

Lesson Preparation Sheet – Water and the Carbon Cycle

Topic: Water Cycle – The hydrological cycle is a system.	<u>Water and Carbon Cycle</u>
Reading: “AQA A-level Geography” Skinner et al. P2 to 3	
Glossary: Hydrological cycle – Flow/transfer – Input – Store/component – System – System boundary – Isolated systems – Open systems – Closed systems – Dynamic equilibrium – Positive feedback – Negative feedback – Cascading system –	
Notes	
Key learning points:	Diagrams or maps: (2 diagrams, positive and negative feedbacks)

Questions to ask at the start of next lesson

- Low level (Name, List, define, Recall, relate, Describe)

- Medium Level (Explain, Compare, Classify, Justify, Apply)

- Hard level (Speculate, Interpret, Analyse, Sequence, Summarize, Develop, Synthesise, Adapt, Judge, Rank, Evaluate, Prove)

Case studies or examples (explain a system and a feedback)

Teachers Initials

Topic: Water Cycle – Stores in the water cycle.	<u>Water and Carbon Cycle</u>	
Reading: “AQA A-level Geography” Skinner et al. P4 to 9		
Glossary: Atmospheric water – Cryospheric water – Hydrosphere – Oceanic water – Terrestrial water – Sea ice – Ice shelves – Ice sheets – Ice caps – Alpine glaciers – Permafrost – Surface water – Rivers – Lakes – Wetlands – Groundwater – Soil water – Biological water – Evaporation – Condensation –		
Notes		
Key learning points:	Diagrams or maps: (Figure 1.5 Distribution of the world’s water)	

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Questions to ask at the start of next lesson

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- Medium Level (Explain, Compare, Classify, Justify, Apply)

- Hard level (Speculate, Interpret, Analyse, Sequence, Summarize, Develop, Synthesise, Adapt, Judge, Rank, Evaluate, Prove)

Case studies or examples (any examples of each store)

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Teachers Initials

Lesson Preparation Sheet – Water and the Carbon Cycle

Topic: Water Cycle – Drainage Basin systems	<u>Water and Carbon Cycle</u>
Reading: “AQA A-level Geography” Skinner et al. P9 to 13	
Glossary: Condensation – Cryospheric processes – Drainage basin – Evaporation – Evapotranspiration – Groundwater flow – Infiltration – Infiltration rate – Interception storage – Overland flow – Percolation – Run-off – Saturated – Stemflow – Storm and rainfall event – Throughfall – Throughflow – Transpiration – Soil storage – Vegetation storage – Channel flow –	
Notes	
Key learning points:	Diagrams or maps: (Figure 1.14 hill slope drainage system)

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- Medium Level (Explain, Compare, Classify, Justify, Apply)

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Make notes on transport within the global water cycle and sketch Figure 1.16.

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Lesson Preparation Sheet – Water and the Carbon Cycle

<p><u>Topic:</u> Water Cycle - The water balance and soil moisture budgets.</p>	<u>Water and Carbon Cycle</u>
<p><u>Reading:</u> “AQA A-level Geography” Skinner et al. P13 to 14 “Geography in Focus” Cook et al, page 380</p>	
<p><u>Glossary:</u> Water Balance/budget – River regime – Soil moisture budget – Storage – Transfers – Discharge – Potential evapotranspiration – Soil moisture surplus – Soil moisture utilization – Soil moisture recharge – Soil moisture surplus –</p>	
<u>Notes</u>	
<p><u>Key learning points:</u></p>	<p><u>Diagrams or maps:</u> (Figure 1.18 Soil water budget graph)</p>
<p><u>Questions to ask at the start of next lesson</u></p> <ul style="list-style-type: none">• Low level (Name, List, define, Recall, relate, Describe)	

- Medium Level (Explain, Compare, Classify, Justify, Apply)

- Hard level (Speculate, Interpret, Analyse, Sequence, Summarize, Develop, Synthesise, Adapt, Judge, Rank, Evaluate, Prove)

Case studies or examples (Younde and Navrongo)

Teachers Initials

Lesson Preparation Sheet – Water and the Carbon Cycle

<p><u>Topic: Water Cycles - River regime and storm hydrographs</u></p>	<p style="text-align: center;"><u>Water and Carbon Cycle</u></p>
<p><u>Reading:</u> “AQA A-level Geography” Skinner et al. P14 to 19 “Geography: an integrated approach” David Waugh pages 61 to 63 Geofile 542</p>	
<p>Glossary: Discharge – Base flow – Storm hydrograph – River regime - Bankfull discharge - Rising limb - Falling limb – Antecedent flow rate – Lag time – Storm Flow – Drainage density – Geology –</p>	
<p style="text-align: center;"><u>Notes</u></p>	
<p><u>Key learning points:</u> (focus on hydrographs and what affects them)</p>	<p><u>Diagrams or maps:</u> (Figure 1.26 A storm hydrograph)</p>

Questions to ask at the start of next lesson

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Case studies or examples (make notes on river regimes and these examples)

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Lesson Preparation Sheet – Water and the Carbon Cycle

<p>Topic: <u>Water Cycles – Changes in water cycle over time- human impact</u></p>	<p><u>Water and Carbon Cycle</u></p>
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Reading:
“AQA A-level Geography” Skinner et al. P19 to 24

Glossary: (you will have to do research on the internet for most of these definitions)

Deforestation –
Forest degradation –
Biodiversity –
Soil drainage –
‘Tiles’ (to do with soil drainage) –
Aeration of soil –
Eutrophication –
Denitrification –
Water abstraction –
Water table –
Saline intrusion –
Desalination plants –
Irrigation –

Notes

<p><u>Key learning points:</u> (cover deforestation, soil drainage and water abstraction, put them as subtitles)</p>	<p><u>Diagrams or maps:</u> (Figure 1.33 effects of soil drainage – draw horizontally)</p>
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Questions to ask at the start of next lesson

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- Medium Level (Explain, Compare, Classify, Justify, Apply)

- Hard level (Speculate, Interpret, Analyse, Sequence, Summarize, Develop, Synthesise, Adapt, Judge, Rank, Evaluate, Prove)

Case studies or examples (Water abstraction of southern England and the London Basin P22-24)

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Questions to ask at the start of next lesson

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- Hard level (Speculate, Interpret, Analyse, Sequence, Summarize, Develop, Synthesise, Adapt, Judge, Rank, Evaluate, Prove)

Teachers Initials

Lesson Preparation Sheet – Water and the Carbon Cycle

Topic: Carbon Cycle – Movement of carbon (driving changes in magnitude of stores)

Water and Carbon Cycle

Reading:

“AQA A-level Geography” Skinner et al. P27 to 30 (up to volcanic activity)

Glossary:

Carbon sink –

Carbon source –

Weathering –

Carbonic acid –

Photosynthesis –

Phytoplankton –

Respiration –

Decomposition –

Oxidation –

Biological pump –

Vertical deep mixing (in oceans) –

Combustion –

Biomass combustion –

Volcanic activity –

Diagrams or maps: (Figure 1.39 The carbon cycle)

Key learning points:

The Geological component:

Photosynthesis and Respiration:

Decomposition:

Oceanic carbon pumps:

Combustion:

Volcanic activity:

Carbon sequestration (include Figure 1.47):

Questions to ask at the start of next lesson

- Low level (Name, List, define, Recall, relate, Describe)

- Medium Level (Explain, Compare, Classify, Justify, Apply)

- Hard level (Speculate, Interpret, Analyse, Sequence, Summarize, Develop, Synthesise, Adapt, Judge, Rank, Evaluate, Prove)

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Diagrams or maps: (Figure 1.45 effects of deforestation on the carbon cycle)

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- Medium Level (Explain, Compare, Classify, Justify, Apply)

- Hard level (Speculate, Interpret, Analyse, Sequence, Summarize, Develop, Synthesise, Adapt, Judge, Rank, Evaluate, Prove)

Teachers Initials

Lesson Preparation Sheet – Water and the Carbon Cycle

Topic: Carbon Cycle – The carbon budget and the impact of the carbon cycle upon land, ocean and atmosphere.

Water and Carbon Cycle

Reading:

“AQA A-level Geography” Skinner et al. P34 to 39

Glossary:

Ocean acidification –

Ocean salinity –

Thermohaline circulation –

Thermal expansion –

Enhanced greenhouse effect –

Geo-sequestration –

Radiative forcing –

Soil organic carbon (SOC) –

Notes

Key learning points: (you may want to put subtitles for land, ocean and atmosphere.)

Diagrams or maps: (Figure 1.50 positive feedback of oceanic warming)

Questions to ask at the start of next lesson

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- Medium Level (Explain, Compare, Classify, Justify, Apply)

- Hard level (Speculate, Interpret, Analyse, Sequence, Summarize, Develop, Synthesise, Adapt, Judge, Rank, Evaluate, Prove)

Case studies or examples (research the Younger Dryas event, how the shutdown of the North Atlantic “Conveyor” caused it and the effect it had on climate)

Teachers Initials

Changing rural land use:

Improved aviation practices:

Questions to ask at the start of next lesson

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- Medium Level (Explain, Compare, Classify, Justify, Apply)

- Hard level (Speculate, Interpret, Analyse, Sequence, Summarize, Develop, Synthesise, Adapt, Judge, Rank, Evaluate, Prove)

Teachers Initials

Lesson Preparation Sheet – Water and the Carbon Cycle

Topic: Carbon Cycles – Case study of a tropical rainforest

Water and Carbon Cycle

Reading:

“AQA A-level Geography” Skinner et al. P44 to 46

Background to the Amazon including a map (Figure 1.63):

Key learning points:

Diagram (Figure 1.65 – strategies to reduce effects of environmental change in Amazonia):

Questions to ask at the start of next lesson

- Low level (Name, List, define, Recall, relate, Describe)

- Medium Level (Explain, Compare, Classify, Justify, Apply)

- Hard level (Speculate, Interpret, Analyse, Sequence, Summarize, Develop, Synthesise, Adapt, Judge, Rank, Evaluate, Prove)

Teachers Initials

Lesson Preparation Sheet – Water and the Carbon Cycle

Topic: Carbon Cycles – Case study of a river catchment at a local scale

Water and Carbon Cycle

Reading:

“AQA A-level Geography” Skinner et al. P47 to 49

Background to the River Brock including a location map (research this):

Key learning points:

Diagram (Sketch Figure 1.67 and 1.68):

Questions to ask at the start of next lesson

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- Medium Level (Explain, Compare, Classify, Justify, Apply)

- Hard level (Speculate, Interpret, Analyse, Sequence, Summarize, Develop, Synthesise, Adapt, Judge, Rank, Evaluate, Prove)

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Lesson Preparation Sheet – Water and the Carbon Cycle

Topic: Carbon Cycles – Case study of a river catchment at a local scale: River Greta, Keswick

Water and Carbon Cycle

Reading:

Coolgeography.co.uk or using the Water and Carbon notes P30-32

Glossary:

Physical factors –

Human factors –

Tributaries –

Confluences –

Long profile –

Relief –

Geology –

Geomorphology –

Permeable rocks –

Interception –

Afforestation -

Background to the River Great including a Geological map of its Drainage Basin:

Key learning points:

Questions to ask at the start of next lesson

- Low level (Name, List, define, Recall, relate, Describe)

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Teachers Initials