GCSE Geography Revision Workbook

Key Dates:

February PPEs 24th Feb-3rd Mar
April PPE (Classroom) 20th April
Paper 1 18th May
Paper 2 3rd June
Paper 3 11th June

Name _____ Teacher_____

Target Grade _____

November PPE Grade _____

February PPE Grade _____

Target setting –
Set yourself a monthly revision target

Example target – Learn more case studies for 6/9 mark questions on paper 1

December _____

January_____

February_____

March_____

April_____

May_____

How to use this book

Revision is hard. Fact!

One of the hardest parts is to know where to start and what to do. In Geography, we believe that guiding you into the process of revision will have the largest impact on your grade in the end.

This book is designed to be used in the following ways

- Pages 3-9: Use to familiarise yourself with the exam. Read these pages and ask your teacher about anything you don't understand
- Page 10: Use this to revise the strategies you should consider when answering different types of questions. If you complete practice questions, try to remember to use them, the are designed to make it easier for you to score maximum marks.
- Page 11-12 Use these pages to make notes about the World Geography you might need. You will need to know where each continent is, use page 11 to learn this and use page 12 to find all of your case studies, draw these onto the map.

- Each topic then has a
  - ***Glossary sheets*** –use these to learn key definitions, make sure you learn the words used in each topic, get others to test you
  - ***Knowledge organisers*** – use the spaces to organise your own notes on the topics you will be assessed on. Concentrate of brief notes, not too much detail
  -***Diagrams to label*** – use these sheets to make sure you can name the key features of the main landforms and other diagrams used throughout the course
  - PLC (Personal Learning Checklist) – Use these to review how confident you feel about each topic. This can be done more than once as you revise. Make sure you spend an appropriate amount of time on the areas you feel weakest on.
  -***Practice 6 and 9 markers*** – These are opportunities to practice structuring your questions. Use the first 10 pages of the book to help you plan answers. Your teacher will mark these for you if you bring them in.

- At the back of the book, there are ***completed knowledge organisers*** for reference, your own ones (completed earlier) will be more useful to you, but you can use these to help. There are also ***completed diagrams to label***. These can be used to check against what you have produced.

If you have any questions at all about revision please contact me via email. You can reach me at brookes.p@cottinghamhigh.net

Introduction: What is assessed on each paper?

Figure 1 shows what is assessed on each of the three exam papers. There are some options in Paper 1 and Paper 2. Make sure you know which ones you have covered.

Paper 1 Living with the physical environment — **Time allowed: 1 hour 30 minutes**

Section	Marks	What are questions about?	
A	33	1. The challenge of natural hazards	Answer **all** questions
B	25	2. The living world	Answer **all** questions
C	30	Physical landscapes in the UK	Answer **two** questions

	Tick **two** topics you studied.
3. Coastal landscapes in the UK	
4. River landscapes in the UK	
5. Glacial landscapes in the UK	

Paper 2 Challenges in the human environment — **Time allowed: 1 hour 30 minutes**

Section	Marks	What are questions about?	
A	33	1. Urban issues and challenges	Answer **all** questions
B	30	2. The changing economic world	Answer **all** questions
C	25	3. The challenge of resource management	Answer question 3 and **one** other

	Tick **one** topic you studied.
4. Food	
5. Water	
6. Energy	

Paper 3 Geographical applications — **Time allowed: 1 hour 30 minutes**

Section	Marks	What are questions about?	
A	37	Issue evaluation	Answer **all** questions
B	39	Fieldwork	Answer **all** questions

Figure 1 What each exam paper assesses

Chapter 1: How Geography is assessed in Papers 1 and 2

This chapter is about how GCSE Geography is assessed in Papers 1 and 2. It will cover:

- what the exam questions mean
- how to tackle questions that use graphs, maps and photos
- how to answer questions worth 6 and 9 marks.

Understanding exam questions

Papers 1 and 2 have a variety of questions designed to test your ability as a geographer. It's important you understand what each question is asking you to do:

- **Command words** are words such as 'Assess' or 'Explain'. The command word tells you what you must do when you write your response. Common command words used in Paper 1 and Paper 2 are given in **Figure 1.2**.
- The **tariff** is the number of marks that are available for each question. These marks are shown at the end of the space where you put your answer. Use the number of lines printed on the exam paper as a guide to how much you should write.
- The **assessment objective (AO)** is what the examiner is looking for in your response. There are four AOs. They are described in **Figure 1.1**. Some questions assess only AO1 or AO4. These questions have a low tariff. Other questions assess a combination of AOs. These questions have 4, 6 or 9 marks. You will need to read these questions very carefully to understand what the examiner is looking for.

In Paper 1 and Paper 2 you have about one minute for each mark. Spend about ten minutes on a 9-mark question. Don't write a lot for a 1- or 2-mark question.

Figure 1.1 The assessment objectives (AOs)

	What the examiner is looking for	Typical command word
AO1	Your ability to remember geographical facts	Describe, Give, Outline, State
AO2	Whether you understand geographical concepts and processes	Explain, Give one reason, Outline one reason
AO3	Whether you can evaluate evidence or use evidence to make a decision	Assess, Discuss, Suggest, To what extent?
AO4	Your skill when you use maps and graphs or make calculations	Describe, Calculate, Give, State

Read the question carefully

It is essential to do what the command word asks you to do. If the command is 'assess' or 'to what extent?' then you must do some evaluation or make a judgement. **Figure 1.2** lists common command words and explains what they mean.

BUG the question! Sometimes candidates seem to write everything they know about a subject, without actually answering the question! To avoid this, BUG the question:

Bold the command word.

Underline other important instructions.

***Glance* back at the question to make sure you are actually answering it!**

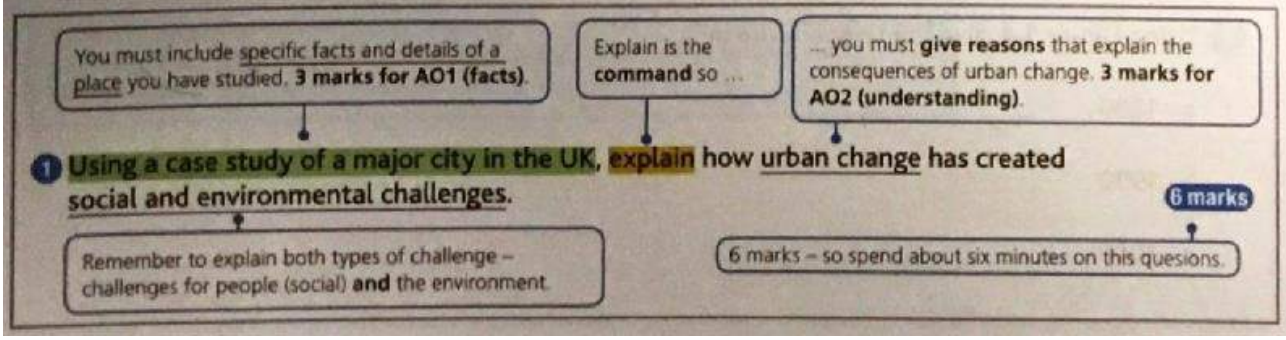
Figure 1.2 Command words that could be used in Paper 1 and Paper 2

Tariff	Command word	What you need to do	Example
1, 2, 3	Calculate	Work out the value of something.	**Calculate** the mean shown in Figure 1. Show your working. (2 marks)
	Describe	Give a brief account of something.	**Describe** the distribution of countries shown in Figure 1. (2 marks)
	Give	Make a short, simple statement.	**Give** one reason why tropical regions have high temperatures throughout the year. (1 mark)
	Identify	Name a feature.	Using Figure 1, **identify** the landform marked X. (1 mark)
	Outline	Give a brief account of something.	**Outline** one way in which trade has had an impact on a named LIC or NEE country. (2 marks)
	State	Make a short, simple statement of fact.	**State** one physical characteristic of a tropical rainforest. (1 mark)
2–4–6	Discuss	Consider the arguments that can be debated around a geographical issue.	Using Figure 1 and your own understanding, **discuss** the issues arising from the growth of major cities in LICs or NEEs. (6 marks)
	Explain	Show your understanding by giving reasons.	**Explain** how waterfalls may change over time. (4 marks)
	Suggest	Propose a possible solution, reason or consequence. Your suggestion should be based on geographical evidence.	Using Figure 1 and your own understanding, **suggest** how large-scale agriculture can create disadvantages for the environment. (4 marks)
9	Assess	Evaluate a situation.	**Assess** the extent to which people can adapt to climate change. (9 marks)
	To what extent?	Make a judgement by weighing up the arguments for and against. Make sure you give reasons for your decision.	**To what extent** have people been successful in managing traffic congestion in a major LIC or NEE city you have studied? (9 marks)

Dealing with complex questions

Some questions seem to be very long and wordy. Don't panic. Break down the questions into bits to understand what the examiner wants you to do. In each question, look out for:

- the command – this is often (but not always) the first word in the question
- instructions to use a figure – this will be a photo, map, graph or some text in the exam paper that contains useful clues. You **must** refer to the evidence provided
- instructions to use an example or case study – you should know facts about fourteen examples and five case studies. Use details from these if the question asks for them
- whether you need to write about more than one thing – for example, a question could be about economic **and** social reasons for migration. Sometimes students do the first part (economic, in this example) and forget to do the second (social) so they don't finish the question.



9-mark questions on Papers 1 and 2

Key points about 9-mark questions:

- You need to answer **two** questions worth 9 marks in Paper 1 and another **two** in Paper 2:
  - one at the end of question 1
  - one at the end of question 2.
- In each paper, **one** of these questions will have an extra 3 marks for spelling, punctuation and grammar (SPaG). This is marked on the exam paper after the question.
- Questions will test your ability to evaluate or to make a decision (**Figure 1.18**).
- The examiner is looking for more than one thing in your response. Questions will have:
  - 3 marks for AO1 (facts)
  - 3 marks for AO2 (understanding)
  - 3 marks for AO3 (your ability to evaluate or make a decision).

Assess

To what extent?

Figure 1.18 Command words for 9-mark questions

Assess is the command so ... you must show you can evaluate/weigh up. **3 marks for AO3 (evaluation)**

You must use your knowledge of international agreements. **3 marks for AO1 (facts)**

1 Assess the extent to which international agreements are able to reduce the causes of climate change. 9 marks

You must show you understand how international agreements can reduce the causes of climate change. **3 marks for AO2 (understanding)**

2 Choose one of the following environments:

Hot desert environment ○

Cold environment ○

Tick the box to show which environment you have chosen.

You must tick the option you have studied. There are no marks for this – it helps the examiner.

You must use detailed knowledge of a place you have studied. **3 marks for AO1 (facts)**

'To what extent' is the command so ... you must show you can weigh up the arguments for and against. **3 marks for AO3 (evaluation)**

Using a case study, to what extent have physical challenges prevented economic activity in your chosen environment? 9 marks

You must show you understand how the physical environment can cause challenges for economic activity. **3 marks for AO2 (understanding)**

Some students do the 9-mark questions first. This makes some sense – they are worth a lot of marks, so you might want to do them straight away while you are feeling alert. If you decide to do this:

- allow a maximum of ten minutes (thirteen for the question with SPaG)
- afterwards, work **carefully** through the paper to ensure you don't miss any questions.

Structuring your answer

You have about ten minutes to answer the 9-mark questions (thirteen minutes for the questions with SPaG). Examiners will expect to see answers that are:

- longer (at least eighteen lines)
- structured – perhaps using two paragraphs and a conclusion
- evaluative.

The question will use command words like 'Assess' or 'To what extent?', so you must give an answer that evaluates the evidence. It's a good idea to practise using a structure for your answer to this kind of question. Let's see how this can be done, using an example.

1 Using a case study, to what extent have physical challenges prevented economic activity in your chosen environment? 9 marks

A good answer to this question will have three parts to it (**Figure 1.19**):

- **An argument**. This paragraph will use evidence that supports the view. Make a point and then explain how physical challenges such as the climate or inaccessibility can prevent economic activity. Use evidence to support your argument. This technique is known as PEEL (see page 20).
- **A counter-argument**. Use PEEL again to consider the opposing point of view, perhaps by using examples of economic activities that have been successful despite the physical challenges.
- **A decision**. Your final paragraph should weigh up the evidence and reach a decision about whether or not physical challenges have prevented economic activity. You might come to a straightforward *yes* or *no* – a black and white decision. Alternatively, it's okay to argue for something in between. If so, use the 'washing line' technique (**see Figure 1.22**) to help you word your decision.

Use words and phrases in your conclusion that make it really obvious to the examiner that you have answered the question.

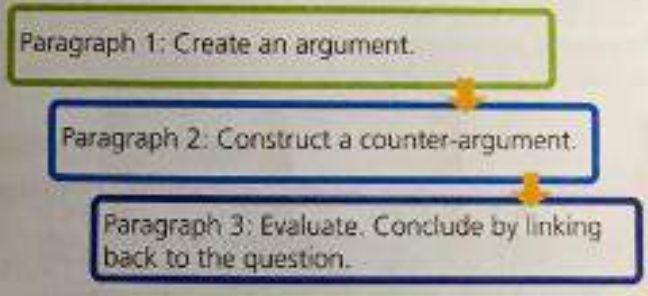


Figure 1.19 How to construct your argument

Signposting your answer

You can use signposting to help structure your answer in a way that the examiner will find helpful and clear. Signposting is a technique that tells the reader what is coming next – like a signpost tells you where you are going. **Figure 1.20** gives a few useful signposts you can use.

To signpost an argument:	*On the one hand ...* *One view would be ...*
To signpost a counter-argument:	*On the other hand ...* *In comparison ...* *Another possibility is ...*
To signpost your conclusion:	*Overall, I think ...* *My conclusion is ...*

Figure 1.20 Examples of signposting

PEEL your answer

On pages 12–13 we looked at using 'So what?' to extend and explain simple points. If you want to extend each point further, you need to PEEL it. The PEEL technique is explained in **Figure 1.21**. We have seen that a good answer to a 9-mark question will have at least two paragraphs. Each paragraph should make one point and PEEL it.

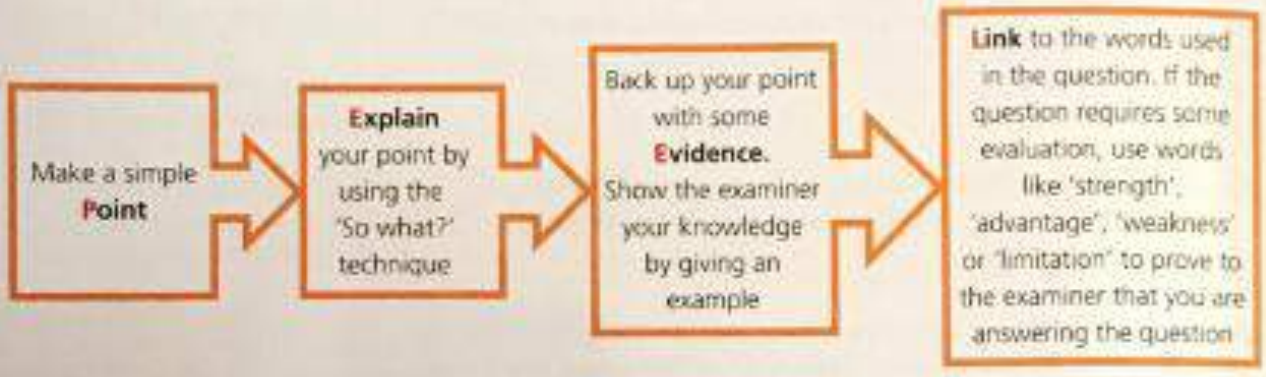


Figure 1.21 Use the PEEL technique in each paragraph

Even if you fully agree or completely disagree, you should always present both sides of an argument and then make a decision.

Dealing with 'to what extent?'

You **must** state whether you agree with the statement or not. You may fully agree or disagree with the statement. It's also possible that you only partially agree with it. Either way, it doesn't really matter because the examiner isn't looking for a particular answer. It's the way that you use the evidence to support your decision that is important. **Figure 1.22** gives you some helpful phrases to use in your answer.

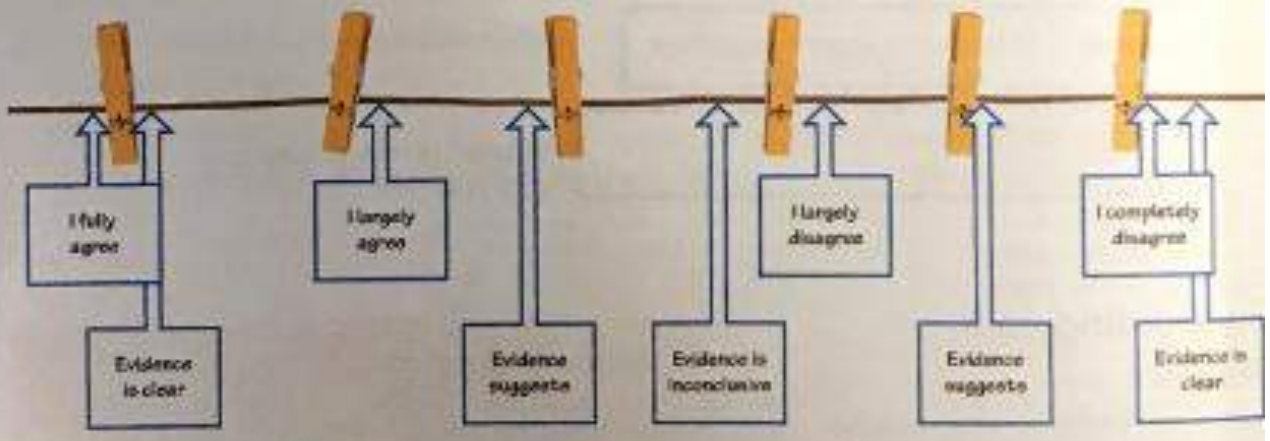


Figure 1.22 Use a 'washing line' to help you state your decision

How 9-mark questions are marked

9-mark questions are marked using a mark scheme with three levels – detailed, clear and basic. You **won't** get a tick for each point – the quality of your answer is compared to the descriptions in the mark scheme. Study the example in **Figure 1.23**. It could be used with the following question.

10 **Assess the extent to which international agreements are able to reduce the causes of climate change.** 9 marks

Figure 1.23 Mark scheme

Level	Marks	Description
3 (Detailed)	7–9	AO1 Detailed knowledge of international agreements. AO2 Thorough geographical understanding of how agreements are able to reduce the causes of climate change. AO3 Thorough evaluation of the extent to which agreements are able to reduce the causes of climate change.
2 (Clear)	4–6	AO1 Clear knowledge of international agreements. AO2 Some geographical understanding of how agreements are able to reduce the causes of climate change. AO3 Reasonable evaluation of the extent to which agreements are able to reduce the causes of climate change.
1 (Basic)	1–3	AO1 Limited knowledge of international agreements. AO2 Slight geographical understanding of how agreements are able to reduce the causes of climate change. AO3 Limited evaluation of the extent to which agreements are able to reduce the causes of climate change.

From the mark scheme you can see that your answer needs a combination of facts, understanding and evaluation. The sample answer below deals with each assessment objective separately so you can see the different things that the examiner might be looking for when they are using the mark scheme.

Sample answer

Facts (AO1)

The United Nations Framework Convention on Climate Change (UNFCCC) met in Paris in 2015 and 195 countries signed the Paris Agreement. Its aim is to keep the increase in global temperature to less than 2°C above levels that existed before the industrial age.

Understanding (AO2)

The agreement works because individual governments pledge to reduce emissions of greenhouse gases that trap heat in the atmosphere. For example, by pledging to stop burning coal to generate electricity and switching to more renewables, a country will emit less CO_2 so less heat will be trapped in the atmosphere.

Evaluation (AO3)

It is difficult for international agreements to make actual reductions in CO_2 emissions because there is nothing to force countries to stick to their pledges. International agreements will work only if enough countries that emit large quantities of greenhouse gases, such as the USA, India or China, actually keep to the targets. Politicians may fail to do this because of pressure from voters. Scientists think that most industrial countries are failing to meet their own targets.

METACOGNATIVE STRATEGIES

How to succeed at GCSE Geography — CHS Geography Team

Be specific

For examples and case studies, know your stuff

Learn key facts and figures
Know details like date, time, place, magnitude
Avoid generalisations

E.g. The 2009 earthquake in L'Aquila, Italy, measured 6.3 on the Richter Scale. It killed 308 people, largely because it struck at 3:30am when many people were in bed.

How to succeed at GCSE Geography — CHS Geography Team

Explain

So what?

At the end of each sentence you write on an explain quesion, ask, So what?

Explain how the earthquake affected people
Many people's house fell down So what?
Which lead to them being homeless So what?
Which made them more likely to get ill So what?
So more emergency aid was needed.

Check you have fully explained with the So what? test. This will get you into level 3.

How to succeed at GCSE Geography — CHS Geography Team

Team C

Getting maximum marks on figure questions

When a figure contains data, numbers, graphs or sometimes maps, use Team C.

T - Trends, what patterns can you see?
E - Examples, can you quote numbers / places?
A - Anomalies, what doesn't fit? Why not?
M - Maths, can you work out the range, mean, median, mode, total, distance, height?
C - Conclusion, overall, what does it show?

Fully explore the figure to score maximum marks

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SEE

How to answer impact / effect questions

S is for social
How are people affected by an event?

E is for economic
How can money and employment be affected?

E is for environmental
How is the living world affected?

Write about social impacts, economic impacts and environmental impacts to access level 3

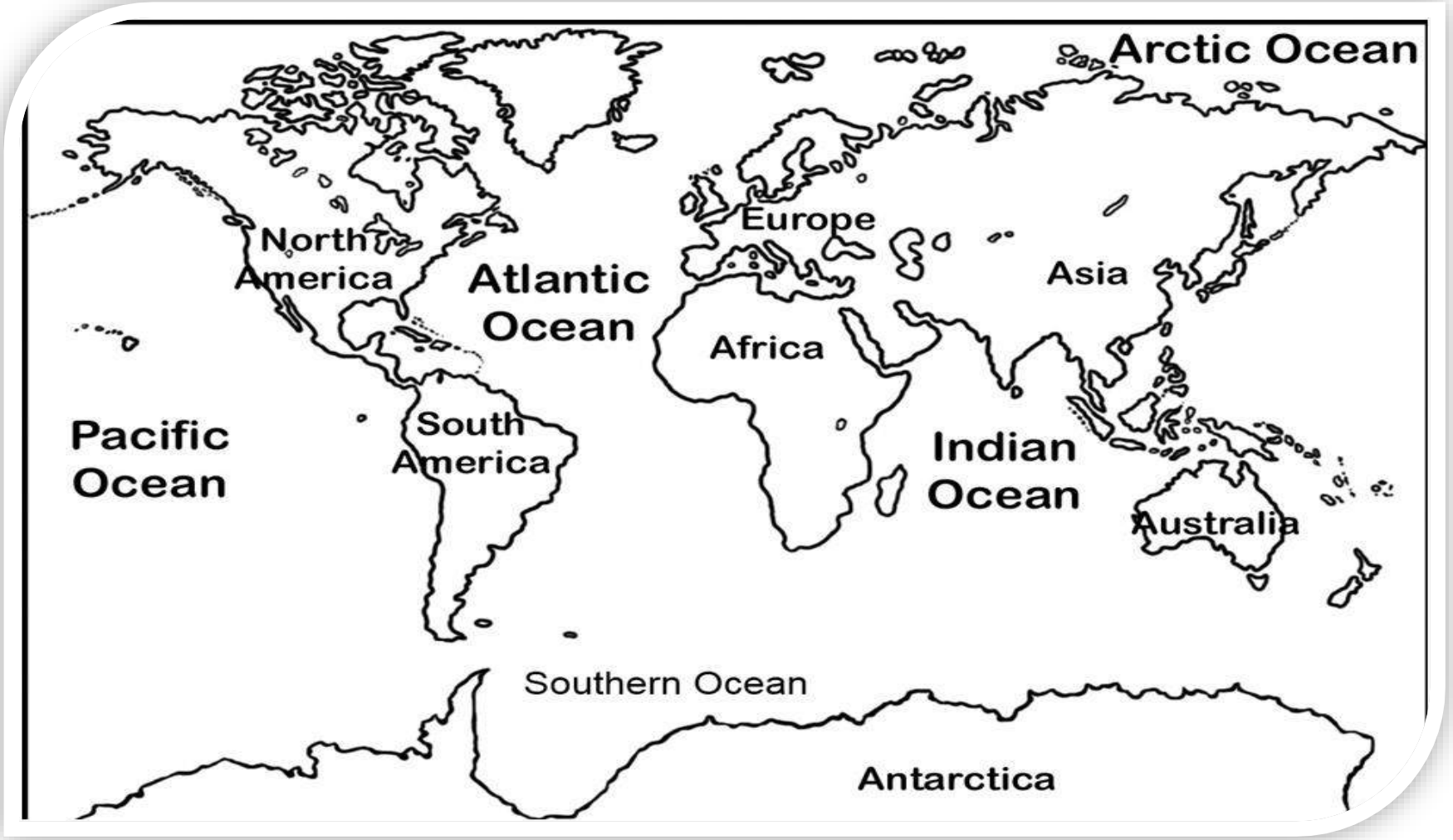
SUGGEST

I - Issue - what is the issue in the questions?
S - solution - how can this problem be solved?
E - evidence (from figure if present)

World Map

Task:

Learn off by heart the names and locations of the continents and oceans



World Map of case Studies

Task:

Add the locations of all of your case studies. Colour code them by topic.

Natural & Tectonic hazards glossary

Hazard risk
The probability or chance that a natural hazard may take place.

Natural hazard
A natural event (for example an earthquake, volcanic eruption, tropical storm, flood) that threatens people or has the potential to cause damage, destruction and death.

Conservative plate margins
Tectonic plate margin where two tectonic plates slide past each other.

Constructive plate margin
Tectonic plate margin where rising magma adds new material to plates that are diverging or moving apart.

Destructive plate margin
Tectonic plate margin where two plates are converging or coming together and oceanic plate is subducted. It can be associated with violent earthquakes and explosive volcanoes.

Earthquake
A sudden or violent movement within the Earth's crust followed by a series of shocks.

Immediate responses
The reaction of people as the disaster happens and in the immediate aftermath.

Long-term responses
Later reactions that occur in the weeks, months and years after the event.

Monitoring
Recording physical changes, such as earthquake tremors around a volcano, to help forecast when and where a natural hazard might strike.

Plate margin
The margin or boundary between two tectonic plates.

Planning
Actions taken to enable communities to respond to, and recover from, natural disasters, through measures such as emergency evacuation plans, information management, communications and warning systems.

Prediction
Attempts to forecast when and where a natural hazard will strike, based on current knowledge. This can be done to some extent for volcanic eruptions (and tropical storms), but less reliably for earthquakes.

Primary effects
The initial impact of a natural event on people and property, caused directly by it, for instance the ground buildings collapsing following an earthquake.

Protection
Actions taken before a hazard strikes to reduce its impact, such as educating people or improving building design.

Secondary effects
The after-effects that occur as indirect impacts of a natural event, sometimes on a longer timescale, for instance fires due to ruptured gas mains resulting from the ground shaking.

Tectonic hazard
A natural hazard caused by movement of tectonic plates (including volcanoes and earthquakes).

Tectonic plate
A rigid segment of the Earth's crust which can 'float' across the heavier, semi-molten rock below. Continental plates are less dense, but thicker than oceanic plates.

Volcano
An opening in the Earth's crust from which lava, ash and gases erupt.

Weather hazards glossary

Economic impact
The effect of an event on the wealth of an area or community.

Environmental impact
The effect of an event on the landscape and ecology of the surrounding area.

Extreme weather
This is when a weather event is significantly different from the average or usual weather pattern, and is especially severe or unseasonal. This may take place over one day or a period of time. A severe snow blizzard or heat wave are two examples of extreme weather in the UK.

Global atmospheric circulation
The worldwide system of winds, which transports heat from tropical to polar latitudes. In each hemisphere, air also circulates through the entire depth of the troposphere which extends up to 15 km.

Immediate responses
The reaction of people as the disaster happens and in the immediate aftermath.

Long-term responses
Later reactions that occur in the weeks, months and years after the event.

Management strategies
Techniques of controlling, responding to, or dealing with an event.

Monitoring
Recording physical changes, such as tracking a tropical storm by satellite, to help forecast when and where a natural hazard might strike.

Planning
Actions taken to enable communities to respond to, and recover from, natural disasters, through measures such as emergency evacuation plans, information management, communications and warning systems.

Prediction
Attempts to forecast when and where a natural hazard will strike, based on current knowledge. This can be done to some extent for tropical storms (and volcanic eruptions, but less reliably for earthquakes).

Primary effects
The initial impact of a natural event on people and property, caused directly by it, for instance buildings being partially or wholly destroyed by a tropical storm.

Protection
Actions taken before a hazard strikes to reduce its impact, such as educating people or improving building design.

Secondary effects
The after-effects that occur as indirect impacts of a natural event, sometimes on a longer timescale, for instance impact on access to potable water can lead to spread of disease.

Social impact
The effect of an event on the lives of people or community.

Tropical storm (hurricane, cyclone, typhoon)
An area of low pressure with winds moving in a spiral around the calm central point called the eye of the storm. Winds are powerful and rainfall is heavy.

Hazards

Hazard:

Risk:

Factors affecting the impact of hazards:

Structure of the earth:

Oceanic crust:

Continental crust:

Why do earthquakes occur?

Epicentre:

Focus:

Constructive:

Conservative:

Parts of a volcano:

Why do they erupt?

Shield:

Composite:

Why do people live in hazard zones?

Destructive:

Nepal 2015 (LIC)

L'Aquila 2009 (HIC)

Monitoring volcanic hazards:

Monitoring earthquake hazards:

Earthquake resistant design:

Global atmospheric circulation:

Climate change and tropical storms:

Hurricane formation:

Typhoon Haiyan 2013 (LIC)

Low pressure depression formation.

St Jude.

Anticyclones:

Greenhouse effect:

Human causes of climate change:

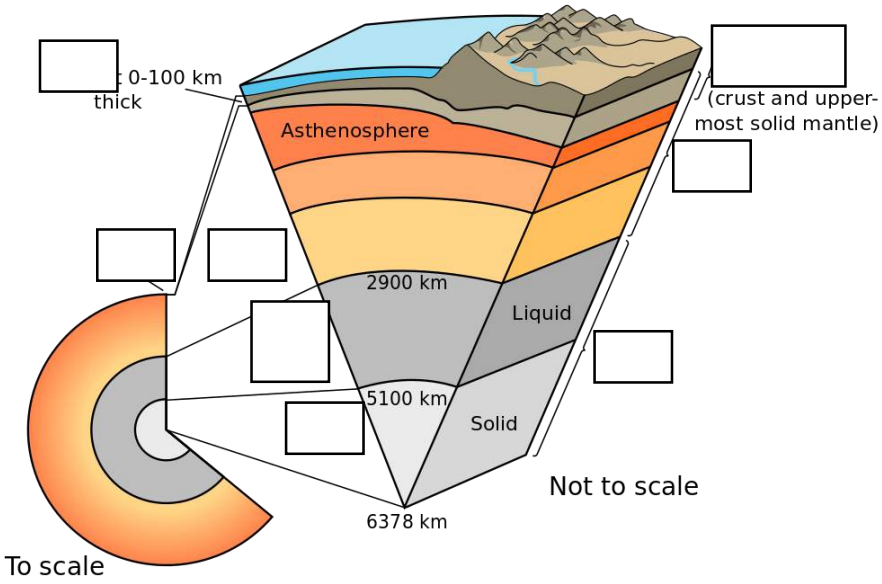
Natural causes of climate change:

Mitigating climate change:

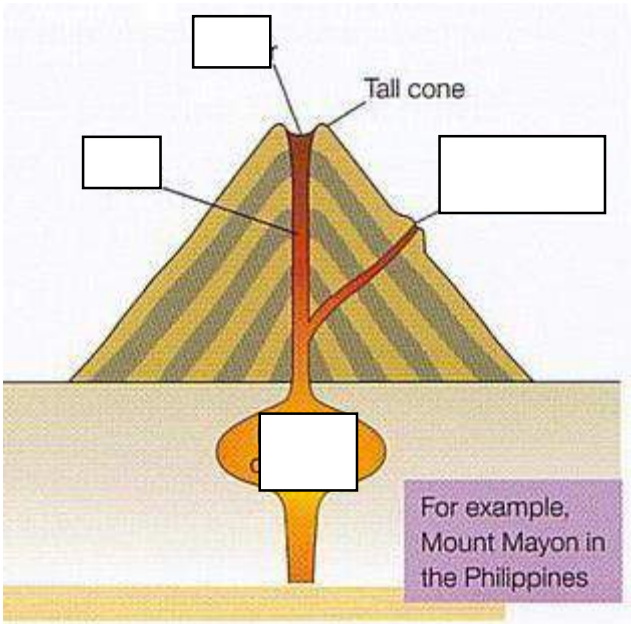
Adapting to climate change:

Hazards Diagrams to label

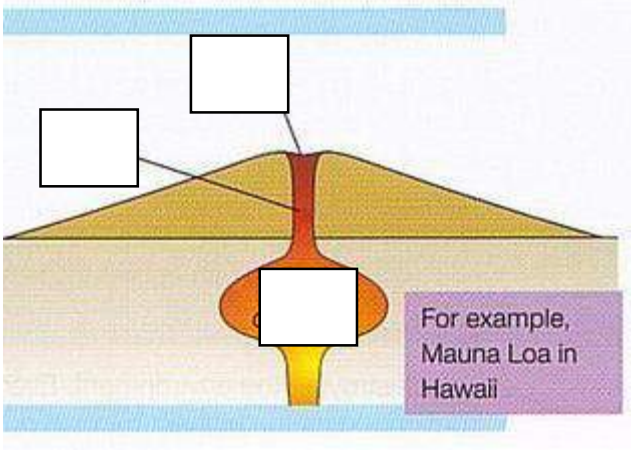
Structure of the Earth



Composite Volcano

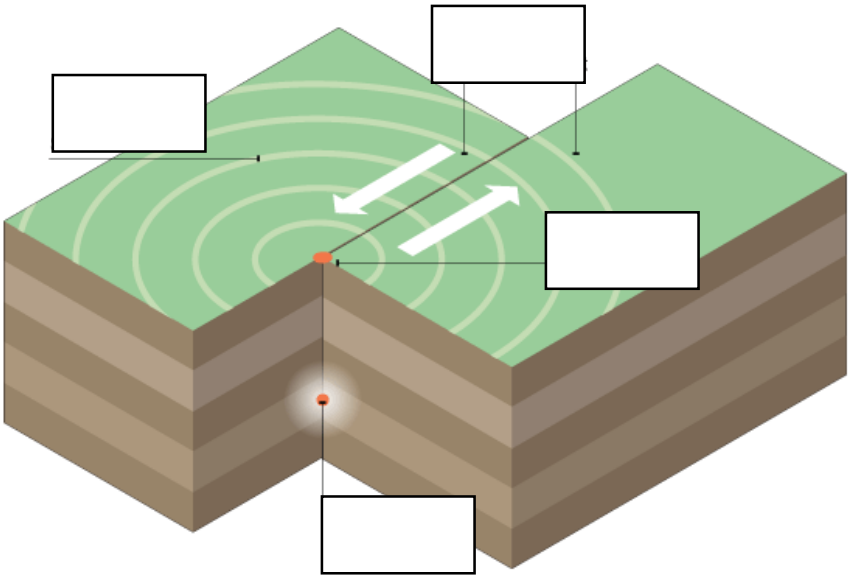


Shield Volcano

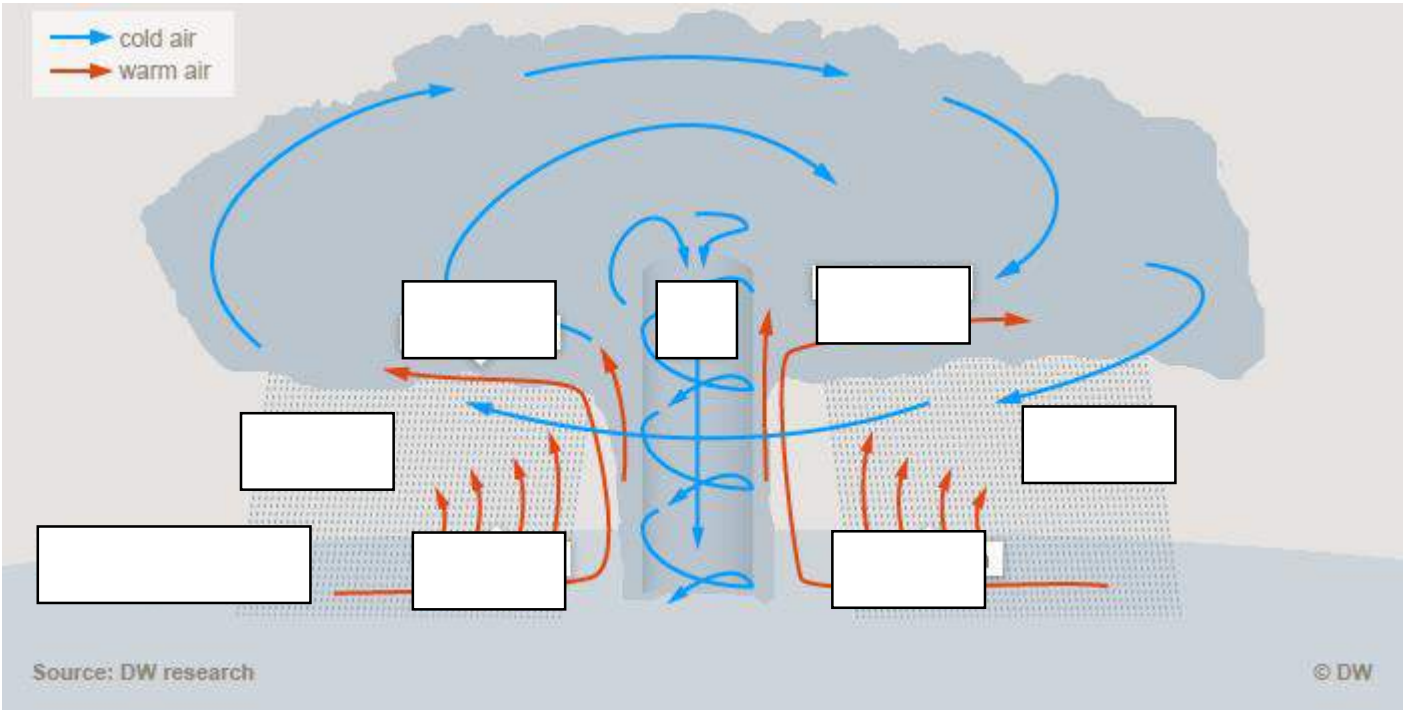


Hazards Diagrams to label

Earthquake

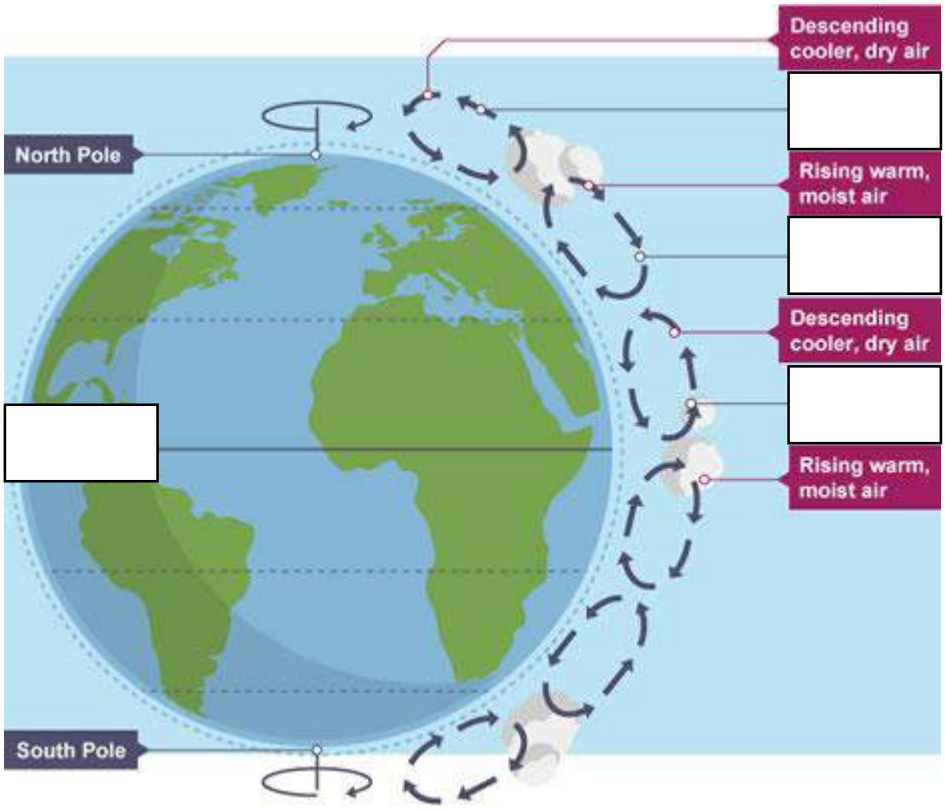


Tropical Storm

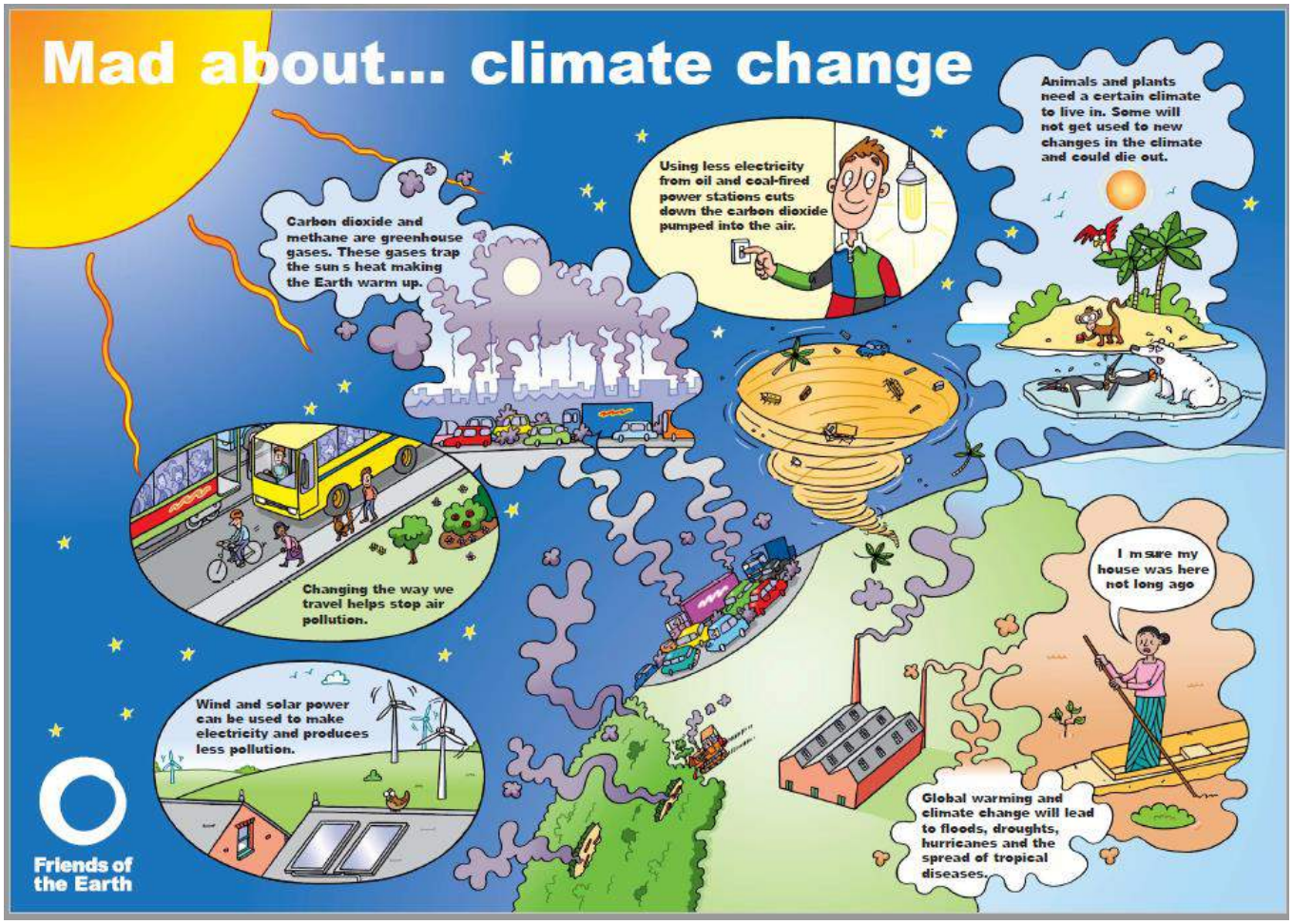


Hazards Diagrams to label

Global Atmospheric Circulation model



Climate Change



The challenge of natural hazards

	☺	😐	☹	Revision undertaken
Natural hazards				
I can define a **natural hazard** and give some examples of the different types.				
I can explain the different factors that affect **risk.**				
Tectonic hazards				
I can describe the distribution of **earthquakes** and **volcanoes**.				
I explain the differences between **destructive, constructive** and **conservative** plate margins.				
I know the main features of an **earthquake** and two different ways of measuring earthquakes.				
Using named examples of a tectonic hazard in both rich and poor countries. I can: (1) Explain why the **tectonic hazard** happened there, (2) Describe the effects that resulted from the **earthquakes** both primary and secondary. (3) Describe what was done after the **earthquake** (responses), both in the long and short term.				
I can explain why **earthquakes** cause more loss of life in poor than in rich countries.				
I can explain why people continue to live in areas at risk of **tectonic hazards**.				
I can explain how monitoring, planning and prediction of **tectonic hazards** can reduce their effects.				
Weather hazard				
I can describe the **global atmospheric circulation model.**				
I can explain how the **global atmospheric circulation** model affects weather around the world.				
I can describe the distribution of **tropical storms.**				
I can explain the causes of a **tropical storm.**				
Using a named example, I can describe and explain the primary and secondary impacts of **tropical storms.**				
I can assess and evaluate methods of responses **tropical storms** in both the long and the short term using a named example.				
I can explain how **tropical storms** might be affected by **global warming.**				
I can explain how monitoring, planning and prediction of **tropical storms** can reduce their effects.				
I can explain the cause of an **extreme weather** event using an example.				
I can describe and expel the social, economic and environmental using an example.				
I can identify evidence of the weather becoming more extreme using an example.				
I can explain how extreme events can be managed to reduce the impacts.				
I can assess and evaluate the **impact** that weather conditions have upon people homes, lives, agriculture, health and transport.				
Climate change				
I can explain the evidence both for and against **climate change.**				
I can explain both the **natural** and **human** causes of climate change.				
I can assess and evaluate the economic, social, environmental and political impacts of **climate change** both on the world and the UK.				
I can describe and evaluate the **mitigation** strategies used to reduce the impact of global **climate change** on a **local, national and international** level.				
I can describe and evaluate the **adaption** strategies used to reduce the impact of global **climate change** on a **local, national and international** level.				

Practice 6 and 9 Markers: Hazards

Mitigation is an effective way of managing tectonic hazards. Discuss this statement.	**6**
Using your own knowledge, suggest how communities can protect themselves from tropical storms	**6**
Human activity is the main cause of climate change. Use evidence to support this statement.	**6**
Living by a constructive boundary is less hazardous than living on a destructive plate boundary. To what extent do you agree with this statement?	**9**
Primary impacts are more damaging than secondary impacts during tropic storms. Discuss the statement making reference to one or more example.	**9**
Green technology will make climate change a problem of the past. To what extent do you agree with this statement?	**9**

Tropical rainforests glossary

Biodiversity
The variety of life in the world or a particular habitat.

Commercial farming
Farming to sell produce for a profit to retailers or food processing companies.

Debt reduction
Countries are relieved of some of their debt in return for protecting their rainforests.

Deforestation
The chopping down and removal of trees to clear an area of forest.

Ecotourism
Responsible travel to natural areas that conserves the environment, sustains the wellbeing of the local people, and may involve education. It is usually carried out in small groups and has minimal impact on the local ecosystem.

Logging
The business of cutting down trees and transporting the logs to sawmills.

Mineral extraction
The removal of solid mineral resources from the earth. These resources include ores, which contain commercially valuable amounts of metals, such as iron and aluminium; precious stones, such as diamonds; building stones, such as granite; and solid fuels, such as coal and oil shale.

Selective logging
The cutting out of trees which are mature or inferior, to encourage the growth of the remaining trees in a forest or wood.

Soil erosion
Removal of topsoil faster than it can be replaced, due to natural (water and wind action), animal, and human activity. Topsoil is the top layer of soil and is the most fertile because it contains the most organic, nutrient-rich materials.

Subsistence farming
A type of agriculture producing food and materials for the benefit only of the farmer and his family.

Sustainability
Actions and forms of progress that meet the needs of the present without reducing the ability of future generations to meet their needs.

Living World Knowledge Organiser

Ecosystem:

Biome:

Biotic factor:

Abiotic factor:

Food chains:

Food webs:

Food pyramids:

A small-scale UK ecosystem:

Rainforest location:

Climate:

Soils:

Nutrient cycle:

Rainforest stratification:

Emergent:

Canopy:

Under canopy:

Shrub level:

Nutrient cycle:

TRF plant adaptations

TRF Animal adaptation:

Factors controlling biome distribution:

Biome characteristics:

Global patterns of deforestation:

Why should the rainforest be protected?

Amazon rainforest:

Reasons for deforestation:

Impacts of deforestation.

Sustainable rainforest management:

Selective logging:

Conservation/education:

Ecotourism:

International agreements:

Debt reduction:

Hot deserts:

Location:

Climate:

Soil:

Nutrients:

Desert plant adaptations:

Desert animal adaptations:

Hot desert case study _____

Location:

Opportunities:

Challenges:

Desertification:

Areas at risk:

Causes:

Impacts:

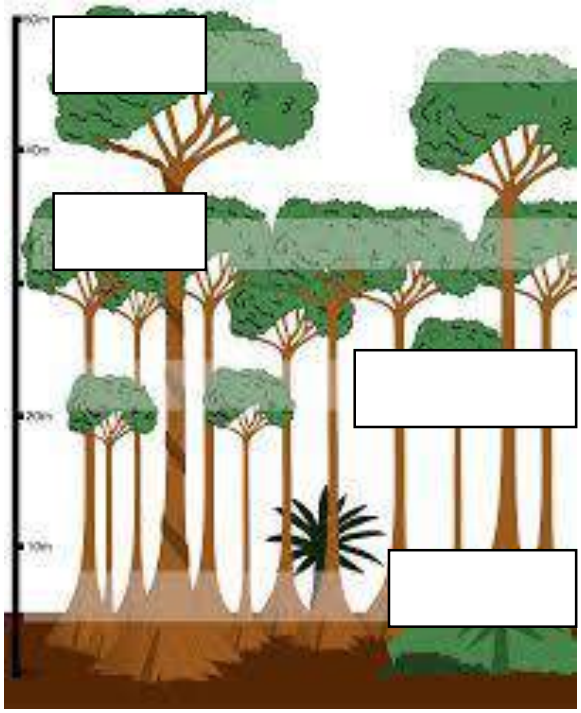
Managing desertification:

The Living world

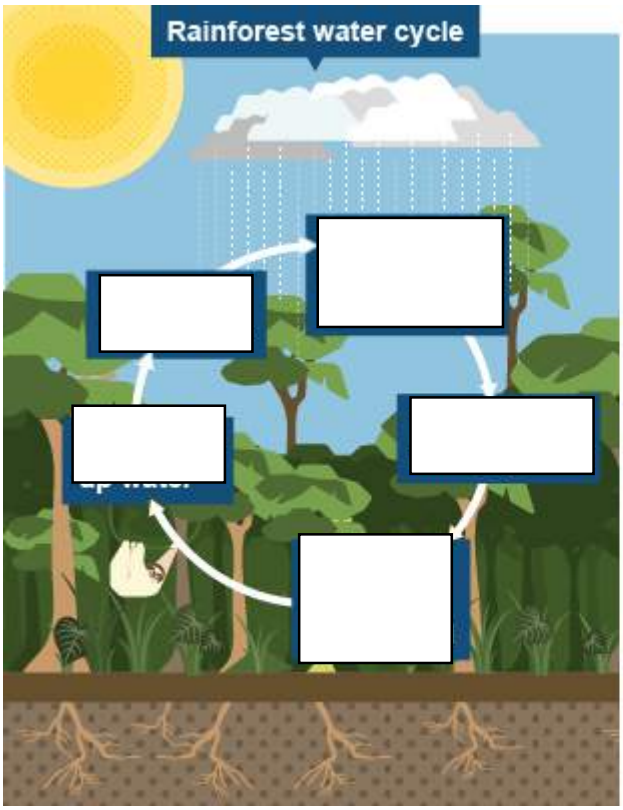
	☺	😐	☹	Revision undertaken
Using an example from the UK, I can explain the **interrelationship** within the natural system.				
I can define and give UK examples of **producers consumers, decomposer, food chain, food web** and **nutrient cycle**				
I can explain their **interdependence** of each of the above and explain how changes might affect each other.				
I can describe the **distribution** and characteristics of **global ecosystems** around the world.				
Tropical rainforests (core content)				
I can describe the physical characteristics of the **tropical rainforests**				
I can explain the **interdependence** of the climate, water, soils, plants, animals and people in a tropical rainforest				
I can explain how plants and animals have **adapted** to the physical conditions of tropical rainforests.				
I can describe and explain the problems and issues with changing **biodiversity** within the tropical rainforest.				
I can describe and explain the changing rates of **deforestation.**				
I can use a case study to explain the causes of **deforestation** subsistence and commercial farming, 1. Logging, 2. Road Building 3. Mineral Extraction 4. Energy Development, 5. Settlement 6. Population Growth				
I can use a case study to explain the impacts of **deforestation** 1. Economic development 2. Soil erosion, 3. Contribution to climate change.				
I can explain the importance and **value** of the tropical rainforest on a local, national and international scale.				
I can explain why it is important the tropical rainforest should be **managed sustainably**.				
I can explain how the tropical rainforest can be managed sustainably using a range of methods 1. Selective logging and replanting 2. Conservation and education 3. Ecotourism 4. International agreements about the use of tropical hardwoods, 5. Debt reduction.				
Hot deserts (option)				
I can describe the physical characteristics of the hot desert				
I can explain the **interdependence** of the climate, water, soils, plants, animals and people in a hot desert				
I can explain how plants and animals have **adapted** to the physical conditions of hot deserts				
I can describe and explain the problems and issues with changing **biodiversity** within the hot desert.				
I can use a case study to explain the causes of **desertification** subsistence and commercial farming, 1. Mineral Extraction 2. Energy Development 3. Farming 4. Tourism				
I can use a case study to explain the challenges of **desertification** 1. Extreme temperature 2. Water supply 3. Inaccessibility				
I can define and describe **desertification**				
I can explain the causes of **desertification** both human and natural				
I can explain a how **desertification** can be managed using: 1. Water and soil management 2. Tree planting 3. Using appropriate technology				

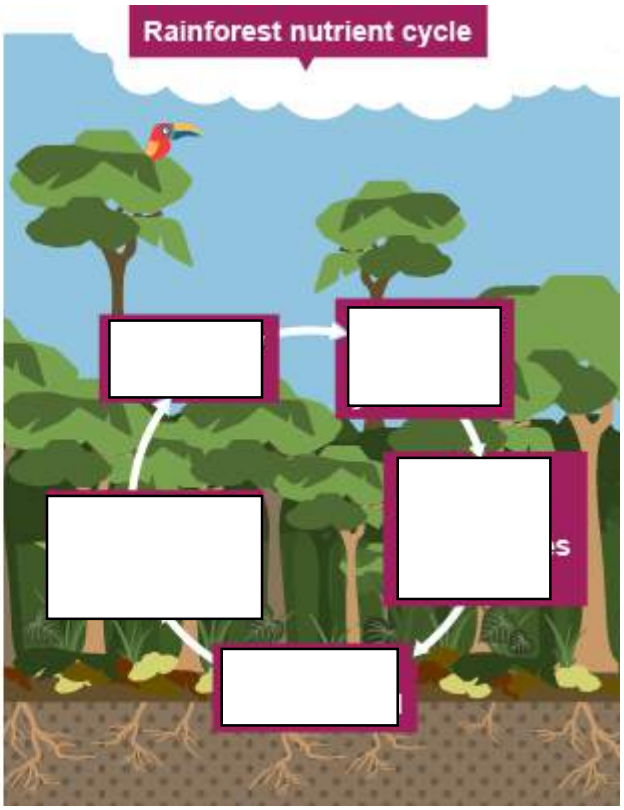
Living World Diagrams to label

Structure of the Earth



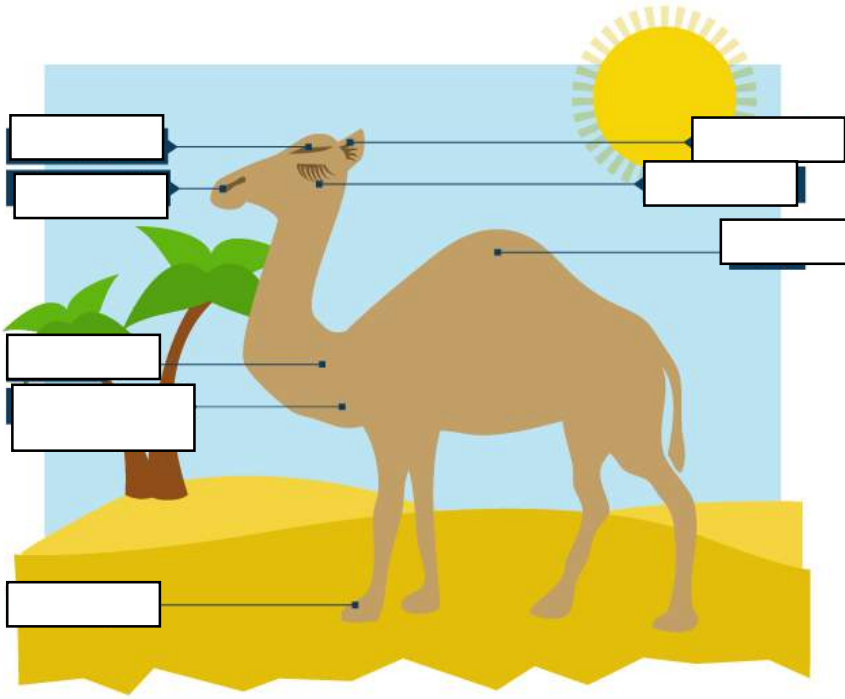
Rainforest Cycles



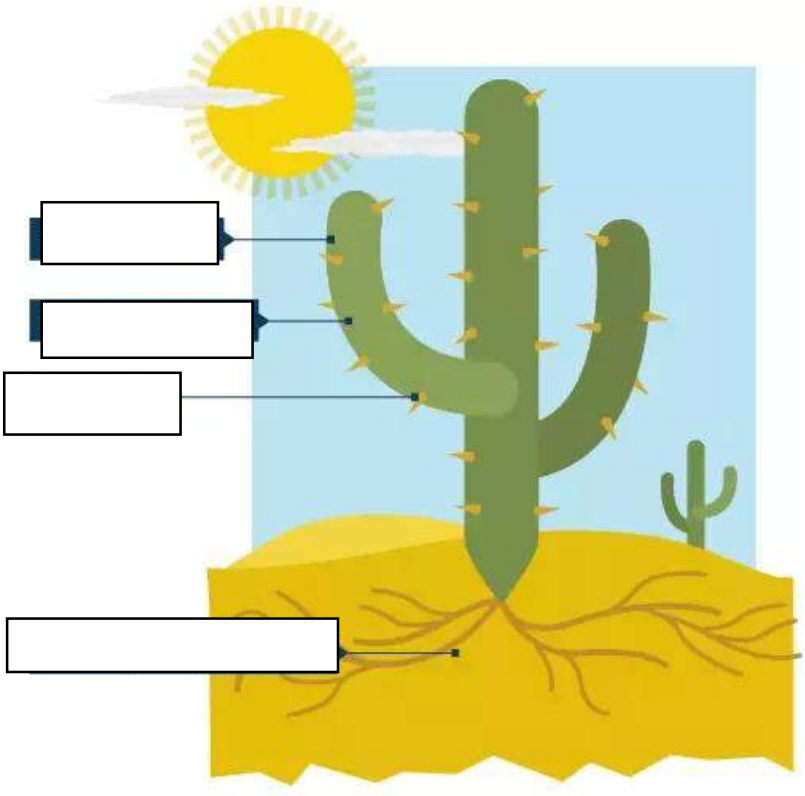


Living World Diagrams to label

Camel adaptations



Cactus adaptations



Practice 6 and 9 Markers: Living World

Tropical rainforests can benefit from tourism – Suggest how this can be achieved.	**6**
The challenges of living in deserts outweigh the benefits. Explain how people can overcome these challenges.	**6**
Explain how a named animal has adapted in order to survive in either a tropical rainforest or a hot desert.	**6**
To what extent does intergovernmental management help to protect rainforests?	**9**
To what extent can deforestation be effectively managed in LICS?	**9**
To what extent can desertification be managed?	**9**

Coastal landscapes glossary

Abrasion
The wearing away of cliffs by sediment flung by breaking waves.

Arch
A wave-eroded passage through a small headland. This begins as a cave formed in the headland, which is gradually widened and deepened until it cuts through.

Attrition
Erosion caused when rocks and boulders transported by waves bump into each other and break up into smaller pieces.

Bar
Where a spit grows across a bay, a bay bar can eventually enclose the bay to create a lagoon. Bars can also form offshore due to the action of breaking waves.

Beach
The zone of deposited material that extends from the low water line to the limit of storm waves. The beach or shore can be divided in the foreshore and the backshore.

Beach nourishment
The addition of new material to a beach artificially, through the dumping of large amounts of sand or shingle.

Beach reprofiling
Changing the profile or shape of the beach. It usually refers to the direct transfer of material from the lower to the upper beach or, occasionally, the transfer of sand down the dune face from crest to toe.

Cave
A large hole in the cliff caused by waves forcing their way into cracks in the cliff face.

Chemical weathering
The decomposition (or rotting) of rock caused by a chemical change within that rock; sea water can cause chemical weathering of cliffs.

Cliff
A steep high rock face formed by weathering and erosion along the coastline.

Deposition
Occurs when material being transported by the sea is dropped due to the sea losing energy.

Dune regeneration
Action taken to build up dunes and increase vegetation to strengthen the dunes and prevent excessive coastal retreat. This includes the re-planting of marram grass to stabilise the dunes, as well as planting trees and providing boardwalks.

Erosion
The wearing away and removal of material by a moving force, such as a breaking wave.

Gabion
Steel wire mesh filled with boulders used in coastal defences.

Groyne
A wooden barrier built out into the sea to stop the longshore drift of sand and shingle, and so cause the beach to grow. It is used to build beaches to protect against cliff erosion and provide an important tourist amenity. However, by trapping sediment it deprives another area, down-drift, of new beach material.

Hard engineering
The use of concrete and large artificial structures by civil engineers to defend land against natural erosion processes.

Headlands and bays
A rocky coastal promontory made of rock that is resistant to erosion; headlands lie between bays of less resistant rock where the land has been eroded back by the sea.

Hydraulic power

Coastal landscapes glossary

The process by which breaking waves compress pockets of air in cracks in a cliff. The pressure may cause the crack to widen, breaking off rock.

Landscape
An extensive area of land regarded as being visually and physically distinct.

Longshore drift
The zigzag movement of sediment along a shore caused by waves going up the beach at an oblique angle(wash) and returning at right angles(backwash). This results in the gradual movement of beach materials along the coast.

Managed retreat
Allowing cliff erosion to occur as nature taking its course: erosion in some areas, deposition in others. Benefits include less money spent and the creation of natural environments. It may involve setting back or realigning the shoreline and allowing the sea to flood areas that were previously protected by embankments and seawalls.

Mass movement
The downhill movement of weathered material under the force of gravity. The speed can vary considerably.

Mechanical weathering
Weathering processes that cause physical disintegration or break up of exposed rock without any change in the chemical composition of the rock, for instance freeze thaw.

Rock armour
Large boulders dumped on the beach as part of the coastal defences.

Sand dune
Coastal sand hill above the high tide mark, shaped by wind action, covered with grasses and shrubs.

Sea wall
A concrete wall which aims to prevent erosion of the coast by providing a barrier which reflects wave energy.

Sliding
Occurs after periods of heavy rain when loose surface material becomes saturated and the extra weight causes the material to become unstable and move rapidly downhill, sometimes in an almost fluid state.

Slumping
Rapid mass movement which involves a whole segment of the cliff moving down-slope along a saturated shear-plane or line of weakness.

Soft engineering
Managing erosion by working with natural processes to help restore beaches and coastal ecosystems.

Spit
A depositional landform formed when a finger of sediment extends from the shore out to sea, often at a river mouth. It usually has a curved end because of opposing winds and currents.

Stack
An isolated pillar of rock left when the top of an arch has collapsed. Over time further erosion reduces the stack to a smaller, lower stump.

Transportation
The movement of eroded material.

Wave cut platform
A rocky, level shelf at or around sea level representing the base of old, retreated cliffs.

Waves
Ripples in the sea caused by the transfer of energy from the wind blowing over the surface of the sea. The largest waves are formed when winds are very strong, blow for lengthy periods and cross large expanses of water.

Coasts

Geology of the UK:

North and west:

South:

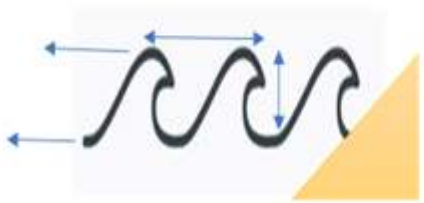
Tees Exe Line:

How do waves form?

Why do waves break?

The size of a wave depends on:

Parts of a wave:



The shape of the coast depends on:

Erosion is…

Hydraulic action:

Abrasion:

Attrition:

Solution:

Weathering is….

Mechanical:

Biological:

Chemical:

Transport:

Traction:

Saltation:

Suspension:

Solution:

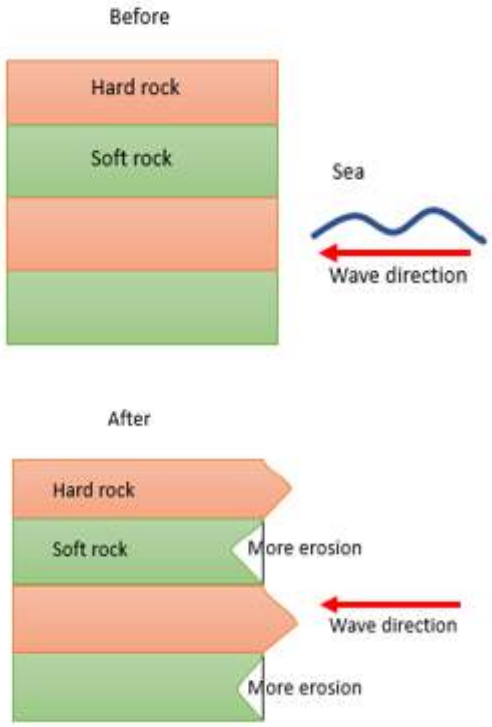
Mass movement:

Deposition occurs when…

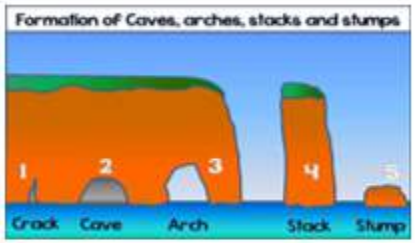
Constructive waves:

Destructive waves:

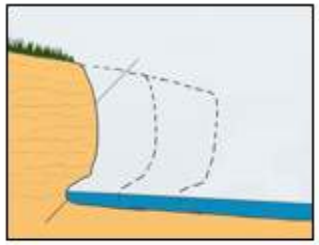
Headlands and bays:



Caves, arches, stacks and stumps:



Wave cut platforms:



Spits:

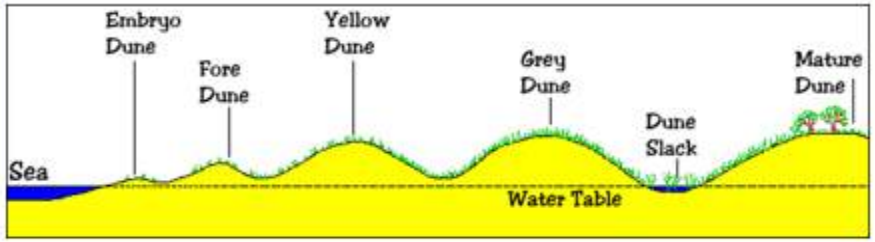
Holderness coast;

Hard engineering:

Soft engineering:

Sand dunes form when:

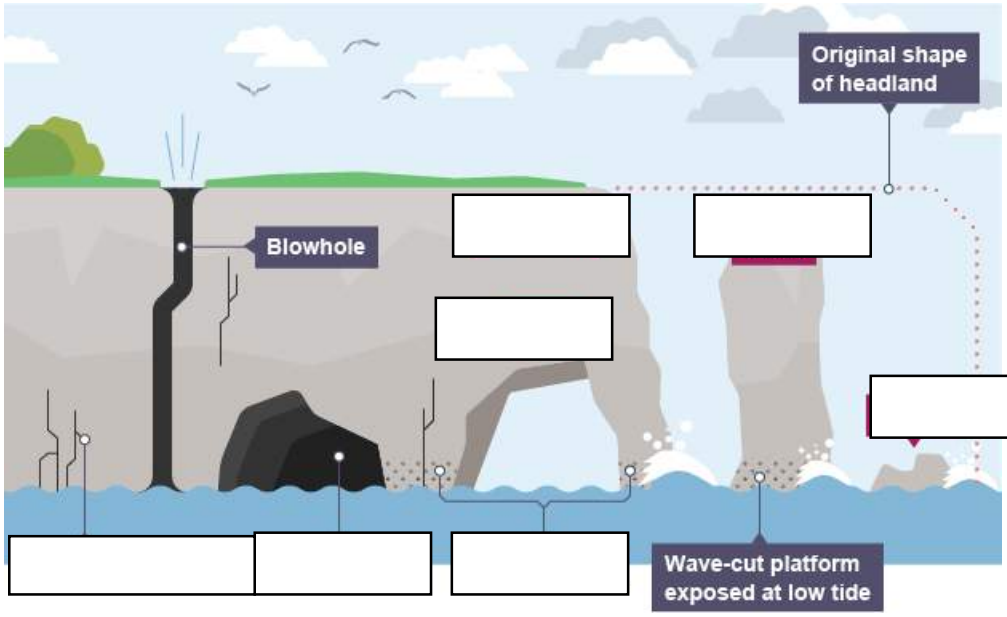
Stages of sand dune formation:



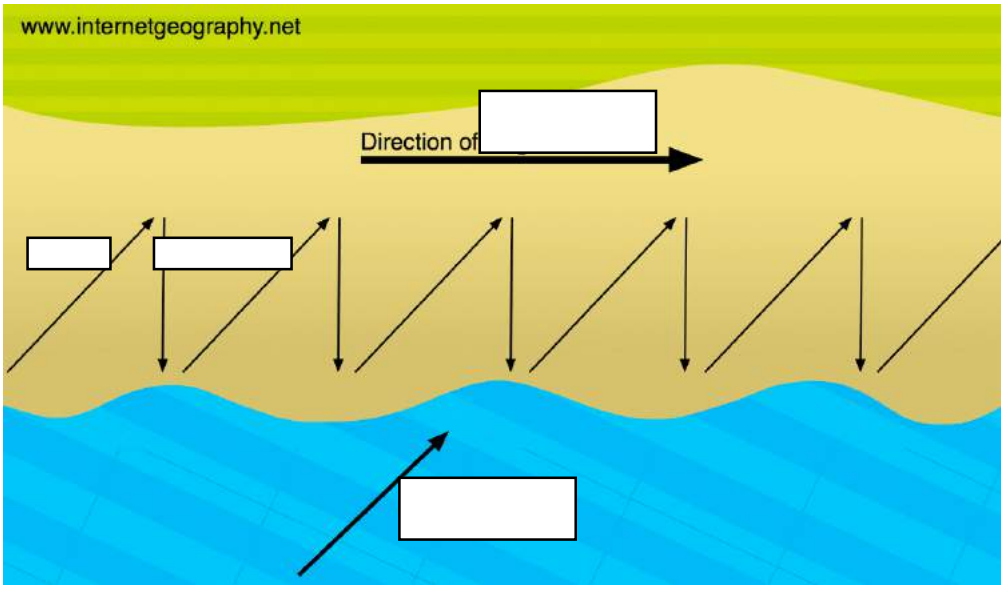
Marram grass:

Physical Environments in the UK (Coasts)
Diagrams to label

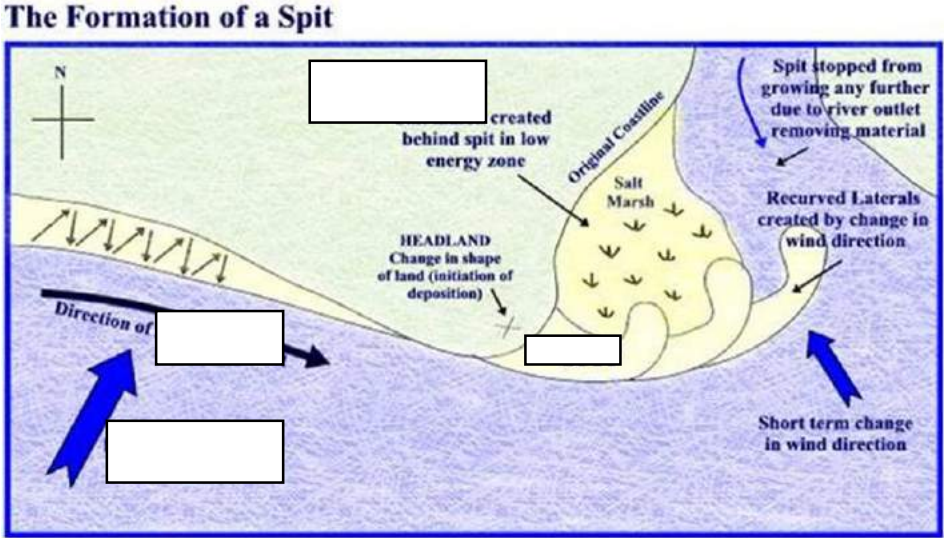
Chalk Headland



Long Shore Drift



Spit



Coastal Management

Photograph	Facts	Lifespan (approx. years)	Cost
	There are many different types of sea walls: sloping, curved, stepped and vertical. They are made of concrete or stone. They stop the sea reaching the cliff base and reflect wave energy.	100	£3500 – £5000 per metre
	**(wooden)** These reduce longshore drift by trapping sediment on one side. This builds up the beach, which acts as a natural barrier to erosion by absorbing the wave energy.	30–40	£1000 per metre
	**(rock)** These reduce longshore drift by trapping sediment on one side. They are made of granite or other hard igneous or metamorphic rocks and so last up to three times longer than wood.	100	£1000 per cubic metre (m^3)
	is made from huge boulders of granite or other hard igneous or metamorphic rocks. They are placed at the base of cliffs to absorb the energy of the waves but let the water drain through them.	120	£1000 per cubic metre (m^3)
	These are cages of stones. They can be used to stabilise cliff bases and to absorb the energy of the waves. They are a short term measure as they are easily damaged by storm waves and the cages rust.	5–10	£50 per cubic metre (m^3)
	These are sloping features which absorb the energy of the waves but which let water and sediment through. Older revetments were made of wood. Some modern ones have shaped concrete or stone blocks laid on finer material and are known as **Rock armour**.	Wooden 10 Rock armour 30	£800 per metre £1200 per metre

River landscapes glossary

Abrasion
Rocks carried along by the river wear down the river bed and banks.

Attrition
Rocks being carried by the river smash together and break into smaller, smoother and rounder particles.

Cross profile
The side to side cross-section of a river channel and/or valley.

Dam and reservoir
A barrier (made on earth, concrete or stone) built across a valley to interrupt river flow and create a man-made lake (reservoir) which stores water and controls the discharge of the river.

Discharge
The quantity of water that passes a given point on a stream or river-bank within a given period of time.

Embankments
Raised banks constructed along the river; they effectively make the river deeper so it can hold more water. They are expensive and do not look natural but they do protect the land around them.

Estuary
The tidal mouth of a river where it meets the sea; wide banks of deposited mud are exposed at low tide.

Flood
Occurs when river discharge exceeds river channel capacity and water spills out of the channel onto the floodplain and other areas.

Flood plain
The relatively flat area forming the valley floor on either side of a river channel, which is sometimes flooded.

Flood plain zoning
This attempts to organise the flood defences in such a way that land that is near the river and often floods is not built on. This could be used for pastoral farming, playing fields etc. The areas that rarely get flooded would therefore be used for houses, transport and industry.

Flood relief channels
Building new artificial channels which are used when a river is close to maximum discharge. They take the pressure off the main channels when floods are likely, therefore reducing flood risk.

Flood risk
The predicted frequency of floods in an area.

Flood warning
Providing reliable advance information about possible flooding. Flood warning systems give people time to remove possessions and evacuate areas.

Fluvial processes
Processes relating to erosion, transport and deposition by a river.

Gorge
A narrow, steep sided valley, often formed as a waterfall retreats upstream.

Hard engineering
Involves the building of entirely artificial structures using various materials such as rock, concrete and steel to reduce, disrupt or stop the impact of river processes.

Hydraulic action
The force of the river against the banks can cause air to be trapped in cracks and crevices. The pressure weakens the banks and gradually wears it away.

Hydrograph
A graph which shows the discharge of a river, related to rainfall, over a period of time.

River landscapes glossary

Interlocking spurs
A series of ridges projecting out on alternate sides of a valley and around which a river winds its course.

Lateral erosion
Sideways erosion by a river on the outside of a meander channel. It eventually leads to the widening of the valley and contributes to the formation of the flood plain.

Levees
Embankment of sediment along the bank of a river. It may be formed naturally by regular flooding or be built up by people to protect the area against flooding.

Long profile
The gradient of a river, from its source to its mouth.

Meander
A pronounced bend in a river.

Ox-bow lake
An arc-shaped lake which has been cut off from a meandering river.

Precipitation
Moisture falling from the atmosphere - as rain, hail, sleet or snow.

Saltation
Particles bouncing down the river bed.

Soft engineering
Involves the use of the natural environment surrounding a river, using schemes that work with the river's natural processes. Soft engineering is usually much cheaper and offers a more sustainable option as it does not interfere directly with the river's flow.

Solution
Soluble particles are dissolved into the river.

(Channel) straightening
Removing meanders from a river to make the river straighter. Straightening the river (also called channelising) allows it to carry more water quickly downstream, so it doesn't build up and is less likely to flood.

Suspension
Fine solid material held in the water while the water is moving.

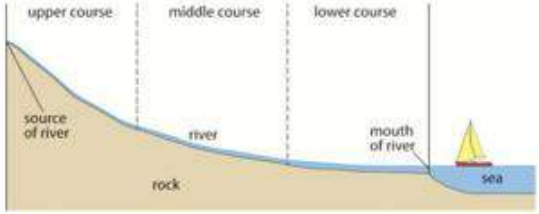
Traction
The rolling of boulders and pebbles along the river bed.

Vertical erosion
Downward erosion of a river bed.

Waterfall
Sudden descent of a river or stream over a vertical or very steep slope in its bed. It often forms where the river meets a band of softer rock after flowing over an area of more resistant material.

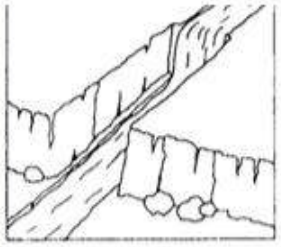
Rivers

Long profile of a river:



V shaped Valleys:

Waterfalls:



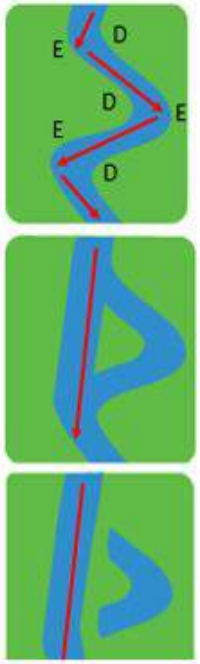
Lower course features:

Floodplains:

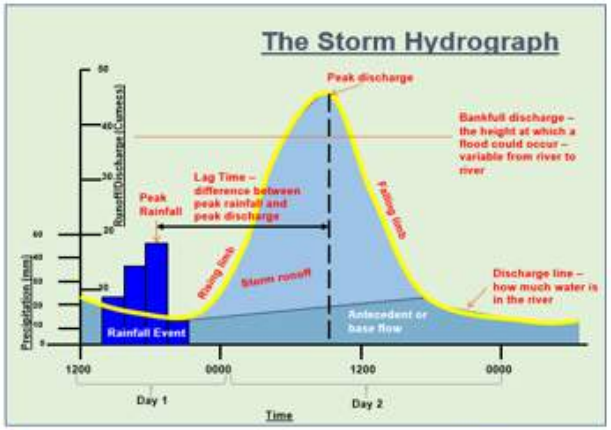
Levees:

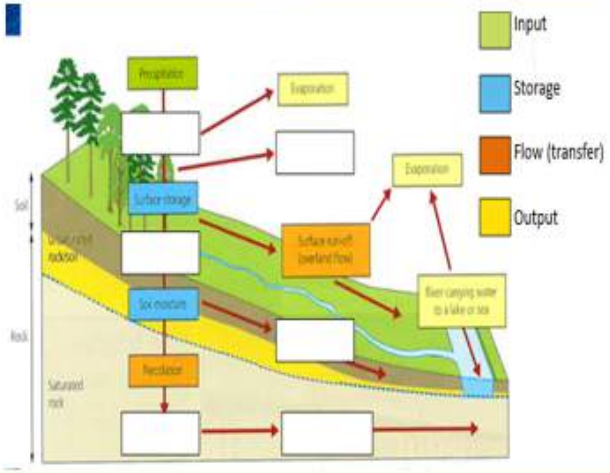
Estuaries:

Meanders:



River Tees:





Physical factors affecting flooding:

Geology:

Relief:

Precipitation:

Human factors affecting flooding:

Urbanisation:

Deforestation:

Farming:

Hard engineering:

Soft engineering;

2007 floods.

Physical landscapes in the UK

	☺	😐	☹	Revision undertaken
I can describe the location of the major upland and lowland areas within the UK				
I can describe the location of the major river systems within the UK				
Coastal landscapes of the UK				
I can define what the coast is				
I can describe and explain the different types of **waves**				
I can name and explain the four processes of **erosion**				
I can name and explain the processes of **weathering**				
I can name and explain the processes of **mass movement**				
I can describe **erosional landforms** and the sequence of (arch, caves, stacks, stump, wave cut platforms, wave cut notch) are formed.				
I can describe and explain the process of **mass movement** and **slumping**				
I can explain, using an example, how **erosion** and **deposition** will impact on the people and the environment at the coast.				
I can describe the processes of **transportation** in the coastal zone. (Longshore drift and traction, saltation, suspension and solution)				
I can explain the reasons why sediment is **deposited** on the coast.				
I can explain how **depositional landforms** (beaches, spit and bars) are formed.				
I can describe and explain methods of **hard** and **soft engineering** using an example.				
I can evaluate the cost and benefits of **hard** and **soft engineering** using an example.				
I can explain why people have different views about the way the coast in managed and the conflicts this may cause using an example.				
I can identify on an OS map all of the coastal landforms and use 4 & 6 fig grid references to locate them on a map				
River landscapes of the UK				
I can describe how a rivers **long profile** and **cross profile** varies over it's course				
I can explain how **vertical** and **lateral** erosion changes the cross profile of a river				
I can explain the four process of **erosion**				
I can describe the four processes of **transportation** in a river				
I can explain the reasons why a river **deposits** its eroded material				
I can explain how **interlocking spurs, waterfalls & gorges** are formed				
I can explain that **meanders** are formed by erosion & deposition				
I can describe an **Ox Bow lake** and explain how they form from meanders				
I can explain how a **flood plain**, levee and estuaries are formed				
I can use an example of a river valley to demonstrate my understanding of the erosional and depositional landforms				
I can explain how physical and human factors affect the risk of flooding including precipitation, geology, relief and land use.				
I can explain what river **discharge** means & how it is shown on a **hydrograph**				
I can explain at least 4 **factors** (things!) that will either **increase or decrease** river discharge				
I can explain how **hard engineering** can reduce the risk of flooding or the effects of flooding				
I can explain how **soft engineering** can reduce the risk of flooding or the effects of flooding				
Using an example I can explain 1. Why the scheme was required 2. How the area was managed 3. The social, environmental and economic issues.				
I can identify on an OS map all of the river landforms and use 4 & 6 fig grid references to locate them on a map.				

Practice 6 Markers:

Physical Landscapes in the UK

Human actions are more significant than physical causes of flooding in the UK. Do you agree? Give an example in your answer.	**6**
Explain how the processes and landforms of river change along its long profile.	**6**
Erosion is the most significant factor in shaping coastal environments in the UK. Do you agree? Give an example in your answer.	**6**
Explain how soft engineering can be an effective in slowing down coastal erosion.	**6**

9 mark questions do not appear on this unit

Urban Issues and challenges glossary

Brownfield site
Land that has been used, abandoned and now awaits some new use. Commonly found across urban areas, particularly in the inner city.

Dereliction
Abandoned buildings and wasteland.

Economic opportunities
Chances for people to improve their standard of living through employment.

Greenfield site
A plot of land, often in a rural or on the edge of an urban area that has not yet been subject to any building development.

Inequalities
Differences between poverty and wealth, as well as in peoples' wellbeing and access to things like jobs, housing and education.

Integrated transport systems
When different transport methods connect together, making journeys smoother and therefore public transport more appealing.

Mega-cities
An urban area with a total population in excess of ten million people.

Migration
When people move from one area to another. In many LICS people move from rural to urban areas (rural-urban migration).

Natural increase
The birth rate minus the death rate of a population.

Pollution
The presence of chemicals, noise, dirt or

Rural-urban fringe
A zone of transition between the built-up area and the countryside, where there is often competition for land use.

Urban Issues and challenges glossary

Sanitation

Measures designed to protect public health, including the provision of clean water and the disposal of sewage and waste.

Social deprivation

The degree to which an individual or an area is deprived of services, decent housing, adequate income and local employment.

Social opportunities

Chances for people to improve their quality of life, for instance access to education and health care.

Squatter settlement

An area of poor-quality housing, lacking in amenities such as water supply, sewerage and electricity,

Sustainable urban living

A sustainable city is one in which there is minimal damage to the environment, the economic base is sound with resources allocated fairly and jobs secure, and there is a strong sense of community, with local people involved in decisions made.

Traffic congestion

Occurs when there is too great a volume of traffic for roads to cope with, so traffic jams form and traffic slows to a crawl.

Urban greening

The process of increasing and preserving open space such as public parks and gardens in urban areas.

Urbanisation

The process by which an increasing percentage of a country's population comes to live in towns and cities. Rapid urbanisation is a feature of many LICs and NEEs.

Urban regeneration

The revival of old parts of the built-up area by either installing modern facilities in old buildings (known as renewal) or opting for redevelopment.

Urban sprawl

The unplanned growth of urban areas into the surrounding countryside.

Waste recycling

The process of extracting and reusing useful substances found in waste.

Urban Issues

Urbanisation is....

Natural increase is...

A megacity is....

Rates of urbanisation:

In HICs:

In LICs:

Rural to urban migration is....

Pull factors:

Push factors:

My LIC/NEE case study is _____

Location:

Why is this place important?

What are the opportunities here?

What are the challenges?

How does urban planning aim to develop this place?

My HIC case study is _____

Location:

Why is this place important?

What are the opportunities here?

What are the challenges?

Sustainable urban living is.....

The four strands of sustainability are:

My sustainable urban living case study is:

Water conservation:

Energy conservation:

Creating green space:

Waste recycling:

An integrated urban transport system is....

My case study is...

Brownfield land is....

Greenfield land is....

The greenbelt is...

Advantages of building on greenfield land:

Disadvantages of building on greenfield land:

Advantages of building on brownfield land:

Disadvantages of building on brownfield land:

My example of an urban regeneration project is....

Urban issues and challenges

	Covered in class?	☺	😐	☹	Revision undertaken
I can explain how **urbanisation** has happened at different rates and at different times in different parts of the world making reference to LICs and HICs.					
I can explain some of the **causes** of **urbanisation** in different parts of the world making reference to LICs and HICs.					
Case study of the LIC or NEE					
I can explain why it is important **nationally** and **internationally**					
I can explain why and how it has grown					
I can explain, analyse and evaluate the **opportunities** including: 1. Access to services – health 2. Access to services - education 3. Access to resources - water supply 4. Access to resources - energy 5. How urban industrial areas can promote economic development					
I can explain, analyse and evaluate the **challenges** including: 1. Managing urban growth – slums, squatter settlements 2. Clean water, sanitation systems and energy 3. Access to services – health and education 4. Unemployment and crime 5. Managing environmental issues – waste disposal, air and water pollution, traffic congestion.					
I can explain and evaluation the how this place can plan to improve the **quality of lives** for the **urban poor**.					
Case study of a HIC - London					
I can explain why London is important **nationally** and **internationally**					
I can explain why and how London has grown					
I can explain the impact of national and international migration on the growth and character of the London.					
I can explain, analyse and evaluation the **opportunities** in London including 1. Cultural mix 2. Recreation 3. Entertainment 4. Employment 5. Integrated transport systems 6. Urban greening					
I can explain, analyse and evaluation the **challenges** in London including 1. Inequalities in housing, education and employment. 2. Urban deprivation 3. Dereliction of buildings 4. Building on **brown** and **Greenfield** sites. 5. Water disposal 6. Urban sprawl on the rural – urban fringe and of commuter towns					
I can explain, analyse and evaluation the how London has undergone **regeneration.**					
Urban sustainability					
I can describe how people can live more **sustainably**					
I can explain how **sustainable urban living** can conserve water and energy, recycle waster and create more green space.					
I can explain how urban transport strategies are used to reduce traffic congestion.					

Practice 6 and 9 Markers: Urban Issues

Discuss how migration has affected the character of a city you have studied.	**6**
Discuss the main causes of urbanisation in LIC/NEE cities.	**6**
Suggest why greenfield developments have less of an environmental impact than brownfield deelopments.	**6**
Discuss the opportunities and challenges faced by a city in an LIC/NEE that you have studied.	**9**
Evaluate the effectiveness of an urban transport scheme you have studied.	**9**
For a UK city you have studied, discuss the role redevelopment has had on improving it.	**9**

The changing economic world glossary

Birth rate
The number of births in a year per 1000 of the total population.

Commonwealth
The Commonwealth is a voluntary association of 53 independent and equal sovereign states, which were mostly territories of the former British Empire. It is home to 2.2 billion citizens. Member states have no legal obligation to one another. Instead, they are united by language, history, culture, and their shared values of democracy, human rights, and the rule of law.

Death rate
The number of deaths in a year per 1000 of the total population.

De-industrialisation
The decline of a country's traditional manufacturing industry due to exhaustion of raw materials, loss of markets and competition from NEEs.

Demographic Transition Model
A model showing how populations should change over time in terms of their birth rates, death rates and total population size.

Development
The progress of a country in terms of economic growth, the use of technology and human welfare.

Development gap
The difference in standards of living and wellbeing between the world's richest and poorest countries (between HICs and LICs).

European Union
An international organisation of 28 European countries, including the UK, formed to reduce trade barriers and increase cooperation among its members. Seventeen of these countries also share the same type of money: the euro. A person who is a citizen of a European Union country can live and work in any of the other 27 member countries without needing a work permit or visa.

Fairtrade
When producers in LICs are given a better price for the goods they produce. Often this is from farm products like cocoa, coffee or cotton. The better price improves income and reduces exploitation.

Globalisation
The process which has created a more connected world, with increases in the movements of goods (trade) and people (migration and tourism) worldwide.

Gross national income (GNI)
A measurement of economic activity that is calculated by dividing the gross (total) national income by the size of the population. GNI takes into account not just the value of goods and services, but also the income earned from investments overseas.

Human Development Index (HDI)
A method of measuring development in which GDP per capita, life expectancy and adult literacy are combined to give an overview. This combined measure of development uses economic and social indicators to produce an index figure that allows comparison between countries.

Industrial structure
The relative proportion of the workforce employed in different sectors of the economy (primary, secondary, tertiary and quaternary).

The changing economic world glossary

Infant mortality
The average number of deaths of infants under 1 year of age, per 1000 live births, per year.

Information technologies
Computer, internet, mobile phone and satellite technologies – especially those that speed up communication and the flow of information.

Intermediate technology
The simple, easily learned and maintained technology used in a range of economic activities serving local needs in LICs.

International aid
Money, goods and services given by the government of one country or a multilateral institution such as the World Bank or International Monetary Fund to help the quality of life and economy of another country.

Life expectancy
The average number of years a person might be expected to live.

Literacy rate
The percentage of people who have basic reading and writing skills.

Microfinance loans
Very small loans which are given to people in the LICs to help them start a small business.

North-south divide (UK)
Economic and cultural differences between Southern England (the South-East, Greater London, the South-West and parts of the East) and Northern England (the North-East, West and Yorkshire and the Humber). There are clear differences in health conditions, house prices, earnings, and political influence.

Post-industrial economy
The economy of many economically developed countries where most employment is now in service industries.

Science and business parks
Business Parks are purpose built areas of offices and warehouses, often at the edge of a city and on a main road. Science parks are often located near university sites, and high-tech industries are established. Scientific research and commercial development may be carried out in co-operation with the university.

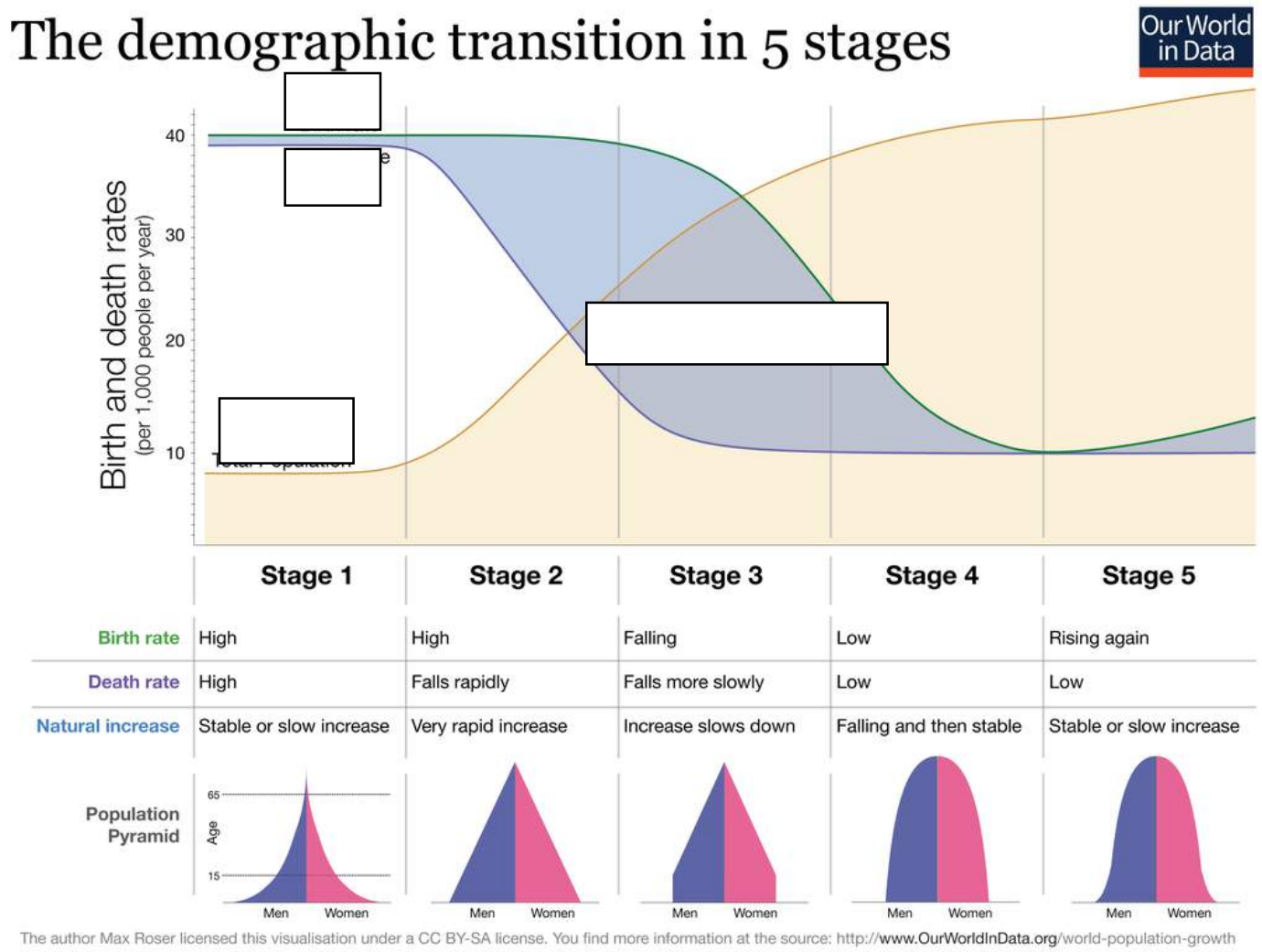
Service industries (tertiary industries)
The economic activities that provide various services - commercial (shops and banks), professional (solicitors and dentists), social (schools and hospitals), entertainment (restaurants and cinemas) and personal (hairdressers and fitness trainers).

Trade
The buying and selling of goods and services between countries.

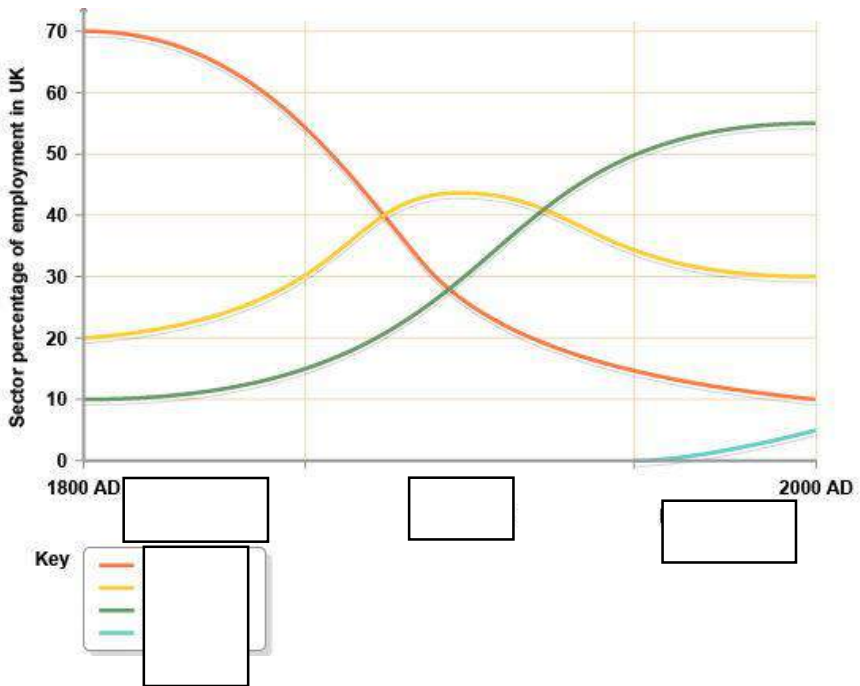
Transnational Corporation (TNC)
A company that has operations (factories, offices, research and development, shops) in more than one country. Many TNCs are large and have well-known brands.

Demographic Transition Model

Changing Economic World
Diagrams to label



Clark Fisher Model



CHANGING ECONOMIC WORLD

HIC =
LIC =
NEE =

Methods of measuring development

Most useful =

Reducing the development gap
Industry –

Tourism –

Investment –

Aid –

Fairtrade –

Microloans –

Debt relief -

Case study of NEE: Nigeria

Location

Importance within Africa and Within the World

How is its industrial structure changing?

How are TNCs involved in the changes?
Positive / Negative

Aid and its impacts on the country

Economic / Environmental impacts of development

CHANGING ECONOMIC WORLD

The UK:
Recent economic changes

Deindustrialisation and its impacts

Post industrial economy

Science and business parks

Service industry development and impacts

Growth of research and financial jobs

Change in landscape from industrial to post industrial
How?

Advantages

Changes to the rural landscape and economy

Transport developments: Rail, Road, Air, Ports
HS2
Crossrail
Heathrow
London Gateway Port

The North/South divide – Causes and consequences
How can it be resolved?

The UK's place in the world
Internal links – city to city

European links – what happens after Brexit?

UK place in the world

The changing economic world

	Covered in class?	☺	😐	☹	Revision undertaken
I can describe the methods of classifying countries and use different **development indicators.**					
I can evaluate the use of different **developmental indicators**.					
I can use the **Demographic Transition Model** to explain the link between changing population structure and level of development.					
I can explain the causes of **uneven development**: 1. Physical 2. Economic 3. Historical					
I can explain the impacts of **uneven development** on people					
I can explain how the **development gap** can be reduced looking at: 1. Investment 2. Industrial development and tourism 3. Aid 4. Using intermediate technology 5. Fairtrade 6. Debt relief 7. Microfinance loans.					
I can use an example to show how tourism in an LIC can help to reduce the development gap					
Case study of the LIC or NEE – Nigeria					
I can explain why Nigeria is important within Africa and internationally					
I can describe the political, social and culture contact of Nigeria within a **world context.**					
I can describe the changing **industrial structure** within in Nigeria.					
I can explain how manufacturing can stimulate **economic growth** in within Nigeria.					
I can define a **Transnational Corporation (TNC)** using a case study.					
I can explain the advantaged and disadvantages of TNCS to Nigeria					
I can describe how Nigeria's **politics** and **trading relationship** have changed over time.					
I can described what **aid** is where is comes from using a case study.					
I can explain what **aid** Nigeria has received and how it has impacted upon the country using a case study.					
I can explain and evaluation the **environmental** impacts of **economic development**.					
I can explain and evaluation impacts of **economic development** on the **population of India**					
Economy of the UK					
I can explain why **deindustrialisation** has occurred in the **UK**					
I can explain the advantages and disadvantages of the **UK** move in the **tertiary sector (post-industrial economy**					
I can explain, using an example, how modern industry can reduce its impact upon the environment and become more **sustainable**					
I can explain, using an example, the social and economic impacts of **population growth** on a **rural landscape**.					
I can explain, using an example, the social and economic impacts of **population decline** on a **rural landscape.**					
I can describe and explain the impact or **transport developments** in road, rail, port and airports.					
I can describe the North – South divide in the UK.					
I can evaluate and explain the strategies use to solve **regional differences** within the UK.					
I can examine the **global links** made with the wider world through trade, culture, increased communication, economics and **political groupings** such as the commonwealth and the European Union.					
I can analyse the growing **interdependence** and **globalisation** of the UK in relation to its economy and politics.					

Practice 6 and 9 Markers:

Changing Economic World

Suggest how tourism can help to reduce the development gap in an LIC.	**6**
Explain why HDI (human development index) is a useful measure of development.	**6**
Describe how aid or Fairtrade is used to assist an named LIC.	**6**
To what extend have TNCs (Transnational corporations) help development in a named LIC/NEE?	**9**
What measures are being taken to help to close the North/South divide and how successful do you feel they are?	**9**
What is deindustrialisation and how has it impacted on communities in the UK?	**9**

Resource management and Energy glossary

Agribusiness
Application of business skills to agriculture.

Carbon footprint
A measurement of all the greenhouse gases we individually produce, through burning fossil fuels for electricity, transport etc, expressed as tonnes (or kg) of carbon-dioxide equivalent.

Energy mix
The range of energy sources of a region or country, both renewable and non-renewable.

Food miles
The distance covered supplying food to consumers.

Fossil fuel
A natural fuel such as coal or gas, formed in the geological past from the remains of living organisms.

Local food sourcing
A method of food production and distribution that is local, rather than national and/or international. Food is grown (or raised) and harvested close to consumers' homes, then distributed over much shorter distances.

Organic produce
Food which is produced using environmentally and animal friendly farming methods on organic farms. Artificial fertilisers are banned and farmers develop fertile soil by rotating crops and using compost, manure and clover. It must be free of synthetic additives like pesticides and dyes.

Resource Management
The control and monitoring of resources so that they do not become depleted or exhausted.

Energy

Biomass
Renewable organic materials, such as wood, agricultural crops or wastes, especially when used as a source of fuel or energy. Biomass can be burned directly or processed into biofuels such as ethanol and methane.

Energy conservation
Reducing energy consumption through using less energy and becoming more efficient in using existing energy sources.

Energy exploitation
Developing and using energy resources to the greatest possible advantage, usually for profit.

Energy security
Uninterrupted availability of energy sources at an affordable price.

Fossil fuel
A natural fuel such as coal or gas, formed in the geological past from the remains of living organisms.

Geothermal energy
Energy generated by heat stored deep in the Earth.

Hydro (electric) power
Electricity generated by turbines that are driven by moving water.

Nuclear power
The energy released by a nuclear reaction, especially by fission or fusion. Nuclear energy uses fuel made from mined and processed uranium to make steam and generate electricity.

Renewable energy sources
A resource which is not diminished when it is used; it recurs and cannot be exhausted (for example wind and tidal energy).

Solar energy
The Sun's energy exploited by solar panels, collectors or cells to heat water or air or to generate electricity.

Sustainable development
Development that meets the needs of the present without limiting the ability of future generations to meet their own needs.

Sustainable energy supply
Energy that can potentially be used well into the future without harming future generations. Sustainable energy is the combination of energy savings, energy efficiency measures and technologies, as well as the use of renewable energy sources.

Wind energy
Electrical energy obtained from harnessing the wind with windmills or wind turbines.

Resources and well-being:

Food, water and energy are unevenly distributed. Why?

Food:

Water:

Energy:

How has demand for food in the UK changed?

Impacts of imports?

Responses:

Agribusiness:

Organic farming:

Alternatives to importing:

Why has demand for water changed in the UK?

Areas of demand and surplus:

Causes of water pollution:	Impacts of water pollution:

How can water quality be managed?

Water transfer schemes:

How has demand for energy in the UK changed?

UK energy mix:

Fossil fuels:

Economic issues:	Environmental issues:

Nuclear power:

Economic issues:	Environmental issues:

Renewables:

Economic issues:	Environmental issues:

Fracking:

Food. Why is global consumption increasing? Why is consumption unequal? What is food security and how is it measured? Factors affecting food supply: Climate: Technology: Pests and disease: Water stress: Conflict: Poverty:	Increasing food supply: Aeroponics: Hydroponics: Green revolution: Biotechnology: Irrigation: Appropriate technology: What are the similarities between these strategies?	Sustainable food production: Definition: Permaculture: Organic farming: Local/seasonal food: Sustainable fish: Urban farming: Sustainable meat:
Impacts of food insecurity: Famine: Rising prices: Conflict: Desertification:	Almeria:	Jamalpur:

The challenge of resource management

	Covered in class?	☺	😐	☹	Revision undertaken
I can describe the importance of **food**, **water** and **energy** to the economic and social wellbeing.					
I can describe the distribution of **resources** around world.					
I can explain why **resources** are unevenly distributed around the world.					
Resource management core content					
I can describe the distribution of **resources** around the UK.					
I can explain the **changing demand** for different foods in the UK.					
I can explain why **food miles** are increasing in the UK.					
I can explain how **food miles** can be reduced in the UK.					
I can describe the different industries involved in agriculture (**agribusiness**) and explain how they are changing in the UK.					
I can explain the changing **demand** for water in the UK.					
I can describe the problems with **water quality** and **pollution** in the UK and how they can be managed.					
I can explain how the UK is trying to manage water to meet **supply** and **demand**.					
I can describe the UKs **energy mix** and how it has changed over time.					
I can explain how the UK can reduce its reliance on **fossil fuels**.					
I can describe and explain the economic and environmental issues with exploitation of energy sources.					
Resource management option: Food					
I can describe the global distribution of food resources both **surplus** and **deficit**					
I can explain why food consumption trends are changing					
I can explain and evaluate the different factors which effect **food availability** including: • Climate (desertification, hazards) • Pests and disease • Technology • Pollution of supply • Poverty. • Water supply • Conflict					
I can analyse the impacts of food insecurity including: • Famine and undernutrition • Rising prices • Conflict and social unrest • Environmental impacts					
I can explain and evaluate how **food supplies** can be managed to increase supply in certain areas					
I can use an example to show how food supply can be increased on a large scale					
I can explain how food resources can be managed **sustainably**					
I can use an example to show how food supply can be increased sustainably					

Practice 6
Markers: Food
Challenge of Resource Management

Explain how food production can be made sustainable. Use one example in your answer.	**6**
Explain what is meant by the term agribusiness and suggest how it benefits customers.	**6**
For a large scale agricultural production system, explain how it may have negative environmental impacts.	**6**
Discuss the factors that affect the availability of food in an LIC.	**6**

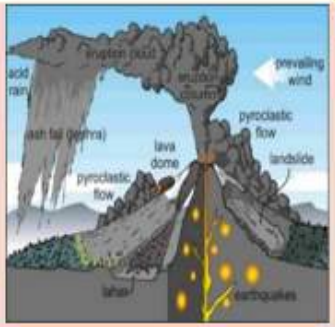
9 mark questions do not appear on this unit

The structure of the Earth

The Crust	Varies in thickness (5-10km) beneath the ocean. Made up of several large plates.
The Mantle	Widest layer (2900km thick). The heat and pressure means the rock is in a liquid state that is in a state of convection.
The Inner and outer Core	Hottest section (5000 degrees). Mostly made of iron and nickel and is 4x denser than the crust. Inner section is solid whereas outer layer is liquid.

Volcanic Hazards

Ash cloud	Small pieces of pulverised rock and glass which are thrown into the atmosphere.
Gas	Sulphur dioxide, water vapour and carbon dioxide come out of the volcano.
Lahar	A volcanic mudflow which usually runs down a valley side on the volcano.
Pyroclastic flow	A fast moving current of super-heated gas and ash (1000°C). They travel at 450mph.
Volcanic bomb	A thick (viscous) lava fragment that is ejected from the volcano.



Managing Volcanic Eruptions

Warning signs	Monitoring techniques
Small earthquakes are caused as magma rises up.	Seismometers are used to detect earthquakes.
Temperatures around the volcano rise as activity increases.	Thermal imaging and satellite cameras can be used to detect heat around a volcano.
When a volcano is close to erupting it starts to release gases.	Gas samples may be taken and chemical sensors used to measure sulphur levels.

Preparation	
Creating an exclusion zone around the volcano.	Being ready and able to evacuate residents.
Having an emergency supply of basic provisions, such as food	Trained emergency services and a good communication system.

Convection Currents

The crust is divided into tectonic plates which are moving due to convection currents in the mantle.

1. Radioactive decay of some of the elements in the core and mantle generate a lot of heat.
2. When lower parts of the mantle molten rock (Magma) heat up they become **less dense** and **slowly rise**.
3. As they move towards the top they cool down, become **more dense** and **slowly sink**.
4. These **circular movements** of semi-molten rock are **convection currents**
5. Convection currents create **drag** on the base of the tectonic plates and this causes them to move.

LIC -CS: Nepal earthquake 2015.

Causes: 7.9 mag earthquake, 15km deep, 80km from Kathmandu. Indo-Australian and Eurasian plate colliding.

Effects
9000 people killed, 8 million affected. No basic needs/sanitation, hospitals overwhelmed. Cost $5 billion. Landslides and avalanches triggered – killed 17 on Everest.

Management
Relied heavily on international aid, field hospitals, social media used to find the missing. Long term – stricter building codes, roads repaired, aid blocked.

Why do people live in hazard zones?
Cost of relocation, fertile soils, employment, culture (Mt Merapi), sense of safety mainly in HICs if there is earthquake resistant design. Tourism. Geothermal energy (Iceland – second largest geothermal power plant in the world, being used to heat greenhouses). Complacency – usually among older generations (Mt St Helens), mineral extraction.

Earthquake Management

PREDICTING

Methods include:
- Satellite surveying (tracks changes in the earth's surface)
- Laser reflector (surveys movement across fault lines)
- Radon gas sensor (radon gas is released when plates move so this finds that)
- Seismometer
- Water table level (water levels fluctuate before an earthquake).
- Scientists also use seismic records to predict when the next event will occur.

PROTECTION

You can't stop earthquakes, so earthquake-prone regions follow these three methods to reduce potential damage:
- Building earthquake-resistant buildings
- Raising public awareness
- Improving earthquake prediction

Types of Plate Margins

Destructive Plate Margin

When the denser plate subducts beneath the other, friction causes it to **melt and become molten magma**. The magma forces its ways up to the surface to form a volcano. This margin is also responsible for **devastating earthquakes**.

Constructive Plate Margin

Here two plates are **moving apart** causing new magma to reach the surface through the gap. Volcanoes formed along this crack cause a submarine mountain range such as those in the **Mid Atlantic Ridge**.

Conservative Plate Margin

A conservative plate boundary occurs where plates **slide past each other** in opposite directions, or in the same direction but at different speeds. This is responsible for earthquakes such as the ones happening along the San Andreas Fault, USA.

What is a Natural Hazard

A natural hazard is a natural process which could cause death, injury or disruption to humans, property and possessions.

Geological Hazard	Meteorological Hazard
These are hazards caused by land and tectonic processes.	These are hazards caused by weather and climate.

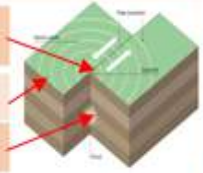
Causes of Earthquakes

Earthquakes are caused when two plates become **locked** causing **friction** to build up. From this **stress**, the **pressure** will eventually be released, triggering the plates to move into a new position. This movement causes energy in the form of **seismic waves**, to travel from the **focus** towards the **epicentre**. As a result, the crust vibrates triggering an earthquake.

The point directly above the focus, where the seismic waves reach first, is called the **EPICENTRE**.

SEISMIC WAVES (energy waves) travel out from the focus.

The point at which pressure is released is called the **FOCUS**.



HIC - CS: L'Aquila, 2009.

Causes
6.3 magnitude, 3.32am, destructive boundary – African and Eurasian plate.

Effects
150 deaths, 67,000 homeless. Bridges collapsed. Cost £11.4 billion. Landslides. Population decline.

Management:
Hotels provided shelter for 10,000, train carriages used to house people, bills suspended, free mobile phones, buildings redeveloped but not made earthquake resistant, scientists sent to prison.

Global pattern of air circulation

Atmospheric circulation is the large-scale movement of air by which heat is distributed on the surface of the Earth.

Hadley cell	Largest cell which extends from the **Equator** to between **30° to 40° north & south.**
Ferrel cell	Middle cell where air flows **poleward** between **60° & 70°** latitude.
Polar cell	**Smallest & weakness** cell that occurs from the poles to the Ferrel cell.

Distribution of Tropical Storms.

They are known by many names, including hurricanes (North America), cyclones (India) and typhoons (Japan and East Asia). They all occur in a band that lies roughly 5-15° either side of the Equator.

High and Low Pressure

Low Pressure	High Pressure
Caused by hot air rising. Causes stormy, cloudy weather.	Caused by cold air sinking. Causes clear and calm weather.

Formation of Tropical Storms

1	The sun's rays heats large areas of ocean in the summer and autumn. This causes **warm, moist air** to rise over the particular spots
2	Once the **temperature is 27⁰**, the rising warm moist air leads to a **low pressure**. This eventually turns into a thunderstorm. This causes air to be sucked in from the **trade winds**.
3	With trade winds blowing in the opposite direction and the rotation of earth involved (Coriolis effect), the thunderstorm will eventually start to **spin**.
4	When the storm begins to **spin faster than 74mph**, a tropical storm (such as a hurricane) is officially born.
5	With the tropical storm growing in power, **more cool air sinks** in the centre of the storm, creating calm, clear condition called the **eye of the storm**.
6	When the tropical storm hits land, it **loses its energy source** (the warm ocean) and it begins to lose strength. Eventually it will 'blow itself out'.

Changing pattern of Tropical Storms

Scientist believe that global warming is having an impact on the frequency and strength of tropical storms. This may be due to an increase in ocean temperatures.

Management of Tropical Storms

Protection
Preparing for a tropical storm may involve construction projects that will improve protection.

Aid
Aid involves assisting after the storm, commonly in LIDs.

Development
The scale of the impacts depends on the whether the country has the resources cope with the storm.

Planning
Involves getting people and the emergency services ready to deal with the impacts.

Prediction
Constant monitoring can help to give advanced warning of a tropical storm

Education
Teaching people about what to do in a tropical storm.

Primary Effects of Tropical Storms

- The intense winds of tropical storms can destroy whole **communities, buildings** and **communication networks**.
- As well as their own destructive energy, the winds can generate abnormally high waves called **storm surges**.
- Sometimes the most destructive elements of a storm are these subsequent **high seas and flooding** they cause to coastal areas.

Secondary Effects of Tropical Storms

- People are **left homeless**, which can cause distress, poverty and ill health due to lack of shelter.
- **Shortage of clean water** and **lack of proper sanitation** makes it easier for diseases to spread.
- **Businesses are damaged** or destroyed causing employment.
- Shortage of food as **crops are damaged**.

Case Study: Typhoon Haiyan 2013

Causes
Started as a tropical depression on 2nd **November 2013** and gained strength. Became a Category 5 **"super typhoon"** and made landfall on the Pacific islands of the Philippines.

Effects
- Almost **6,500 deaths**.
- **130,000 homes destroyed.**
- Water and sewage systems destroyed had caused **diseases**.
- **Emotional grief** for dead.

Management
- The UN raised **£190m in aid**.
- USA & UK **sent helicopter carrier ships** deliver aid remote areas.
- **Education** on typhoon preparedness.

Case Study: UK – St Jude 2013.

Causes
Strong depression formed over atlantic ocean, aided by jet stream and remnants of ex tropical storm. 99mph winds.

Effects
4 deaths, flights cancelled, 850,000 homes without power, cranes collapsed in London, rail disruption, shipping containers damaged, 10 million trees blown down.

Management
Predicted to a good degree of accuracy, Met Office issued a yellow weather warning, insurance companies employed extra staff, old trees cut down.

What is Climate Change?

Climate change is a large-scale, long-term shift in the planet's weather patterns or average temperatures. Earth has had tropical climates and ice ages many times in its 4.5 billion years.

Recent Evidence for climate change.

Global temperature	Average global temperatures have increased by more than **0.6°C since 1950**.
Ice sheets & glaciers	Many of the world's glaciers and ice sheets are melting. E.g. the Arctic sea ice has declined by **10% in 30 years**.
Sea Level Change	Average global **sea level has risen by 10-20cms** in the past 100 years. This is due to the additional water from ice and thermal expansion.

Enhanced Greenhouse Effect

Recently there has been an increase in **humans burning fossil fuels** for energy. These fuels (gas, coal and oil) emit **greenhouse gases**. This is making the Earth's atmosphere thicker, therefore trapping more solar radiation and causing **less to be reflected**. As a result, the Earth is becoming warmer.

Evidence of natural change

Orbital Changes	Some argue that climate change is linked to how the Earth orbits the Sun, and the way it wobbles and tilts as it does it.
Sun Spots	Dark spots on the Sun are called Sun spots. They increase the **amount of energy Earth receives** from the Sun.
Volcanic Eruptions	Volcanoes release large amounts of **dust containing gases**. These can **block sunlight** and results in cooler temperatures.

Managing Climate Change

Carbon Capture
This involves new technology designed to reduce climate change.

Planting Trees
Planting trees increase the amount of carbon is absorbed from atmosphere.

International Agreements
Countries aim to cut emissions by signing international deals and by setting targets.

Renewable Energy
Replacing fossil fuels based energy with clean/natural sources of energy.

Unit 1b

AQA

The Living World

What is an Ecosystem?

An ecosystem is a system in which organisms interact with each other and with their environment.

Ecosystem's Components

Abiotic	These are **non-living**, such as air, water, heat and rock.
Biotic	These are **living**, such as plants, insects, and animals.
Flora	**Plant life** occurring in a particular region or time.
Fauna	**Animal life** of any particular region or time.

Food Web and Chains

Simple **food chains** are useful in explaining the basic principles behind ecosystems. They show only one species at a particular trophic level. **Food webs** however consists of a network of many food chains interconnected together.

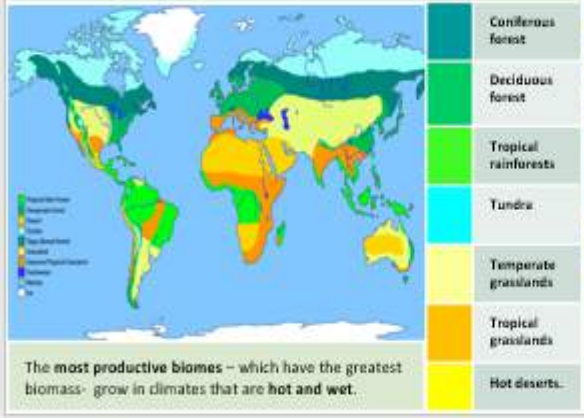
Nutrient cycle

Plants take in **nutrients** to build into new organic matter. Nutrients are taken up when animals eat plants and then returned to the soil when animals die and the body is broken down by **decomposers**.

Litter	This is the **surface layer** of vegetation, which over time breaks down to become **humus**.
Biomass	The total **mass of living organisms** per unit area.

Biomes

A biome is a **large geographical area of distinctive plant and animal groups**, which are adapted to that particular environment. The climate and geography of a region determines what type of biome can exist in that region.



The **most productive biomes** – which have the greatest biomass- grow in climates that are **hot and wet**.

Biome's climate and plants

Biome	Location	Temperature	Rainfall	Flora	Fauna
Tropical rainforest	Centred along the Equator.	Hot all year (25-30°C)	Very high (over 200mm/year)	Tall trees forming a canopy; wide variety of species.	Greatest range of different animal species. Most live in canopy layer
Tropical grasslands	Between latitudes 5°- 30° north & south of Equator.	Warm all year (20-30°C)	Wet + dry season (500-1500mm/year)	Grasslands with widely spaced trees.	Large hoofed herbivores and carnivores dominate.
Hot desert	Found along the tropics of Cancer and Capricorn.	Hot by day (over 30°C) Cold by night	Very low (below 300mm/year)	Lack of plants and few species; adapted to drought.	Many animals are small and nocturnal: except for the camel.
Temperate forest	Between latitudes 40°- 60° north of Equator.	Warm summers + mild winters (5-20°C)	Variable rainfall (500-1500m /year)	Mainly deciduous trees; a variety of species.	Animals adapt to colder and warmer climates. Some migrate.
Tundra	Far Latitudes of 65° north and south of Equator	Cold winter + cool summers (below 10°C)	Low rainfall (below 500mm/ year)	Small plants grow close to the ground and only in summer.	Low number of species. Most animals found along coast.
Coral Reefs	Found within 30° north – south of Equator in tropical waters.	Warm water all year round with temperatures of 18°C	Wet + dry seasons. Rainfall varies greatly due to location.	Small range of plant life which includes algae and sea grasses that shelters reef animals.	Dominated by polyps and a diverse range of fish species.

Tropical Rainforest Biome

Tropical rainforest cover about **2 per cent** of the Earth's surface yet they are home to **over half of the world's plant and animals**.

Interdependence in the rainforest

A rainforest works through **interdependence**. This is where the plants and animals **depend on each other** for survival. If one component changes, there can be **serious knock-up effects** for the entire ecosystem.

Distribution of Tropical Rainforests

Tropical rainforests are **centred along the Equator** between the Tropic of Cancer and Capricorn. Rainforests can be found in South America, central Africa and South-East Asia. **The Amazon** is the world's largest rainforest and takes up the majority of northern South America, encompassing countries such as Brazil and Peru.

Layers of the Rainforest

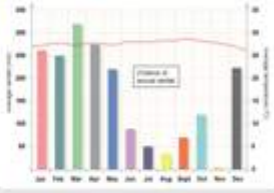
Emergent	Highest layer with trees reaching **50 metres.**
Canopy	80% of life is found here as it receives **most of the sunlight and rainfall.**
U-Canopy	Consists of trees that reach **20 metres high.**
Shrub Layer	Lowest layer with **small trees** that have adapted to living in the **shade.**

Rainforest nutrient cycle

The **hot, damp conditions** on the forest floor allow for the **rapid decomposition** of dead plant material. This provides plentiful nutrients that are easily absorbed by plant roots. However, as these nutrients are in high demand from the many fast-growing plants, they do not remain in the soil for long and stay close to the surface. If vegetation is removed, the soils quickly become **infertile**.

Climate of Tropical Rainforests

- Evening temperatures rarely fall below **22°C.**
- Due to the **presence of clouds**, temperatures rarely rise above **32°C.**
- Most afternoons have heavy showers.
- At night with no clouds insulating, temperature drops.



CASE STUDY: UK Ecosystem: Ponds.

Ponds offer a range of habitats including in the surface water, bed, banks, vegetation etc. Animals live in different zones depending on adaptations to light levels, oxygen levels, temperature, predation etc.

Ponds are at risk due to: deforestation, disease, hunting, restocking, alien species, hedge row removal, eutrophication, climate change, drought, flooding.

Dew Ponds – Yorkshire Wolds.

1800s – Dew ponds used for drinking water for livestock such as cattle.
1900s – livestock rearing moved indoors and become more intensive, ponds were filled in, left to dry up, the ecosystem was destroyed.
2019 – funding received on the Yorkshire Wolds to reinstate and manage the ponds.

Tropical Rainforests: Case Study: Amazon

Rates of deforestation were slowing due to international awareness and protection. Summer 2019 – wildfires threaten the state of the Amazon.

Adaptations to the rainforest

Monkeys:	Large arms to swing & support in the tree canopy.
Drip Tips	Allows heavy rain to **run off leaves easily.**
Lianas & Vines	**Climbs** trees to reach sunlight at canopy.

Rainforest inhabitants

Many tribes have developed sustainable ways of survival. The rainforest provides inhabitants with...

- **Food** through hunting and gathering.
- **Natural medicines** from forest plants.
- **Homes and boats** from forest wood.

Issues related to biodiversity

Why are there high rates of biodiversity?

- **Warm and wet climate** encourages a wide range of vegetation to grow.
- There is **rapid recycling of nutrients** to speed plant growth.
- Most of the rainforest is **untouched.**

Main issues with biodiversity decline

- **Keystone species** (a species that are important of other species) are extremely important in the rainforest ecosystem. Humans are threatening these vital components.
- **Decline in species** could cause tribes being unable to survive.
- **Plants & animals** may become **extinct.**
- Key medical **plants** may become **extinct.**

Impacts of deforestation

Economic development

+ Mining, farming and logging creates employment and tax income for government.
+ Products such as palm oil provide valuable income for countries.
- The loss of biodiversity will reduce tourism.

Soil erosion

- Once the land is **exposed by deforestation,** the soil is more **vulnerable to rain.**
- With **no roots to bind soil together,** soil can easily **wash away.**

Climate Change

-When rainforests are cut down, the climate becomes **drier.**
-Trees are **carbon 'sinks'.** With greater deforestation comes more greenhouse emissions in the atmosphere.
-When trees are burnt, they **release more carbon in the atmosphere.** This will enhance the **greenhouse effect.**

What are the causes of deforestation?

Logging

- Most widely reported cause of destructions to biodiversity.
- Timber is harvested to create **commercial items** such as furniture and paper.
- **Violent confrontation** between indigenous tribes and logging companies.

Agriculture

- Large scale **'slash and burn'** of land for ranches and palm oil.
- Increases **carbon emission.**
- **River siltation** and **soil erosion** increasing due to the large areas of **exposed land.**
- Increase in **palm oil** is making the **soil infertile.**

Mineral Extraction

- **Precious metals** are found in the rainforest.
- Areas **mined** can experience **soil and water contamination.**
- **Indigenous people** are becoming **displaced** from their land due to roads being built to transport products.

Tourism

- **Mass tourism** is resulting in the building of hotels in extremely **vulnerable areas.**
- Lead to **negative relationship** between the government and indigenous tribes
- Tourism has **exposed animals** to human **diseases.**

Energy Development

- The **high rainfall** creates ideal conditions for **hydro-electric power (HEP).**
- 300 HEP plants are either built, under construction or planned for the Amazon.

Road Building

- **Roads** are needed to bring supplies and **provide access** to new mining areas, settlements and energy projects.
- Trans Amazonian Highway.

Sustainability for the Rainforest

Uncontrolled and unchecked exploitation can cause irreversible damage such as loss of biodiversity, soil erosion and climate change.

Possible strategies include:

- **Debt for Nature Swaps: Brazil and US.**
- **Selective logging** - Trees are only felled when they reach a particular height.
- **Education** - Ensuring those people understand the consequences of deforestation
- **Afforestation** - If trees are cut down, they are replaced.
- **Ecotourism** - tourism that promotes the environments & conservation
- International Hardwood Agreements – CITES or FSC.

Hot Desert: Case Study Thar Desert – India/Pakistan

The Thar Desert is located on the border between India and Pakistan in Southern Asia. With India soon becoming the most populated country in the world in the next five years. With this, more people will plan to live in the desert.

Distribution of the world's hot deserts

Most of the world's hot deserts are found in the **subtropics** between **20 degrees and 30 degrees north & south** of the Equator. The **Tropics of Cancer and Capricorn** run through most of the worlds major deserts.

Major characteristics of hot deserts

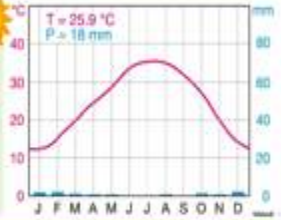
- **Aridity** – hot deserts are extremely dry, with annual rainfall below **250 mm.**
- **Heat** – hot deserts rise over **40 degrees.**
- **Landscapes** – Some places have dunes, but most are **rocky** with **thorny bushes.**

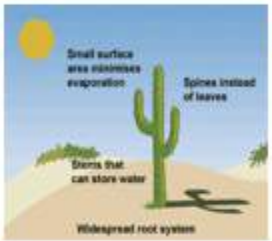
Hot Deserts inhabitants

- People often live in large **open tents** to **keep cool.**
- Food is often **cooked** slowly in the **warm sandy soil.**
- **Head scarves** are worn by men to provide **protection from the Sun.**

Climate of Hot Deserts

- **Very little rainfall** with less than **250 mm per year.**
- It might only **rain once every two to three years.**
- Temperate are **hot in the day** (45 °C) but are **cold at night** due to little cloud cover (5 °C).
- In winter, deserts can sometimes receive occasional frost and snow.





Adaptations to the desert

Cactus	• **Large roots** to absorb water soon after rainfall. • **Needles** instead of leaves to reduce surface area and therefore **transpiration.**
Camels	• Hump for storing **fat (NOT water).** • **Wide feet** for walking on sand. • **Long eyelashes** to protect from sand.

Desert Interdependence

Different parts of the hot desert ecosystem **are closely linked together and depend on each other**, especially in a such a harsh environment.

Opportunities and challenges in the Hot desert

Opportunities

- **There are valuable minerals for industries and construction.**
- **Energy resources such as coal and oil can be found in the Thar desert.**
- **Great opportunities for renewable energy such as solar power at Bhaleri.**
- **Thar desert has attracted tourists, especially during festivals.**

Challenges

- **The extreme heat makes it difficult to work outside for very long.**
- **High evaporation rates from irrigation canals and farmland.**
- **Water supplies are limited, creating problems for the increasing number of people moving into area.**
- **Access through the desert is tricky as roads are difficult to build and maintain.**

Causes of Desertification

Desertification means the turning of semi-arid areas (or drylands) into deserts.

Climate Change
Reduce rainfall and rising temperatures have meant less water for plants.

Fuel Wood
People rely on wood for fuel. This removal of trees causes the soil to be exposed.

Overgrazing
Too many animals mean plants are eaten faster than they can grow back. Causing soil erosion.

Over-Cultivation
If crops are grown in the same areas too often, nutrients in the soil will be used up causing soil erosion.

Population Growth
A growing population puts pressure on the land leading to more deforestation, overgrazing and over-cultivation.

Strategies to reduce Desertification

- **Water management** - growing crops that don't need much water.
- **Tree Planting** - trees can act as windbreakers to protect the soil from wind and soil erosion.
- **Soil Management** - leaving areas of land to rest and recover lost nutrients.
- **Technology** – using less expensive, sustainable materials for people to maintain. i.e. sand fences, terraces to stabilise soil and solar cookers to reduce deforestation.

Relief of the UK

Relief of the UK can be divided into uplands and lowlands. Each have their own characteristics.

Key

Lowlands

Uplands

Areas +600m: Peaks and ridges cold, misty and snow common. i.e. Scotland

Areas -200m: Flat or rolling hills. Warmer weather. i.e. Fens

Types of Erosion

The break down and transport of rocks – smooth, round and sorted.

Attrition	Rocks that bash together to become smooth/smaller.
Solution	A chemical reaction that dissolves rocks.
Abrasion	Rocks hurled at the base of a cliff to break pieces apart.
Hydraulic Action	Water enters cracks in the cliff, air compresses, causing the crack to expand.

Types of Transportation

A natural process by which eroded material is carried/transported.

Solution	Minerals dissolve in water and are carried along.
Suspension	Sediment is carried along in the flow of the water.
Saltation	Pebbles that bounce along the sea/river bed.
Traction	Boulders that roll along a river/sea bed by the force of the flowing water.

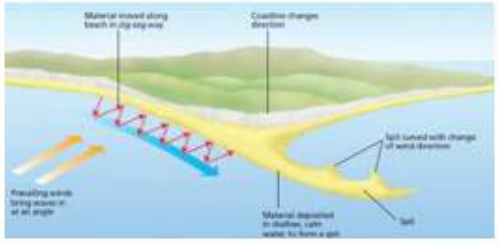
Mass Movement

A large movement of soil and rock debris that moves down slopes in response to the pull of gravity in a vertical direction.

1. Rain saturates the permeable rock above the impermeable rock making it heavy.
2. Waves or a river will erode the base of the slope making it unstable.
3. Eventually the weight of the permeable rock above the impermeable rock weakens and collapses.
4. The debris at the base of the cliff is then removed and transported by waves or river.

Formation of Coastal Spits - Deposition

Example: Spurn Head, Holderness Coast.



1) Swash moves up the beach at the angle of the prevailing wind.
2) Backwash moves down the beach at 90° to coastline, due to gravity.
3) Zigzag movement (Longshore Drift) transports material along beach.
4) Deposition causes beach to extend, until reaching a river estuary.
5) Change in prevailing wind direction forms a hook.
6) Sheltered area behind spit encourages deposition, salt marsh forms.

Types of Weathering

Weathering is the breakdown of rocks where they are.

Carbonation	Breakdown of rock by changing its chemical composition.
Mechanical	Breakdown of rock without changing its chemical composition.

What is Deposition?

When the sea or river loses energy, it drops the sand, rock particles and pebbles it has been carrying. This is called deposition.

Formation of Bays and Headlands

1) Waves attack the coastline.
2) Softer rock is eroded by the sea quicker forming a bay, calm area cases deposition.
3) More resistant rock is left jutting out into the sea. This is a headland and is now more vulnerable to erosion.

Unit 1c

AQA

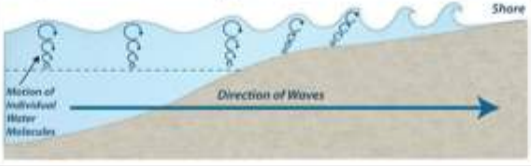
Physical Landscapes in the UK

How do waves form?

Waves are created by wind blowing over the surface of the sea. As the wind blows over the sea, friction is created - producing a swell in the water.

Why do waves break?

1	Waves start out at sea.
2	As waves approaches the shore, friction slows the base.
3	This causes the orbit to become elliptical.
4	Until the top of the wave breaks over.



Mechanical Weathering Example: Freeze-thaw weathering

Stage One
Water seeps into cracks and fractures in the rock.

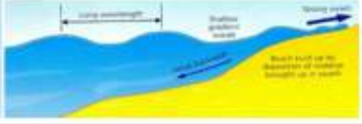
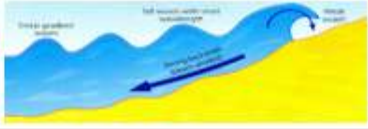
Stage Two
When the water freezes, it expands about 9%. This wedges apart the rock.

Stage Three
With repeated freeze-thaw cycles, the rock breaks off.

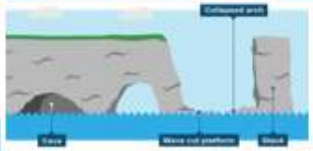
Size of waves

- Fetch how far the wave has travelled
- Strength of the wind.
- How long the wind has been blowing for.

Types of Waves

Constructive Waves	Destructive Waves
This wave has a **swash that is stronger** than the backwash. This therefore builds up the coast.	This wave has a **backwash that is stronger** than the swash. This therefore erodes the coast.
	

Formation of Coastal Stack



Example: Old Harry Rocks, Dorset

1) Hydraulic action widens cracks in the cliff face over time.
2) Abrasion forms a wave cut notch between HT and LT.
3) Further abrasion widens the wave cut notch to from a cave.
4) Caves from both sides of the headland break through to form an arch.
5) Weather above/erosion below –arch collapses leaving stack.
6) Further weathering and erosion eaves a stump.

Coastal Defences

Hard Engineering Defences

Groynes	Wood barriers prevent longshore drift, so the beach can build up.	✓ Beach still accessible. ✗ No deposition further down coast = erodes faster.
Sea Walls	Concrete walls break up the energy of the wave . Has a lip to stop waves going over.	✓ Long life span ✓ Protects from flooding ✗ Curved shape encourages erosion of beach deposits.
Gabions or Rip Rap	Cages of rocks/boulders absorb the waves energy, protecting the cliff behind.	✓ Cheap ✓ Local material can be used to look less strange. ✗ Will need replacing.

Soft Engineering Defences

Beach Nourishment	Beaches built up with sand, so waves have to travel further before eroding cliffs.	✓ Cheap ✓ Beach for tourists. ✗ Storms = need replacing. ✗ Offshore dredging damages seabed.
Managed Retreat	Low value areas of the coast are left to flood & erode.	✓ Reduce flood risk ✓ Creates wildlife habitats. ✗ Compensation for land.

Case Study: Holderness Coast

Location and Background
East Riding of Yorkshire. 61km from Flamborough Head to Spurn Point. Fastest eroding coastline on Europe. Range of settlements at risk and Easington North Sea Gas Terminal.

Geomorphic Processes
Flamborough Head: chalk, erodes slower, caves, arches, stacks, wave cut platform.
South of the headland – boulder clay, deposited during last ice age, prone to rapid erosion and slumping.
Spurn point – sand and shingle, 3 miles long. Longshore drift.
Boulder clay cliffs – Mappleton, Hornsea – mass movement common.
Beaches – sand and shingle.

Management
Hornsea - £5.2 million – groynes, sea wall. Protects sea front, caravan site at risk of mass movement however.
Mappleton - £2 million spent on rock armour and two groynes.
Withernsea - £6.3 million spent on a sea wall and rock armour.

Water Cycle Key Terms

Precipitation	Moisture falling from clouds as rain, snow or hail.
Interception	Vegetation prevent water reaching the ground.
Surface Runoff	Water flowing over surface of the land into rivers
Infiltration	Water absorbed into the soil from the ground.
Transpiration	Water lost through leaves of plants.

Physical and Human Causes of Flooding.

***Physical:* Prolong & heavy rainfall**
Long periods of rain causes soil to become saturated leading runoff.

***Physical:* Geology**
Impermeable rocks causes surface runoff to increase river discharge.

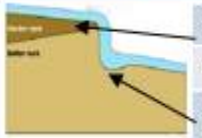
***Physical:* Relief**
Steep-sided valleys channels water to flow quickly into rivers causing greater discharge.

***Human:* Land Use**
Tarmac and concrete are impermeable. This prevents infiltration & causes surface runoff.

Upper Course of a River

Near the source, the river flows over steep gradient from the hill/mountains. This gives the river a lot of energy, so it will erode the riverbed vertically to form narrow valleys.

Formation of a Waterfall



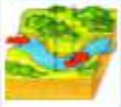
1) River flows over alternative types of rocks.
2) River erodes soft rock faster creating a step.
3) Further hydraulic action and abrasion form a plunge pool beneath.
4) Hard rock above is undercut leaving cap rock which collapses providing more material for erosion.
5) Waterfall retreats leaving steep sided gorge.

Middle Course of a River

Here the gradient get gentler, so the water has less energy and moves more slowly. The river will begin to erode laterally making the river wider.

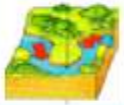
Formation of Ox-bow Lakes

Step 1



Erosion of outer bank forms river cliff. Deposition inner bank forms slip off slope.

Step 2



Further hydraulic action and abrasion of outer banks, neck gets smaller.

Step 3

Erosion breaks through neck, so river takes the fastest route, redirecting flow

Step 4

Evaporation and deposition cuts off main channel leaving an oxbow lake.

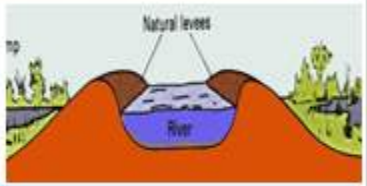
Lower Course of a River

Near the river's mouth, the river widens further and becomes flatter. Material transported is deposited.

Formation of Floodplains and levees

When a river floods, fine silt/alluvium is deposited on the valley floor. Closer to the river's banks, the heavier materials build up to form natural levees.

✓ Nutrient rich soil makes it ideal for farming.
✓ Flat land for building houses.



River Management Schemes

Soft Engineering

Afforestation – plant trees to soak up rainwater, reduces flood risk.
Demountable Flood Barriers put in place when warning raised.
Managed Flooding – naturally let areas flood, protect settlements.

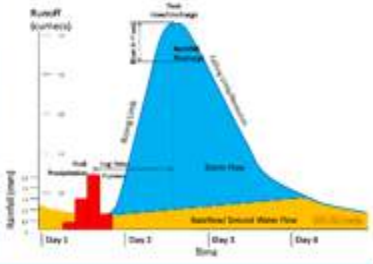
Hard Engineering

Straightening Channel – increases velocity to remove flood water.
Artificial Levees – heightens river so flood water is contained.
Deepening or widening river to increase capacity for a flood.

Hydrographs and River Discharge

River discharge is the volume of water that flows in a river. Hydrographs who discharge at a certain point in a river changes over time in relation to rainfall

1. **Peak discharge** is the discharge in a period of time.
2. **Lag time** is the delay between peak rainfall and peak discharge.
3. **Rising limb** is the increase in river discharge.
4. **Falling limb** is the decrease in river discharge to normal level.



Case Study: The River Tees

Location and Background
Located in the North of England and flows 137km from the Pennines to the North Sea at Red Car.

Geomorphic Processes
Upper – Features include V-Shaped valley, rapids and waterfalls. High Force waterfall drops 21m and is made from harder Whinstone and softer limestone rocks. Gradually a gorge has been formed.
Middle – Features include meanders and ox-bow lakes. The meander near Yarm encloses the town.
Lower – Greater lateral erosion creates features such as floodplains & levees. Mudflats at the river's estuary.

Management
-Towns such as Yarm and Middleborough are economically and socially important due to houses and jobs that are located there.
-Dams and reservoirs in the upper course, controls river's flow during high & low rainfall.
- Better flood warning systems, more flood zoning and river dredging reduces flooding.

Unit 2a

Urban Issues & Challenges

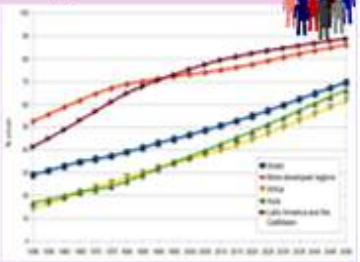
AQA

What is Urbanisation?

This is an increase in the amount of people living in urban areas such as towns or cities. In 2007, the UN announced that for the first time, more than 50 % of the world's population live in urban areas.

Where is Urbanisation happening?

Urbanisation is happening all over the word but in LICs and NEEs rates are much faster than HICs. This is mostly because of the rapid economic growth they are experiencing.



Causes of Urbanisation

Rural - urban migration (1) — The movement of people from rural to urban areas.

Push

- Natural disasters
- War and Conflict
- Mechanisation
- Drought
- Lack of employment

Pull

- More Jobs
- Better education & healthcare
- Increased quality of life.
- Following family members.

Natural Increase (2) — When the birth rate exceeds the death rate.

Increase in birth rate (BR)

- High percentage of population are child-bearing age which leads to high fertility rate.
- Lack of contraception or education about family planning.

Lower death rate (DR)

- Higher life expectancy due to better living conditions and diet.
- Improved medical facilities helps lower infant mortality rate.

Types of Cities

Megacity — An urban area with over **10 million people** living there.

More than two thirds of current megacities are located in either NEEs (Brazil) and LICs (Nigeria). The amount of megacities are predicted to increase from 28 to 41 by 2030.

Sustainable Urban Living

Sustainable urban living means being able to live in cities in ways that do not pollute the environment and using resources in ways that ensure future generations also can use then.

Water Conservation

This is about reducing the amount of water used.

- Collecting rainwater for gardens and flushing toilets.
- Installing water meters and toilets that flush less water.
- Educating people on using less water.

Energy Conservation

Using less fossil fuels can reduce the rate of climate change.

- Promoting renewable energy sources.
- Making homes more energy efficient.
- Encouraging people to use energy.

Creating Green Space

Creating green spaces in urban areas can improve places for people who want to live there.

- Provide natural cooler areas for people to relax in.
- Encourages people to exercise.
- Reduces the risk of flooding from surface runoff.

Waste Recycling

More recycling means fewer resources are used. Less waste reduces the amount that eventually goes to landfill.

- Collection of household waste.
- More local recycling facilities.
- Greater awareness of the benefits in recycling.

Sustainable Urban Living Example: Freiburg

Background & Location

Freiburg is in west Germany. The city has a population of about 220,000. In 1970 it set the goal of focusing on social, economic and environmental sustainability.

Sustainable Strategies

- The city's waste water allows for rainwater to be retained.
- The use of sustainable energy such as solar and wind is becoming more important.
- 40% of the city is forested with many open spaces for recreation, clean air and reducing flood risk.

Integrated Transport System

This is the linking of different forms of public and private transport within a city and the surrounding area.

Brownfield Site

Brownfield sites is an area of land or premises that has been previously used, but has subsequently become vacant, derelict or contaminated.

Traffic Management

Urban areas are busy places with many people travelling by different modes of transport. This has caused urban areas to experience different traffic congestion that can lead to various problems.

Environmental problems

- Traffic increases air pollution which releases greenhouse gases that is leading to climate change.

Economic problems

- Congestion can make people late for work and business deliveries take longer. This can cause companies to loose money.

Social Problems

- There is a greater risk of accidents and congestion is a cause of frustration. Traffic can also lead to health issues for pedestrians.

Congestion Solutions

- Widen roads to allow more traffic to flow easily.
- Build ring roads and bypasses to keep through traffic out of city centres.
- Introduce park and ride schemes to reduce car use.
- Encourage car-sharing schemes in work places.
- Have public transport, cycle lanes & cycle hire schemes.
- Having congestion charges discourages drivers from entering the busy city centres.

Traffic Management Example: Bristol

In 2012 Bristol was the most congested city in the UK. Now the city aims to develop it's integrated transport system to encourage more people to use the public transport. The city has also invested in cycle routes and hiring schemes.

Greenbelt Area

This is a zone of land surrounding a city where new building is strictly controlled to try to prevent cities growing too much and too fast.

Urban Regeneration

The investment in the revival of old, urban areas by either improving what is there or clearing it away and rebuilding.

Urban Change in a Major UK City: London Case Study

Location and Background

London is a city in the south east of England. The population of the city is 8 million people The city grew during the industrial revolution.

City's Importance

- Capital city, centre of government.
- One of the financial capitals of the world.
- Headquarters of many large multinational companies.
- International transport links.
- Top universities and medical facilities.

Migration to London

During the industrial revolution, the population dramatically increased with people migrating from nearby rural communities.

Many young graduates migrate to the city.

Gentrification of Shoreditch and Canary Wharf has pressured some communities to migrate away from the area due to rising house prices and the changing demographic.

City's Opportunities

Social: various cultural attractions, improved housing, a range of recreational opportunities, integrated transport.

Economic: job opportunities e.g. financial jobs Canary Wharf, Cross rail. Tourism. Stock market. Retail e.g. Harrods, Hamleys. Entertainment e.g. West End, O2, live sport..

Environmental: Large volumes of green space: became a national park city in 2019. urban greening.

City Challenges

Social: House prices have increased along with greater house shortages. Large variations in wealth and quality of life. Homelessness. Deprivation.

Economic: house prices are the highest in the UK, disparity in wealth and incomes.

Environmental: Urban sprawl places pressure on greenfield land, traffic congestion, air quality, waste.

Regeneration: London Olympics 2012

- Brownfield site: previously industrial, contaminated.
- Lea Valley nature reserve, also a soft engineering strategy.
- London City Stadium.
- Created new housing (unaffordable to the poorest in nearby wards)
- Employment opportunities
- Facilities used by nearby schools

Urban Change in a Major NEE City: RIO DE JANEIRO Case Study

Location and Background

Rio is a coastal city situated in the South East region of Brazil within the continent of South America. It is the second most populated city in the country (6.5 million) after Sao Paulo.

City's Importance

- Has the second largest GDP in Brazil It is headquarters to many of Brazil's main companies, particularly with Oil and Gas.
- Sugar Loaf mountain is world heritage site
- One of the most visited places in the Southern Hemisphere.
- Hosted the 2014 World Cup and 2016 Summer Olympics.
- Christ the Redeemer is a new 7 wonder.

Migration to Rio De Janeiro

The city began when Portuguese settlers with slaves arrived in 1502. Since then, Rio has become home to various ethnic groups.

However, more recently, millions of people have migrated from rural areas that have suffered from drought, lack of services and unemployment to Rio. People do this to search for a better quality of life.

This expanding population has resulted in the rapid urbanisation of Rio de Janeiro.

City's Opportunities

Social: Standards of living are gradually improving. The Rio Carnival is an important cultural event for traditional dancing and music.

Economic: Rio has one of the highest incomes per person in the country. The city has various types of employment including oil, retail and manufacturing.

Environmental: The hosting of the major sporting events encouraged more investment in sewage works and public transport systems.

City Challenges

Social: There is a severe shortage of housing, schools and healthcare centres available. Large scale social inequality, is creating tensions between the rich and poor.

Economic: The rise of informal jobs with low pay and no tax contributions. There is high employment in shanty towns called Favelas

Environmental: Shanty towns called Favelas are established around the city, typically on unfavourable land, such as hills.

Self-help schemes - Rocinha, Bairro Project

- The authorities have provided basic materials to improve peoples homes with safe electricity and sewage pipes.
- Government has demolished houses and created new estates.
- Community policing has been established, along with a tougher stance on gangs with military backed police.
- Greater investment in new road and rail network to reduce pollution and increase connections between rich and poor areas.

Unit 2b
The Changing Economic World

AQA

What is development?

Development is an improvement in living standards through better use of resources.

Economic	This is progress in economic growth through levels of industrialisation and use of technology.
Social	This is an improvement in people's standard of living. For example, clean water and electricity.
Environmental	This involves advances in the management and protection of the environment.

Measuring development

These are used to compare and understand a country's level of development.

Economic indictors examples

Employment type	The proportion of the population working in primary, secondary, tertiary and quaternary industries.
Gross Domestic Product per capita	This is the total value of goods and services produced in a country per person, per year.
Gross National Income per capita	An average of gross national income per person, per year in US dollars.

Social indicators examples

Infant mortality	The number of children who die before reaching 1 per 1000 babies born.
Literacy rate	The percentage of population over the age of 15 who can read and write.
Life expectancy	The average lifespan of someone born in that country.

Mixed indicators

Human Development Index (HDI)	A number that uses life expectancy, education level and income per person.

Variations in the level of development

LICs	Poorest countries in the world. GNI per capita is low and most citizens have a low standard of living.
NEEs	These countries are getting richer as their economy is progressing from the primary industry to the secondary industry. Greater exports leads to better wages.
HICs	These countries are wealthy with a high GNI per capita and standards of living. These countries can spend money on services.

Causes of uneven development

Development is globally uneven with most HICs located in Europe, North America and Oceania. Most NEEs are in Asia and South America, whilst most LICs are in Africa. Remember, development can also vary within countries too.

Physical factors affecting uneven development

Natural Resources

- **Fuel sources** such as oil.
- Minerals and metals for fuel.
- **Availability for timber**.
- Access to **safe water**.

Natural Hazards

- Risk of tectonic hazards.
- Benefits from **volcanic material** and **floodwater.**
- Frequent hazards **undermines redevelopment**.

Climate

- **Reliability** of rainfall to benefit farming.
- **Extreme climates** limit industry and affects health.
- Climate can **attract tourists.**

Location/Terrain

- **Landlocked countries** may find trade difficulties.
- Mountainous terrain makes farming difficult.
- **Scenery attracts tourists**.

Human factors affecting uneven development

Aid

- Aid can help some countries develop **key projects** for infrastructure faster.
- **Aid** can improve services such as schools, hospitals and roads.
- Too much **reliance on aid** might stop other trade links becoming established.

Trade

- Countries that export more than they import have a **trade surplus**. This can improve the national economy.
- Having **good trade relationships**.
- **Trading goods** and services is more profitable than raw materials.

Education

- Education creates a **skilled workforce** meaning more goods and services are produced.
- **Educated people earn more money**, meaning they also pay more taxes. This money can help develop the country in the future.

Health

- **Lack of clean water** and poor healthcare means a large number of people suffer from **diseases**.
- People who are ill cannot work so there is little contribution to the economy.
- More money on healthcare means less spent on development.

Politics

- **Corruption** in local and national governments.
- The **stability of the government** can effect the country's ability to trade.
- Ability of the country to **invest into services and infrastructure**.

History

- **Colonialism** has helped Europe develop, but slowed down development in many other countries.
- Countries that went through industrialisation a while ago, have now develop further.

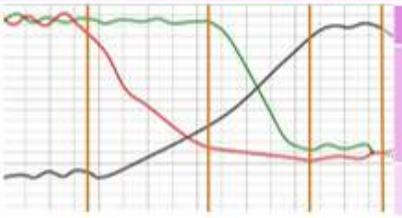
Consequences of Uneven Development

Levels of development are different in different countries. This uneven development has consequences for countries, especially in wealth, health and migration.

Wealth	People in more developed countries have higher incomes than less developed countries.
Health	Better healthcare means that people in more developed countries live longer than those in less developed countries.
Migration	If nearby countries have higher levels of development or are secure, people will move to seek better opportunities and standard of living.

The Demographic Transition Model

The demographic transition model (DTM) shows population change over time. It studies how birth rate and death rate affect the total population of a country.



STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5
High DR High BR Steady	*BR Low Declining DR Very High*	*Rapidly falling DR Low BR High*	*Low DR Low BR Zero*	*Slowly Falling DR Low BR Negative*
e.g. Tribes	e.g. Kenya	e.g. India	e.g. UK	e.g. Japan

Reducing the Global Development Gap

Microfinance Loans
This involves people in LICs receiving smalls loans from traditional banks.
+ Loans enable people to begin their own businesses
- Its not clear they can reduce poverty at a large scale.

Foreign-direct investment
This is when one country buys property or infrastructure in another country.
+ Leads to better access to finance, technology & expertise.
- Investment can come with strings attached that country's will need to comply with.

Aid
This is given by one country to another as money or resources.
+ Improve literacy rates, building dams, improving agriculture.
- Can be wasted by corrupt governments or they can become too reliant on aid.

Debt Relief
This is when a country's debt is cancelled or interest rates are lowered.
+ Means more money can be spent on development.
- Locals might not always get a say. Some aid can be tied under condition from donor country.

Fair trade
This is a movement where farmers get a fair price for the goods produced.
+ Paid fairly so they can develop schools & health centres.
-Only a tiny proportion of the extra money reaches producers.

Technology
Includes tools, machines and affordable equipment that improve quality of life.
+ Renewable energy is less expensive and polluting.
- Requires initial investment and skills in operating technology

CS: Reducing the Development Gap In Jamaica

Location and Background

Jamaica is a LIC island nation part of the Caribbean. Location makes Jamaica an attractive place for visitors to explore the tropical blue seas, skies and palm filled sandy beaches

Tourist economy

-In 2015, **2.12 million** visited.
-Tourism **contributes 27% of GDP** and will increase to **38% by 2025**.
-**130,000 jobs** rely on tourism.
-**Global recession** 2008 caused a **decline in tourism**. Now tourism is beginning to recover.

Multiplier effect

-**Jobs from tourism** have meant **more money** has been spent in shops and other businesses.
-Government has invested in **infrastructure** to support tourism.
-**New sewage treatment** plants have reduced pollution.

Development Problems

- Tourists do not always **spend much money** outside their resorts.
- Infrastructure improvements **have not spread** to the whole island.
- Many people in Jamaica still live in **poor quality housing** and **lack basic services** such as healthcare.

Case Study: Economic Development in Nigeria

Location & Importance

Nigeria is a **NEE** in West Africa.
Nigeria is just north of the Equator and experiences a range of environments.
Nigeria is the most populous and economically powerful country in Africa. Economic growth has been base on oil exports.

Influences upon Nigeria's development

Political

Suffered **instability** with a **civil war** between 1967-1970.
From 1999, the country became **stable** with **free and fair elections**.
Stability has **encouraged global investment** from China and USA.

Social

Nigeria is a **multi-cultural, multi-faith society**.
Although mostly a strength, diversity has caused **regional conflicts** from groups such as the Boko Haram terrorists.

Cultural

Nigeria's **diversity** has created rich and varied **artistic culture**.
The country has a **rich music, literacy and film industry** (i.e. Nollywood).
A successful national football side.

Industrial Structures

Once mainly based on agriculture, **50% of its economy is now manufacturing and services**.
A thriving manufacturing industry is **increasing foreign investment** and **employment opportunities**.

The role of TNCs

TNCs such as **Shell** have played an important role in its economy.
+ Investment has increased employment and income.
- Profits move to HICs.
- Many oil spills have damaged fragile environments.

Changing Relationships

Nigeria plays a leading role with the **African Union** and **UN**.
Growing links with **China** with huge **investment in infrastructure**.
Main import includes petrol from the EU, cars from Brazil and phones from China.

Environmental Impacts

The 2008/09 **oil spills devastated swamps** and its **ecosystems**.
Industry has caused **toxic chemicals** to be discharged in open sewers - **risking human health**.
80% of forest have been **cut down**.
This also increases **CO^2 emissions**.

Aid & Debt relief

+ Receives **$5billion** per year in aid.
+ **Aid groups** (ActionAid) have improved health centres, provided anti-mosquito nets and helped to protect people against AIDS/HIV.
- Some aid fails to reach the people who need it due to **corruption**.

Effects of Economic Development

Life expectancy has increased from 46 to 53 years. 64% have access to safe water. Typical schooling years has increased from 7 to 9.

Case Study: Economic Change in the UK

UK in the Wider World

The UK has one of the largest economies in the world.
The UK has huge political, economic and cultural influences.
The UK is highly regarded for its fairness and tolerance.
The UK has global transport links i.e. Heathrow and the Eurostar.

Causes of Economic Change

De-industrialisation and the **decline** of the UK's industrial base.
Globalisation has meant many industries have moved overseas, where labour costs are lower.
Government investing in supporting vital businesses.

Towards Post-Industrial

The **quaternary industry** has **increased**, whilst **secondary** has **decreased**.
Numbers in **primary** and **tertiary industry** has **stayed the steady**.
Big increase in **professional** and **technical jobs**.

Developments of Science Parks

Science Parks are groups of scientific and technical knowledge based businesses on a single site.

- Access to **transport routes**.
- **Highly educated workers**.
- Staff benefit from **attractive working conditions**.
- Attracts **clusters** of related **high-tech businesses**.

CS: UK Car Industry

Every year the UK makes 1.5 million cars. These factories are owned by large TNCs. i.e. Nissan.

- 7% of energy used there factories is from **wind energy**.
- New cars are more energy **efficient and lighter**.
- Nissan produces **electric and hybrid cars**.

Change to a Rural Landscape

Social

Rising house prices have caused tensions in villages.
Villages are **unpopulated** during the day causing **loss of identity**.
Resentment towards **poor migrant communities**.

Economic

Lack of affordable housing for local first time buyers.
Sales of farmland **has increased rural unemployment**.
Influx of poor migrants puts **pressures** on local services.

Improvements to Transport

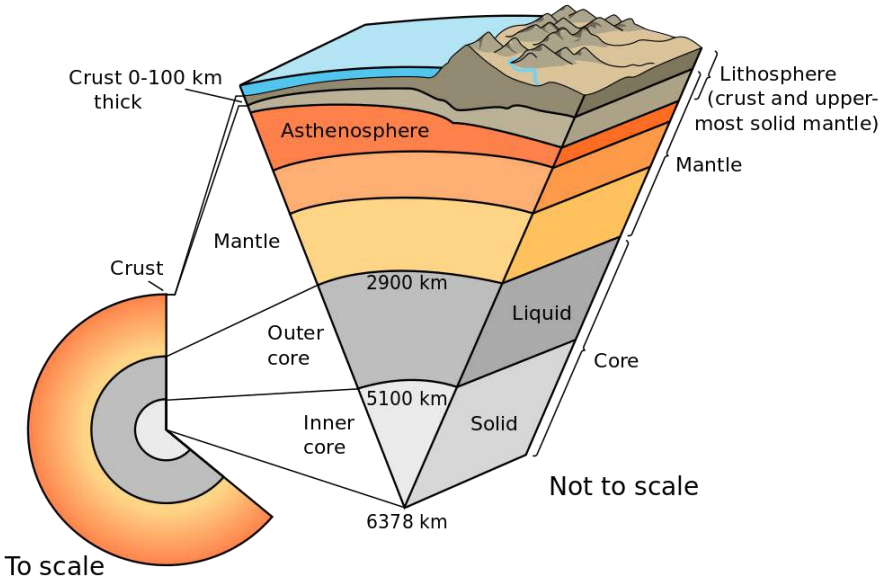
A £15 billion 'Road Improvement Strategy'. This will involve 10 new roads and 1,600 extra lanes.
£50 billion HS2 railway to improve connections between key UK cities.
£18 billion on Heathrow's controversial **third runway**.
UK has many **large ports** for importing and exporting goods.

UK North/South Divide

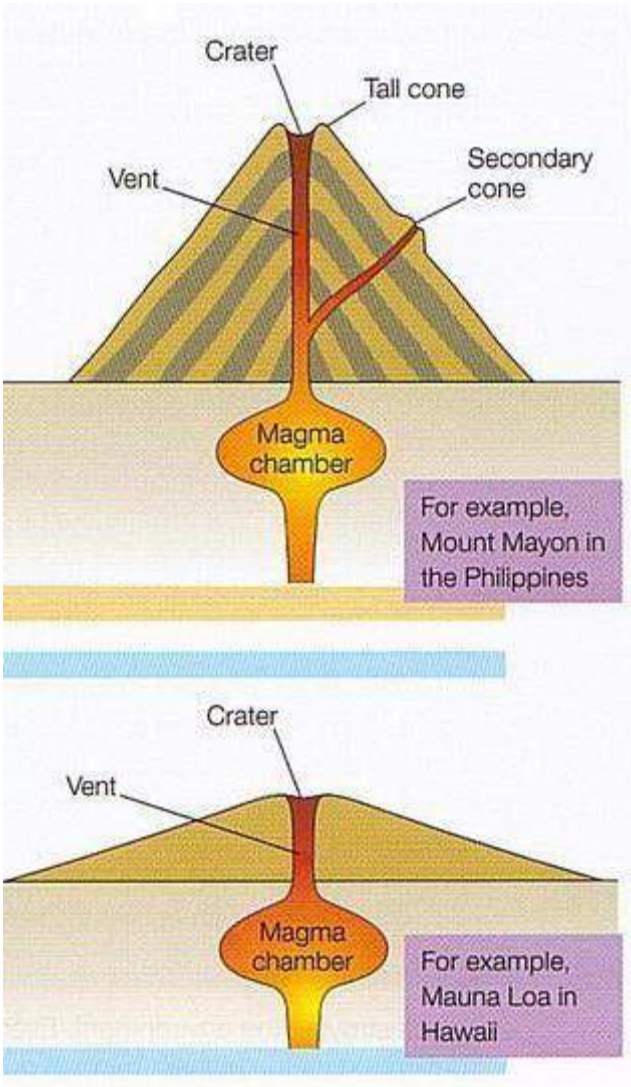
- Wages are **lower** in the North.
- Health is **better** in the South.
- Education is **worse** in the North.
+ The government is aiming to support a **Northern Powerhouse** project to resolve regional differences.
+ More **devolving of powers** to disadvantaged regions.

ANSWERS Hazards Diagrams to label

Structure of the Earth

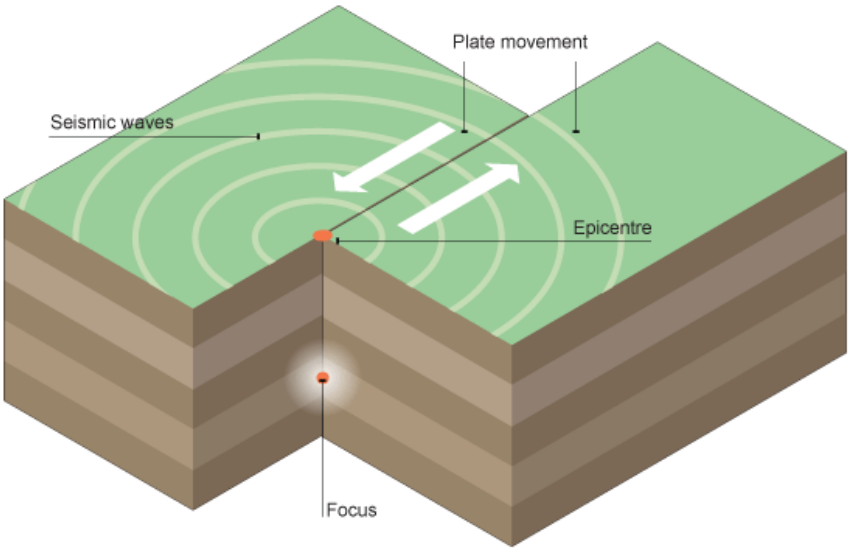


Composite and Shield Volcano

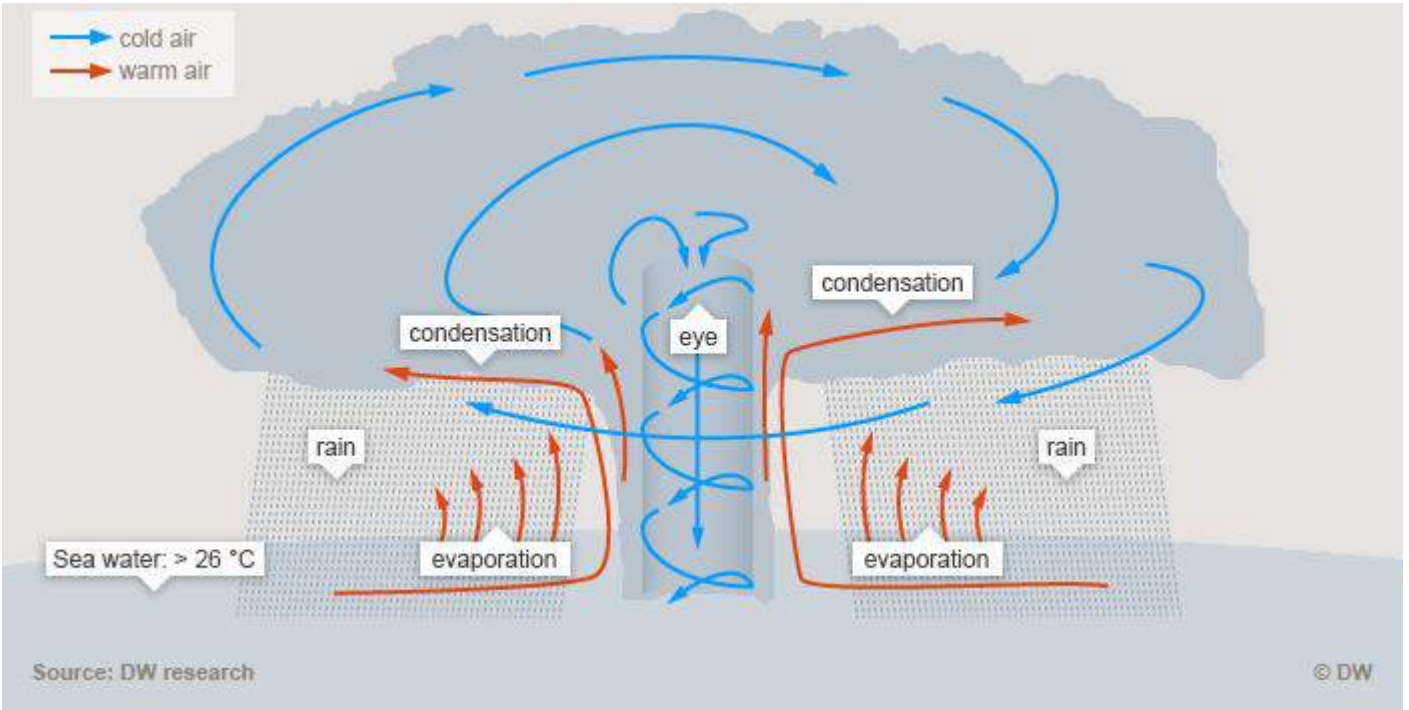


ANSWERS Hazards Diagrams to label

Earthquake

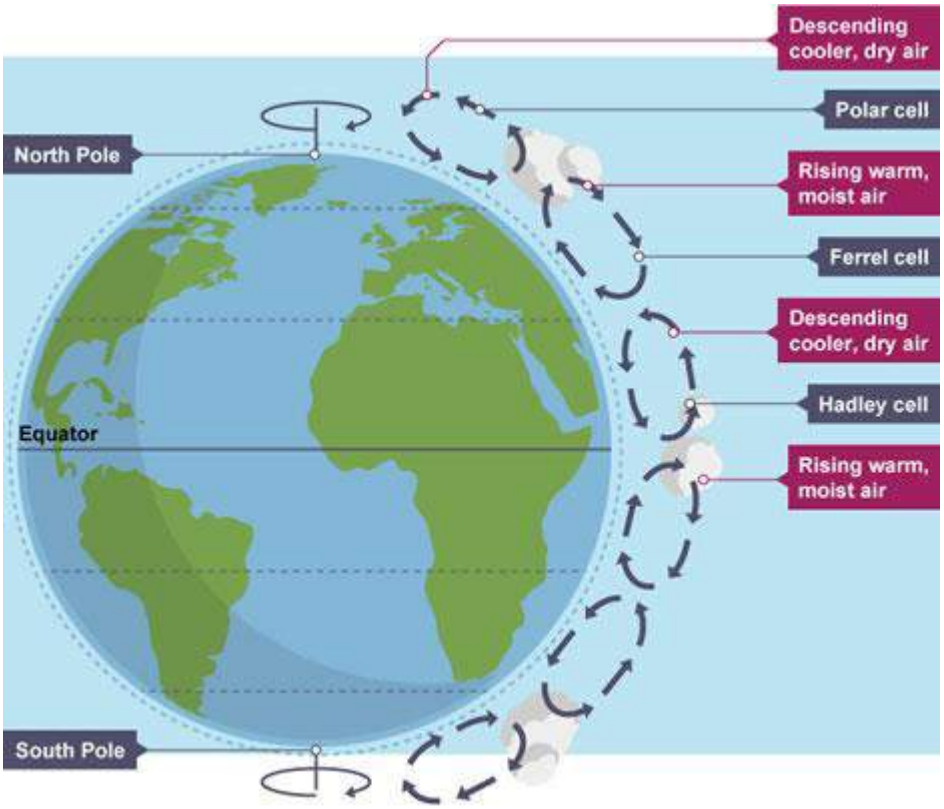


Tropical Storm

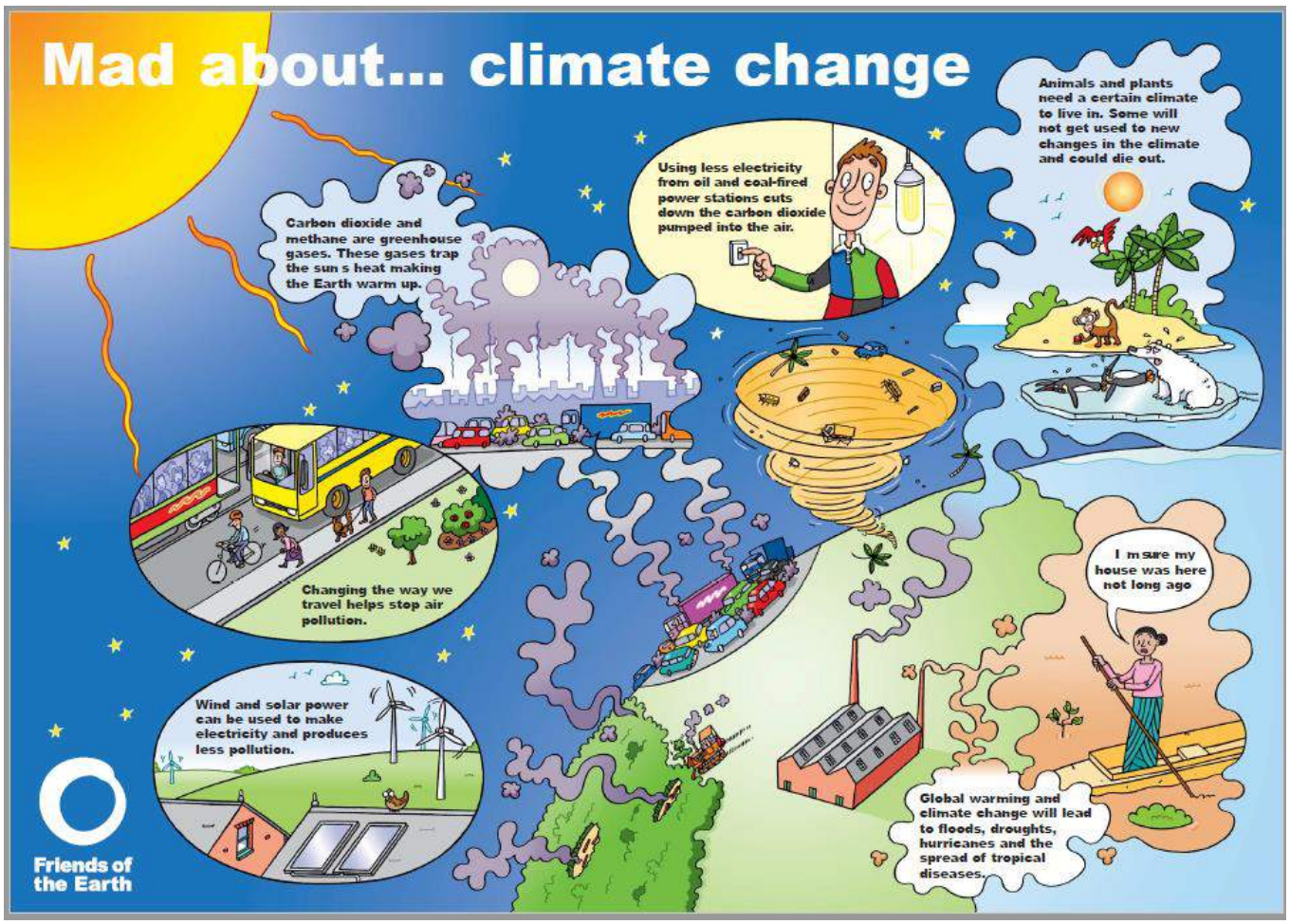


ANSWERS Hazards Diagrams to label

Global Atmospheric Circulation model

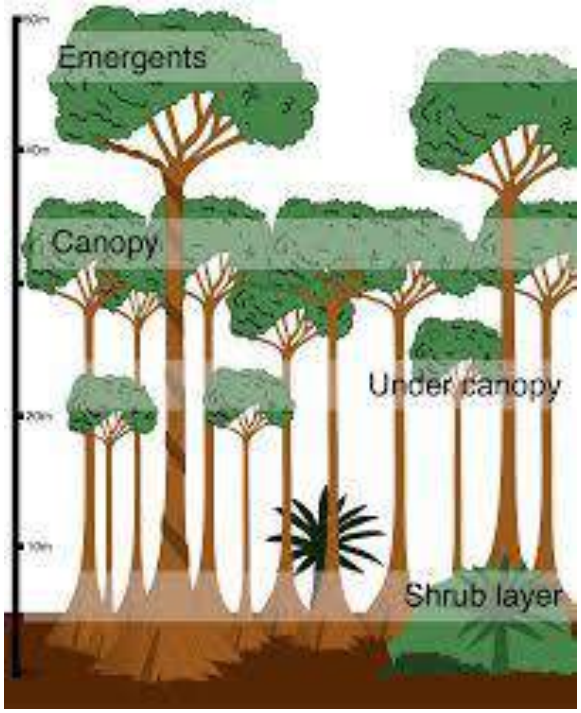


Climate Change

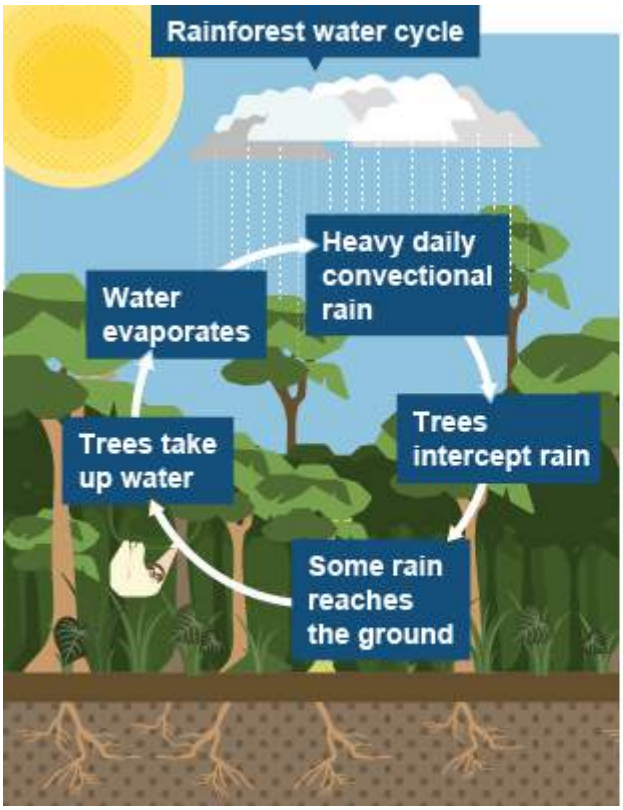


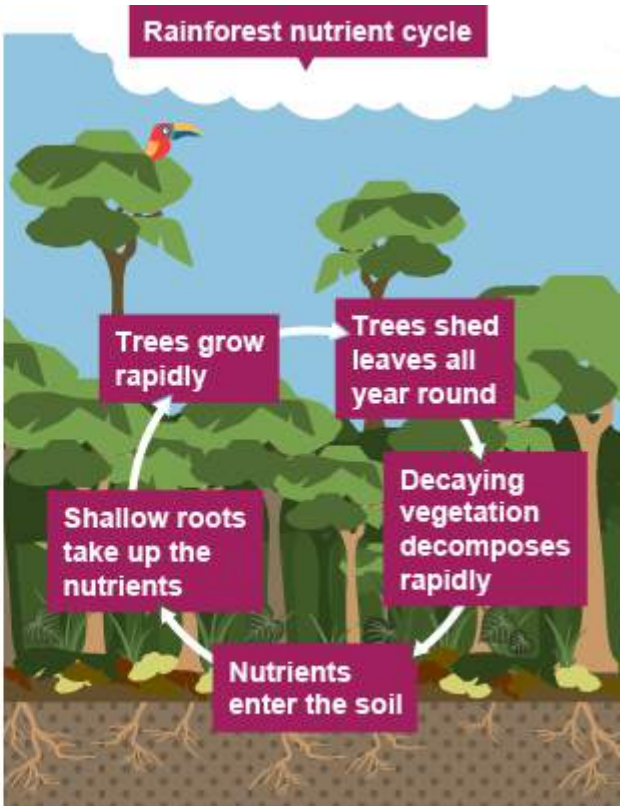
ANSWERS Living World Diagrams to label

Structure of the Earth



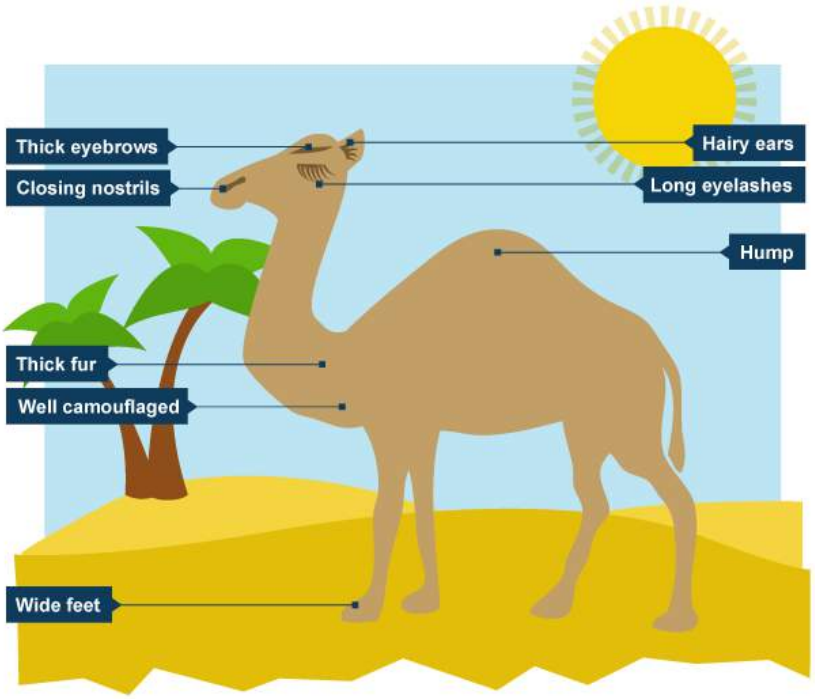
Rainforest Cycles



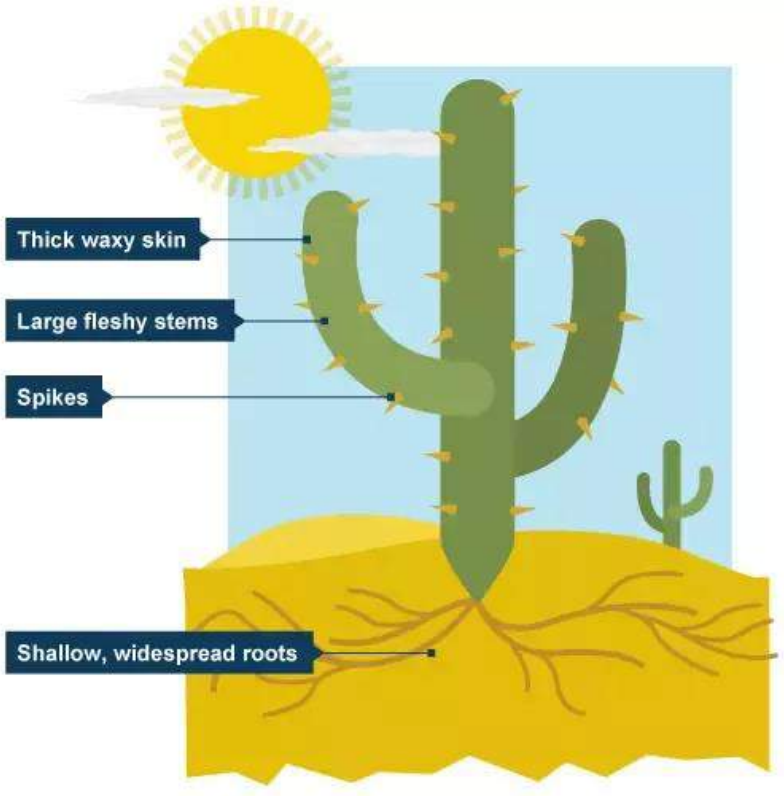


ANSWERS Living World Diagrams to label

Camel adaptations



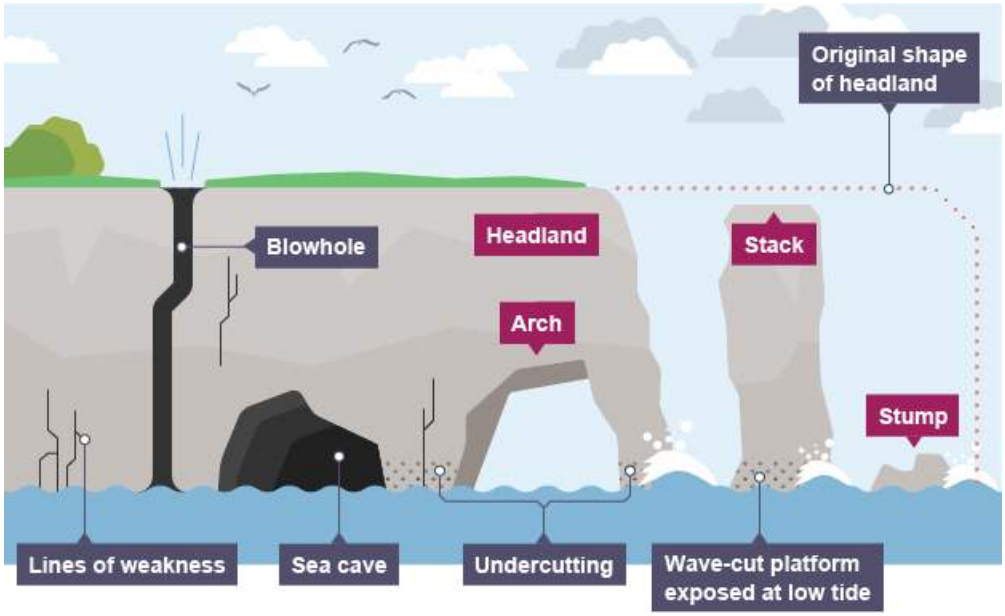
Cactus adaptations



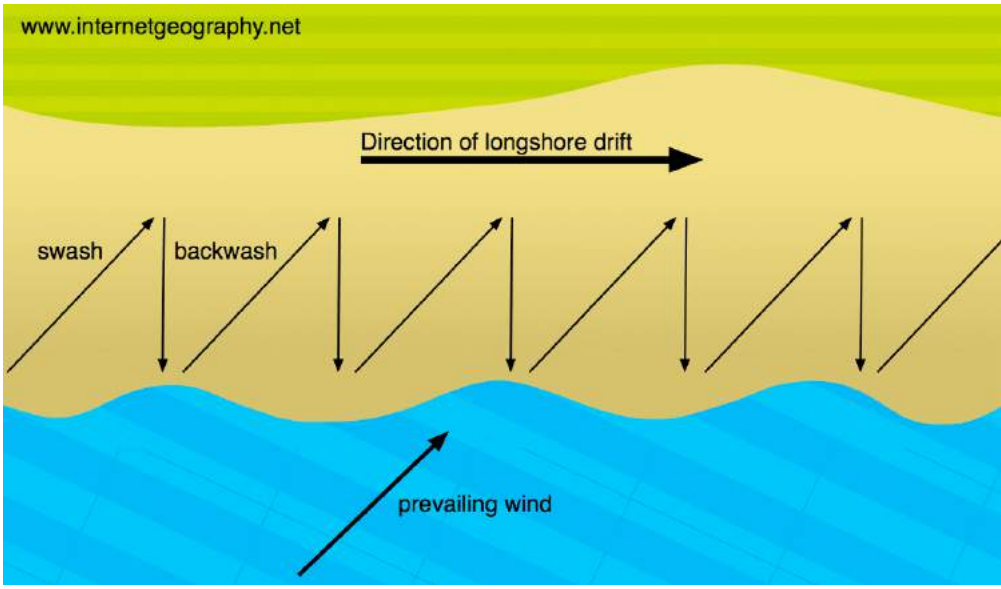
ANSWERS

Physical Environments in the UK (Coasts)
Diagrams to label

Chalk Headland

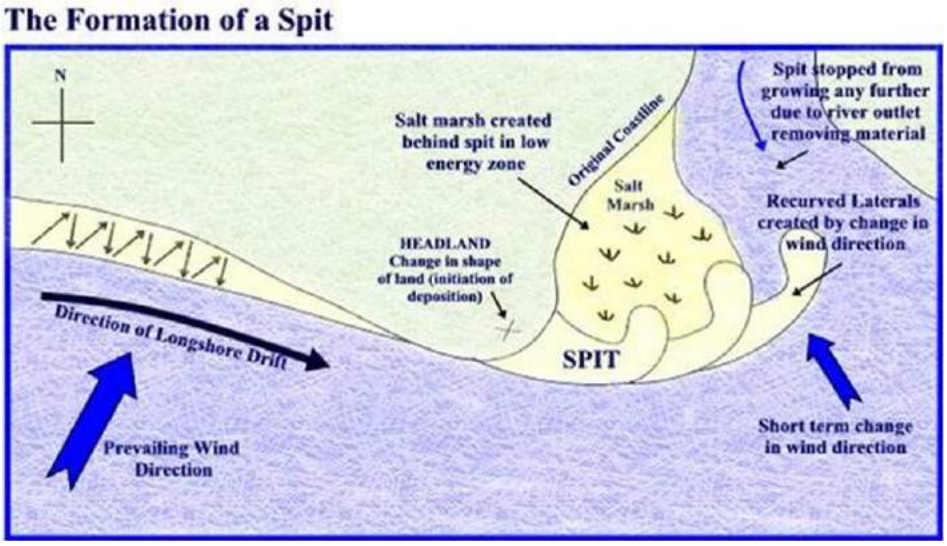


Long Shore Drift



ANSWERS

Spit



Coastal Management

Photograph	Facts	Lifespan (approx. years)	Cost
	**Sea walls** There are many different types of sea walls: sloping, curved, stepped and vertical. They are made of concrete or stone. They stop the sea reaching the cliff base and reflect wave energy.	100	£3500 – £5000 per metre
	**Groynes (wooden)** These reduce longshore drift by trapping sediment on one side. This builds up the beach, which acts as a natural barrier to erosion by absorbing the wave energy.	30–40	£1000 per metre
	**Groynes (rock)** These reduce longshore drift by trapping sediment on one side. They are made of granite or other hard igneous or metamorphic rocks and so last up to three times longer than wood.	100	£1000 per cubic metre (m^3)
	**Rip-rap** is made from huge boulders of granite or other hard igneous or metamorphic rocks. They are placed at the base of cliffs to absorb the energy of the waves but let the water drain through them.	120	£1000 per cubic metre (m^3)
	**Gabions** These are cages of stones. They can be used to stabilise cliff bases and to absorb the energy of the waves. They are a short term measure as they are easily damaged by storm waves and the cages rust.	5–10	£50 per cubic metre (m^3)
	**Revetments** These are sloping features which absorb the energy of the waves but which let water and sediment through. Older revetments were made of wood. Some modern ones have shaped concrete or stone blocks laid on finer material and are known as **Rock armour**.	Wooden 10 Rock armour 30	£800 per metre £1200 per metre
	**Tetrapods** These are usually made of concrete. Their unique shape makes them stable and they absorb the wave energy but allow the water to drain through them.	100	£1000 per cubic metre (m^3)

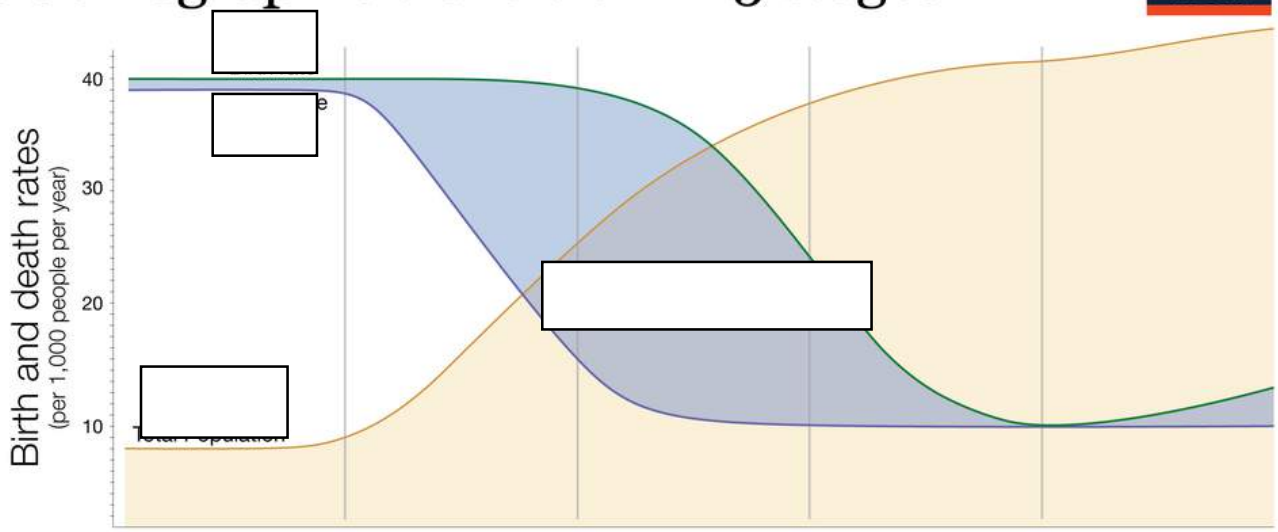
Demographic Transition Model

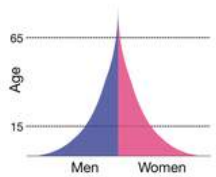
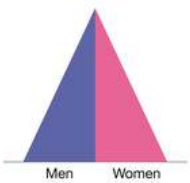
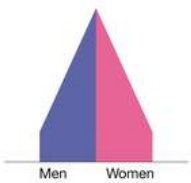
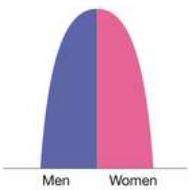
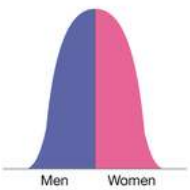
Changing Economic World Diagrams to label

ANSWERS

The demographic transition in 5 stages

Our World in Data



	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Birth rate	High	High	Falling	Low	Rising again
Death rate	High	Falls rapidly	Falls more slowly	Low	Low
Natural increase	Stable or slow increase	Very rapid increase	Increase slows down	Falling and then stable	Stable or slow increase
Population Pyramid					

Clark Fisher Model