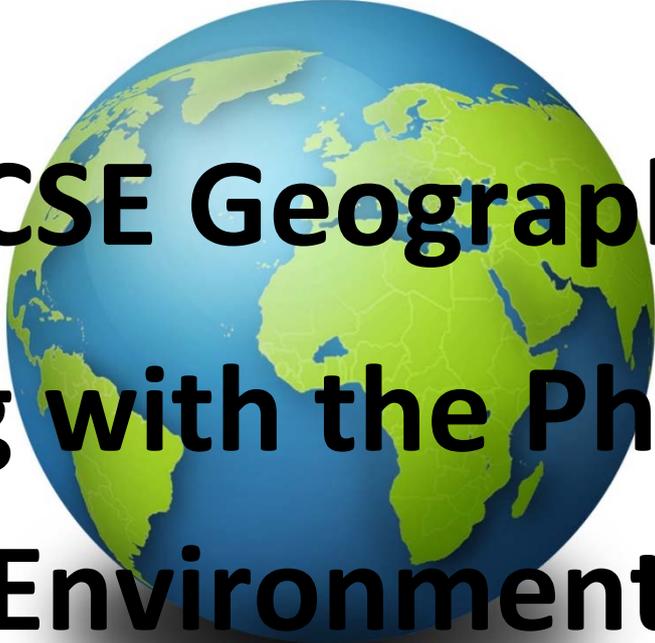




Geography Department



GCSE Geography

Living with the Physical Environment

Core Knowledge

Name:

Class:

Teacher:

Paper 1:

3.1.1 The challenge of natural hazards (Tectonics, Weather and Climate Change) (p.2-8)

3.1.2 The living world (Tropical Rainforest and Desert) (p.9-14)

3.1.3 Physical landscapes in the UK (Coasts and Rivers) (p.15-23)

The Challenge of Natural Hazards (Tectonics, Weather and Climate Change)

Tectonic Hazards Glossary

Keyword	Definition
Aid	Money, food, training and technology given by richer countries to poorer countries after a natural hazard.
Constructive plate margin	When plates pull apart.
Convection currents	Circular pockets of heat that move in the mantle.
Conservative plate margin	Plates slide past each other. Plates can slide in opposite directions OR in the same direction at different speeds.
Constructive plate margin	Plates move apart allowing rising magma to come to the surface.
Crust	The layer of the Earth that we live on.
Destructive plate margin	Plates move together. Oceanic plate is subducted (pushed under) underneath the continental plate.
Earthquake	A sudden or violent movement within the Earth's crust followed by a series of shocks.
Epicentre	Point directly above the focus on the earth's surface.
Focus	Point in the earth's crust where the earthquake starts.
Geothermal power	Energy harnessed from super-heated water beneath the ground.
Hazard risk	The probability or chance that a natural hazard may take place.
Immediate response	Response that happens immediately e.g. rescuing people.
Long-term response	Happen months/years after the disaster.

Mantle	The layer underneath the crust.
Monitoring	Recording physical changes, such as earthquake tremors around a volcano, to help forecast when and where a natural hazard might strike.
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
Planning	Earthquake drills, survival kits etc. so people know what to do in a natural disaster.
Plate margins (boundary)	Place where two plates meet <i>e.g. North American plate and the Eurasian plate.</i>
Prediction	Predicting events e.g. earthquakes, volcanoes, tsunamis.
Protection	Making buildings stronger so that they are safe to live in.
Primary effects	Immediate effects of an eruption/earthquake, e.g. buildings collapsing following an earthquake.
Richter scale	Logarithmic scale which measures the magnitude of the earthquake.
Rift valley	Found at a constructive plate margin where two continental plates have pulled apart. <i>Forms a steep valley where the land has dropped as the plates have moved apart.</i>
Secondary effects	After effects of an eruption/earthquake, e.g. fires occurring due to ruptured gas mains damaged by an earthquake.
Seismic waves	Seismic waves that travel through the earth's crust after an earthquake.
Shield volcano	Typically found at constructive plate margins. They have a wide base and gentle slopes. Erupt frequently and non-explosive.
Subduction zone	The point where the oceanic crust gets pushed underneath continental crust.
Tectonic hazard	A natural hazard caused by movement of tectonic plates including volcanoes and earthquakes.
Tectonic plate	A section of the Earth's crust.
Volcano	An opening in the Earth's crust from which lava, ash and gases erupt.

Weather Hazards Glossary

Keyword	Definition
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	When a weather event is significantly different from the average or usual weather pattern. <i>A severe snow blizzard or heat wave are two examples for UK weather.</i>
Global atmospheric circulation	The worldwide systems of wind which transports heat from tropical to polar latitudes.
Hazard risk	The probability or chance that a natural hazard may take place.
Immediate responses	The reaction of people as the disaster happens and in the immediate aftermath.
Long-term responses	Later reaction of people as the disaster happens and in the immediate aftermath.
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.
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
Planning	Actions taken to enable communities to respond to and recover from natural disasters. <i>These might be evacuation plans or warning systems.</i>
Prediction	Attempts to forecast when and where a natural hazard will strike based on current knowledge.
Primary effects	The initial impact of a natural event on the people and property, caused directly by it, for instance buildings being partially destroyed by a tropical storm
Protection	Actions taken before a hazard strikes to reduce its impacts, 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 clean water can lead to spread of disease and malnutrition.
Social impact	The effect of an event on the lives of people or community effected.
Tropical storm	An area of low pressure with winds moving in a spiral around a calm central (the eye).

Climate Change Glossary

Key Word	Definition
Adaption	Actions taken to adjust to natural changes in the environment such as climate change. <i>Adaption takes place to reduce, limit or take advantage of opportunities or cope with consequences.</i>
Climate change	Increasing temperature and the overall impacts <i>E.g. sea level rise and shifting weather patterns</i>
Enhanced greenhouse effect	
Global warming	An increase in the overall temperature of the Earth's atmosphere due to the greenhouse effect
Greenhouse effect	
Mitigation	Action taken to reduce or eliminate long term risk to human life and property from natural hazards, such as building earthquake proof buildings or making international agreements about pollution targets.
Orbital change	Changes in pathway of the earth around the sun.
Quaternary period	The period of geological time about 2.6 million years ago to present. <i>It has seen the appearance and development of humans.</i> <i>It includes smaller epochs, the Pleistocene and Holocene.</i>

The Challenge of Natural Hazards Pop Quiz

What is a natural hazard?	A natural hazard is any natural event that has the potential to endanger human life, the economy and property
What are the three types of plate boundary called?	Divergent, convergent and conservative
At which two plate boundaries are volcanoes created?	Divergent and convergent
Where is the largest band of active volcanoes found?	The Ring of Fire around the entire Pacific Ocean
Where do earthquakes normally occur?	In long narrow bands on all types of plate boundary
Where was the focus of the Kobe earthquake in Japan?	20km southwest of the city, 16km under the surface
What was the magnitude of the Haiti earthquake in the Caribbean?	7.2
How many people died in the Kobe earthquake?	5000
How much money did the EU give Haiti to help recover from the earthquake?	\$330 million
Name two building features that would help in an earthquake	Lattice work steel cage to stabilise building Rubber shock absorbers between foundations and building Latticework steel foundations into the bedrock Window shutters that come down automatically Identification numbers for helicopters to identify damaged buildings Reinforced lift shafts with tensioned cables
Give two ways volcanoes can be predicted	Monitoring seismic waves Monitoring gas emissions Looking for ground deformation Satellite images Remote sensing
Name three ways earthquakes can be predicted	Seismometers Laser beams Animal behaviour

What are the names of the three cells that describe the variation in the world's weather?	Polar, Ferrel and Hadley cell
What is PDI?	A measure of maximum surface wind velocity during a storm
Name a cause of damage from Typhoon Haiyan	<ol style="list-style-type: none"> 1. The Philippines sits in an area of seasonally warm ocean water which has enough Coriolis Force to create rotating winds over the ocean surface 2. Sea level rise is happening globally but is particularly affecting the Philippines – this causes larger storm surges 3. Use of groundwater has caused parts of the country to sink 4. The worst affected city, Tacloban, is at the end of a bay which funnelled water from the storm stage
How many people were killed in Typhoon Haiyan?	7400
What are depressions?	Low pressure storm systems bringing unsettled weather to Britain all year round
When was the UK's wettest year and how many mm of rainfall was there?	<p>2000</p> <p>1337.3mm</p>
What are anticyclones?	Areas of high pressure where air sinks to the earth's surface. As the air sinks it warms so condensation does not occur and there are very few clouds giving clear, settled weather
Name two negative effects of the St Jude depression	<p>£0.3-0.5 billion worth of damage</p> <p>4 deaths</p> <p>10 million trees destroyed</p>
How were the impacts of the St Jude depression limited?	The Met Office's supercomputer worked with a good level of accuracy to forecast the path of the storm
Give an example of an internal factor that causes climate change	Volcanic activity, tectonic activity, albedo, atmospheric gases
Give an example of an external factor that causes climate change	Sunspots, earth's orbit, earth's tilt
State one reason why carbon dioxide is increasing in the atmosphere	More private transport, more tourism creating more flights, greater demand for electricity and heating

How are the people of the Tuvalu islands being negatively affected by climate change?	They are being evacuated to New Zealand as sea levels rise
Which coastal city could be lost by 2100 if sea levels rise?	New York
When was the Kyoto Protocol signed?	1997
How much government grant do UK homeowners get from DEFRA to demolish homes at risk from coastal erosion?	£6000

The Living World:

Ecosystems Glossary

Key Word	Definition
Abiotic	Related to all non-living things.
Biotic	Related to all living things.
Consumer	Creature that eats herbivores and/or plant matter.
Decomposer	An organism such as bacteria or fungus which breaks down dead plant or animal tissue which is recycled into the environment.
Ecosystem	A community of plants and animals that interact with each other and their physical environment.
Food chain	The connections between different organisms (plants and animals) that rely on one another as their source of food.
Food web	A complex hierarchy of plants and animals relying on each other for food.
Global ecosystem	The large ecological areas on the earth's surface with animals and plants adapting to their environment.
Nutrient global	A set of processes whereby organisms extract minerals necessary for growth from soil or water. Passing them on later through the food chain and ultimately (decomposed) back into the soil.
Producer	An organism or plant that is able to absorb energy from the sun through photosynthesis.

Hot Deserts Glossary

Key Word	Definition
Appropriate (Intermediate) Technology	Technology best suited to the needs, skills, knowledge and wealth of the locals, often used in LICs. <i>Usually combines simple ideas with cheap, readily available materials.</i>
Biodiversity	The variety of life in the world or a particular habitat.
Desertification	The process where land becomes drier and degraded, as a result of climate change or human activities, or both.
Hot deserts	Parts of the world that have high average temperatures and very low precipitation.
Mineral extraction	The removal of solid mineral resources from the earth. <i>Ores, precious metals or building materials could be dug up, along with fuel mining such as coal or oil shale.</i>
Over cultivation	Exhausting the soil by over-cropping (using) the land on a repeated basis.
Overgrazing	Grazing too many livestock for an extended period of time on a piece of land, meaning it is unable to regrow and recover its vegetation cover.

Tropical Rainforests Glossary:

Key Word	Definition
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 the forest.
Ecotourism	Responsible travel to natural areas that conserves the environment and supports the livelihood of locals. <i>It sustains the wellbeing of local people, involves educational action and usually carried out in small groups to have minimal shock to the ecosystem it takes place in.</i>

Logging	The business of cutting down trees and transporting timber to mills for processing and sale.
Mineral extraction	Removing mineral resources from the earth. <i>These resources include ore, which contain metals for processing or can involve precious gem stones.</i>
Selective logging	Cutting down trees which are mature or inferior, encouraging the growth of remaining trees within the forest.
Soil erosion	Removal of top soil faster than it can be replenished. <i>This may be due to natural causes such as flooding, or human activity such as farming.</i>
Subsistence farming	A type of agricultural practise to only produce enough food and material to sustain and benefit the farmer.
Sustainability	Actions and forms of progress that meet the needs of the present without reducing the ability of future generations to meet their need.

The Living World Pop Quiz

What is an ecosystem?	An ecosystem is community of plants and animals living together in a habitat. The lives of the plants and animals are closely linked to each other and the climate and soil of the area that they live in
Name three areas of a freshwater pond ecosystem	Pond margin, pond bottom, mid pond water, pond surface, air above pond
Give an example of a producer in a freshwater pond	Detritus (decaying leaves) Algae
Give an example of a consumer in a freshwater pond	Great diving beetle Heron Fish Midge larvae
What is the difference between a food web and a food chain?	Food chains follow a single path of energy as organisms find food whilst food webs display how plants and animals are connected in many ways to help them all survive
What is a biome?	A biome is a large geographical area of distinctive plant and animal groups, which are adapted to that particular environment
List the structure of a tropical rainforest from the ground up	Shrub layer, lower canopy, canopy, emergent layer
Name two adaptations of vegetation in a tropical rainforest	Lianas, buttress roots, leaves with flexible bases, thin branchless trunks, smooth bark, epiphytes, emergent, drip-tips
Describe the soil in a tropical rainforest	Red in colour due to high iron and aluminium content and is infertile with a thick layer of leaf litter and decomposing organic leaf matter on the surface
What is the soil in rainforests called?	Latosol
Explain the nutrient cycle	<ol style="list-style-type: none"> 1. Trees shed leaves all year round 2. Decaying vegetation decomposes rapidly releasing nutrients 3. Nutrients enter the soil surface but don't get chance to sink in 4. Shallow roots quickly take up the nutrients 5. The nutrients help the trees to grow rapidly

State two effects of deforestation	Loss of biodiversity, climate change, conflict between indigenous tribes and newcomers to the area, less CO ₂ absorbed from the atmosphere, water pollution, decrease in unemployment rate
What is the percentage change in annual deforestation rate 2000 - 2005 vs 2005 – 2010 in Indonesia?	107%
Between 2000 – 2010, the population in the Amazon increased by what percentage?	23%
What is extracted from mines in the Amazon rainforest?	Iron, nickel, tin, zinc and gold
What is the BR163?	A dirt track that ran through huge sections of untouched forest in the Amazon which was planned to be tarmacked to turn it into a superhighway
Define the term “sustainable use of the rainforest.”	Sustainable uses of the rainforest are uses that allow current generations to make a living from the forest without damaging the forest for future generations to use
What are the five standards for sustainable forest management?	<ol style="list-style-type: none"> 1. Clearing of intact rainforests is prohibited 2. Sustainable management plan 3. Sensitive forest areas are to be preserved 4. The rights of indigenous groups are to be protected 5. Workers are assured of fair working conditions
Why was the International Tropical Timber Agreement of 2006 set up?	To "promote the expansion and diversification of international trade in tropical timber from sustainably managed and legally harvested forests and to promote the sustainable management of tropical timber producing forests"
How much rainfall does a desert receive per year?	Less than 250mm
Describe one way that a camel is adapted to live in the desert	Long eyelashes to keep out sand/dust and sun, fat stored in hump so it can survive periods with no food, fur for insulation (cold nights and hot days), nostrils can close to keep out blowing sand and broad feet so they don't sink into sand
Where is the Thar Desert located?	On and around the border between India and Pakistan

What are the main problems in Jaisalmer due to tourism?	The demand for water in the fort in the city has increased 12-fold, and the waste water passes under the foundations and undermines them
What is the benefit of the Indira Gandhi canal in the Thar Desert?	It brings water to major cities such as Bikaner and Jaisalmer, but also water to irrigate the land
Name three development opportunities in hot desert environments	Tourism, subsistence farming, commercial farming, mineral extraction, energy use
How many people in the Sahel region of Africa faced hunger due to desertification in 2014?	20 million
What is the Acacia Project?	In Senegal, FAO and the Forestry Service provided Acacia seeds and seedlings and taught the people how to sow and plant the Acacia trees and extract and market the gum that they extract.

Physical Landscapes in the UK:

Coastal Landscapes Glossary

Keyword	Definition
Abrasion (Corrasion)	Rocks are flung at the cliff by powerful waves. They start to erode the cliffs.
Arch	A cave becomes bigger due to hydraulic action and abrasion. Eventually the cave breaks through the headland to create an arch.
Attrition	Pebbles bang together making them smaller and smoother over time.
Backwash	When a wave moves back down the beach.
Bar	A spit which has grown across a bay. <i>It forms a bar of sand with a freshwater lake/lagoon trapped behind it.</i>
Bay	Bays are mainly circular and created out of less resistant (soft) rock. <i>They form between the areas of more resistant rock and often have beaches.</i>
Beach	Deposited sand/rock/pebbles that have built up.
Beach nourishment	Adding new material to a beach artificially, e.g. by dumping sand.
Beach reprofiling	Changing the profile or shape of the beach.
Cave	A large hole in the cliff caused by waves forcing their ways into cracks in the cliff face.
Chemical weathering	The decomposition of rock caused by a chemical change.
Cliff	A steep, high rock face formed by weathering and erosion.
Constructive waves	Powerful wave with a strong swash and weak backwash which deposits material on a beach.
Corrosion (Solution)	Rocks like limestone dissolve.
Crest	Top of a wave.
Deposition	Occurs when material carried by the sea is dropped as energy decreases.
Destructive wave	Formed by storm conditions. Has a weak swash and strong backwash and erodes the beach.
Dune slack	Wind can form depressions in the sand where ponds may form.
Embryo dune	At the front of the dunes is the youngest dune
Erosion	This is the wearing away of the land by moving agents such as the sea, rivers and glaciers
Fetch	The distance that wind blows over the sea before reaching land.

Fore dune	These are older, slightly higher and further from the sea than the embryo dune.
Gabion	A steel wire mesh filled with boulders. It is a type of hard engineering defence.
Groyne	A wooden barrier built out into the sea to stop the longshore drift or sand and shingle, and to help the beach to grow.
Hard engineering	Building artificial structures to reduce or stop the impact of coastal processes.
Hydraulic action	Water is forced in to cracks in the cliff, gradually making the cracks bigger and bigger.
Landslide	Blocks of rock slide downwards.
Longshore drift (LSD)	Transportation of sediment along the coastline. <i>Waves approach the beach at a 45° angle and transport beach material (sediment) up and down the beach.</i>
Managed retreat	Allow the sea to erode the coastline but monitor the retreat occurring.
Mass movement	The movement of material downslope.
Mechanical weathering	Weathering processes that cause physical disintegration or break up of exposed rock without any change in the chemical composition of the rock, e.g. freeze-thaw weathering.
Pioneer plant	Tough plants, such as Marram grass that take root on the dune. These help stabilise the sand and fix the dune in place.
Relief	Relief describes the physical features of a landscape, including its height, steepness and how its features are shaped.
Rockfall	Collapse of a cliff face. Individual rocks fall from a cliff.
Rock armour	Large boulders dumped on the beach as part of the coastal defences.
Saltation	Pebbles bounce along the sea bed in a leap-frogging motion.
Salt marsh	Low lying (below sea level) coastal wetland.
Sand dune	Coastal sand hill above the high tide mark, shaped by wind action, covered with grasses and shrubs.
Sea wall	Concrete wall built to protect the coast by deflecting wave energy.
Slumping	Rapid mass movement where a whole segment of a cliff moves downslope.
Soft engineering	Sustainable approach (using natural resources) to managing the coast. E.g. beach nourishment, dune regeneration and marsh creation.
Solution	Material dissolved in sea water.
Spit	A finger of new land made of sand. It juts out in to the sea from the coast.

Stack	The arch collapses as there is nothing to support it. Leaving an isolated rock stack.
Stump	The stack gets eroded further by erosion and weathering to form a stump.
Suspension	Lighter particles e.g. sand are suspended in the water.
Swash	When a wave moves up the beach
Traction	Heavy rocks (boulders) are rolled along the sea bed.
Transportation	Movement of material along a coastline.
Vegetation Succession	Sequence of vegetation (plants) that colonise (take over) an environment. This takes place over hundreds of years.
Waves	Ripples in the sea caused by the transfer of energy from the wind blowing over the surface of the sea. <i>The largest waves are formed when winds are very strong, blow for lengthy periods and cross large expanses of water.</i>
Wave-cut notch	Small notch (dent) cut in to the cliff at the level of high tide.
Wave-cut platform	Wide sloping surface at the base of a cliff.
Yellow dune	These are taller than the fore dune.

River Landscapes Glossary

Keyword	Definition
Abrasion (Corrasion)	Stones transported in the river are thrown at the bed and banks
Attrition	Stones in the river bang together making them smaller and smoother over time.
Bankfull discharge	The height at which a flood could occur on a storm hydrograph.
Channel straightening	Removing meanders from a river to make it straighter. This allows it to carry more water quickly downstream.
Confluence	Where two rivers meet.
Corrosion (Solution)	Weak acids within the river water react with the rocks on the beds and banks
Cross profile	The side to side cross section of a river channel.
CUMEC	Cubic metres per second
Dam	A barrier built across a valley to interrupt river flow which creates a man-made lake (reservoir) which stores water and controls the discharge of a river.
Deposition	Occurs when material carried by a river is dropped as energy decreases.

Discharge	Amount of water passing a certain point every second (measured in CUMECs)
Drainage basin	Area of land drained by a river system.
Embankments	Raised banks constructed along a river – they effectively make the river deeper so it can carry more water.
Erosion	This is the wearing away of the land by moving agents such as the sea, rivers and glaciers
Estuary	The tidal mouth of a river (where it meets the sea)
Falling limb	Shows a river as its level falls after a rainfall event (shown on a storm hydrograph).
Flood	Occurs when river discharge exceeds river channel capacity and water spills onto the surrounding land.
Flood relief channels	Building artificial channels to divert rivers away from settlements and areas of value.
Flood risk	The predicted frequency of floods in an area.
Flood warning	Provide reliable advance warning of a flood allowing people time to evacuate if necessary.
Floodplain	Flat land created by deposition on either side a river in the middle and lower valley.
Floodplain zoning	Land close to the river cannot be built upon. It can be used for farming and playing fields.
Fluvial processes	Processes relating to erosion, transport and deposition in a river.
Gorge	A narrow, steep sided valley created as a waterfall retreats upstream.
Hard engineering	Building artificial structures to reduce or stop the impact of river processes.
Hydraulic action	Water is forced in to cracks in the river banks, gradually making the cracks bigger and bigger.
Interlocking spurs	A river winds its way around more resistant rock in the upper valley of river.
Lag time	Difference between peak rainfall and peak discharge on a storm hydrograph.
Landslide	Blocks of rock slide downwards.
Levee	Ridge of higher material at the edge of a river channel in the middle and lower valley.
Long profile	A way to display the channel slope of a river along its entire course.
Mass movement	The movement of material downslope.
Meander	A bend in a river.
Mechanical weathering	Weathering processes that cause physical disintegration or break up of exposed rock without any change in the chemical composition of the rock, e.g. freeze-thaw weathering.

Mouth	End of a river
Ox bow lake	A cut off meander bend.
Plunge pool	At the base of a waterfall.
Relief	Relief describes the physical features of a landscape, including its height, steepness and how its features are shaped.
Rising limb	Indicates how quickly water is reaching a river channel and represents the water rising in a river (shown on a storm hydrograph).
Saltation	Pebbles bounce along the river bed in a leap-frogging motion.
Slumping	Rapid mass movement where a whole segment of a river bank moves downslope.
Soft engineering	Managing a river using natural materials and mimicking natural processes to protect more vulnerable areas.
Solution	Material is dissolved in the water.
Source	Start of a river
Storm hydrograph	A graph to show the discharge of a river and how it changes over time in response to rainfall.
Suspension	Lighter particles e.g. sand are suspended in the water.
Traction	Heavy rocks (boulders) are rolled along the river bed.
Transportation	Movement of material along a river.
Tributary	A smaller river joining a larger river.
Waterfall	Created by erosion in the upper valley of a river. Occur where a band a hard rock overlies a band of soft rock.
Watershed	Edge of a drainage basin.
Water cycle	Series of processes by which water is evaporated and eventually condenses and precipitates over land.

Physical Landscapes in the UK Pop Quiz

Describe the swash and backwash of constructive waves.	Strong swash, weak backwash.
What type of beach do destructive waves create?	Steep.
How many times per minute do destructive waves break onto a beach?	10-12.
How do neap tides occur?	When the sun's gravity pulls the ocean one side and the moon's gravity pulls it the opposite side, the tidal range is smaller.
At which moons do spring tides occur?	Full Moon and New Moon
When temperatures fall below 0°C, what type of physical weathering may occur?	Freeze-thaw weathering.
What are the two types of mass movement?	Soil creep and slumping.
Material is transported along a coastline. What is this called?	Longshore drift.
What is the difference between erosion and weathering?	Erosion involves weakened material being carried away whereas with weathering, the weakened material does not move.
Name the four types of transport in rivers.	Traction, saltation, solution, suspension.
How does the process of caves, arches, stacks and stumps begin?	Hydraulic action widening cracks in a headland.
What landform will be created along a coastline that has alternating bands of hard and soft rock?	Headlands and bays.
If a wide wave cut platform forms in front of a cliff, what happens to the rate of erosion? Why?	It slows down because the wave's energy is removed from travelling over the material.
How would a spit become a bar?	Form across a bay and link two headlands.

Why do spits often form curved ends?	Secondary wind direction.
Explain how the stems of Marram Grass are adapted to sand?	They can grow quickly and elongate so if they are covered by sand, the stems elongate, which enables the plant to emerge from the deposited sand.
What are sand dunes?	Accumulations of deposited sand and other sediment gathered on a beach.
What is another name for a sand dune system?	Psammosere.
What do four figure and six figure grid references help locate on a map?	Four – a square (e.g. a settlement) Six – A particular point on a map (e.g. a church)
What are contour lines?	Everywhere along a contour line is the same height above sea level. The number on the line shows the height in metres.
Name two types of hard engineering.	Sea wall, revetment, rip rap, gabion, groyne, offshore reef.
Name one type of soft engineering.	Beach nourishment, cliff regrading, managed retreat.
Give three disadvantages of hard engineering.	Expensive, man-made, ugly.
In 1991, what did the Holderness District Council have built to protect Mablethorpe?	A groyne to protect the beach and a sea wall made of large boulders.
What are the cliffs along the Holderness coastline made of?	Glacial till.
What are the names of the start and end of a river?	Start – source. End – mouth.
What three landforms are found in the upper course of a river?	V-shaped valley, interlocking spurs and waterfalls.
What four landforms are found in the lower course of a river?	Ox-bow lake, floodplains, levees and deltas.
What needs to happen for a waterfall to be created?	A river needs to cross a band of soft rock after flowing over hard rock.
What feature forms on the inside bend of a meander?	Slip off slope.

Name the waterfall in the River Tees.	High Force.
Around which town are there many meanders in the River Tees?	Yarm.
Why does the removal of vegetation increase the chances of flooding?	Because less rainfall is intercepted before it hits the ground, meaning that it moves down towards rivers more quickly.
What is a cloud burst?	A sudden, heavy rainfall over a short period of time.
What types of graph are used on a storm hydrograph? What do they show?	Histogram for rainfall. Line graph for discharge.
How is the normal discharge of river shown on a storm hydrograph?	Base flow (dashed line).
What does the recession limb of a storm hydrograph show?	Falling flood water in a river.
Name three hard engineering river defences.	Embankments, dams, channelisation, flood walls, flood relief channels, storage areas.
Name two soft engineering river defences.	Warning systems, floodplain zoning, afforestation, washlands.
When did the flood of River Wansbeck in Morpeth occur?	6 th – 7 th September 2008.
How many millimetres of rainfall was recorded between the 5th and 6th of September in the Wansbeck catchment?	150 millimetres.
How many residents were evacuated as a result of the Wansbeck flood?	400.
Overall how much did the new flood management scheme in Morpeth cost?	£26 million.