age in years a person lives to in an area

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Population continued...

Population structures with more old people than young can lead to problems with looking after the elderly, increasing costs of healthcare and taxes and declining birth rates.

Populations with more young than old may lead to problems with economic development due to too many children to support and not enough jobs and school places. Both these situations may result in migration. People needed to work or people moving for work.

•**Migration** The movement of people from one place to another. Migrant A person who migrates from one country to another.

•**Rural-to-urban Migration =** This is when people migrate from countryside areas to towns and cities.

•**International Migration =** The act of resettling to another country.

•**Emigration** The act of leaving a country to resettle abroad. (Emigrants leaving their country)

•**Immigration** The act of moving into a country from abroad. (Immigrants entering another country)

•**Refugee** A person who is forced to migrate as a result of unsafe conditions in their home country.

To balance a population with natural population growth and migration usually requires careful knowledge of the population structure. In the UK a census is carried out every 10 years to find out who lives in the UK and their age education level and wealth. This helps with managing the economy and public services.

APPLYING YOUR KNOWLEDGE...

- Why may birth rates remain high in a country?
- How do you calculate natural population change?
- What does the terms sparsely populated mean?
- Name a country or region of the world where few people live?
- What problems are associated with over populations?
- How could having an aging population lead to population decline?
- What is the difference between an immigrant and an emigrant?
- What do we call factors that make people want to leave a place?

Now Challenge yourself even further!

- Explain why population pyramids may indicate the wealth of a country or place?
- Do you think China's One Child Policy was successful? Give reasons for your opinion.
- Countries regulate migration with policy. Why do you think this is?

OTHER RESOURCES

Interactive pyramids change over time for all countries.https://www.populationpyramid.net/

BBC KS3—Population & migration https://www.bbc.co.uk/bitesize/guides/zkg82hv/revision/2

KS3 Schoology

SCAN ME

Key Term	Definition
Birth Rate	The number of babies born per 1000 people per year.
Death Rate	The number of deaths per every 1000 people per year.
Densely Populated	The population is high and very close together
Emigration	The act of leaving a country to resettle abroad. (Emigrants leaving their country)
Immigration	The act of moving into a country from abroad. (Immigrants entering another country)
International migration	The act of leaving a country to resettle abroad. (Emigrants leaving their country)
Migration	The movement of people from one place to another. Migrant A person who migrates from one country to another.
Natural decrease	When the death rate exceeds the birth rate.
Natural increase	When the birth rate exceeds the death rate.
Overpopulation	The size of the population exceeds a country's own supply of resources
Population	The number of 'inhabitants' of a particular place.
Population Density	A measurement of how many people there are per square kilometre.
Population Distribution	The pattern or 'spread' of where people live in the world.
Population Growth	BR - DR = Natural Change
Population Policy	A set of laws or strategies put in place by a government aimed at 'managing' the number of people in a country
Population Pyramid	A horizontal bar graph that represents the 'structure' or composition of a place's population by age and sex.
Refugee	A person who is forced to migrate as a result of unsafe conditions in their home country.
Rural-Urban migration	This is when people migrate from countryside areas to towns and cities.
Sparsely Populated	The population is low and very spread out
Underpopulation	Too few people to make best use of their resources of food, water, minerals, and energy

To test yourself Read, Cover, Write, Check OR try this quizlet

https://tinyurl.com/KS3Population

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WEATHER & CLIMATE

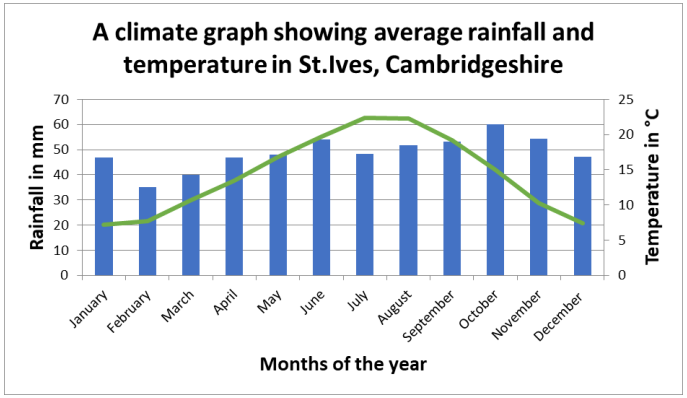
1. What is Weather and Climate?

Weather is the day to day conditions of the atmosphere. It includes temperatures, precipitation and wind.

Climate is the average weather of a place or region measured over many years (usually at least 30).

2. Climate Graphs

A Climate graph shows Temperature and precipitation (Rainfall) on one graph and is averaged out per month.



Along the X Axis shows the months of the year.

The Y Axis on the left shows the Rainfall / Precipitation in millimetres (mm). Rainfall is measured using the left axis and the Blue Bars. Think about it like a glass of liquid you get in a bar.

The Y Axis on the right shows the Temperatures in degrees Celsius (^{o}C) and is shown by the red line.

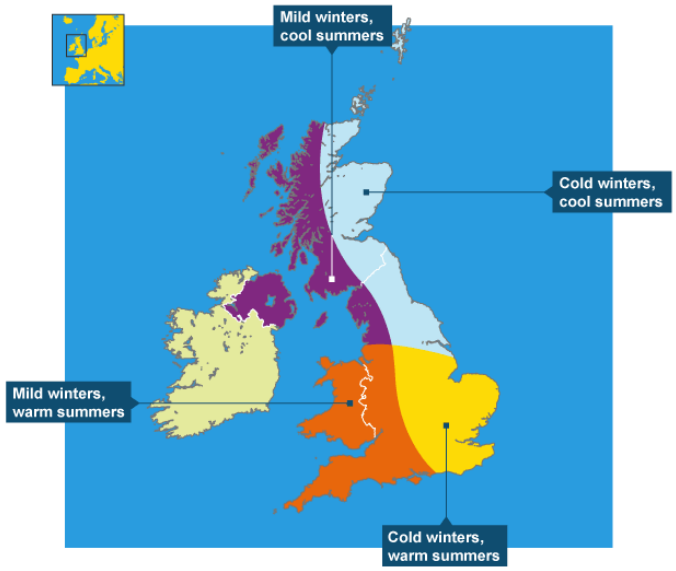
Each measurement is taken from the middle as it shows an average.

ALWAYS CHECK YOU ARE READING THE CORRECT AXIS AND THE CORRECT AREA BAR OR LINE!

3. The UK's Climate

The UK's has what is known as a **temperate** climate. Within the UK we have four distinct seasons. Generally winters are cool and wet and summers are warm and wet.

Temperature and rainfall also differs across the UK.



Source: https://www.bbc.co.uk/bitesize/guides/zjk7hyc/revision/1

South West – Warm and wet, warm wet air coming over the warm Atlantic Ocean.

South East – Air comes from the west and loses its moisture so we get warm summers and cooler winters.

North West – Cooler air from the north Atlantic Ocean means it is wet but often warmer.

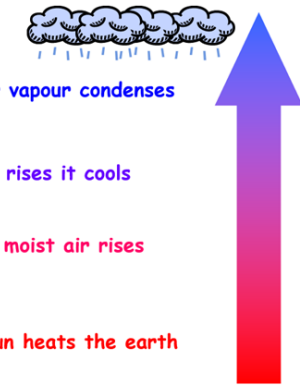
North East – Generally cooler air from the north east (Russia) and comes over land so drier.

4. Rainfall Formation

All rain forms in the same basic way—as shown in this simple diagram.

There are three types of rainfall:

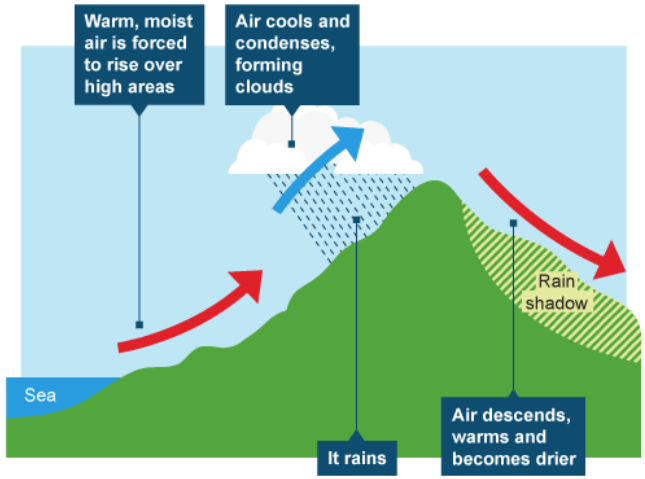
1. Convectional Rainfall
2. Frontal Rainfall
3. Relief Rainfall



What differs is what causes the air to rise in the first place.

1. RELIEF RAINFALL

- Prevailing winds bring warm, moist air to the western British Isles.
- Air is **forced to rise over high areas.**
- Air cools and condenses.
- Clouds form and it rains.
- Air descends on the other side of the mountains.
- It warms up and therefore becomes drier.



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Weather & Climate continued..

Types of Rainfall continued..

2. FRONTAL RAINFALL

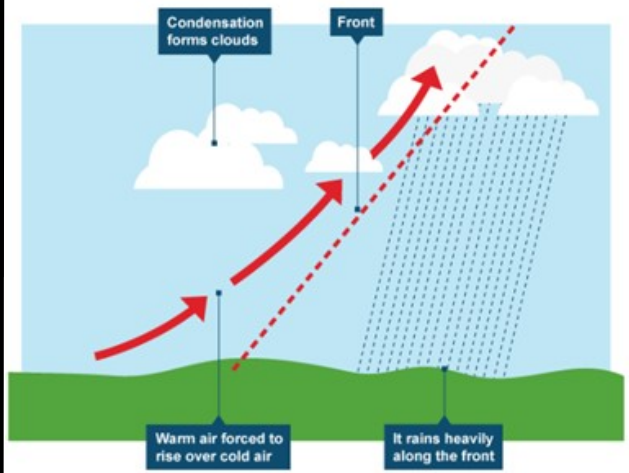
The British Isles are affected by a number of different air masses.

When warm and cold air meet, a **depression** forms:

- When a cold polar air mass meets a warm tropical air mass they do not mix - they form fronts.
- cold air is heavier than warmer air so rises over it.
- As the warm air is forced to rise it cools. As the warm air is in contact with the cold air along fronts, this also cools.
- Condensation occurs and clouds form. Rain occurs along the front.

In the UK, depressions often follow a similar pattern. First, a warm front passes over, bringing rain and then warmer air.

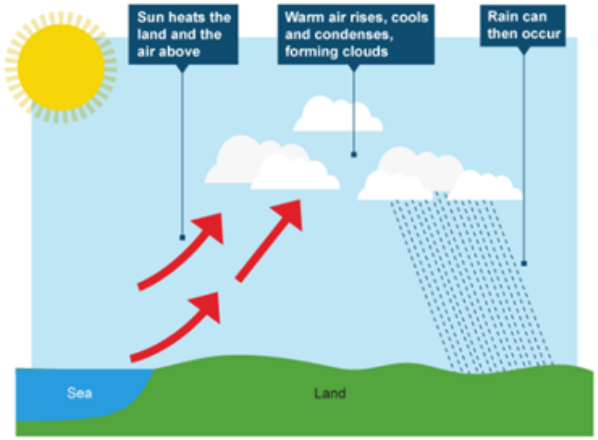
Then a cold front follows, bringing more rain and cooler air.



3. CONVECTIONAL RAINFALL

- When the land warms up, it heats the air above it.
- This causes the air to expand and rise.
- As the air rises it cools and condenses. If this process continues then rain will fall.

This type of rainfall is very common in tropical areas but also in areas such as South East England during warm sunny spells.



Source of Diagrams—https://www.bbc.co.uk/bitesize/guides/zjk7hyc/revision/3

5. Cloud Types

Types of Clouds – Clouds are categorised according to height and shape.

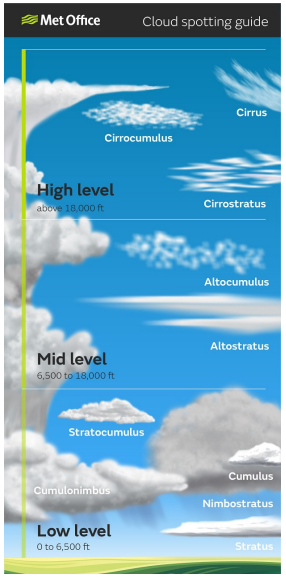
Many of the names are based on latin words.

NIMBUS clouds—bring with them rain.

STRATUS clouds—appear in layers

CIRRUS clouds —are wispy and high level

CUMULO clouds are fluffy with flat bases.



6. Air Pressure

Barometric Pressure is the weight of the overlying air pressing down on the earth. It is also known as **air pressure.**

1. Air Pressure is measured using a Barometer.
2. **Low Pressure** means the overlying air is **rising,**
3. **High pressure** means the overlying air is **sinking.**

1. LOW PRESSURE SYSTEMS

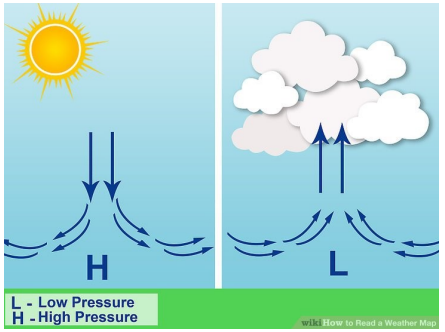
These create what is known as a depression and associated wet and cloudy weather.

- Warm air rises = Falling Pressure
- Warm air, often has water vapour, this cools to form clouds, simple water cycle.
- Wind is created as high pressure air rushes to fill the space left.

2. HIGH PRESSURE SYSTEMS

These create what is known as a anticyclones and are associated with calm, clear and dry conditions

- Warm air has risen so cold air gets moved, and rushes to fill the gap so SINKS.
- As the cold air sinks, pressure increases.
- Closer to the ground the cold air warms up but there is no water vapour so no condensation occurs – NO RAIN.
- Nice and dry with clear skies. Very cold in the winter if we get high pressure. Very hot and dry in the summer if we get high pressure.



Weather & Climate continued..

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7. Measuring the weather

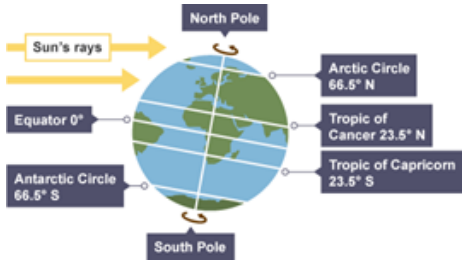
Weather Feature	How measured	Units
Temperature	Thermometer	°C
Precipitation	Rain Gauge	mm
Wind Direction	Weather /	Compass Direction
Wind Speed	Anemometer	Beaufort Scale (0-12)
Cloud cover	Observation	Oktas (measured in eighths)
Air Pressure	A barometer	Millibars
Cloud Type	Observation	Specific Names given
Visibility	Visibility Meter	In feet and metres

8. Factors affecting Weather and Climate

There area number of factors which affect the weather / climate of a place.

1. LATITUDE

This relates to hope far a place is from the equator. Closer to the equator places are hotter with the sun directly overhead. Closer to the poles, sunlight has a larger area of atmosphere to pass through (due to curvature of the earth) and temperatures are cooler.



2. ALTITUDE (Height above sea level)

Temperatures higher up are colder. Temperature usually decreases by 1°c for every 100m increase in height.

3. DISTANCE FROM THE SEA

Oceans heat up and cool down slower than land—so coastal areas are cooler in summer and warmer in winter than places inland at the same latitude and altitude.

4. OCEAN CURRENTS

A warm area of water (ocean current) known as the North Atlantic Drift (Gulf Stream), travels up from the Caribbean and keeps Britain warmer and wetter than places in continental Europe.

5. PREVAILING WIND

The main direction from which wind comes will affect the weather. In the UK, the prevailing wind is from the SW—this brings warm, moist air from the Atlantic and contributes to frequent rainfall.

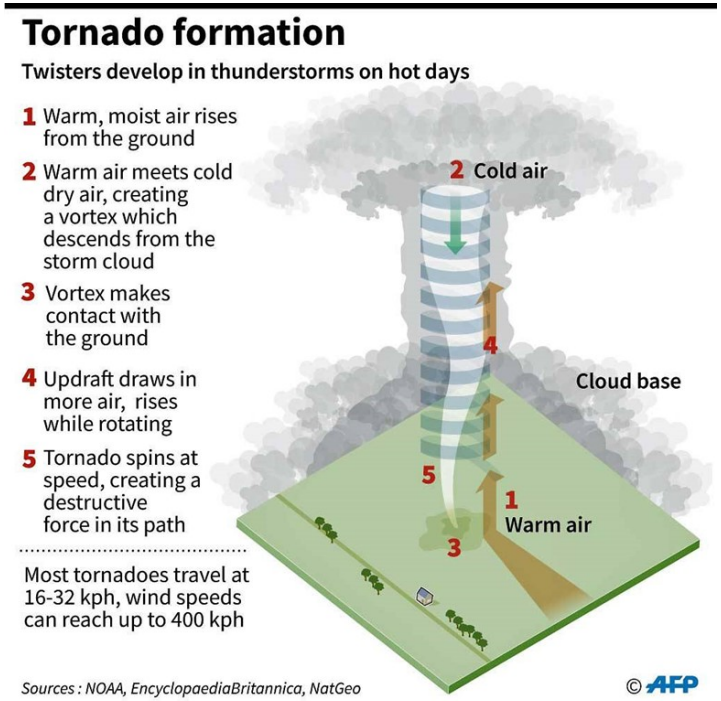
6. Extreme Weather—Tornadoes

HOW DO TORNADOES FORM?

Tornadoes are violent rotating columns of air extending from a thunderstorm to the ground. They appear as a funnel shape cloud initially and when they touch down they are called a tornado.

Tornadoes can ready speeds of up to 300mph causing huge amounts of damage.

Most tornadoes form from thunderstorms, often supercell thunderstorms, which are long-lived and can produce very violent tornadoes.



WHICH AREAS ARE MOST AT RISK?

Tornadoes have been recorded in all continents apart from Antarctica. Most tornadoes form in an area known as **Tornado Alley** in the USA where there are the ideal conditions with cold dray air moving south from Canada and warm moist air travelling north from the Gulf of Mexico.

May and June are peak months for tornadoes. The most notable tornado in the UK was in Birmingham in 2005 in which a row of houses were destroyed (no one was killed).

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Weather & Climate continued..

HOW DO MEASURE TORNADOES?

Tornadoes are measured on the Fujita scale. The scale is based on the amount of damage the tornado causes in terms of to buildings and trees etc. It goes from F0 to F5.

Enhanced Fujita Scale (EF-Scale)	
EF0	65 to 85 MPH
EF1	86 to 110 MPH
EF2	111 to 135 MPH
EF3	136 to 165 MPH
EF4	166 to 200 MPH
EF5	201+ MPH

Source: https://www.factsjustforkids.com/

APPLYING YOUR KNOWLEDGE...

- What is the difference between weather and climate?
- Name at least 4 pieces of equipment we use to measure the weather and what they do? What units do they record in.
- State 5 factors that affect the weather and explain why they changes it in different places.
- What are the three types of rainfall and how do they form?
- What is a tornado and how do they form?

Now Challenge yourself even further!

- Storm Chasers, what are they and what do they do?
- Extreme weather in the UK – What examples can you find and what are the causes?
- Try and create either a 3D Rainfall model or Animation – showing either convectional, frontal or relief rainfall with annotations placed in some way.
- Weather Forecast – watch this video on how are weather forecasts made? https://www.bbc.co.uk/news/explainers-51533852
- https://study.com/academy/lesson/weather-forecasting-definition-types.html
- Explore how to read a synoptic chart https://www.metoffice.gov.uk/weather/learn-about/weather/how-weather-works/synoptic-weather-chart
- Find out what is meant by Blood Rain https://www.metoffice.gov.uk/weather/learn-about/weather/types-of-weather/rain/blood-rain

OTHER RESOURCES

BBC KS3 Bitesize—Weather and climate https://www.bbc.co.uk/bitesize/topics/zx38q6f

Climate, Weather and Cloud types Quiz https://www.bbc.co.uk/bitesize/guides/zw9qtfr/test

British weather and climate quiz https://www.bbc.co.uk/bitesize/guides/zjk7hyc/test

The MET Office https://www.metoffice.gov.uk/

Climate Kids—NASA https://climatekids.nasa.gov/menu/weather-and-climate/

SCAN ME

Key Term	Definition
Air mass	A mass of air with the same temperature and humidity
Air Pressure	The force or weight of the air above us. Air pressure is measured in millibars
Altitude	How high land is above sea level (in metres or km above sea level)
Anemometer	A weather instrument used to measure the wind speed
Anticyclone	An area of high pressure—causes clear skies and sunny weather
Atmosphere	A layer of gases surrounding the planet
Barometer	A weather instrument used to measure air pressure
Beaufort Scale	The scale used to determine wind speed through observations of the effects of the wind
Climate	The average weather conditions for a place, usually measured over a long period of time (30 years)
Climate Graph	A graph showing average month temperature & rainfall
Clouds	A collection of tiny droplets of water or ice crystals in the air
Cloud Cover	The amount of cloud covering the sky
Convectional Rainfall	Rain formed when the ground heats up during warm, sunny weather
Frontal Rainfall	Type of rainfall formed when two air masses meet.
High Pressure	When air pressure is higher than average caused by sinking air
Latitude	How far a place is north or south of the equator
Low Pressure	When air pressure is lower than average—caused by rising air
Ocean Currents	Movements of warm or cold water around the world's oceans
Precipitation	Any type of moisture reaching the Earth's surface (rain / snow / sleet)
Rain Gauge	Used to measure amount of rain in 24hr period (in mm)
Relief Rainfall	Rain formed when air is forced to rise over hills/mountains
Stevenson Screen	A shelter for weather instruments to protect from extremes
Temperature	How warm or cold the air is (measured in °C or °F)
Thermometer	Used to measure temperature
Tornado	A violently rotating column of air in contact with the ground
Weather	Daily changes in condition of the atmosphere
Wind Direction	Direction from which the wind is blowing from
Wind Speed	How fast the wind is blowing—measured in miles / km per hour.

To test yourself Read, Cover, Write, Check OR try this quizlet https://tinyurl.com/KS3weather

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RUSSIA

1. Geography of Asia

Asia is an important continent containing 2 of the world's most populated countries (India and China) and also some of the world's most economically important economies (Japan) and a global superpower (Russia). There are 48 countries in Asia.

Test yourself on the following:

- Largest country by land area – Russia
- Biggest Island – Borneo
- Longest River - Yangtse
- Biggest lake – Caspian Sea
- Biggest desert – Gobi desert

Source: https://geology.com/world/asia-satellite-image.shtml

2. Basic Geography of Russia and major features

Source: https://www.worldatlas.com/

Physical Features

Major rivers – Volga, Ob, Yenisey

Ural Mountains – these divide Western from Eastern Russia

Lake Baikal - Lake Baikal is located in SE Russia and is the largest freshwater lake in the country. It is the deepest lake in the world at 1600m deep. It is nearly 400 miles long and contains 1/5 of all freshwater stored on land. The lake is home to more than 1800 species, many endemic to the area. Important industries include fishing, mining, paper production and tourism.

Human Geography—Population Density

Map Credit Kolya Yanchiy - Wikipedia

RUSSIA continued..

Densely populated cities in the West include Moscow and St Petersburg. These are located here due to good trade links with Europe and a more temperate climate than the East which is better for growing food. Sparse populations in the East and North are the consequence of difficulties of access, transport and the extreme climate in much of Northern and Eastern Russia.

Natural resources of Russia

Russia exports more than 3,000,000 barrels of oil to European countries per day, making Europe very reliant on Russian exports. Russia also provides a large percentage of coal and gas used in Europe. Russia also has abundant supplies of many other metals and minerals which means that they can supply many of their own industries without being reliant on imports from other countries.

Russia
Coal and Major Minerals

Source: http://www.1uptravel.com/worldmaps/russia48.html

3. Oymyakon—The world's coldest inhabited place

Oymyakon is the world's coldest inhabited settlement with a lowest recorded temperature of -71 degrees centigrade. The town is built on permafrost which means the soil is permanently frozen. This means no food can be grown so the diet is very focused around meat and fish. It is too cold for indoor plumbing for toilets so these have to be located outside. Transport can be an issue as even fuel and oil can freeze at these temperatures.

4. Permafrost and issues of building on frozen ground.

Permafrost is permanently frozen ground—frozen for two or more consecutive

You should be able to annotate key ways in which buildings are designed to manage the permafrost environment. (skills) – Walls and windows are heavily insulated, houses are raised to avoid melting permafrost base, roof has steep angle to quickly clear snow and ice.

Raised pipes to carry oil and gas.

People eat a lot of protein based foods eg. fish and meat due to lack of fresh fruit and vegetables

RUSSIA continued..

5. Dzerzhink—The World's most polluted city

38 chemical factories still producing toxic chemicals. During Soviet era the town produced chemical weapons including Arsenic. Average life expectancy is 42 for men and 47 for women. Dzerzhink has been the focus of recent investment in an attempt to clean up the town.

6. Indigenous peoples of Russia—the Nenets

The Nenets inhabit the Yamal peninsular, an area in Northern Russia which has becoming increasingly important as a source of oil and gas.

Traditionally, the Nenets live in tents – they rely on the reindeer for food, shelter and transport. They migrate annually between reindeer feeding grounds.

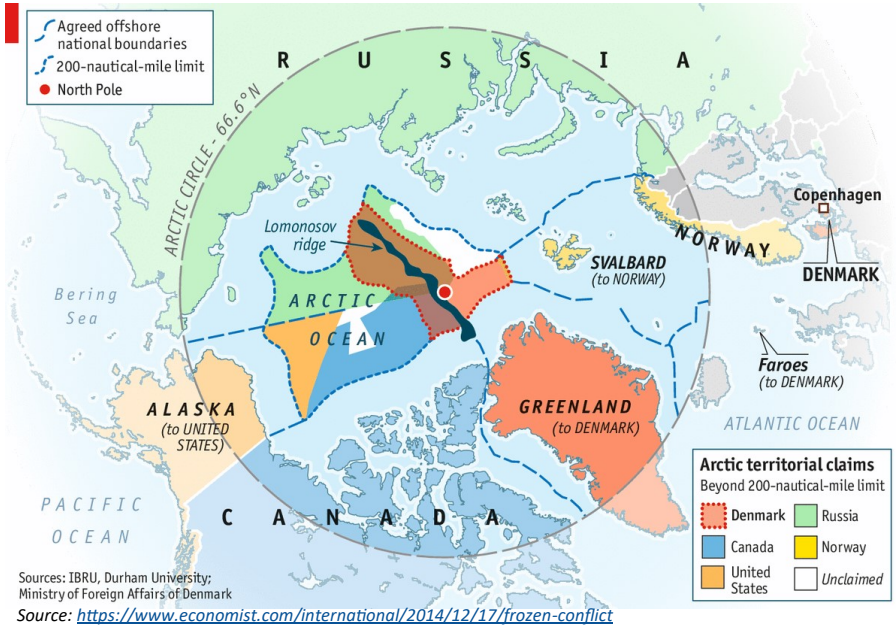
Melting permafrost is damaging the reindeer as cannot migrate as easily.

Oil and gas exploration is taking away the land from the Nenets and they are being moved to towns and cities, removing traditional ways of life. Also, pollution from oil and gas is damaging the ecosystem leading to less feeding areas for the reindeer.

7. Scramble for the Arctic —Issues of resource exploitation

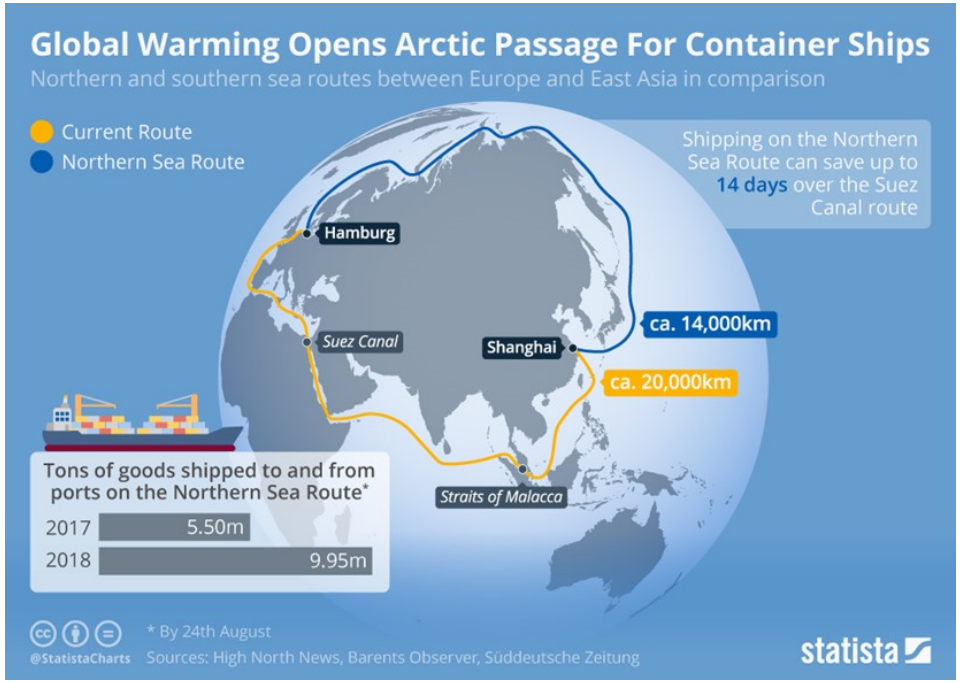
Russia has put a flag on the sea bed to lay claim to areas of arctic territory. Global warming is melting arctic ice, opening up new areas for exploitation.

Russia has many oil and gas operations in the Arctic. Other countries also lay claim to the Arctic.



Source: https://www.economist.com/international/2014/12/17/frozen-conflict

There are implications for global trade as melting ice opens up the Northern Sea Route across the Arctic. This is likely to cause conflicts between countries.



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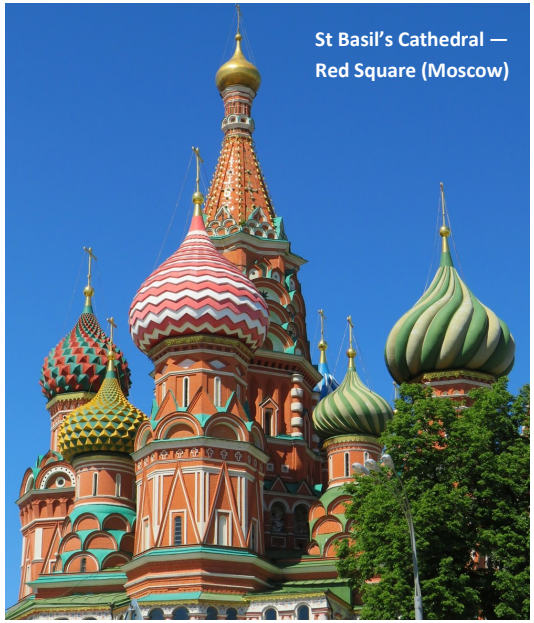
RUSSIA continued..

TOURISM

Source: https://phys.org/news/2015-08-russia-vast-swathe-arctic.html



APPLYING YOUR KNOWLEDGE...

- Explain why the population density varies across Russia
- Describe 3 ways in which people have adapted to living in the cold Arctic temperatures
- Explain why Dzerzhink is such a polluted city
- Describe some impacts of global warming on the Nenets people
- Contrast 2 different biomes which are found in Russia
- Explain why the natural resources found in Russia help to make Russia a 'Superpower'.

Now Challenge yourself even further!

- What impacts do you expect climate change to have on the indigenous people of Russia in the future?
- How will the opening of the Northern Sea Passage affect the geopolitics of the Arctic region?

OTHER RESOURCES

KS3 Schoology

SCAN ME

- Extended video on the Nenets https://www.youtube.com/watch?v=Sykmh7V0eSQ
- Interactive room at the museum of Hetscheepvaart https://www.hetscheepvaartmuseum.com/whats-on/exhibitions/Scramble-for-the-Arctic-and-Rising-Tide
- Life with the Nenets https://tinyurl.com/lifewiththeNenets

To test yourself Read, Cover, Write, Check OR try this quizlet

https://tinyurl.com/KS3Russia

Key Term	Definition
Asia	The continent occupying the area between Japan in the East, Turkey in the west, India in the South and the Arctic in the North.
Biome	A large area with common flora, fauna and climate characteristics
Chemical Waste	Toxic chemicals released as a by product of industrial activity, often have negative effects on the environment
Continent	A large continuous area of land, usually including many different countries and islands.
Country	A politically determined area of land and sea ruled over by a single government
Dense Population	An area where many people are found per square km
Dzerzhink	The most polluted city on earth
Geopolitics	The relationships between countries and the efforts to manage these relationships
Indigenous	Group of people with a long history of settlement in one ecosystem/ area
Methane	A greenhouse gas
Migration	The movement of people from one place to another
Natural resources	Products that are found naturally in a country eg. forests or oil
Nenets	An indigenous group of people native to the Arctic tundra region of Yakutsk
Omyakon	The coldest populated city on earth
Permafrost	Permanently frozen subsoil
Plain	A large area of land with little variation in height
Pollution	Chemicals or products released into the environment which are damaging to plants, animals or people
Reindeer	A species of deer native to Arctic areas used by indigenous people for transport, food, clothing and shelter
Sparse Population	An area where few people are found per square km
Steppe	A biome found in temperate regions characterised by flat grasslands
Superpower	A country which exercises political, economic or military power over a large area beyond its own national borders
Taiga	A biome found in colder areas characterised by evergreen coniferous forests
Time Zone	An area of land which operates a common time policy
Toxicity	The level to which a substance is harmful to humans and wildlife
Tundra	A biome found in cold areas with permanently frozen subsoil