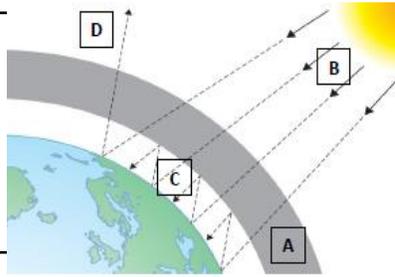


**HUMAN CAUSES OF CLIMATE CHANGE**

**The Greenhouse Effect**

A) Humans produce greenhouse gases, which create a blanket around the earth.  
 B) Sunlight travels to earth as shortwave radiation.  
 C) Sunlight bounces off the earth's surface as long-wave radiation. This reflected sunlight is trapped in the earth's atmosphere by the greenhouse gases = earth heats up.  
 D) Some heat does manage to escape.



**How does human activity = greenhouse gases?**

**Methane**  
 Cows produce a methane when they fart, belch and poo. Methane is a greenhouse gas that traps longwave radiation in the earth's atmosphere.  
*The world's population is rising and countries are becoming more developed = there are more people and more families that have money to spend on food (e.g. meat) = rising demand for meat = more animals farmed = more methane produced.*

**Carbon dioxide**  
 Carbon dioxide is the greenhouse gas that people are most worried about, as it is the one we are adding to the atmosphere fastest.  
 ➤ Fossil fuels (coal, gas, oil) are burnt to make energy = carbon dioxide is released into the atmosphere.  
 ➤ Humans drive cars, which release carbon dioxide, nitrous oxide and methane into the atmosphere.  
*Rising population and more developed countries = increased demand for electricity = more carbon dioxide produced.*

**Humans are to blame because...**

**CASE STUDY OF HOW CLIMATE CHANGE AFFECTS LICs: BANGLADESH**

<b>Location:</b>	Southern Asia, along the Tropic of Cancer. It neighbours Burma, India and the Indian Ocean.
<b>How has climate change increased flooding?</b>	<ul style="list-style-type: none"> <li>It's low altitude (&lt;10m above sea level) and long coastline (580km) makes it vulnerable to sea level rise.</li> <li>The Himalayas lie to the north of Bangladesh. The ice and snow melts in the summer, which then rushes down into the rivers in Bangladesh. This occurs more due to increased temperatures.</li> <li>Bangladesh is prone to cyclones and monsoonal rains which bring a huge amount of rain. Due to climate change, these storms will occur more often.</li> </ul>
<b>Primary effects</b>	<ul style="list-style-type: none"> <li>1000 people died</li> <li>7 million homes destroyed</li> <li>Hospitals flooded</li> <li>400,000 factories closed down.</li> <li>Fields were flooded. 2/3<sup>rd</sup>s of the country was flooded.</li> <li>Roads and railways were flooded.</li> </ul>
<b>Secondary effects</b>	<ul style="list-style-type: none"> <li>Dead bodies spread disease and illness</li> <li>30 million people homeless.</li> <li>Temporary hospitals did not have the necessary equipment or medicine.</li> <li>Many people losing their jobs.</li> <li>700,000 hectares of crops were destroyed.</li> <li>Blocked transport routes mean that aid could not reach victims.</li> </ul>

**Human causes of climate change:**

- Using the diagram above, explain what letters A-D represent.
- Explain how the greenhouse effect results in increased global temperatures.
- What is meant by 'greenhouse gases'? Provide an example.
- Explain one cause of methane pollution.
- Explain the reasons that humans are to blame for the increase in methane.
- Explain one cause of carbon dioxide pollution.
- How can an increase in population result in an increase in carbon dioxide?
- What are the global impacts of an increase in temperatures?
- What is the difference between short wave and long wave radiation?
- To what extent is the greenhouse effect caused by humans?

**Exam practice - Explain how the greenhouse effect heats our atmosphere.**

*The greenhouse effect is a natural process, where gases in the atmosphere trap heat within our atmosphere. Without the greenhouse effect, the earth's temperature would be..... °C.*

*Human actions, such as....., create.....*

*More specifically.....*

*Sunlight travels.....*

**Flooding in a LIC:**

- Describe the location of Bangladesh.
- Low altitude causes flooding because...
- The fact that the Himalayas are in Bangladesh means that...
- Bangladesh is prone to cyclones and monsoonal rains, this means...
- One primary effect of the Bangladesh floods is... +More specifically...
- Another primary effect is... +More specifically...
- One secondary effect of the Bangladesh floods is... +More specifically...
- Another secondary effect is... +More specifically...
- What infrastructure was destroyed by the flood?
- In your opinion, what effect had the greatest impact on Bangladesh?

**Exam practice - The effects of the flood have been devastating.**

Firstly ...primary... +As a result ...secondary...

Secondly.....primary.... +As a result ... secondary...

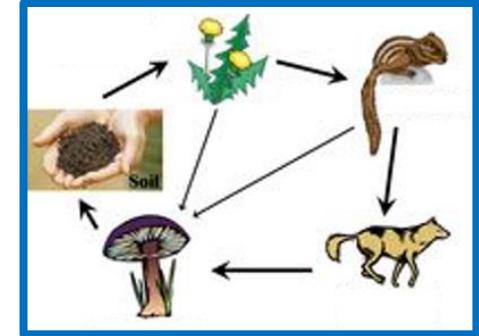
Finally....primary... +As a result.....secondary...

An ecosystem is an area, within which plants and animals interact with each other and their non-living environment (rock, soil, climate). They can be as small as a hedgerow or pond. Larger ecosystems are known as biomes (tropical rainforest, the desert).

<b>Producer</b>	Organisms that get their food from the natural environment ( <i>photosynthesis</i> ) e.g. vegetation
<b>Consumer</b>	Organisms that feed on other organisms (producers and consumers). <ul style="list-style-type: none"> <li>• herbivores (only eats plants)</li> <li>• carnivores (eat only animals)</li> <li>• omnivores (eats animals and plants)</li> </ul>
<b>Decomposer</b>	Decomposers (fungi, bacteria) feed on dead producers & consumers. This dead material is known as litter. They break down the litter and recycle the nutrients back to the soil.
<b>Food Chain</b>	A food chain is a single line of linkages between producers and consumers. It shows what eats what.
<b>Nutrient Cycle</b>	The movement of nutrients around an ecosystem. <i>e.g. when dead material is decomposed, nutrients are released into the soil. The nutrients are then taken up from the soil by plants. The nutrients are then passed to consumers when they eat the plants. When the consumers die, decomposers return the nutrients to the soil.</i>

**Food webs:**

1. What is an ecosystem?
2. What is a producer? And provide an example.
3. What is a consumer? And provide an example.
4. A herbivore is...
5. A carnivore is...
6. An omnivore is...
7. What is a decomposer? And provide an example.
8. If there was a reduction in producers, what would happen to the number of consumers?
9. The nutrient cycle is...
10. What happens in the nutrient cycle when dead material is decomposed?



**Exam practice – Using the figure (→) describe how nutrients are transferred around an ecosystem.**

*Nutrients are taken up by producers, such as \_\_\_\_\_ by their roots.  
 Consumers, more specifically \_\_\_\_\_ consume the producers.  
 Nutrients are then transferred to carnivores by...  
 Finally, when producers and consumers die...  
 This transfers nutrients...*

**Animals adapt to survive in the ecosystem they live in. Adaptation = changing to suit the surrounding environment.**

<b>Camel (desert)</b>	<ul style="list-style-type: none"> <li>• Long eyelashes which keep sand out of their eyes.</li> <li>• Camouflage - their colour helps them blend in.</li> <li>• They store fat in their hump which can be used for energy. Therefore they can go months with no food.</li> </ul>
<b>Giraffe (savannah)</b>	<ul style="list-style-type: none"> <li>• Long necks help them to reach tall trees for food.</li> <li>• Long legs help them run very fast.</li> <li>• Camouflage: their colour helps them blend in.</li> </ul>
<b>Cheetah (savannah)</b>	<ul style="list-style-type: none"> <li>• Spots help them stay camouflaged.</li> <li>• Paws help them to run quietly so they are able to sneak up on their prey.</li> <li>• Large nostrils and enlarged hearts and lungs help them to circulate oxygen efficiently = they can run fast.</li> </ul>
<b>Spider monkey (rainforest)</b>	<ul style="list-style-type: none"> <li>• Their long limbs (arms and legs) allow spider monkeys to swing through the trees with ease.</li> <li>• Their strong tails allow them to hang suspended up in the trees and aids their swinging.</li> <li>• 90% of their diet comes from nuts, seeds, fruit and insects.</li> </ul>
<b>Poison Dart Frog (rainforest)</b>	<ul style="list-style-type: none"> <li>• Is very small to prevent being eaten</li> <li>• Has skin that releases poison when touched</li> </ul>
<b>Polar Bear (tundra)</b>	<ul style="list-style-type: none"> <li>• Thick white fur to help camouflage help them keep warm.</li> <li>• Layer of fat under their skin helping them stay warm.</li> <li>• Large feet help to spread their weight over a larger surface area. This prevents the ice breaking beneath them.</li> </ul>

**Animal adaptations:**

1. Adaptation means...
2. Name one animal that lives in the desert ecosystem.
3. Explain how this animal has adapted to the desert.
4. Name one animal that lives in the savannah ecosystem.
5. Explain how this animal has adapted to the ecosystem.
6. Explain one animal adaptation in the rainforest ecosystem.
7. Explain how this animal has adapted to the rainforest.
8. Explain one animal adaptation in the tundra ecosystem.
9. Explain how this animal has adapted to the tundra.
10. In your opinion, what animal is best adapted to its environment?

**Exam practice - Choose a minimum of two animals and explain how it has adapted to its ecosystem.**

**Use specific information about the ecosystem it lives within.**

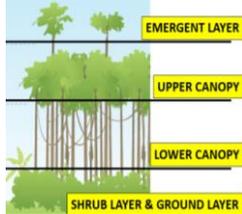
➤ *E.g. The tundra's average winter temperature is 30°C.*

*The .....lives in the.....  
 It has adapted by.... + More specifically.....  
 This helps it survive in the.....ecosystem because.....*

*Furthermore..... + More precisely.....  
 This helps it survive in the.....ecosystem because.....*

Repeat with a second animal.

An ecosystem is an area, within which plants and animals interact with each other and their non-living environment (rock, soil, climate). They can be

<p><b>Rainforest</b></p> <ul style="list-style-type: none"> <li>• Location</li> <li>• Climate</li> <li>• Vegetation</li> <li>• Animals</li> </ul>	<ul style="list-style-type: none"> <li>• Along the equator in central Africa (Nigeria, Congo), south-east Asia (Malaysia, Indonesia), north Australia and South America (Brazil, Peru).</li> <li>• Humid (hot &amp; wet). The average daily temperature is 28°C. It t never goes below 20°C. and rarely above 35°C. It receives at least 2000mm of rain each year. There are no real seasons.</li> <li>• Very dense vegetation. There are over 1,000 different types of trees including hardwoods such as mahogany and greenheart. There are four layers of vegetation in the tropical rainforest. The vegetation has had to adapt, in order to survive with the constant high temperatures and the heavy rainfall.</li> </ul> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">  <ul style="list-style-type: none"> <li>➢ The trees grow over 40 metres tall to get sunlight. Large buttress roots anchor the tall trees and prevent them falling over.</li> <li>➢ The leaves have drip tips to shed the heavy rainfall.</li> <li>➢ Lianas are vine like plants. They use large trees as support to climb up to the canopy.</li> <li>➢ The forest floor is dark as the leaves block out the sunlight. As a result, the leaves in this lower level are very large as they try to catch as much sunlight as possible.</li> </ul> </div> <div style="width: 45%; text-align: center;">  </div> </div> <ul style="list-style-type: none"> <li>• Millions of species (e.g. jaguar, alligator, monkeys, apes). It is believed that in the Amazon Rainforest there are over 2,000 species of birds and 1,500 species of fish. There is also thought to be 50,000 kinds of insects in a single square mile. Animals have to adapt to survive in the rainforest (see adaptations section).</li> </ul>
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<p><b>Savannah</b></p> <ul style="list-style-type: none"> <li>• Location</li> <li>• Climate</li> <li>• Vegetation</li> <li>• Animals</li> </ul>	<ul style="list-style-type: none"> <li>• The savannah ecosystems is located between the rainforests found at the equator and deserts found along the tropic lines. More precisely, they are located between 23.5° north and 23.5° south of the equator. The largest expanses of savannah are in Africa, for example <b>Kenya</b> and <b>Tanzania</b>, consists of tropical grassland. They are also located in South America, Africa, Asia and Australia.</li> <li>• The savannah has two seasons: a wet season and dry season. Its annual precipitation is between 100-150cm of rain, however most of this falls in the wet season. The temperature is warm throughout the year, with a temperature range between 25°C to 30°C across the year.</li> <li>• The main type of vegetation is grass, which grows very tall. There are also occasional scattered trees such as the Baobab tree and Acacia tree. These have adapted to survive in the savannah.             <ul style="list-style-type: none"> <li>➢ <b>The Baobab Tree:</b> it only produces leaves in the wet season and their leaves are very small. These both reduce the rate of transpiration = less water lost. They are also able to store water in their tree trunk to help it survive in the dry season.</li> <li>➢ <b>The Acacia Tree</b> it has long roots that travel deep underground to search for groundwater. To avoid water loss they have small waxy leaves which prevents transpiration. To protect against predators, it has sharp thorns and a chemical defence system where it secretes a poisonous fluid into its leaves. This prevents it being eaten by giraffes.</li> </ul> </li> <li>• Lots. Most are fast with strong legs (zebra, giraffe). There are many herbivores due to the high amount of grass, however carnivores (lions, cheetahs) are also found in the savannah due to the high number of herbivores.</li> </ul>
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<p><b>Desert</b></p> <ul style="list-style-type: none"> <li>• Location</li> <li>• Climate</li> <li>• Vegetation</li> <li>• Animals</li> </ul>	<ul style="list-style-type: none"> <li>• Near the Tropic of Cancer and Tropic of Capricorn at 23. 5°C north and 23. 5° south of the equator</li> <li>• Arid (hot with very little rain). The average temperature is 40°C in the day and average annual rainfall is 250mm.</li> <li>• Sparse (e.g. cactus, Joshua tree)</li> <li>• Very few. Scorpions have adapted</li> </ul>
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<p><b>Tundra</b></p> <ul style="list-style-type: none"> <li>• Location</li> <li>• Climate</li> <li>• Vegetation</li> <li>• Animals</li> </ul>	<ul style="list-style-type: none"> <li>• North (arctic circle) and south poles</li> <li>• Very cold, very dry, soil is permanently frozen (permafrost). Winters are cold, dark and long, with an average temperature is -30°C. In mid-December it is dark all day. In the summer temperatures vary between 0-10°C.</li> <li>• Sparse – usually small bushes and flowers. The top layer of soil only thaws during 2-3 months in the summer.</li> <li>• Few (e.g. penguin, polar bear).</li> </ul>
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- Rainforest:**
1. The rainforest is located...
  2. The climate in the rainforest is... *(use specific numbers)*
  3. Vegetation in the rainforest is...
  4. Trees in the rainforest grow to over \_\_\_\_\_m in height. This is because...
  5. Large buttress roots anchor...
  6. The forest floor is dark because...
  7. How many species of birds and fish exist in the rainforest?
  8. How many different kinds of insects are there in the rainforest?
  9. One animal in the rainforest is...
  10. This animal is well suited to the rainforest because...

- Savannah:**
1. The Savannah is located...
  2. One country example is...
  3. The climate in the savannah is... *(use specific numbers)*
  4. How many seasons are there in the savannah? What are they called?
  5. Vegetation in the savannah is...
  6. There are Baobab trees, these have adapted to survive in the savannah by...
  7. There are also Acacia trees, these have adapted to survive in the savannah by...
  8. There are lots of animals that exist in the savannah, such as...
  9. These have adapted by....
  10. There are carnivores in the savannah because...

- Desert:**
1. The desert is located...
  2. The climate is arid, this means...
  3. What is the average temperature and rainfall?
  4. The vegetation in the desert is sparse. This means...
  5. An animal found in the desert is...
  6. Why are there so few animals in the desert?

- Tundra:**
1. The tundra is located...
  2. The tundra is very cold, this is because...
  3. What are the winters like in the tundra?
  4. What are the summers like in the tundra?
  5. What is vegetation like in the tundra?
  6. The top layer of soil thaws during...
  7. Why are there few animals in the tundra?

**Exam practice - Outline the key characteristics of the tropical rainforest ecosystem.**

*The tropical rainforest is located.... + More specifically.....*

*It has a humid climate. For example.... + Furthermore.....*

*It has very dense vegetation. More specifically....*

*The vegetation has adapted to the rainforest's climate. For example..... + Furthermore...*

*The tropical rainforest is home to many animals. For example....*

Global populations are	Rising.	Population growth is affected by:	Natural increase and migration.
The global population is... In 2050 it will be.... In 2100 its will be.....	7.7 billion 9.8 billion 11.2 billion	Natural increase is caused when...  This is common in	the number of babies being born (birth rate) is greater than the number of people dying (death rate).  Countries in stages 2 and 3 of the DTM: <i>Bangladesh, India, Brazil, Mexico</i>
Population Distribution	Where people are located.	Migration is..... <ul style="list-style-type: none"> <li>Emigrants are....</li> <li>Immigrants are....</li> <li>A migrant is....</li> <li>Voluntary migrants are....</li> <li>Forced migrants are.....</li> </ul>	The movement of people from one place to another, both domestically (within a country) & internationally (between countries) <ul style="list-style-type: none"> <li><i>The people choosing to leave countries.</i></li> <li><i>The people arriving in a new country.</i></li> <li><i>The person doing the moving.</i></li> <li><i>People who choose to move for work or family.</i></li> <li><i>People who have no choice, due to war or natural disasters.</i></li> </ul>
Population density	The number of people living in a certain area (ppl per km <sub>2</sub> )		
Dense population	Lots of people live in an area.		
Sparse population	Very few people live in an area.		
Factors that affect population density are called...	Push and pull factors	Number of international migrants in 2017	The number of international migrants (people living in a country they were not born in) worldwide was 258 million in 2017. If all the world's international immigrants lived in a single country, it would have the world's fifth largest population.
Pull factors are.....	Factors that attract people to an area.	International migrants in the UK	Today there are 9.3 million international migrants in the UK. <i>They mainly come from Africa, India, Pakistan, West Indies, Eastern Europe.</i>
Examples of pull factors:	<ul style="list-style-type: none"> <li>Flat land</li> <li>Good access to services and lots of employment</li> <li>Mild climates with lots of natural resources (oil, wood, coal)</li> <li>Fertile soil</li> <li>Peace</li> </ul>		
Push factors are.....	Factors that push people out of an area.		
Examples of push factors	<ul style="list-style-type: none"> <li>Steep slopes</li> <li>Lack of services and lack of employment</li> <li>Extreme temperatures</li> <li>Few natural resources</li> <li>Unfertile soil</li> <li>Dense forest</li> <li>War and conflict</li> </ul>		

**Population growth:**

1. Define the term natural increase.
2. In what stages of the DTM is there a high natural increase?
3. Is the UK experiencing a high or low natural increase? Why?
4. Define the term migration.
5. Explain the different types of migrants.
6. What happened to the number of migrants in 2017?
7. What type of migration is common in the UK?
8. How many international migrants are there in the UK?
9. In what stage of the DTM is the UK?
10. Why might a person choose to leave their country of origin?

**Exam practice - Explain why some areas are more populated than other.**

*One factor that affects population distribution is... +More specifically...*  
*Another factor that affects population distribution is... +More specifically...*

**Population growth:**

1. What's happening to global populations?
2. What is the expected global population by 2050?
3. A pull factor is...
4. An example is...
5. A push factor is...
6. An example is...
7. Explain the difference between a dense and sparse population.
8. Why do more people live in places that have flat land?
9. Explain why a mild climate is seen as a pull factor?
10. If a war/conflict were occurring in a country – what might happen to its population?

Urban growth has created a number of opportunities in Mumbai	
<b>Jobs</b>	<ul style="list-style-type: none"> <li>Over 3 million people commute each day to work in Mumbai.</li> <li>Mumbai generates 6.16% of India's GDP</li> </ul>
<b>Jobs in a variety of industries</b>	<ul style="list-style-type: none"> <li>Jobs in factories producing electronic items, jewellery, textiles.</li> <li>Jobs in high-tech industries: call centres, online banking and software development.</li> <li>Many TNCs have their headquarters in Mumbai: Bank of America, Volkswagen, Walt Disney.</li> </ul>
<b>Higher &amp; reliable wages</b>	<ul style="list-style-type: none"> <li>The highly skilled jobs = higher wages.</li> <li>The high number of jobs means there are more reliable wages.</li> </ul>
<b>Access to services</b>	<ul style="list-style-type: none"> <li>There is much better access to education and healthcare.</li> <li>Mumbai has the highest percentage of internet access of any Indian city (12 million in 2013)</li> </ul>
<b>Entertainment</b>	<ul style="list-style-type: none"> <li>Restaurants, clubs, bars, theatres, festivals, shops...etc.</li> </ul>
<b>Transport</b>	<ul style="list-style-type: none"> <li>Train, airplanes, boats, buses...etc. Mumbai has links to all the major industrial cities in India as well as connections to globally important cities.</li> </ul>
<b>Cultures</b>	<ul style="list-style-type: none"> <li>People live in Mumbai from different ethnic backgrounds (people from different races and religions). This enriches the city's culture with different cuisines, places of worship and cultural festivals.</li> </ul>

Urban growth has created a number of challenges in Mumbai	
<b>Squatter settlements</b>	<ul style="list-style-type: none"> <li>40% of the population in Mumbai live in poor quality housing or on the streets.</li> <li>The poorest live in squatter settlements on the outskirts of the city. People arriving to Mumbai cannot afford rent so build a house using whatever they can find, close to the city centre. Overtime squatter settlements are formed.                             <ul style="list-style-type: none"> <li>Homes are very small and made out of wood, cardboard, metal and plastic sheeting</li> <li>They are overcrowded and lack services (healthcare, clean water) = diseases are common.</li> <li>Pollution (air, water, waste)</li> </ul> </li> <li>An example of a squatter settlement in Mumbai is Dharavi which is home to over 1 million people.</li> </ul>
<b>Lack of services</b>	<ul style="list-style-type: none"> <li>As populations rise rapidly it is very difficult to supply services to the population. They cannot develop the necessary infrastructure (water pipes, electricity lines, sewage pipes) fast enough to support the rising population size. Challenges include:                             <ul style="list-style-type: none"> <li>Education</li> <li>Sanitation</li> <li>Hospitals</li> </ul> </li> <li>Lack of teachers and schools = lack of education. Around 24 % of children are illiterate.</li> <li>Lack of sewage pipes = people dispose of sewage into nearby rivers and streams. These are used by locals to clean clothes and for drinking = waterborne diseases (typhoid, cholera and dysentery). 83% diseases in Mumbai are waterborne. Everyday in Dharavi, 4000 people are affected by waterborne diseases.</li> <li>Lack of hospitals = lack of healthcare.</li> </ul>
<b>Water pollution</b>	<p>Sewage and industrial waste from factories is poured into rivers. The Mithi River in Mumbai is very polluted because:</p> <ul style="list-style-type: none"> <li>Large companies dump industrial waste straight into the river and the airport uses it to dump untreated oil.</li> <li>800 litres of sewage goes straight into the river every day.</li> </ul> <p>This results in waterborne diseases, death of wildlife and destruction of ecosystems.</p>
<b>Air pollution</b>	<p>Vehicles and factories pollute the air. In 2018</p> <ul style="list-style-type: none"> <li>The World Health Organisation ranked Mumbai as the 4<sup>th</sup> most polluted megacity in the world.</li> <li>89.6% of deaths in slums are due to respiratory diseases.</li> </ul>
<b>Waste pollution</b>	<p>100,000s of tons of waste is produced every day in Mumbai. This is often left on the streets because they do not have the infrastructure (roads, lorries) to collect the rubbish and the do not have the money to build this infrastructure.</p>

**Opportunities in Mumbai:**

- How many people commute into Mumbai each day?
- How much of India's GDP generate?
- What type of industries exist in Mumbai?
- Why are higher and reliable jobs good for people?
- What services exist in Mumbai?
- How many people have internet access in India?
- What entertainment facilities exist in Mumbai?
- What transport links exist in Mumbai?
- Why is good transport a benefit?
- Why is a city with different ethnic groups a benefit?

**Exam practice - Explain how urban growth has resulted in opportunities in Mumbai.**

Mumbai provides a number of opportunities.

- |                  |                       |                    |
|------------------|-----------------------|--------------------|
| Firstly....      | + This is due to....  | + As a result....  |
| Furthermore..... | + More precisely..... | + As a result..... |
| Finally...       | + For example...      | +As a result...    |

**Challenges in Mumbai:**

- What % of the population live in squatter settlements in Mumbai?
- What is a squatter settlement?
- Why do squatter settlements form?
- Describe the squatter settlements found in Mumbai.
- Why does a rise in population result in a lack of services?
- What % of children are illiterate in Mumbai?
- How many people are affected by waterborne diseases in Mumbai?
- Why is a lack of hospitals bad?
- What is the Mithi River in Mumbai like? Why is it like this?
- What was happening in 2018 in Mumbai?

**Exam practice - Explain how urban growth has resulted in challenges in Mumbai.**

Mumbai's population has increased/decreased in the last 50 years to reach.....today.

This has caused a number of challenges.

- |                  |                       |                    |
|------------------|-----------------------|--------------------|
| Firstly....      | + This is due to....  | + As a result..... |
| Furthermore..... | + More precisely..... | + As a result..... |
| Finally...       | + For example...      | +As a result...    |

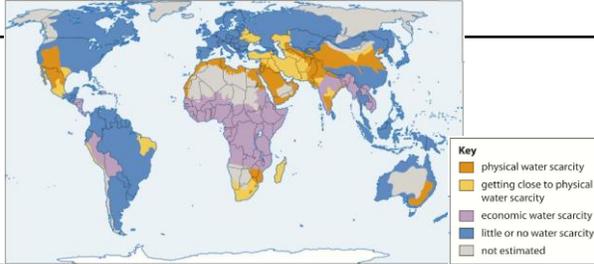
A NATURAL RESOURCE is something that occurs naturally and we can make use of.

A Renewable resources is one that will not run out.

A Non-renewable resource is finite and will run out.

**Water as a Resource**

<b>Physical scarcity</b>	Where there is not enough water to meet the needs of everyone there.
<b>Economic scarcity</b>	People cannot afford the infrastructure such as pumps and pipes to bring fresh water to the people living in that area
<b>Water facts and location</b>	<ul style="list-style-type: none"> <li>✓ water and it is our basic need.</li> <li>✓ 97% of the earth's water is salty so we cannot use it (for drinking, agriculture or industry)</li> <li>✓ 3% of the earth's water is fresh water</li> <li>✓ 2/3 of this is frozen in ice sheets and glaciers,</li> <li>✓ Less than 1% of the fresh water we can use</li> <li>✓ most of this is underground, so we must pump it out it use it.</li> </ul>



**The problems with water**

<b>Water disease and pollution</b>	<ul style="list-style-type: none"> <li>• In some countries that experience economic water scarcity they have little sanitation facilities (clean water and toilets).</li> <li>• This might mean human waste is dumped into rivers and contaminate drinking water which can cause diseases such as Cholera.</li> </ul>
<b>Water conflict</b>	<ul style="list-style-type: none"> <li>• Water is shared between countries this is because some rivers flow through several countries such as the Nile and Danube rivers.</li> <li>• This means that some countries are able to take more water than others and this can lead to conflicts over water and physical water scarcity.</li> </ul>
<b>Food production</b>	<ul style="list-style-type: none"> <li>• Agriculture (farming) uses 70% of the global amount of water.</li> <li>• Areas where not a lot of rain falls are at risk because if there is water scarcity it means that food may not be able to grow and we won't be able to feed a growing population.</li> <li>• Some countries such as the USA provide 30% of the world's wheat (makes bread and cereals), so this would have a huge negative impact on food production.</li> </ul>

**Water:**

1. Give two ways we use water
2. What percentage of the earth's water is in the oceans?
3. Why can't we use this water?
4. What percentage of the earth's water is freshwater?
5. Why can't we use all of this freshwater?
6. Physical water scarcity is where there is ....
7. Economic water scarcity is where people...
8. Explain how drinking water is contaminated in some countries
9. Give an example of a waterborne disease
10. Some rivers flow through different countries, explain how this can cause conflict.
11. Explain how rainfall can affect food production.
12. What percentage of the available water is used for agriculture?

**Exam practice - Is water shared equally and how does it impact on people?**

*97% of the earth's water is salt water and cannot be used. Fresh water is not shared equally and some places face water scarcity.*

*One problem caused by water is disease and pollution. + More specifically.....  
For example.....  
As a result.....*

*Another problem with water is.... + More specifically.....  
For example .....  
As a result.....*

Oil as a Resource	
<b>Oil reserves</b>	The proven amount of oil a country has.
<b>Oil facts and location</b>	<ul style="list-style-type: none"> <li>✓ Oil is a fossil fuel which means it's formed from fossils of tiny oceans creatures millions of years ago.</li> <li>✓ This becomes oil and is then extracted from the ground (<b>this is known as crude oil</b>) and brought to an oil refinery.</li> <li>✓ It is then separated into refined oil and other raw materials.</li> <li>✓ Oil is used to fuel cars, ships, planes and to generate electricity.</li> <li>✓ It is also used to produce plastics, fertilizers and even clothes.</li> <li>✓ Oil is a very valuable resource</li> </ul>
<b>The Problems with Oil</b>	
<b>Climate Change:</b>	<ul style="list-style-type: none"> <li>➢ When oil burns it releases carbon dioxide (GHG) into the atmosphere adding to global warming leading to climate change.</li> <li>➢ Increased temperatures can cause glaciers and ice sheets to melt leading to sea level rise and loss of polar habitats.</li> <li>➢ Many species of plants and animals becoming extinct and their habitats are damaged or altered by climate change.</li> </ul>
<b>Oil Conflict:</b>	<ul style="list-style-type: none"> <li>➢ Some oil producing countries are politically unstable so we may not want to or be able to buy oil from them.</li> <li>➢ Conflicts can happen between those who have oil and those that want oil.</li> <li>➢ An example of this is conflict in the Niger Delta (Nigeria) between big oil companies (such as Shell Oil) and minority ethnic groups who feel that they are being exploited by these big oil companies.</li> </ul>
<b>Environmental Disaster</b>	<ul style="list-style-type: none"> <li>➢ Oil spills can happen on oil platforms, oil tankers or as oil is transported from one place to another.</li> <li>➢ In April 2010 a large oil spill happened due to an explosion at an oil rig in the Gulf of Mexico, known as the <b>Deepwater Horizon Oil Spill</b>.</li> <li>➢ More than 200 million gallons of crude oil was spilled into the Gulf of Mexico during accident.</li> <li>➢ Over 16,000 miles of coastline was affected</li> <li>➢ over 8,000 animals were reported dead 6 months after the spill.</li> </ul>



**Oil:**

1. Give three uses of oil
2. Oil is a 'fossil fuel' – explain what this means
3. Crude oil is...
4. Refined oil is...
5. Give an example of a country with significant oil reserves
6. Give an example of a country which does not have significant oil reserves
7. Saudi Arabia is the country with the second largest oil reserve, but which is the first?
8. What does oil release when it is burnt and how does this lead to climate change?
9. Explain how increasing temperatures result in species becoming extinct
10. Where is the Niger Delta?
11. Explain why there is conflict in the Niger Delta
12. Explain how oil can result in environmental disasters
13. How many miles of coastline were destroyed in the Deepwater Horizon Oil Spill?
14. How many animals were reported dead 6 months after the disaster?

**Exam practice - Why is oil important and what are the problems with using it?**

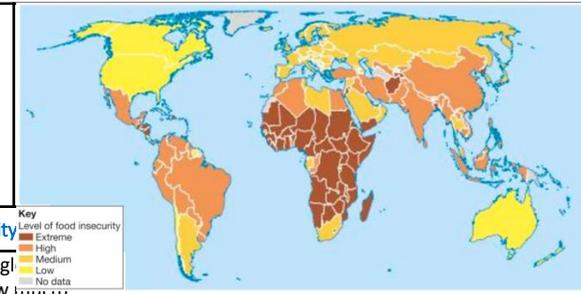
*Oil is a f..... f..... . It is known as a f..... f..... because...  
Oil is not shared equally between countries. + More specifically.....*

*A problem with using oil is .....  
As a result.....*

*Another problem is .....  
As a result.....*

*A final problem is .....  
As a result.....*

Food as a Resource	
<b>Food Insecurity</b>	<i>Not enough access to safe, affordable and nutritious food.</i>
<b>Food facts and location</b>	<ul style="list-style-type: none"> <li>✓ Food consumption (how much people eat) varies across the world.</li> <li>✓ The recommended daily calories intake is 2000-2400 per day.</li> <li>✓ This is met and exceeded in continents such as North America and Europe, but in much of Africa is well below this level.</li> <li>✓ Whilst global food consumption is increasing due to increasing development (people are becoming richer), population is increasing and developments in transport and storage of food there are still many countries that face <b>FOOD INSECURITY</b></li> </ul>
<b>Reasons for Food Insecurity</b>	
<b>Climate Change</b>	<ul style="list-style-type: none"> <li>➢ Extreme temperatures and low rainfall due to climate change =struggle</li> <li>➢ Climate change affects global farming patterns and productivity (how much food is produced)</li> <li>➢ Weeds and pests such as locusts = consume whole crops</li> </ul>
<b>Access to technology</b>	<ul style="list-style-type: none"> <li>➢ Food production can be increased by investing in new technology and machinery.</li> <li>➢ Poorest people cannot afford any form of technology, irrigation or fertilisers.</li> <li>➢ Unskilled use of technology e.g. poor use of irrigation = damage the land, meaning its harder to grow food in the future.</li> </ul>
<b>Wars and conflicts</b>	<ul style="list-style-type: none"> <li>➢ Conflicts can lead to the destruction of land, crops and livestock</li> <li>➢ Food can be used as a weapon, with enemies cutting off food supplies in order to gain ground = famine/death.</li> <li>➢ During war transport links can be destroyed e.g. ports = imported food is not able to reach the people in that country.</li> </ul>



**Food:**

1. What is the recommended daily calorie intake?
2. Give an example of a continent where this number of calories is easily consumed by its population.
3. Give an example of a continent below this level of calories.
4. Food insecurity is...
5. Give an example of a country which experiences food insecurity
6. Give an example of a country which does NOT experience food insecurity
7. Explain how climate change can lead to food insecurity.
8. Give two examples of technology which can help increase food production
9. Why is this technology less common in poorer countries?
10. Explain how food can be used as a weapon during war
11. How can the destruction of transport links during a war lead to food insecurity?

**Exam practice - What are the challenges with food supply globally?**

*Food is not shared equally around the world. Some countries experience food insecurity. This is when there is not enough...*

*One reason food insecurity occurs is .... + More specifically.....  
As a result.....*

*Another reason is because....  
As a result.....*

*A final reason is....  
As a result.....*

Lines of Latitude go from East to West.

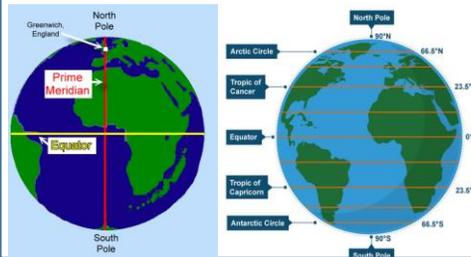
- The Equator is found at latitude 0°

Lines of Longitude go from North to South

- The Prime Meridian is at longitude 0°. This runs through Greenwich, SE London.

There are 7 major lines of latitude:

- North Pole - 90°N
- Arctic Circle – 66.5°N
- Tropic of Cancer – 23.5°N
- Equator - 0°
- Tropic of Capricorn - 23.5°S
- Antarctic Circle - 66.5°S
- South Pole - 90°S



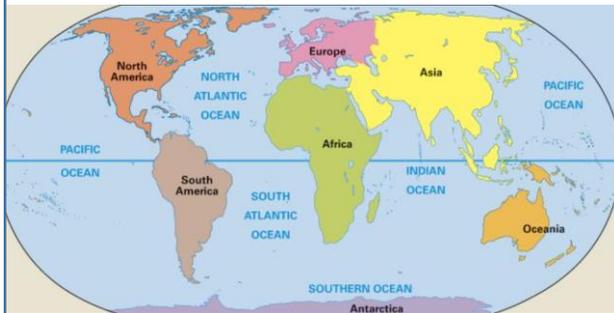
A continent is a landmass that is made up of many countries. There are 7 continents and 5 major oceans.

Continents (listed in order of size):

- Asia
- Africa
- North America
- South America
- Antarctica
- Europe
- Oceania

Oceans:

- The Atlantic Ocean (North and South)
- Pacific Ocean
- Indian Ocean
- Southern Ocean
- Arctic Ocean



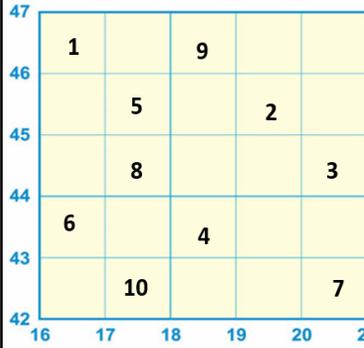
Grid References

An OS map is a very detailed map. They are split up into squares, known as grid squares.

- A 4 figure grid reference directs you to a certain grid square.
- A 6 figure grid reference directs you to a certain point within a grid square.

How to read grid references: remember the rule *along the corridor, up the stairs*.

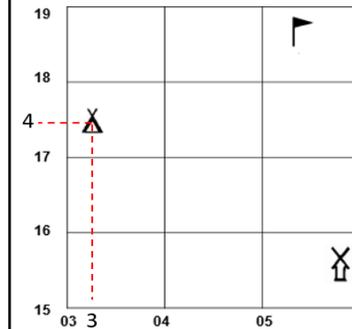
ALWAYS send to the BOTTOM LEFT corner.



4 FIGURE GRID REFERENCES

\_\_\_\_ / \_\_\_\_

- Draw a **X** in the bottom left corner of the grid square.
- Along the corridor** – go along the horizontal axis until you reach the line that the X is on.
- Up the stairs** – go along the vertical axis until you reach the line that the X is on. **1 = 16,46.**



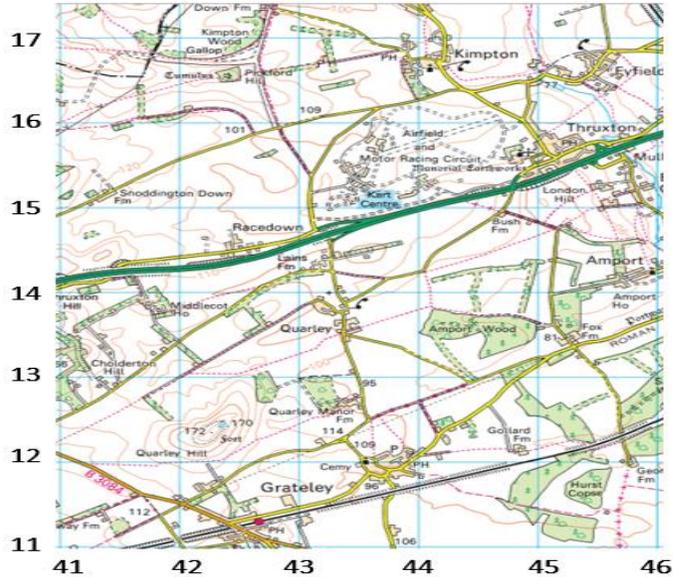
6 FIGURE GRID REFERENCES

\_\_\_\_ / \_\_\_\_

- What is the grid square? **03,17**
- To work out the 3<sup>rd</sup> number you state how many 10<sup>ths</sup> across the campsite is in 03, 17 = 03**3**, 17 \_
- To work out the 6<sup>th</sup> number you state how many 10<sup>ths</sup> up the grid square the campsite is = 033, **174**
- Therefore the six figure grid reference is **033, 174**

Latitudes and continents:

- What is the name of the continent we live on?
- What is the largest continent based on land area?
- Which continent has the largest population size?
- What is the name of the ocean that separates North America and Europe?
- What is the name of the ocean that separates Asia and North America?
- Which continent has no one living on it?
- What are lines of latitude?
- Give two examples of lines of latitude and state where they are found (north or south of the equator).
- What are lines of longitude and give an example.
- How is time affected by lines of latitude?



Grid references:

Use the OS map ←

Section A

- What is the name of the wood in 4413?
- What is the name of the farms in 4415?
- What road is found in 4111?
- What is the name of the hill located in 4515
- What is the name of the settlement in 4416

Section B

What is located at the following 6 figure grid references? Draw the symbol or state what it means.

- 441167
- 426113
- 443167
- 428112
- 435139

Section C

What is the height of the land at the following points on the map?

- 426129
- 425159
- 431162
- 452165
- 416114

Section D: In which grid squares is the slope steeper?

- 4212 or 4313
- 4116 or 4115
- 4113 or 4411