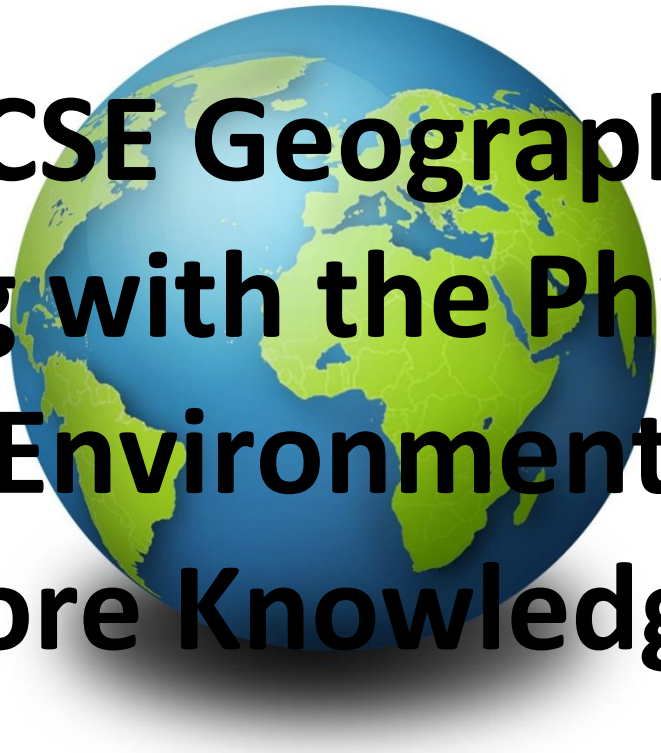
Geography Department



GCSE Geography
Living with the Physical Environment
Core Knowledge

Name:

Class:

Teacher:

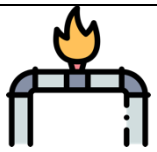
The Challenge of Natural Hazards:

Tectonics

Weather

Climate Change

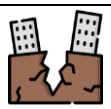
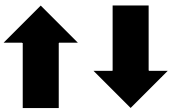
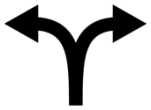
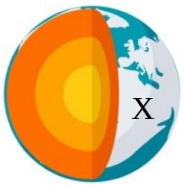
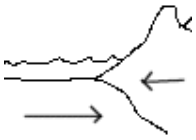
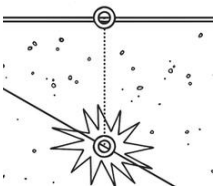
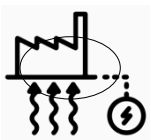
General hazards glossary:

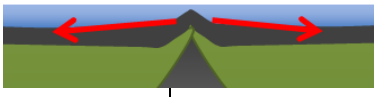
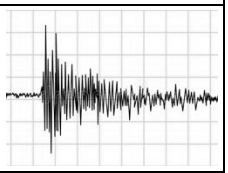
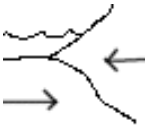
Keyword	Definition	Icon
Aid	Help given to poorer countries. *This can be money, food, training or technology.*	
Economic impact	The effect of an event on wealth.	
Environmental impact	The effect of an event on the landscape.	
Hazard risk	The probability a natural hazard will occur.	
Immediate response	The actions straight away after a natural disaster. *For example, rescuing people.*	
Long-term response	The actions taken in the months and years after a natural disaster. *For example, rebuilding a community, planning for the future, building storm shelters.*	
Monitoring	Scientific observations / recordings in hazardous areas. *Monitoring earthquakes or gas emissions at a volcano.* *Tracking a tropical storm by satellite.*	
Natural hazard	A natural event that has the potential to cause damage, destruction and death.	
Planning	Preparing people on what to do in a natural disaster. *For example, earthquake drills and survival kits.*	
Prediction	Attempts to forecast when and where a natural hazard will occur.	
Primary effects	Immediate / direct impacts. *For example, buildings collapsing in an earthquake or destroyed by wind in a tropical storm.*	
Protection	Structures to reduce the impact of a natural hazard. *For example, improving building design to be earthquake resistant or building tropical storm shelters.*	
Secondary effects	Indirect impacts occurring (days, weeks, months etc) after a natural disaster. *For example, fires occurring due to ruptured gas mains*	
Social impact	The effect of an event on people's lives.	

General hazards quiz questions:

What is a natural hazard?	A natural event that has the potential to cause damage, destruction and death.
What is the difference between a primary and secondary effect?	Primary effects happen immediately whereas secondary effects happen after
What is the difference between an immediate and long-term response?	Immediate response happen straight away whereas long-term responses happen in the months and years afterwards
State an economic impact of a natural hazard occurring	Rebuilding costs Businesses closed Less tourism
How can areas impacted by natural hazards be supported by other countries?	International aid

Tectonic hazards glossary:

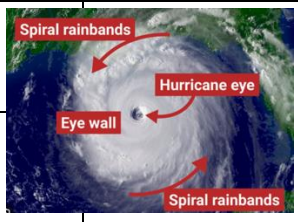
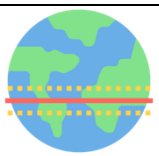
Keyword	Definition	Icon
Aftershock	Further earthquakes following a main earthquake event.	
Cascade effect	Chain reaction of events. *For example, a tsunami occurring after an earthquake.*	
Collison plate margin	Two continental plates move towards each other. *These buckle upwards to create fold mountains.*	
Conservative plate margin	Plates slide past each other. *This can be in opposite directions OR in the same direction at different speeds.*	
Constructive plate margin	Plates move apart. *This allows rising magma to come to the surface.*	
Convection currents	Circular pockets of heat that move in the mantle.	
Crust	The upper layer of the Earth.	
Destructive plate margin	An oceanic plate moves towards a continental plate. *Oceanic plate is subducted (pushed under) underneath the continental plate.*	
Earthquake	A sudden or violent movement within the Earth's crust.	
Earth's core	Inner core is solid (*due to immense pressure)* Outer core is liquid.	
Epicentre	Point directly above the focus <u>at the surface</u>.	
Fault	A fracture in the Earth's crust.	
Focus	Point <u>underground</u> where the earthquake starts.	
Geothermal power	A renewable energy created from super-heated water underground.	

Mantle	The thickest layer of the Earth, directly under the crust.	
Plate margins	Place where two plates meet. *For example, Mid Atlantic Ridge between the North American plate and the Eurasian plate.*	
Retrofit	Addition of new technology to existing buildings.	
Richter scale	Scale used to measure earthquakes. *Uses a logarithmic scale to measure magnitude.*	
Ridge push	Force causing a plate to move away from a constructive margin. *Gravity forces the plate away from a mid-ocean ridge and into a subduction zone.*	
Seismic waves	Energy that travels through the earth's crust during an earthquake.	
Slab pull	Plate movement at a subduction zone. *The edge of a subducting plate is much colder and heavier than the mantle, so it sinks, pulling the rest of the plate along with it.*	
Subduction zone	The point where the oceanic crust gets forced underneath continental crust.	
Tectonic hazard	A natural hazard caused by movement of tectonic plates.	
Tectonic plate	A section of the Earth's crust.	
Volcano	An opening in the Earth's crust from which lava, ash and gases erupt.	

Tectonic quiz questions:

State the different types of plate boundary	Destructive, constructive, conservative, collision
At which two plate boundaries are volcanoes created?	Destructive Constructive
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.
What was the magnitude of the Haiti (2010) earthquake in the Caribbean?	7.0
What was the magnitude of the Japan (2011) earthquake?	9.0
How many people died in the Haiti (2010) earthquake?	316,000
How many people died in the Japan (2011) earthquake?	15,854
How much money did the EU give Haiti (2010) to help recover from the earthquake?	$330 million
State 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 Reinforced lift shafts with tensioned cables
Give two ways volcanoes can be predicted	Monitoring seismic waves and gas emissions Looking for ground deformation Satellite images and remote sensing
State three ways earthquakes can be predicted	Seismometers Laser beams Animal behaviour

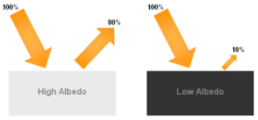
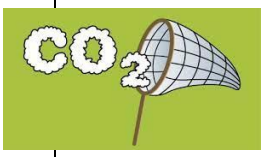
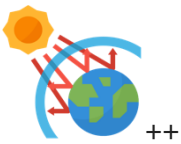
Weather hazards glossary:

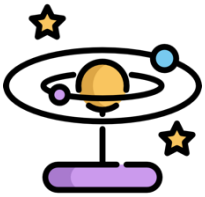
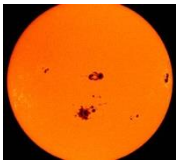
Keyword	Definition	Icon
Extreme weather	When a weather event is significantly different from the usual weather pattern. *For example, a severe snow blizzard or heatwave in the UK*	
Eye	Calm centre of a tropical storm.	
Eye wall	Violent winds surrounding the eye of a tropical storm.	
Global atmospheric circulation	Movement of air around the planet. *The worldwide system which transports heat from tropical to polar latitudes.*	
Tropical storm	An area of low pressure with 74mph + wind speeds moving in a spiral around a calm central (the eye). *Can be a hurricane, cyclone or typhoon (depending on where they are formed)*	

Weather hazards quiz questions:

What are the names of the three cells that describe the variation in the world's weather?	Polar cell Ferrel cell Hadley cell
How many people were killed in Typhoon Haiyan?	7400
When did Storm Emma and the Beast from the East occur?	February / March 2018
State two negative effects of the Beast from the East	Lost sales in supermarkets amounted to £22 million 14 deaths Over 8000 road collisions
What short-term responses were there to the Beast from the East?	Red Cross issued blankets to stranded people at Glasgow airport Armed forced helped rescue stranded drivers and transport NHS staff to work

Climate change glossary:

Key Word	Definition	Icon
Adaptation	Changes to cope with the effects of climate change. *For example, changing farming practices to respond to changes in weather.*	
Afforestation	Planting trees. *Mitigation strategy*	
Albedo	Measure of reflectivity. *Measured on a scale of 0 – 1* *(0 = dark surface – no reflectivity / 1 = light surface – high reflectivity)*	
Alternative energy	Switching to energy that produces less greenhouse gas emissions. *For example, renewables and nuclear energy*	
Carbon capture	Trapping carbon dioxide released from burning of fossil fuels. *Mitigation strategy*	
Climate change	Increasing average temperature, changing weather patterns and the overall impacts.	
Enhanced greenhouse effect	Additional heat trapped in the atmosphere due to increased greenhouse gases emissions.	
External factor	Occur naturally outside of the Earth's atmosphere. *For example, solar output, Earth's orbit and tilt.*	
Global warming	Earth's increasing average temperature. *Due to the enhanced greenhouse effect.*	
Greenhouse effect	When heat is trapped in the Earth's atmosphere and reflected back to the surface by naturally occurring greenhouse gases. *For example, methane, carbon dioxide, nitrous dioxide*	
Internal factor	Occur naturally within our atmosphere or on the Earth's surface. *For example, volcanic activity and albedo*	
Mitigation	Action taken to reduce greenhouse gas emissions to limit climate change.	

Orbital change	Changes in pathway of the earth around the sun. *Changes from circular to elliptical.*	
Quaternary period	The period of geological time about 2.6 million years ago to present.	
Sunspot	Darker patches on the Sun's surface releasing high energy. *More sunspots = hotter Earth temperatures / Less sunspots = lower Earth temperatures* *Part of an 11 year cycle*	
Unequivocal	In no doubt.	

Climate change quiz questions:

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	Increased car ownership Food miles More tourism creating more flights Greater demand for electricity and heating
Which coastal city could be lost by 2100 if sea levels rise?	New York
When was the Kyoto Protocol signed?	1997

The Living World

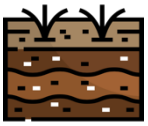
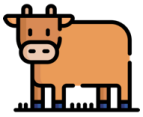
Ecosystems

Tropical rainforests

Hot deserts

Ecosystems glossary:

Key Word	Definition	Icon
Abiotic	**Non-living** things in an ecosystem.	
Apex predator	Top of a food chain / web.	
Biodiversity	The variety of life in the world or a particular habitat.	
Biotic	**Living** things in an ecosystem.	
Biome	A large-scale ecosystem. *For example, tropical rainforest*	
Commercial farming	Farming to sell produce for a profit.	
Consumer	Creatures that gain their energy by eating plants or other animals.	
Decomposer	An organism that breaks down dead material.	
Ecosystem	A community of plants and animals that interact with each other and the environment.	
Food chain	The simple connections between species that rely on one another for food.	
Food web	A complex network with multiple connections between species that rely on one another for food.	
Interdependence	Organisms within an ecosystem rely on each other for survival.	
Mineral extraction (mining)	Removing mineral resources from the Earth.	

Nutrient cycle	The recycling of nutrients within an ecosystem. *Processes whereby organisms extract minerals necessary for growth from soil or water, passing them on through the food chain and ultimately (decomposed) back into the soil.*	
Producer	Plant. *A plant that is able to absorb energy from the sun through photosynthesis.*	
Runoff	Flow of water and soil over the Earth's surface.	
Soil erosion	Removal of soil faster than it can be replaced. *Due to natural causes such as flooding, or human activity such as farming.*	
Subsistence farming	Farming for the family and local community rather than profit.	

Ecosystems quiz questions:

What is an ecosystem?	A community of plants and animals that interact with each other and their physical environment.
State 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	Water lily 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. Food webs display how plants and animals are connected in many ways with multiple food sources to help them all survive.
What is a biome?	A large-scale ecosystem.

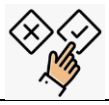
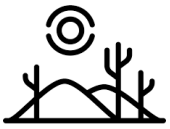
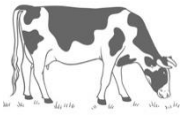
Tropical rainforests glossary:

Key Word	Definition	Icon
Canopy	Upper layer of a tropical rainforest with dense vegetation. *Creates shade and shelter to the layers below.*	
Carbon sink	Absorbs more carbon than is released. *Rainforest trees absorb carbon through photosynthesis*	
Debt reduction	Countries are relieved of some of their debt in return for protecting their rainforests.	
Deforestation	Large scale removal of trees.	
Ecotourism	Responsible travel to natural areas that conserves the environment and supports the livelihood of locals.	
Emergent	Highest layer of the tropical rainforest.	
Equatorial	At or near to the equator. *Tropical rainforest biomes are located in equatorial regions.*	
International agreements	Formal understanding between two or more countries. *For example, the International Tropical Timber agreement (2006)*	
Latosol	Soil found in tropical rainforest. *Soil is infertile and red/orange in colour (due to high iron content)*	
Leaching	Removal of nutrients from soil through heavy rainfall.	
Logging	Removing trees for sale.	
Lower canopy	Second layer of a rainforest with straight branchless trunks.	
Selective logging	Only cutting down certain trees. *By cutting down trees which are mature or inferior this encourages the growth of remaining trees within the forest.*	
Shrub layer	Lowest layer of the tropical rainforest. *Shrubs have large leaves due to shade from the canopy.*	
Sustainability	Actions that meet the needs of the present without reducing the ability of future generations to meet their needs.	

Tropical rainforests quiz questions:

List the structure of a tropical rainforest from the ground up	Soil layer, shrub layer, lower canopy, canopy, emergent layer
State two tropical rainforest vegetation adaptations	Lianas, buttress roots, leaves with flexible bases, thin branchless trunks, smooth bark, epiphytes, emergent, drip-tips
Describe the soil in a tropical rainforest	Red and infertile *Red in colour due to high iron content* *Infertile with a thick layer of leaf litter and decomposing organic leaf matter on the surface.*
What is rainforest soil called?	Latosol
Explain the nutrient cycle	1. Trees shed leaves all year round 2. Decaying vegetation decomposes rapidly releasing nutrients 3. Nutrients enter the soil surface but don't get a 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 CO2 absorbed from the atmosphere, water pollution, decrease in unemployment rate
What is extracted from mines in the Amazon rainforest?	Iron, nickel, zinc and gold
Define the term "sustainable use of the rainforest."	Uses that allow current generations to make a living from the forest without damaging the forest for future generations.
How much rainfall does a desert receive per year?	Less than 250mm

Hot deserts glossary:

Key Word	Definition	Icon
Appropriate Technology	Technology best suited to the needs, skills, knowledge and wealth. *Important in LICs*	
Desertification	Where land becomes more desert like. *The process where land becomes drier and degraded, as a result of climate change or human activities, or both.*	
Hot desert	Receive less than 250mm of rainfall per year and have high temperatures.	
Overcultivation	Overusing the land to grow crops. *This causes the soil to be exhausted and stripped of nutrients.*	
Overgrazing	Grazing too many livestock for too long on a piece of land. *This means it is unable to regrow and recover its vegetation cover.*	

Hot deserts quiz questions:

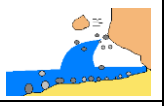
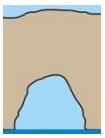
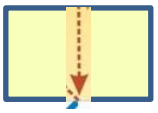
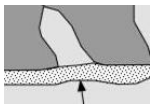
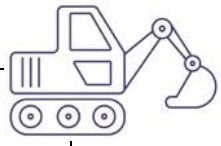
Describe one way that a camel is adapted to live in the desert	Long eyelashes to keep out sand/dust and sun, fat stored in hump so it can survive periods with no food, fur for insulation (cold nights and hot days), nostrils can close to keep out blowing sand and broad feet so they don't sink into sand
Where is the Arabian Desert located?	Saudi Arabia
State three challenges of development in the Arabian Desert	Conflict, water use, extreme temperatures, increased waste, energy use, habitat destruction, inaccessibility
State three development opportunities in the Arabian Desert	Oil and minerals, tourism, farming, renewable energy, growth and development of cities
How many people in the Sahel faced hunger due to desertification in 2023?	6.3 million
What is the Great Green Wall?	Trees planted in Sahel to combat desertification *Aim to plant trees in a 10 mile wide band across 4300 miles of the Sahel*
How are stone lines a management strategy?	Traps rainwater, reduces surface runoff and soil erosion
Where are stone lines used?	Burkina Faso

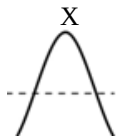
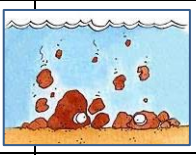
Physical Landscapes in the UK

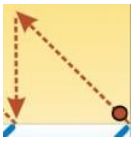
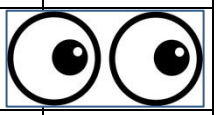
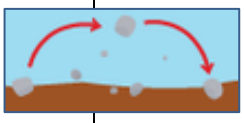
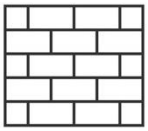
Coasts

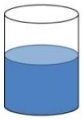
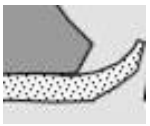
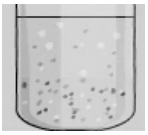
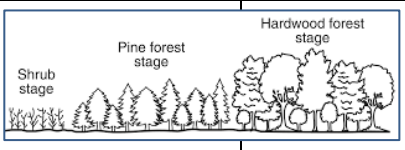
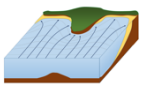
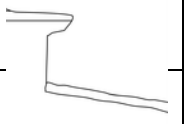
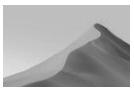
Rivers

Coastal landscapes glossary:

Keyword	Definition	
Abrasion	Rocks are scraped along the cliff by powerful waves acting as sandpaper and eroding them.	
Arch	An opening in a headland developed from a cave. *A cave becomes bigger due to hydraulic action and abrasion. Eventually the cave breaks through a headland to create an arch.*	
Attrition	Pebbles collide making them smaller and smoother over time.	
Backwash	When a wave moves back down the beach due to gravity.	
Bar	A spit which has grown across a bay to join two headlands. *It forms a bar of sand with a freshwater lake (lagoon) trapped behind it.*	
Bay	Where a coastline curves inwards between 2 headlands. *They form between areas of more resistant rock (headlands) and often contain beaches.*	
Beach	Deposited material that has built up over time.	
Beach nourishment	Adding new material to a beach artificially.	
Beach reprofiling	Changing the beach gradient. *Pebbles are often bulldozed to the backshore to protect the cliffs*	
Cave	A hollow in the base of a cliff eroded by waves.	
Chemical weathering	The break-down of rock caused by a chemical change.	
Cliff	A steep, high rock face formed by weathering and erosion.	
Climax vegetation	Final stage of sand dune development. *Woodland*	
Coastal realignment	Creating a new coastline position.	

Concordant coastline	Parallel bands of rock along a coastline.	
Constructive waves	Waves with a strong swash and weak backwash which deposits material.	
Crest	Top of a wave.	
Deposition	Material dropped as energy decreases.	
Destructive wave	Waves with a weak swash and strong backwash which erode material.	
Discordant coastline	Alternating bands of hard and soft rock at 90 degrees along a coastline. *Encourages development of headlands and bays*	
Dune regeneration	Creating / protecting dune as a soft engineering defence.	
Dune slack	Depressions between dunes.	
Embryo dune	The youngest dune closest to the sea.	
Erosion	Wearing away and removal of the land / material.	
Fetch	The distance that wind blows over the sea before reaching land.	
Fore dune	Older, slightly more developed dune versus an embryo dune.	
Gabion	A cage filled with rocks.	
Groyne	A wooden barrier built out into the sea to stop longshore drift. *Encourages material to be deposited which will naturally remove energy from waves*	

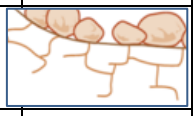
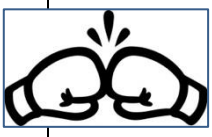
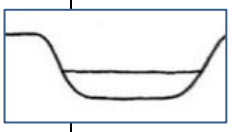
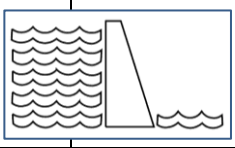
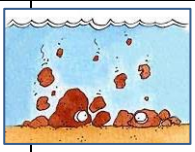
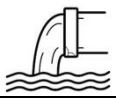
Hard engineering	Artificial structures to reduce the impact of coastal processes.	
Hydraulic action (power)	Water and air is forced in to cracks in the cliff, gradually weakening rock making the cracks bigger.	
Landslide	Blocks of rock sliding downwards (a type of mass movement).	
Longshore drift (LSD)	Transportation of sediment along the coastline in a zigzag motion. *Waves approach the beach at an angle, then backwash moves straight down the beach, and transport material (sediment) up and down the beach.*	
Managed retreat	Allow the sea to erode the coastline but monitor the retreat occurring.	
Mass movement	The movement of material downslope under the influence of gravity.	
Mechanical weathering	Caused by the effects of changing temperature on rocks, causing the rock to break apart. *Freeze thaw weathering*	
Pioneer plant	Initial plants (e.g. Marram grass) to grow on sand dunes and help hold them in place.	
Relief	The height and gradient of a landscape.	
Rockfall	Individual rocks fall from a cliff (a type of mass movement).	
Rock armour	Large boulders placed on a beach to reduce wave energy.	
Saltation	Pebbles bounce along the sea bed in a leap-frogging motion.	
Salt marsh	Low lying (below sea level) coastal wetland. *Forms in sheltered water behind a spit.*	
Sand dune	Mound of sand at the backshore of a beach. *Found above the high tide mark, shaped by wind action and covered with grasses and shrubs.*	
Sea wall	Concrete wall built to protect the coast by deflecting wave energy.	

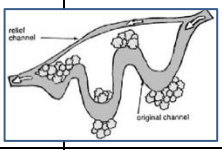
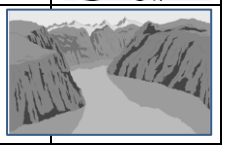
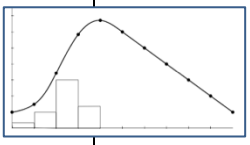
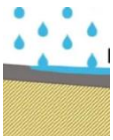
Sediment	Varying sizes of material (e.g. rocks, sand, silt).	
Slumping	Rapid movement where a whole segment of a cliff moves downslope (a type of mass movement).	
Soft engineering	Sustainable approach (using natural resources) to manage the coast.	
Solution	Material dissolved in sea water.	
Spit	Deposited material stretching into the sea from a change in direction of coastline.	
Stack	An isolated column of rock formed when an arch has collapsed.	
Stump	A stack eroded and weathered to form a short column of rock.	
Suspension	Lighter particles float along within the water (they are suspended in water).	
Swash	When a wave moves up the beach.	
Traction	Heavy rocks (boulders) are rolled along the sea bed.	
Vegetation succession	Sequence of plants that colonise (take over) a sand dune.	
Waves	Transfer of energy from the wind blowing over the sea's surface. *The largest waves are formed when winds are very strong, blow for lengthy periods and cross large expanses of water.*	
Wave refraction	Bending of waves as they approach the coastline. *Due to differences in depth (headlands and bays)*	
Wave-cut notch	Small indent cut into the base of a cliff between the level of high and low tide.	
Wave-cut platform	Wide sloping surface at the base of a cliff.	
Yellow dune (fixed)	Tall sand dunes.	

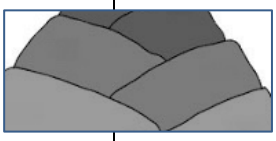
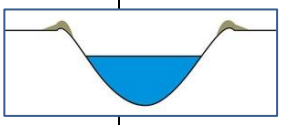
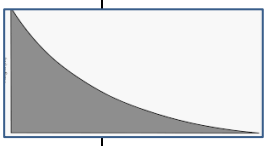
Coastal landscapes quiz questions:

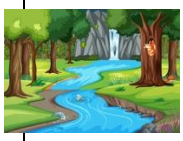
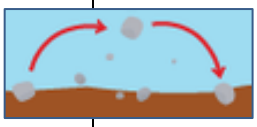
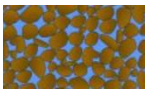
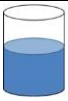
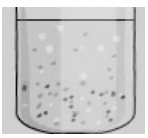
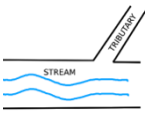
Describe the swash and backwash of constructive waves.	Strong swash, weak backwash.
What type of beach do destructive waves create?	Steep.
How many times per minute do destructive waves break?	10-12.
When temperatures fall below 0°C, what type of weathering may occur?	Freeze-thaw weathering.
State the different types of mass movement	Slumping, rock fall, landslide
Material is transported along a coastline. What is this called?	Longshore drift.
What is the difference between erosion and weathering?	Erosion involves material being worn and carried away whereas with weathering involves the breaking down of material in situ
State the four types of river transport	Traction, saltation, solution, suspension.
How does the process of caves, arches, stacks and stumps begin?	Hydraulic action/power widening cracks in a headland.
What landform will be created along a discordant coastline?	Headlands and bays.
What is a discordant coastline?	Alternating bands of hard and soft rock at right angles to sea.
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 reduced 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.
What are sand dunes?	Accumulations of deposited sand and other sediment gathered on a beach.
State two types of coastal hard engineering.	Sea wall, rock armour, gabion, groyne
State one type of coastal soft engineering.	Beach nourishment and reprofiling, managed retreat, dune regeneration
Give three disadvantages of hard engineering.	Expensive, man-made, ugly.
What are the cliffs along the North Norfolk coastline made of?	Soft impermeable clay and permeable sands and gravels

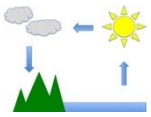
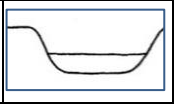
River landscapes glossary:

Keyword	Definition	Icon
Abrasion	Rocks are scraped along the river bed and banks acting as sandpaper and eroding them.	
Afforestation	Planting trees.	
Attrition	Stones in the river collide making them smaller and smoother over time.	
Bankfull discharge	The maximum capacity of a river (shown on a storm hydrograph).	
Channelisation	Increasing capacity through widening or deepening the river channel. *For example, dredging the river bed*	
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.	
Cross profile	The side to side cross section of a river channel.	
CUMEC	Cubic metres per second. *Unit of measurement of discharge*	m3/s
Dam	A barrier to control the flow of a river. *Creates a man-made lake (reservoir) which stores water behind the dam and controls discharge along the river course.*	
Deposition	Material dropped as energy decreases.	
Discharge	Volume of water passing a certain point every second (measured in CUMECs)	
Drainage basin	Area of land drained by a river system.	
Embankments	Raised banks to increase capacity.	
Erosion	Wearing away of land by moving water.	

Estuary	The tidal mouth of a river (where it meets the sea).	
Falling limb	River discharge decreasing after a rainfall event (shown on a storm hydrograph).	
Flood	River water spills onto the surrounding land. *When a river exceeds the bankfull discharge.*	
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	Give advance warning of a flood.	
Floodplain	Flat land on either side of a river. *Created by migration of meanders and developed* *Due to deposition during floods in the lower/middle course*	
Floodplain zoning	Planning of land use near a river based on land value. *Using land closest to a river for low value land use* *(e.g. farming or parks)*	
Fluvial processes	Processes relating to erosion, transport and deposition in a river.	
Gorge	A narrow, steep sided valley created as a waterfall erodes upstream.	
Hard engineering	Artificial structures to reduce the impact of river processes.	
Hydraulic action (power)	Water and air is forced in to cracks in the river banks, gradually weakening the rock making the cracks bigger.	
Hydrograph	A graph showing river discharge and its changes over time in response to rainfall.	
Impermeable	Water cannot pass through. *For example, some types of rock or surfaces in urban areas*	

Infiltration	Water soaking into a surface.	
Interlocking spurs	A river winds its way around harder rock in the upper valley of a river.	
Lag time	Time difference between peak rainfall and peak discharge on a storm hydrograph.	
Lateral erosion	Erosion of river banks (sideways).	
Levee	Ridge of higher material at a river's edge. *Created from large material being deposited first during a flood.*	
Long profile	Displays the slope of a river channel from source to mouth.	
Mass movement	The movement of material downslope under the influence of gravity.	
Meander	A river bend.	
Mouth	End of a river.	
Mudflat	Deposition of silt and mud in an estuary	
Ox bow lake	A cut off meander bend. *Created from the neck of a meander being eroded closer together until the river breaks through it leaving the meander cut off.*	
Permeable	Water can pass through.	
Plunge pool	Formed at the base of a waterfall.	
Relief	Height and gradient of a landscape.	

Reservoir	Artificial lake to store water behind a dam.	
Rising limb	Represents the increasing river discharge on a storm hydrograph. *The steeper the rising limb, the quicker the river levels are increasing*	
River cliff	Outside of meander bend. *Created by erosion*	
River restoration	Returning a river back to its natural state. *For example, through reinstating meanders and allowing natural processes*	
Saltation	Pebbles bounce along the river bed in a leap-frogging motion.	
Saturated	Land that cannot hold more water (soaked).	
Slip off slope	Inside of a meander bend. *Created by deposition*	
Soft engineering	Sustainable approach (using natural resources) to manage rivers.	
Solution	Material is dissolved in river water.	
Source	Start of a river.	
Surface runoff	Movement of water over the top of the land.	
Suspension	Lighter particles are floating along within water.	
Traction	Heavy rocks (boulders) are rolled along the river bed.	
Tributary	A smaller river joining a larger river.	
Urbanisation	Increasing impermeable surfaces.	
Vertical erosion	Erosion of a river bed (downward).	

Velocity	Speed of flow.	
Waterfall	A natural step in a landscape. *A band a hard rock overlies a band of soft rock in the upper valley.*	
Watershed	Edge of a drainage basin. *This is a high point of land from which water will flow from into a river.*	
Water cycle	Continuous movement of water within the Earth and atmosphere.	
Wetted perimeter	Water in contact with bed and banks.	

River landscapes quiz questions:

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, estuaries.
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.
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.
Which graphs are used on a hydrograph? What do they show?	Histogram for rainfall. Line graph for discharge.
How is the normal discharge of river shown on a hydrograph?	Base flow (dashed line).
What does the recession limb of a hydrograph show?	Falling flood water in a river.
State three hard engineering river defences.	Embankments, dams, channelisation, flood walls, flood relief channels, storage areas.
State two soft engineering river defences.	Warning systems, floodplain zoning, afforestation, washlands, river restoration.

When did the flood of River Wansbeck in Morpeth occur?	6th – 7th September 2008.
How many residents were evacuated as a result of the River Wansbeck (Morpeth) flood?	400.
Overall how much did the new flood management scheme in Morpeth cost?	£26 million.

Wider reading list

These are some suggestions of useful books to read to further your understanding of the topics you are studying this year.

Please let your geography teacher know if you read any these or if you come across any other great geography books we can add to the list.

The living world:

Author	Title	Type
Horrible Geography	Bloomin Rainforests	Non-fiction
Simon Chapman	Borneo Rainforest (Expedition diaries)	Non-fiction
Gerard Cheshire	The Tropical Rainforest (Nature unfolds)	Non-fiction
Richard Platt	The Vanishing Rainforest	Non-fiction
Michael Palin	Sahara	Non-fiction
Eva Ibbotson	Journey to the River Sea	Fiction
Louis Sachar	Holes	Fiction
Katherine Rundell	The Explorer	Fiction

Challenge on natural hazards:

Author	Title	Type
Catherine Chambers	Can we Protect People from Natural Disasters?	Non-fiction
Gail Herman	What is Climate Change?	Non-fiction
Baby Professor	What Every Child Should Know about Climate Change?	Non-fiction
Philip Steele	Analyzing Climate Change: Asking questions, evaluating evidence and designing solutions	Non-fiction
Philip Steele	Climate Change (Can we really stop it?)	Non-fiction
Mark Maslin	Climate Change (A very short introduction)	Non-fiction
Julie Bertagna	Exodus	Fiction
Sue Reid	Pompeii	Fiction
Saci Lloyd	The Carbon Diaries	Fiction
Lauren James	The Quiet at the End of the World	Fiction

Physical landscapes:

Author	Title	Type
Richard Girling	Sea Change: Britain's coastal catastrophe	Non-fiction
Nicholas Crane	Coast: Our Island Story	Non-fiction
Horrible Geography	Cracking Coasts	Non-fiction
James Nixon	Let's Explore Britain: Coasts	Non-fiction
Samantha S Bell	Engineering for Disaster: Engineering for floods	Non-fiction
Corona Brezina	Engineering Solutions for Floods and Tsunamis	Non-fiction
Michael Morpurgo	Why the Whales came	Fiction
Chris Vick	Storms: Every storm breaks in the end	Fiction
Lara Maiklem	Mudlarking	Fiction