Montgomery Academy



GCSE AQA Geography Flashcards

Physical C: Physical Landscapes in the UK



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Physical C: Physical Landscapes in the UK



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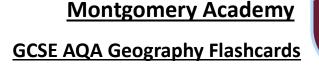
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Physical C: Physical Landscapes in the UK









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CONTENTS

3-20	Physical Processes
21-28	Waves
29-48	Coastal Landforms
49-72	Coastal Management
73-102	River Features & Landforms
103-132	River Flooding & Management

2

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What is weathering? What are the 3 types of weathering? Can you describe examples of each?

Question(s) What is weathering? What are the 3 types of weathering? Can you describe examples of each?

3

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Topic: Physical Landscapes

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Topic: Physical Landscapes

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- Mechanical weathering is the breakdown of rock through movement e.g. freeze-thaw, onion skin
- **Chemical weathering** is the breakdown of rock through changing its chemical composition e.g. carbonation
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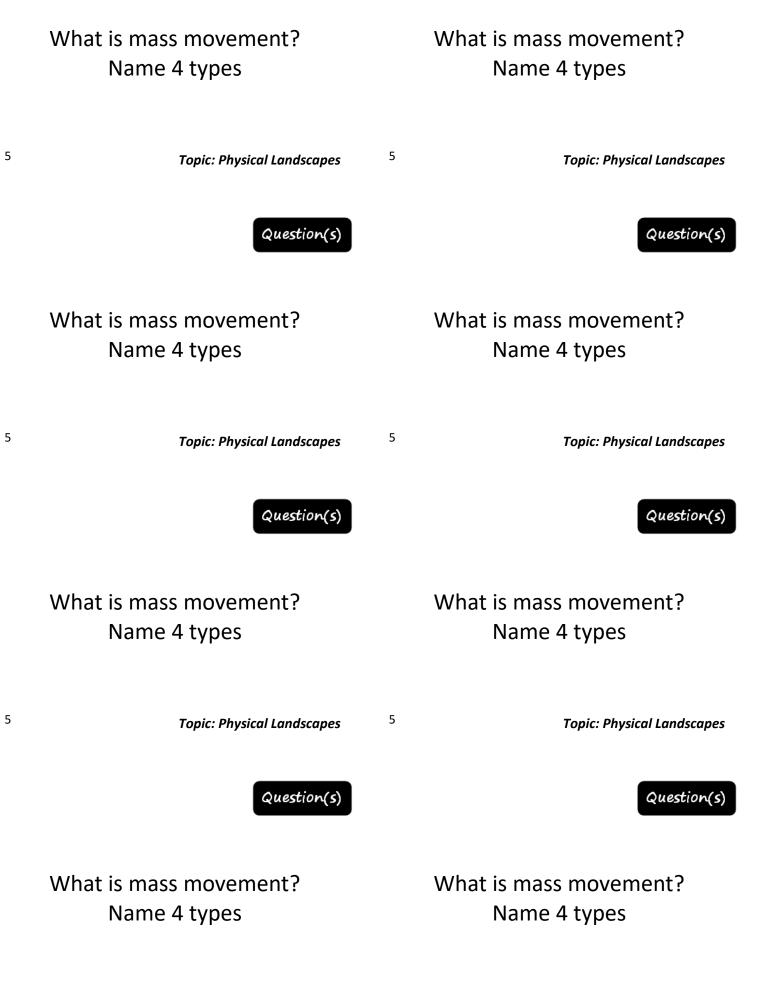
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Mass Movement is the downhill movement of large amounts of cliff material under the influence of gravity

E.g. Rockfall, landslide, mudslide and slumping

6

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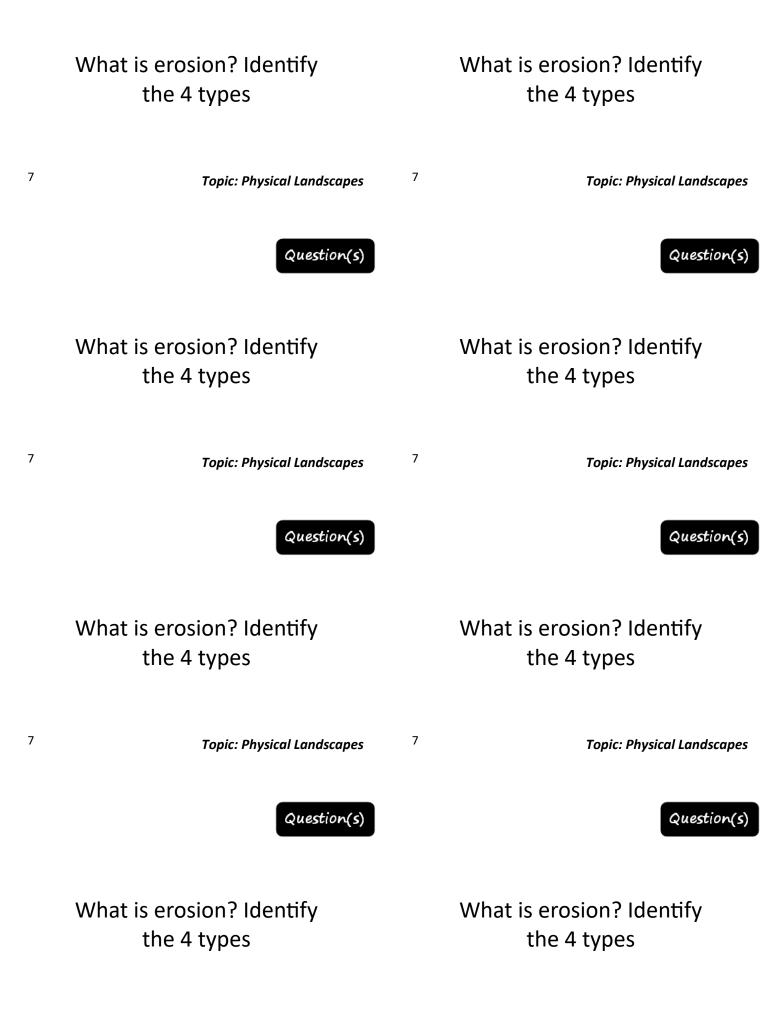
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Erosion is the wearing away of the land by wind or water

E.g. Abrasion, hydraulic action, attrition and solution

Answer(s)

Erosion is the wearing away of the land by wind or water

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- Abrasion
- Hydraulic Action •
- Attrition •
- Solution

Topic: Physical Landscapes

Describe:

- Abrasion
- Hydraulic Action
- Attrition
- Solution

Topic: Physical Landscapes

Question(s)

Question(s)

9

9

Describe:

- Abrasion •
- **Hydraulic Action** •
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- Solution

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Topic: Physical Landscapes

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Topic: Physical Landscapes

Topic: Physical Landscapes

9

Question(s)

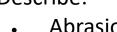
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Question(s)

Describe:

- Abrasion •

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- Solution





- Abrasion When waves which contain sand and larger fragments wear away the base of a cliff or headland (sandpaper effect)
- Hydraulic Action Waves compress air in cracks or joints in the rock. As air rushes out of the crack when the wave retreats it leads to an explosive effect as pressure is released
- Attrition When rocks and pebbles bump into each other and break up and round-off
- **Solution** When weak acids in the sea/river dissolve the rock

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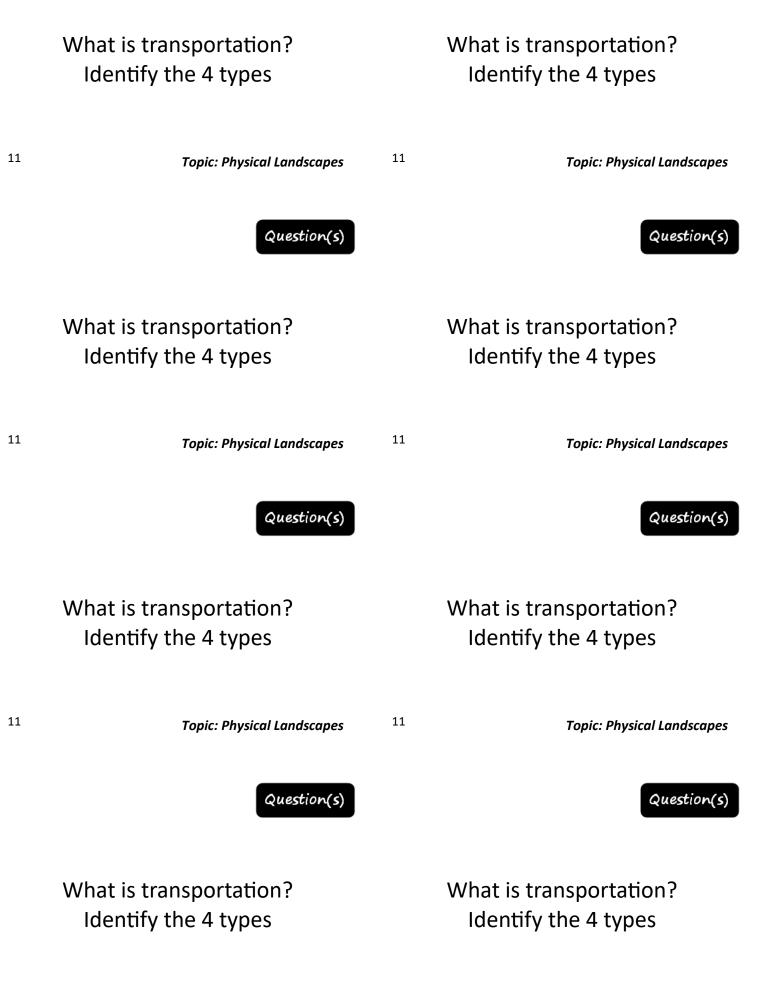
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Transportation is the movement of sediment from one place to another

E.g. Solution, suspension, saltation and traction

12

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What is:

- Traction
- Saltation •
- **Suspension** •
- Solution

Topic: Physical Landscapes

13

13

What is:

- Traction
- Saltation
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Topic: Physical Landscapes

Question(s)

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Topic: Physical Landscapes

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Topic: Physical Landscapes

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Topic: Physical Landscapes

Traction

- Saltation
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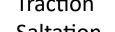
What is:

•

Topic: Physical Landscapes

Question(s)





13

13

Question(s)

Traction	 large pebbles and boulders are rolled along the seafloor.
Saltation	 material is bounced along the sea- floor.
Suspensio	 m – material is suspended and carried by the waves.
Solution	 material is dissolved and carried by the water.

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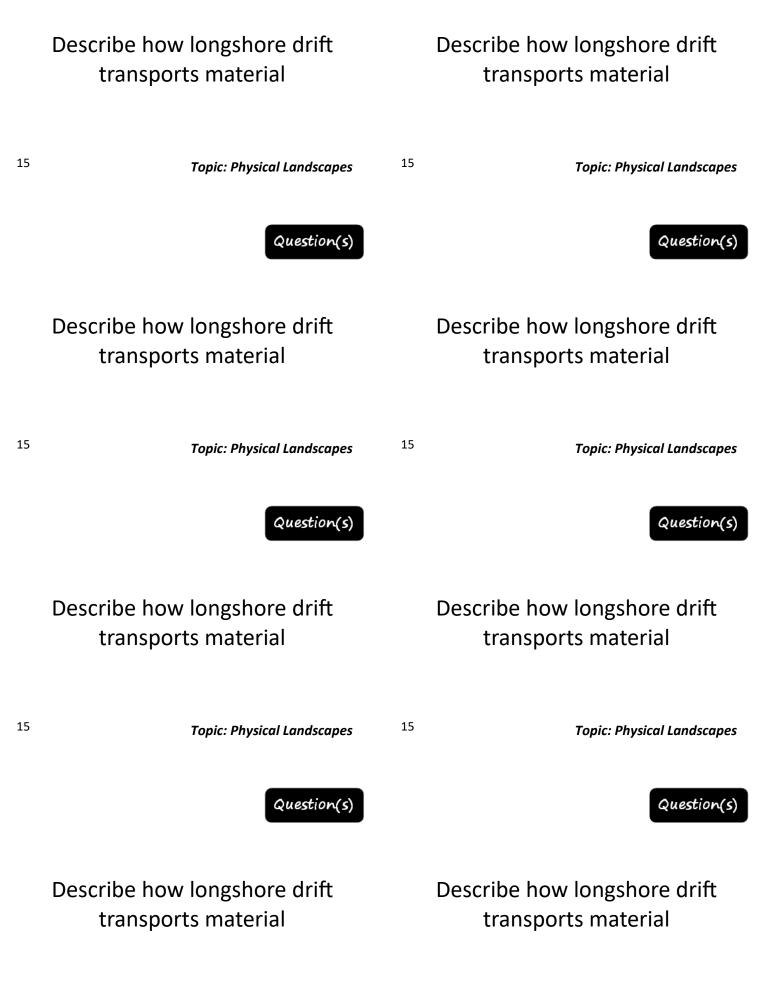
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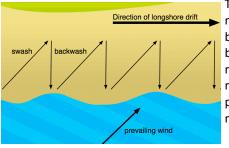
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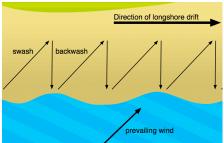
When waves approach the beach at an angle. The swash (waves moving up the beach) carries material up and along the beach.



The backwash (waves moving back down the beach) carries material back down the beach at right angles. This is the result of gravity. This process slowly moves material along the beach



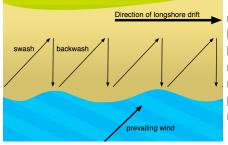
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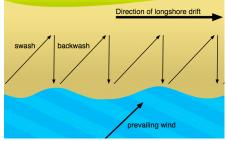
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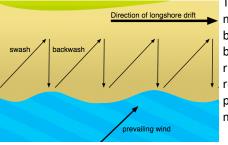
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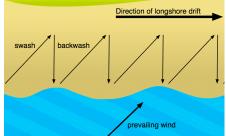
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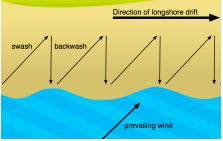
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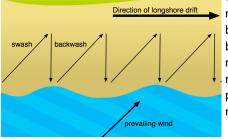
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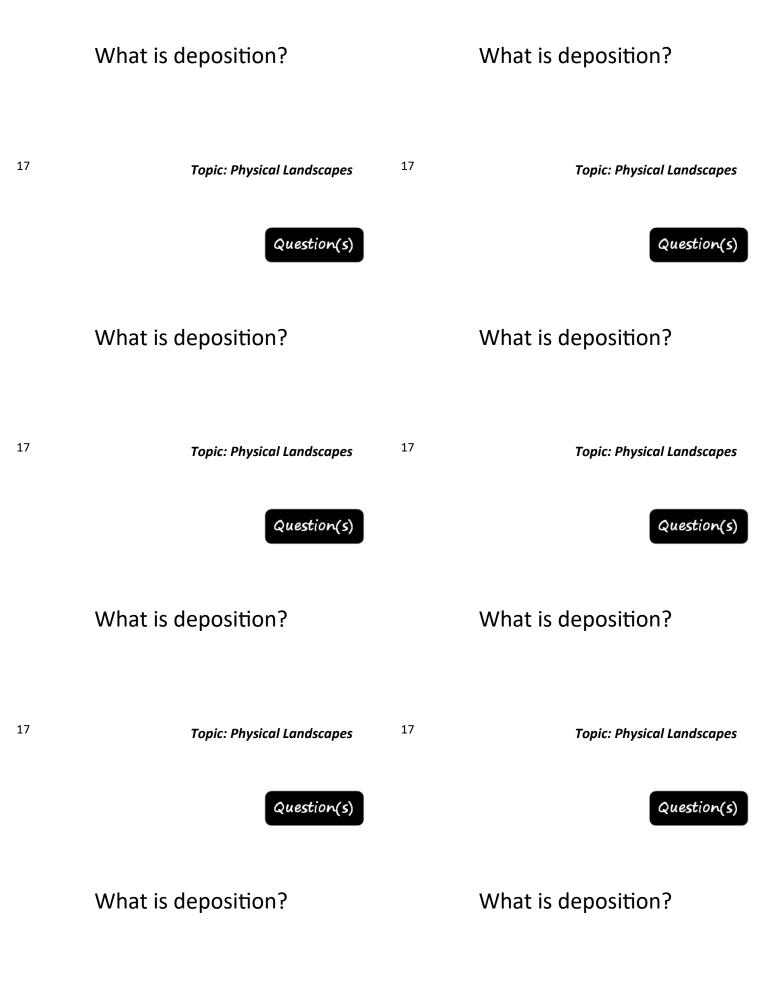
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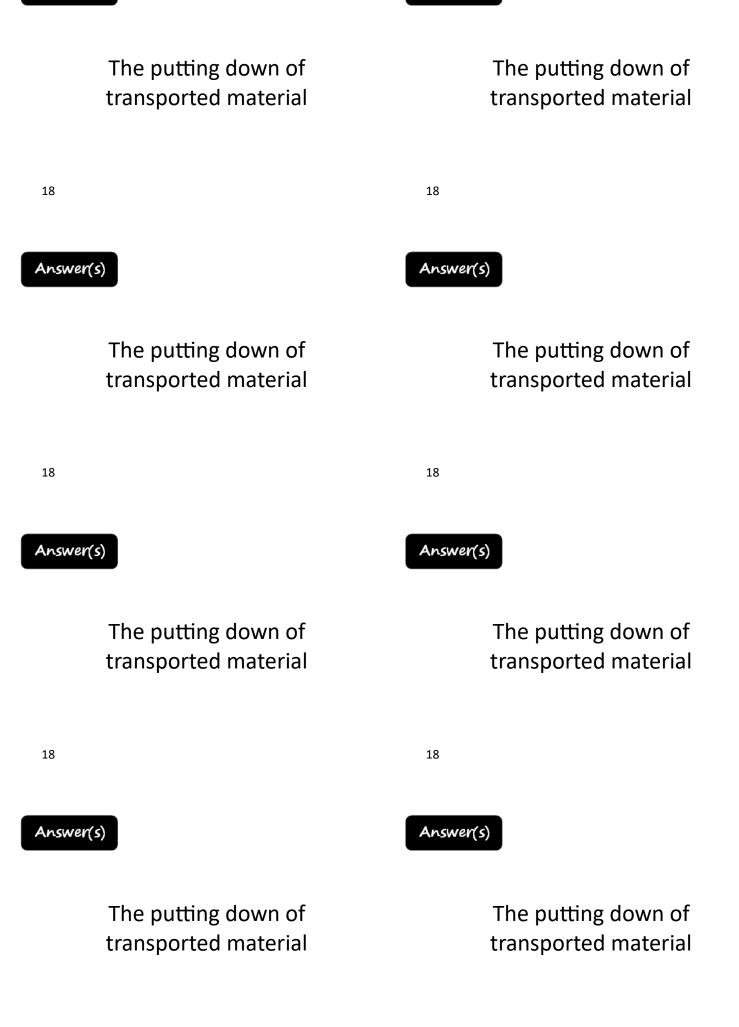
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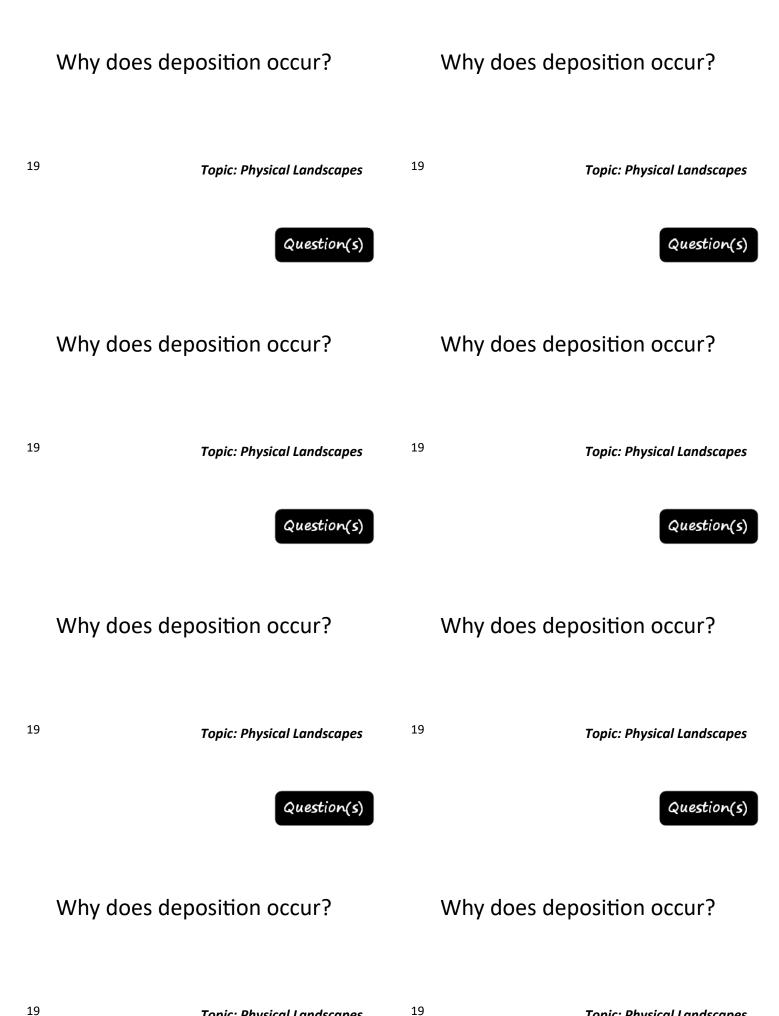


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Water energy reduces leading to material being deposited. This could be because...

Waves enter an area of shallow water / waves enter a sheltered area, e.g. a cove or bay / there is little wind / a river or estuary flows into the sea reducing wave energy 20

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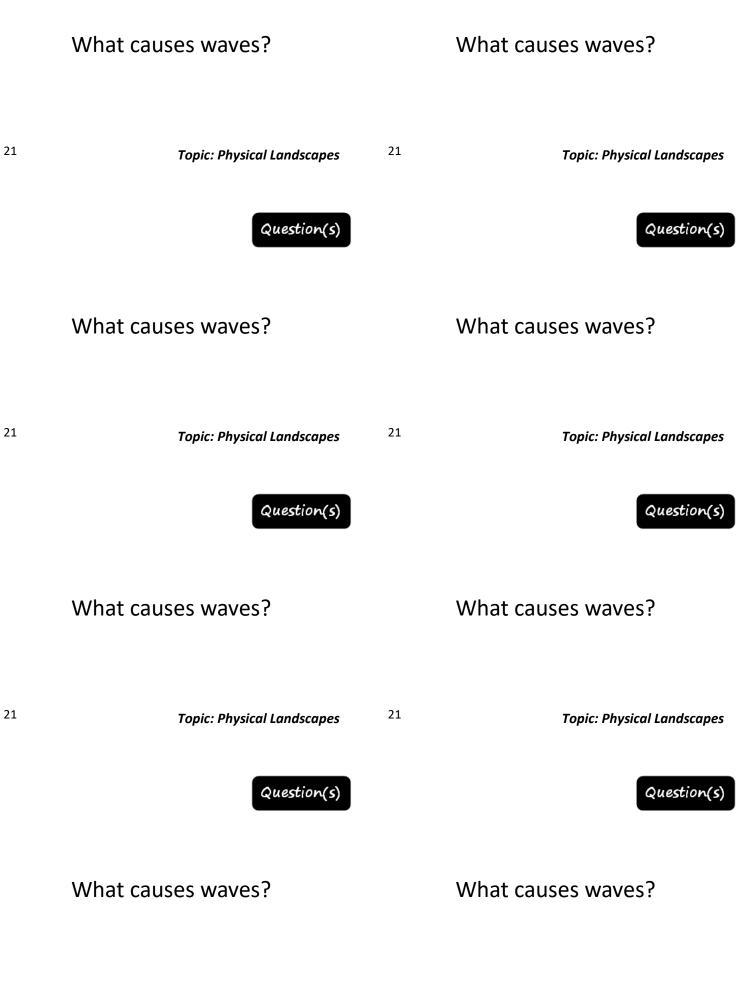
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21

Waves are caused by the transfer of energy from the wind to the sea due to the friction of wind on the water's surface

22

Answer(s)

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22

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- Fetch (the distance a wave has travelled)
- Wind speed
- Wind duration

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24

Answer(s)

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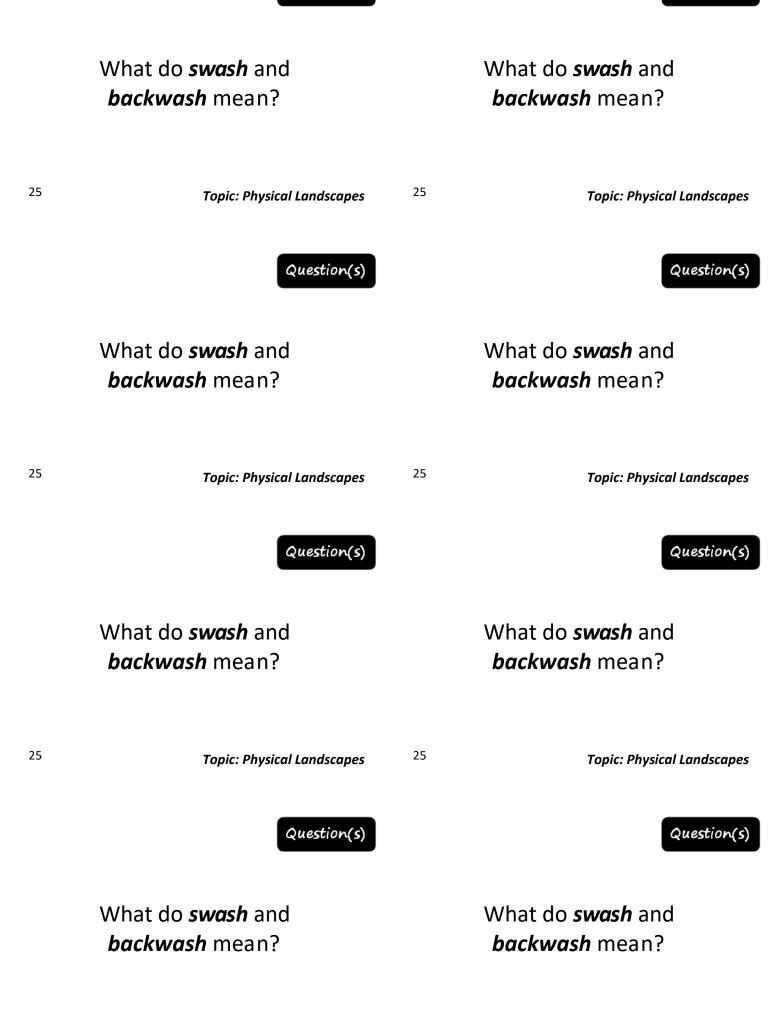
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The **swash** is the movement of a wave up a beach

The **backwash** is the wave returning back to the sea from the beach

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Answer(s)

The **swash** is the movement of a wave up a beach

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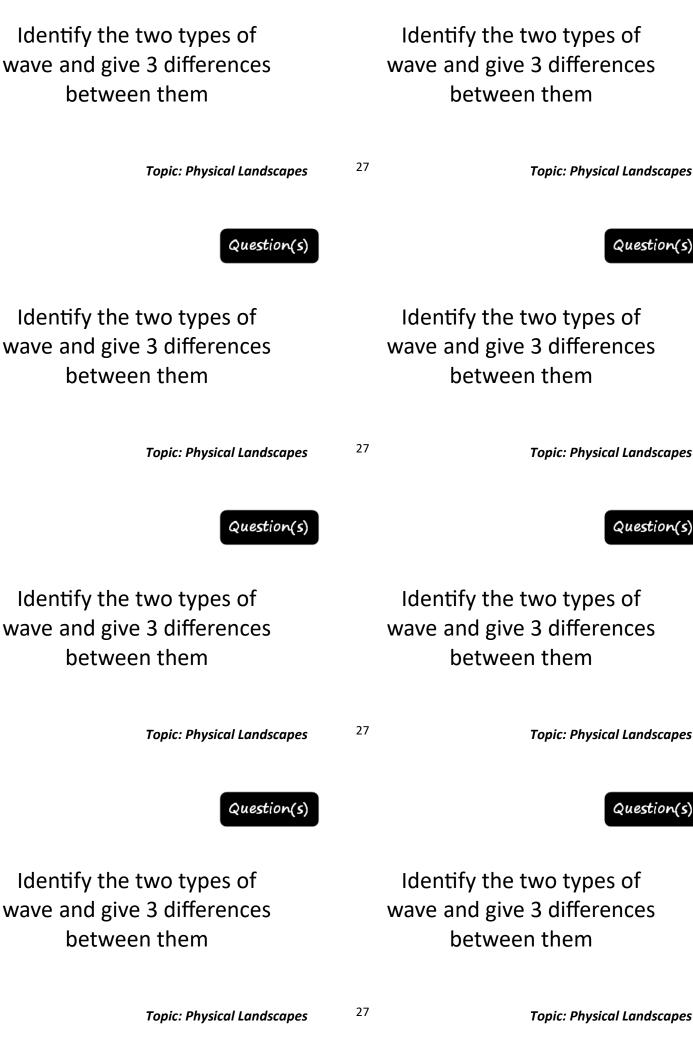
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Destructive and constructive waves

Any differences from:

- Destructive are more frequent
- Destructive are higher waves
- Constructive have a stronger swash
- Constructive have a weaker backwash
- Destructive are more erosive etc.

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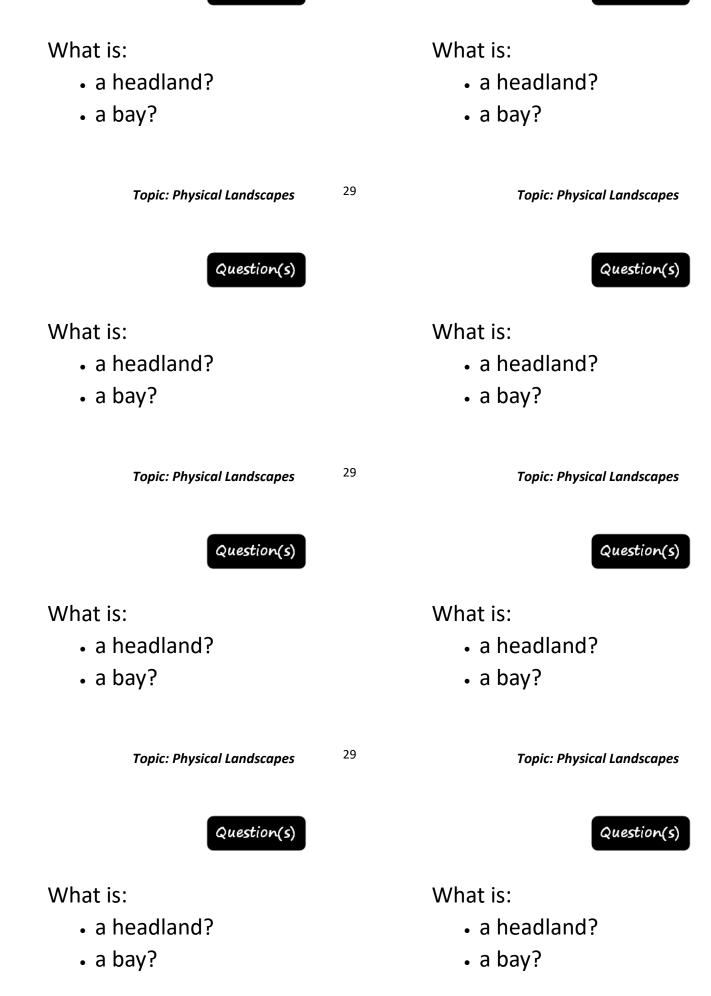
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- A headland is a cliff that sticks out into the sea and is surrounded by water on three sides.
- A bay is an inlet of the sea where the land curves inwards

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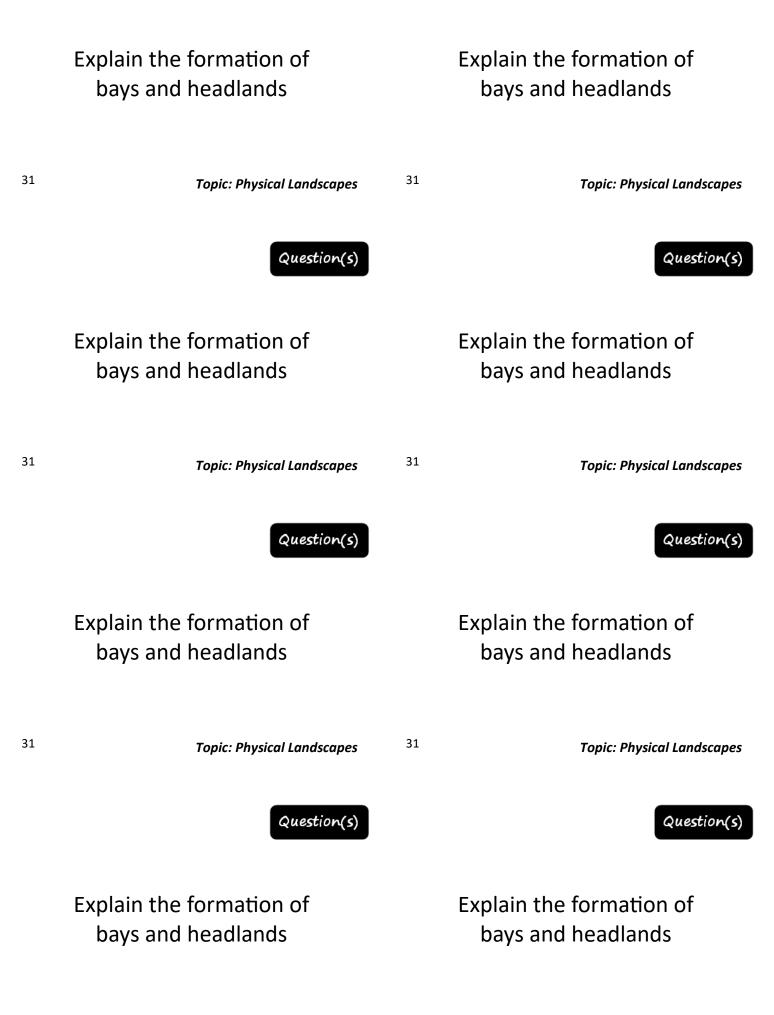
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They occur at discordant coastlines is where the geology alternates between bands of soft and hard rock. The bands of soft rock, such as sand and clay, erode (through abrasion and hydraulic action) more quickly than those of more resistant rock, such as chalk. This leaves a section of land jutting out into the sea called a headland. The areas where the soft rock has eroded away, next to the headland, are called bays.

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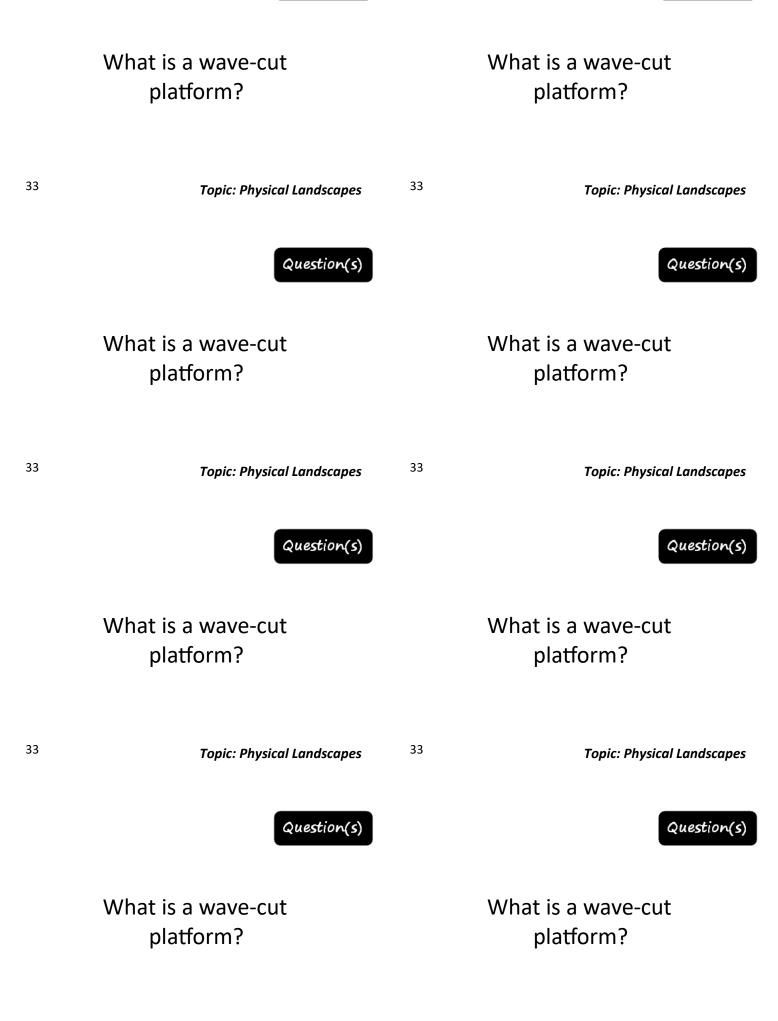
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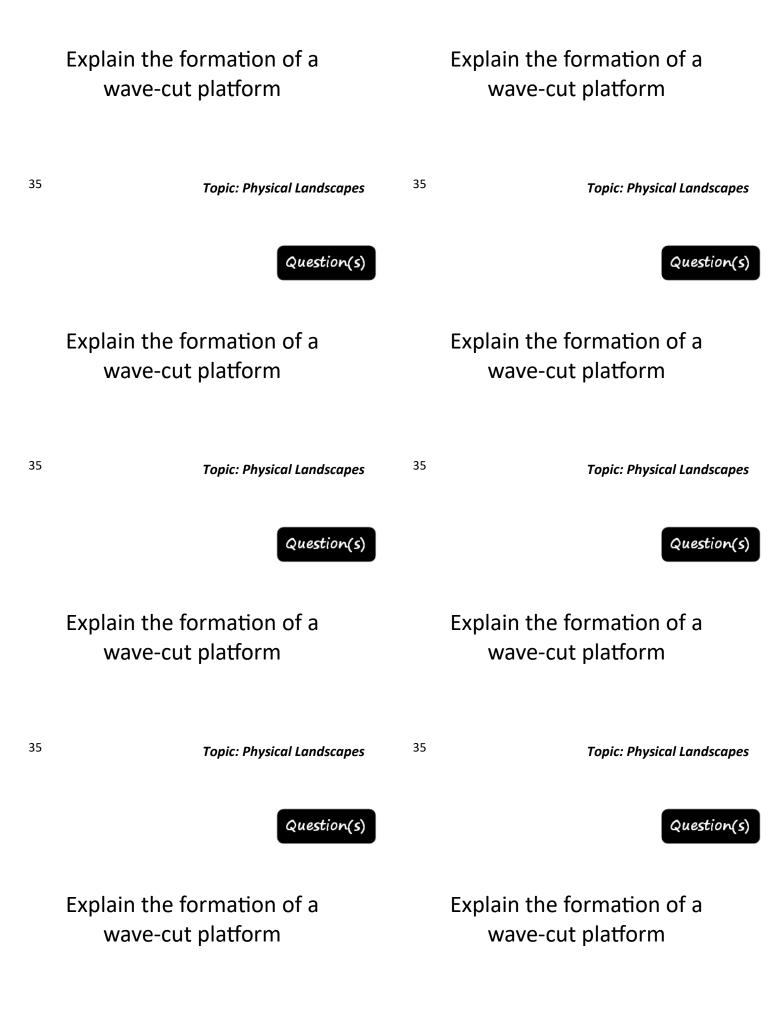
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A wave-cut platform is formed when:

- The sea attacks a weakness in the base of the cliff. For example, this could be a joint in chalk.
- A wave-cut notch is created by erosional processes such as hydraulic action and abrasion.
- As the notch becomes larger the cliff becomes unstable and collapses as the result of gravity.
- The cliff retreats inland.
- The material from the collapsed cliff face is eroded and transported away. This leaves a wave-cut platform.
- The process repeats over time. 36

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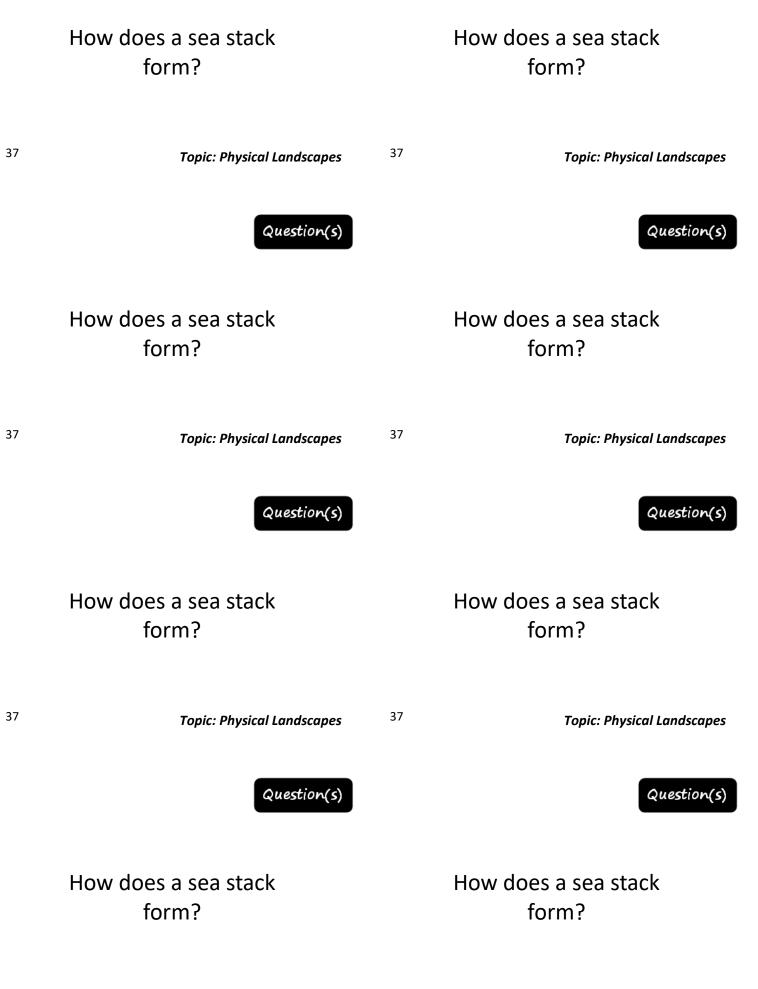
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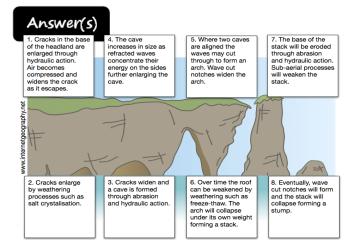
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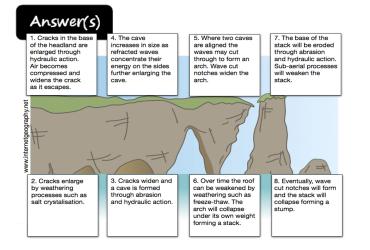
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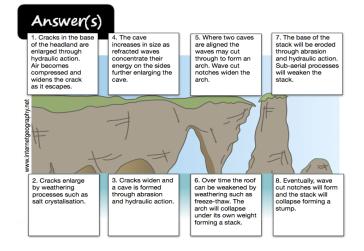


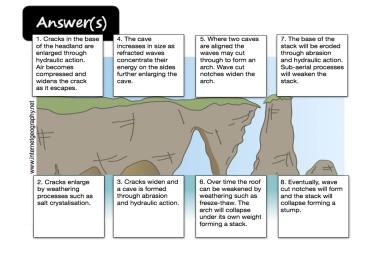


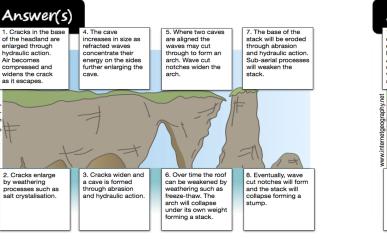


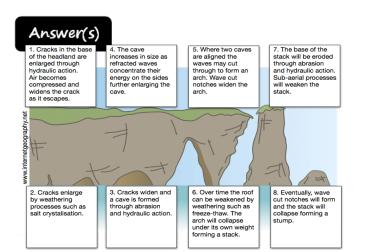
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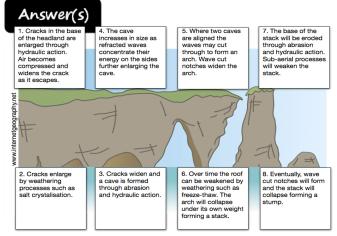
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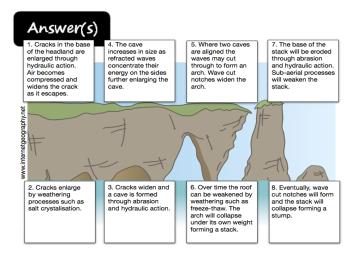


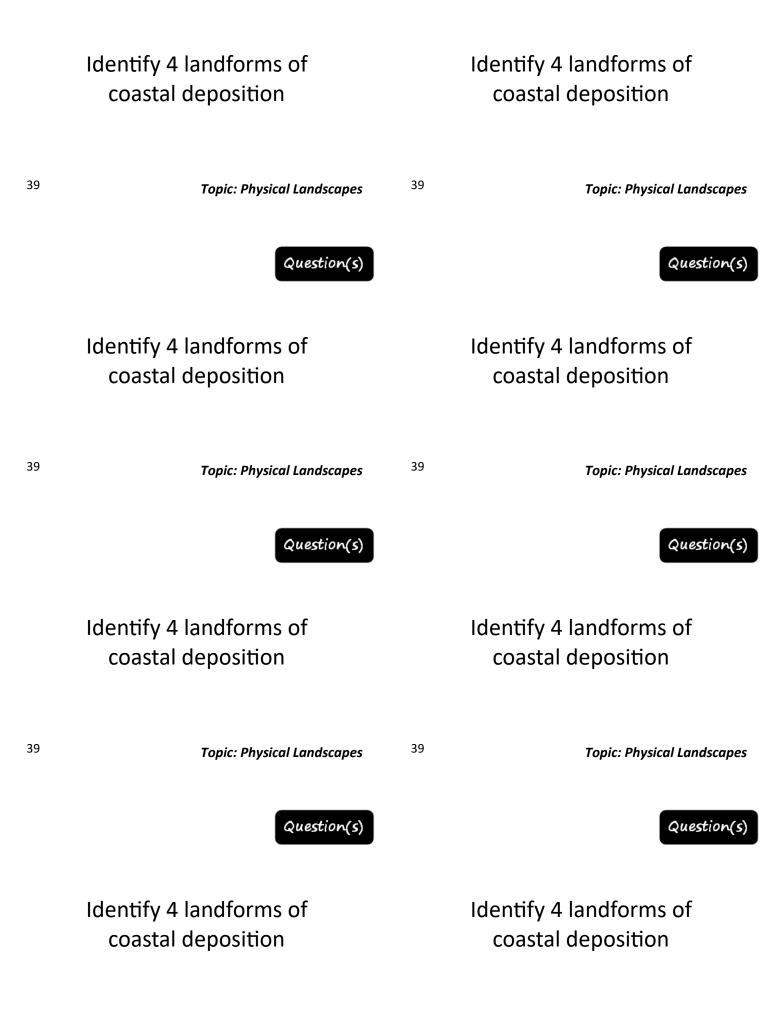












	Beaches, sand dunes, spits and bars	Beaches, sand dunes, spits and bars
40		40
Answ	er(s)	Answer(s)
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41 Question(s) What is a beach? And What is a beach? And where do they typically where do they typically form?

41

Topic: Physical Landscapes

Question(s)

What is a beach? And where do they typically form?



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41 **Topic: Physical Landscapes**

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Topic: Physical Landscapes

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A sandy beach is an area of deposited sand and shingle. They are usually formed in a sheltered bays, where low energy, constructive waves transport material onto the shore

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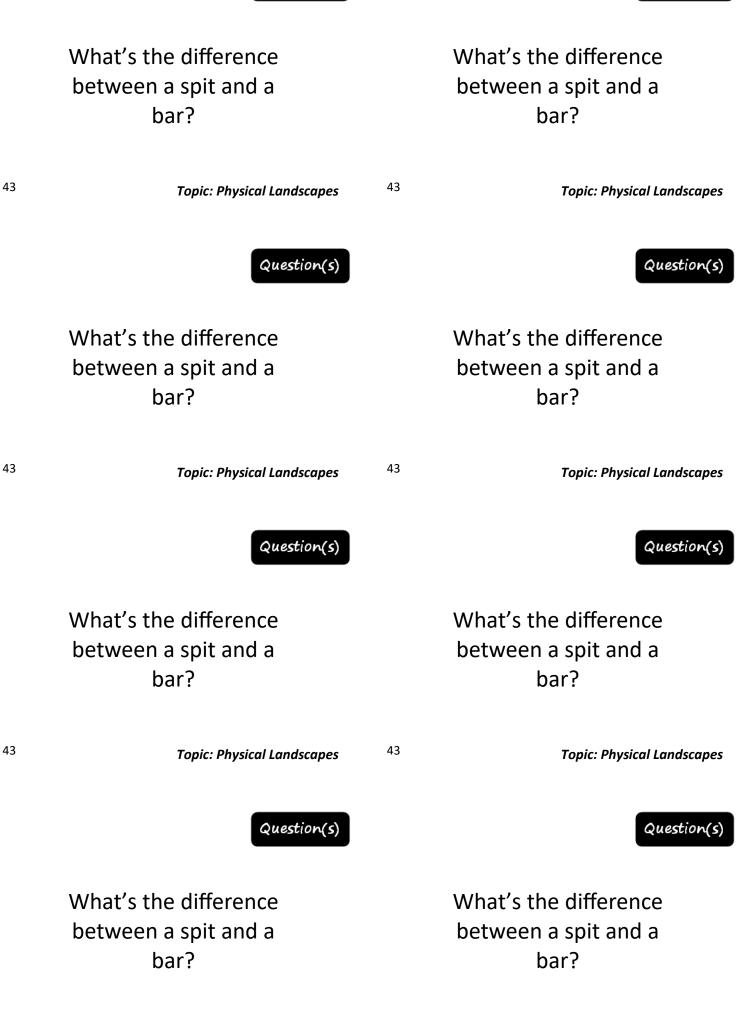
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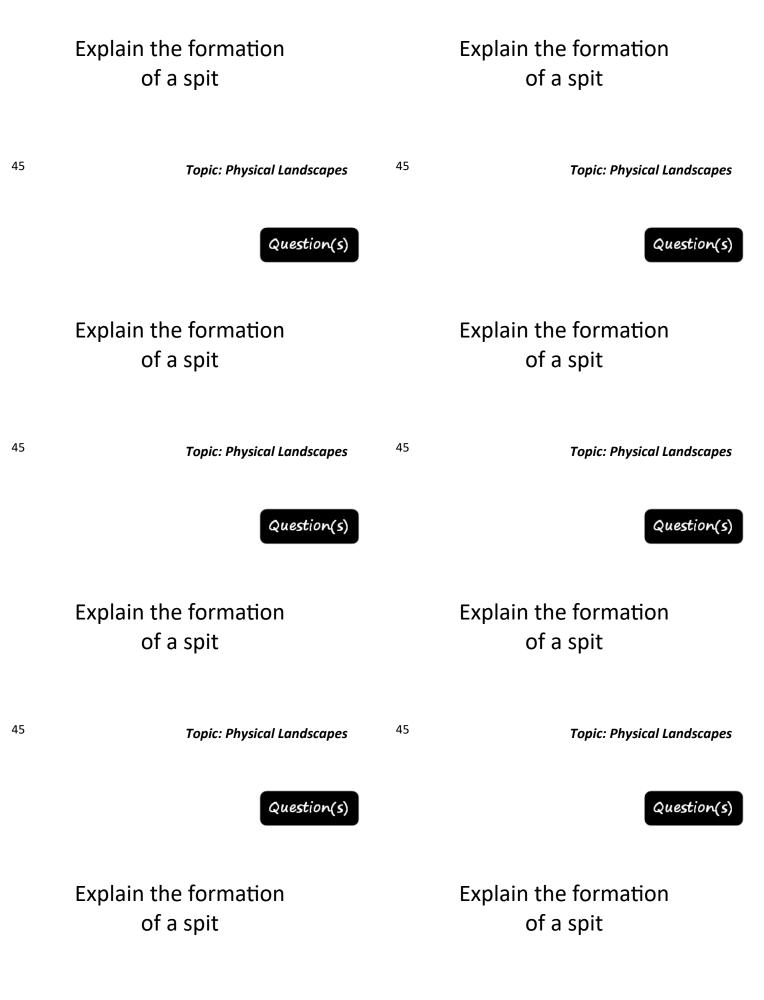
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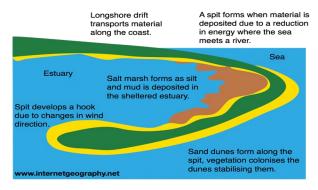
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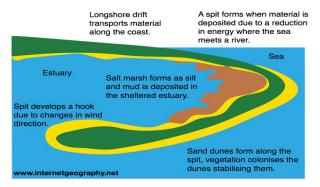


Formation of a spit



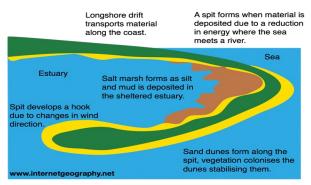
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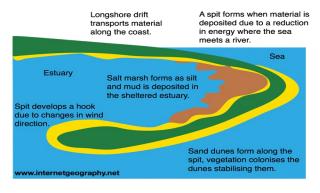
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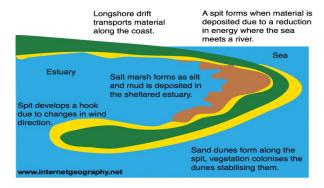


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Answer(s)

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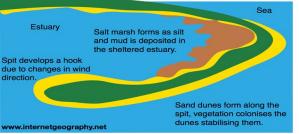
Formation of a spit

Longshore drift

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A spit forms when material is deposited due to a reduction in energy where the sea meets a river.



Answer(s) Formation of a spit A spit forms when material is Longshore drift transports material deposited due to a reduction in energy where the sea meets a river. along the coast. Estuary Salt marsh forms as silt and mud is deposited in the sheltered estuary. Spit develops a hook due to changes in wind direction

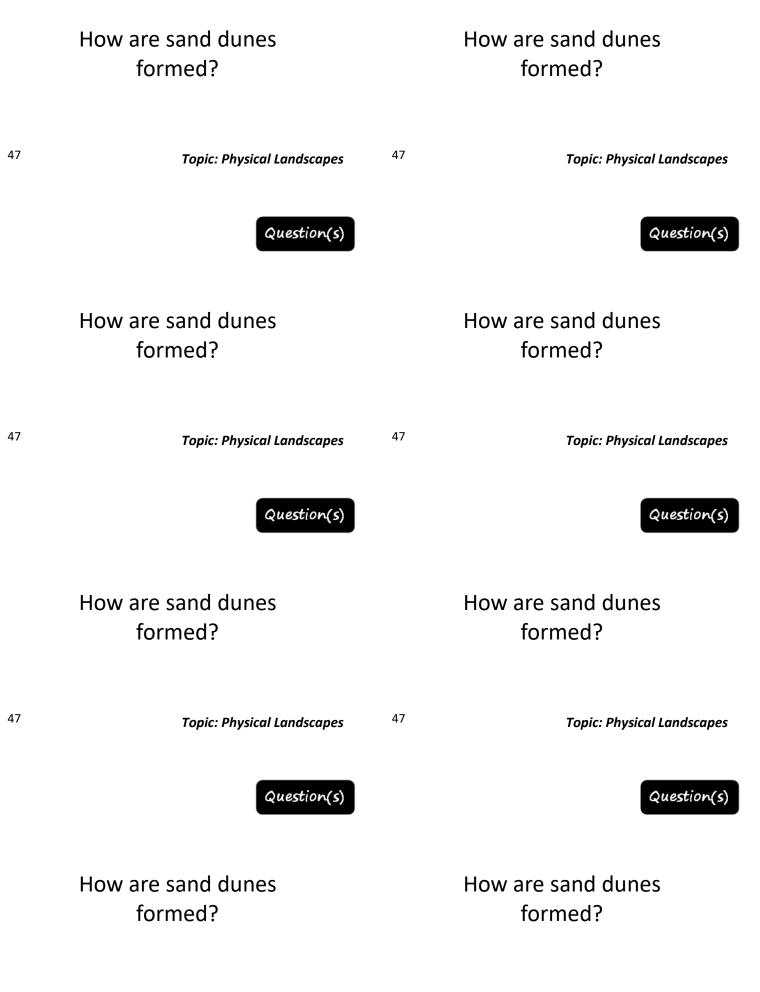
ography.net

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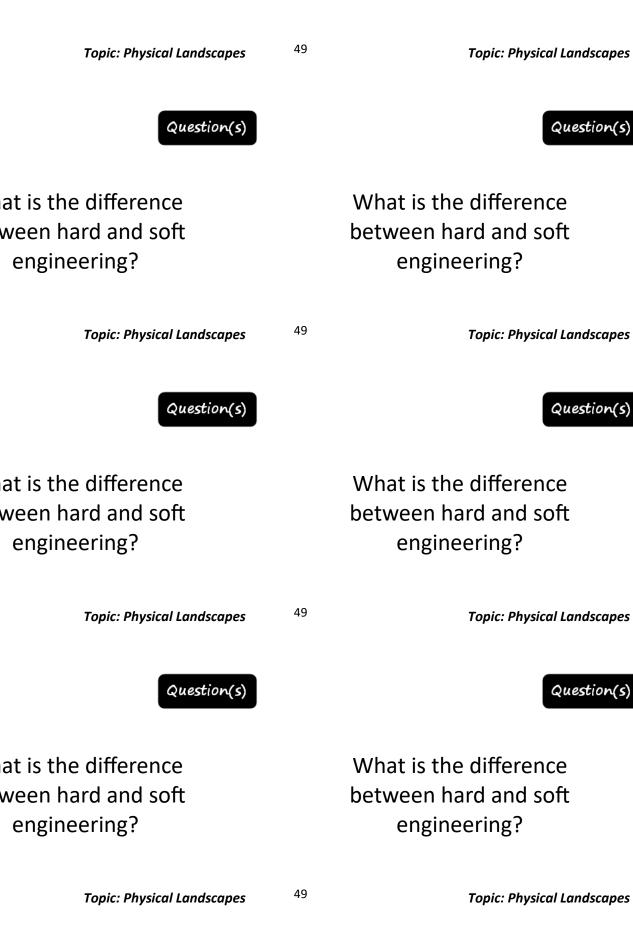
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What is the difference

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engineering?



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49

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- **Soft engineering** does not involve building artificial structures but takes a more sustainable and natural approach to managing the coast.

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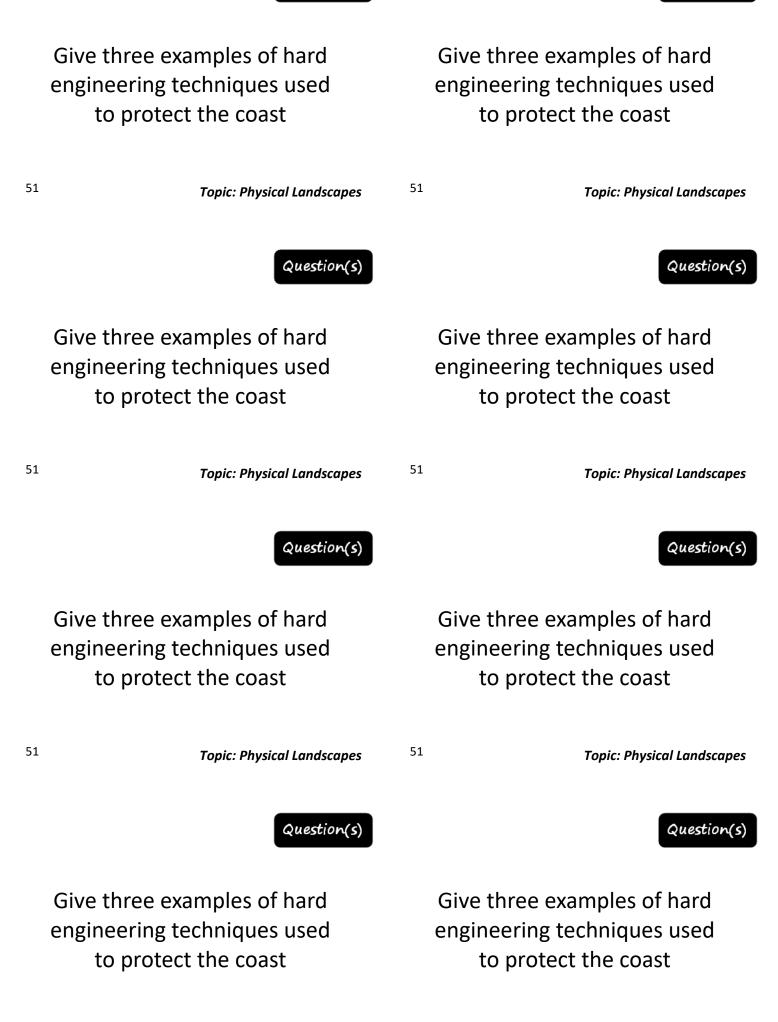
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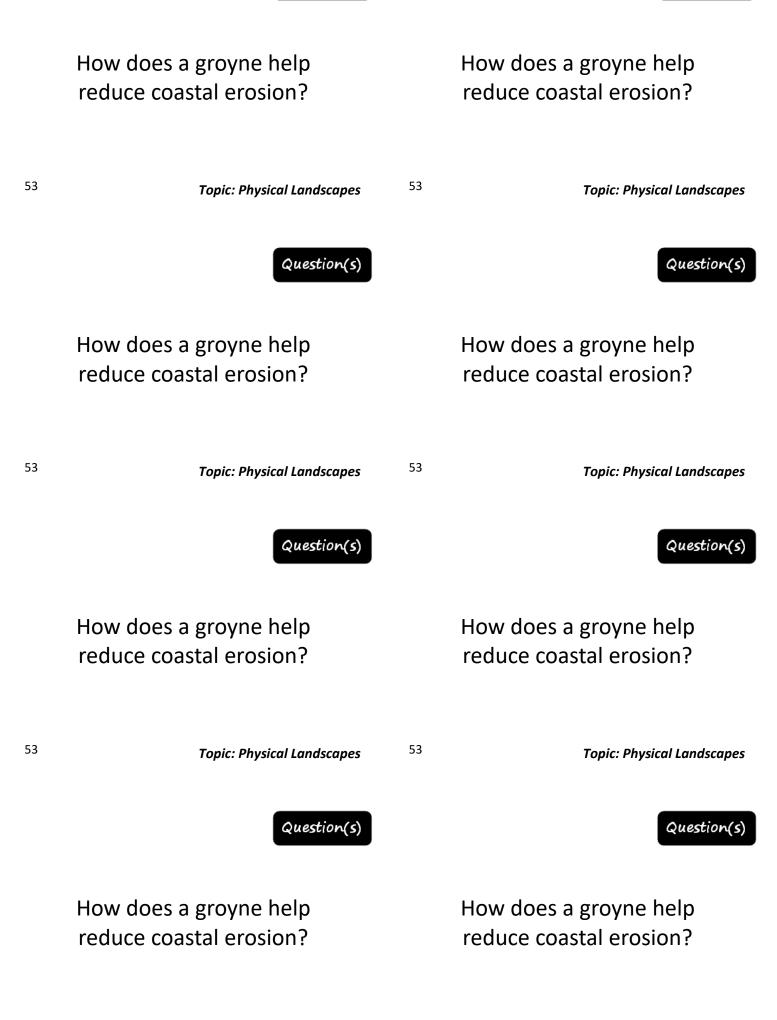
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|--|

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Groynes trap material being transported by longshore drift. This builds up a wide beach which helps absorb energy from waves, reducing the rate of cliff erosion.



54

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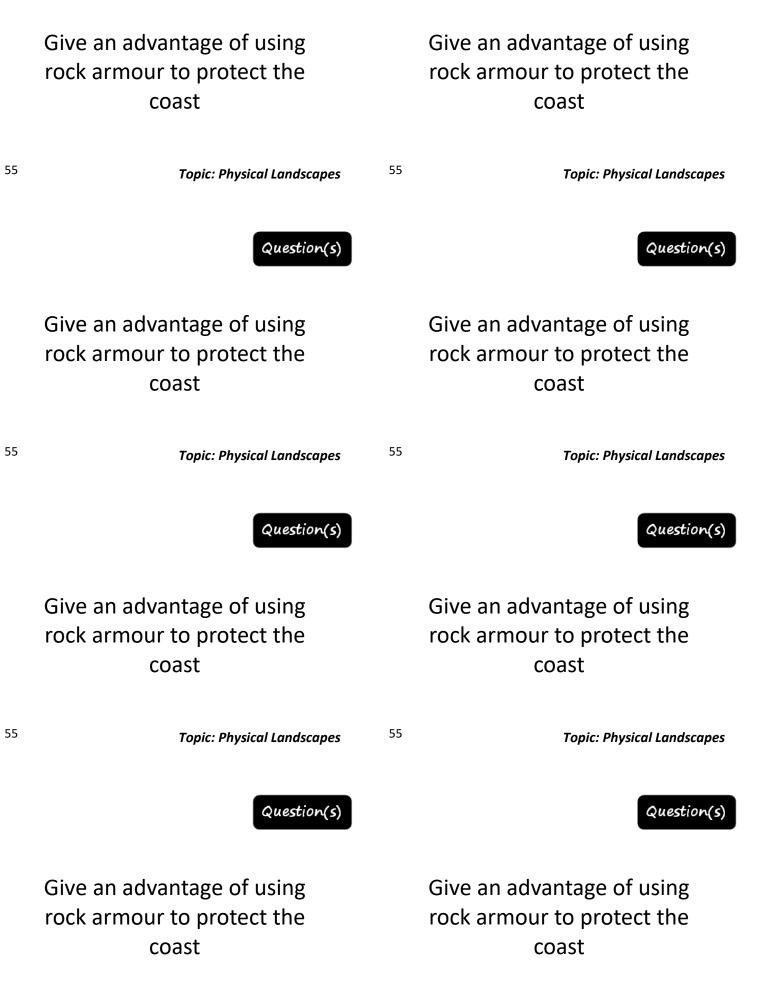
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Cheap and efficient at reducing energy in waves approaching the coast.



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56

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57	Topic: Physical Landscapes	57	Topic: Physical Landscapes
	Question(s)		Question(s)
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Topic: Physical Landscapes

Gabions are coastal defences that consist of rocks and boulders encased in a wired mesh. They absorb the energy from waves.

58

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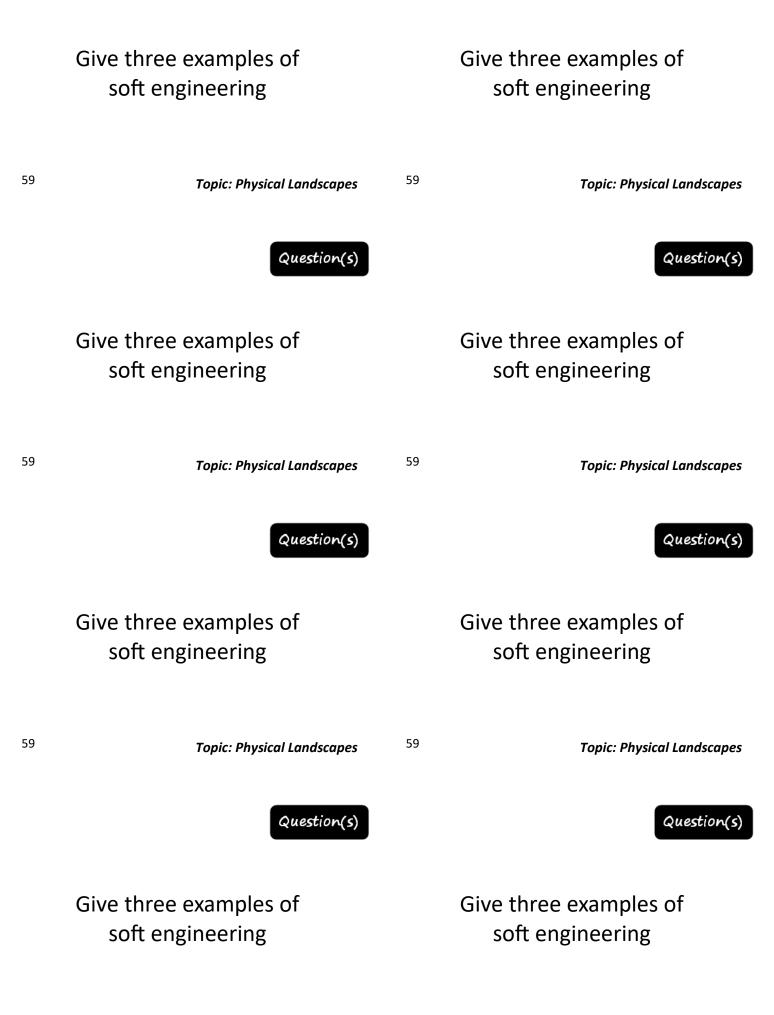


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Beach nourishment, managed Beach nourishment, managed retreat, dune regeneration, retreat, dune regeneration, beach re-profiling. beach re-profiling. 60 60 Answer(s) Answer(s) Beach nourishment, managed Beach nourishment, managed retreat, dune regeneration, retreat, dune regeneration, beach re-profiling. beach re-profiling. 60 60 Answer(s) Answer(s) Beach nourishment, managed Beach nourishment, managed retreat, dune regeneration, retreat, dune regeneration, beach re-profiling. beach re-profiling. 60 60 Answer(s) Answer(s) Beach nourishment, managed Beach nourishment, managed retreat, dune regeneration, retreat, dune regeneration, beach re-profiling. beach re-profiling.

Identify the soft engineering techniques being described below:

- a. This is when areas of the coast are allowed to erode. This is usually in areas where the land is of low value.
- b. Beaches are made higher and wider by importing sand and shingle to an area affected by longshore drift.
- c. This involves taking action to build up dunes and increase vegetation on them
- d. This technique involves redistributing sediment from the lower part of the beach to the upper part of the beach.

Topic: Physical Landscapes

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- b. Beach nourishment
- c. Dune regeneration
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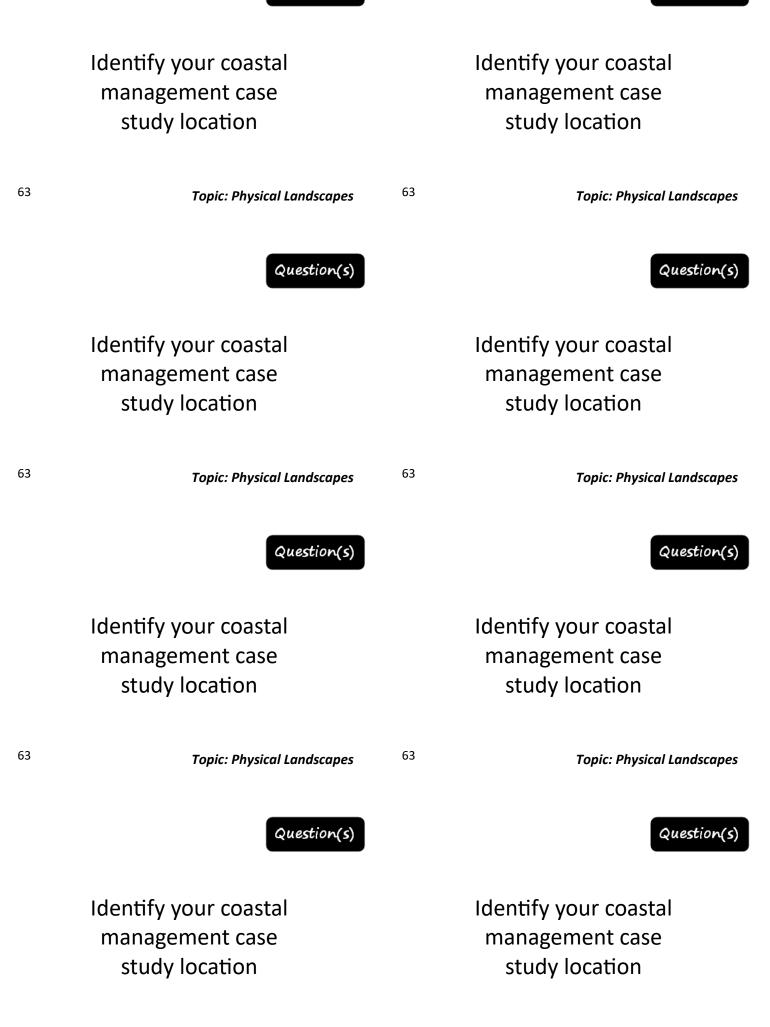
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Topic: Physical Landscapes

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- Erosion is causing the cliffs retreat about 1.8m every year. Up to 10m in some areas (the fastest erosion in Europe)
- The coastline is made of **boulder clay** which erodes easily and slumps when wet and causes cliff collapse
- There is a large *fetch*, which means more powerful (destructive) waves and more erosion
- The beaches are *naturally narrow* give less protection to the coast as it doesn't reduce the power of the waves 66

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Identify the coastal management strategies used at your location

67

67

67

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Topic: Physical Landscapes

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Topic: Physical Landscapes

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Identify the coastal management strategies used at your location

Answer(s)

sea wall and

wooden groynes

Hornsea - Sea wall,

wooden groynes

and rock armour

Withernsea - Sea

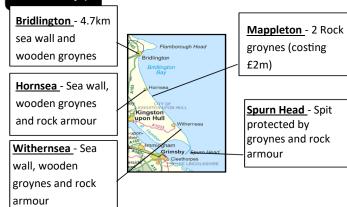
groynes and rock

wall, wooden

armour

armour

Bridlington - 4.7km

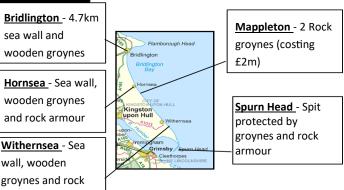


Flamb

idlington

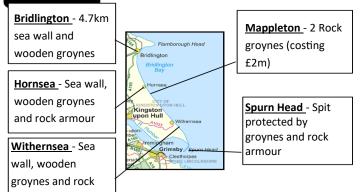
Kingston upon Hull

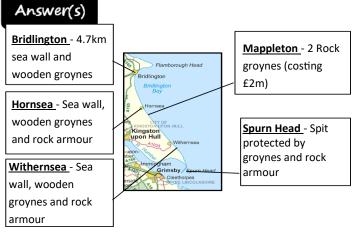
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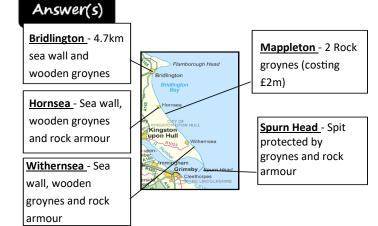


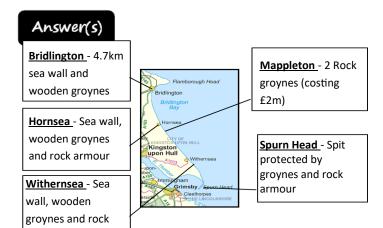
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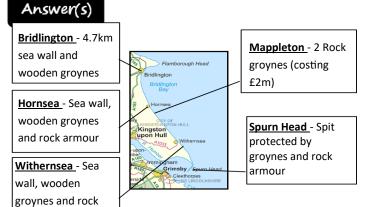
armour











armour

armour

Mappleton - 2 Rock

groynes (costing

Spurn Head - Spit

groynes and rock

protected by

armour

£2m)

What have been the positive impacts of the coastal management strategy?

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Topic: Physical Landscapes

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69



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Topic: Physical Landscapes

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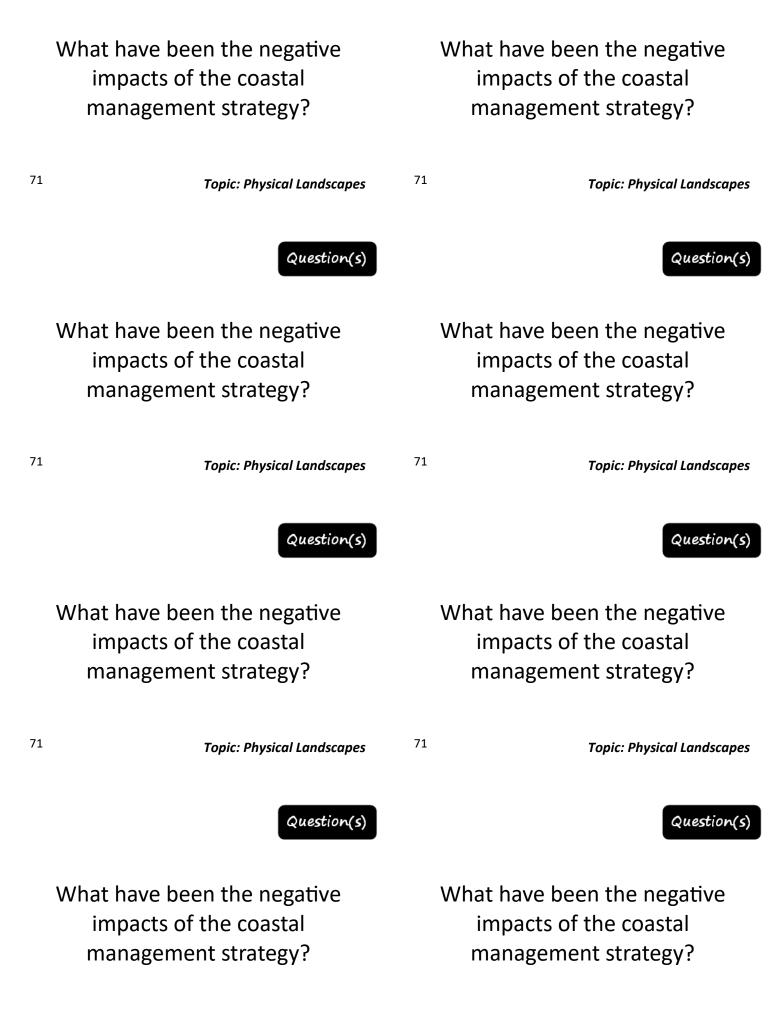
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- There has been an increase in erosion at Great Cowden because of the groynes used in Mappleton have narrowed the beaches further down the coast. This has led to farms being destroyed by the erosion and the loss of 100 chalets at the Golden Sands Holiday Park.
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- a. Source
- b. Mouth
- c. Tributary
- d. Drainage Basin
- e. Confluence

Topic: Physical Landscapes

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- a. The **source** is the original point from which the river flows
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- c. A **tributary** is a smaller river/stream that flows into a larger river
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- e. A **confluence** is the point where two rivers merge

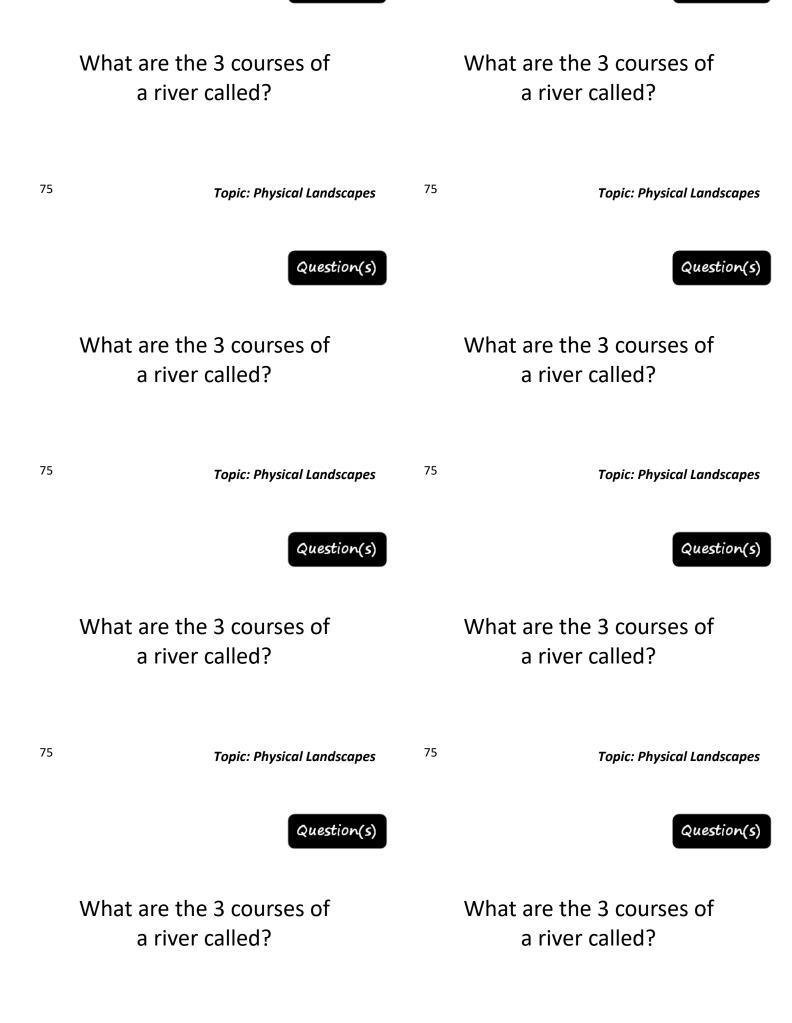
74

Answer(s)

- a. The **source** is the original point from which the river flows
- b. The **mouth** is where the river flows into the sea
- c. A **tributary** is a smaller river/stream that flows into a larger river
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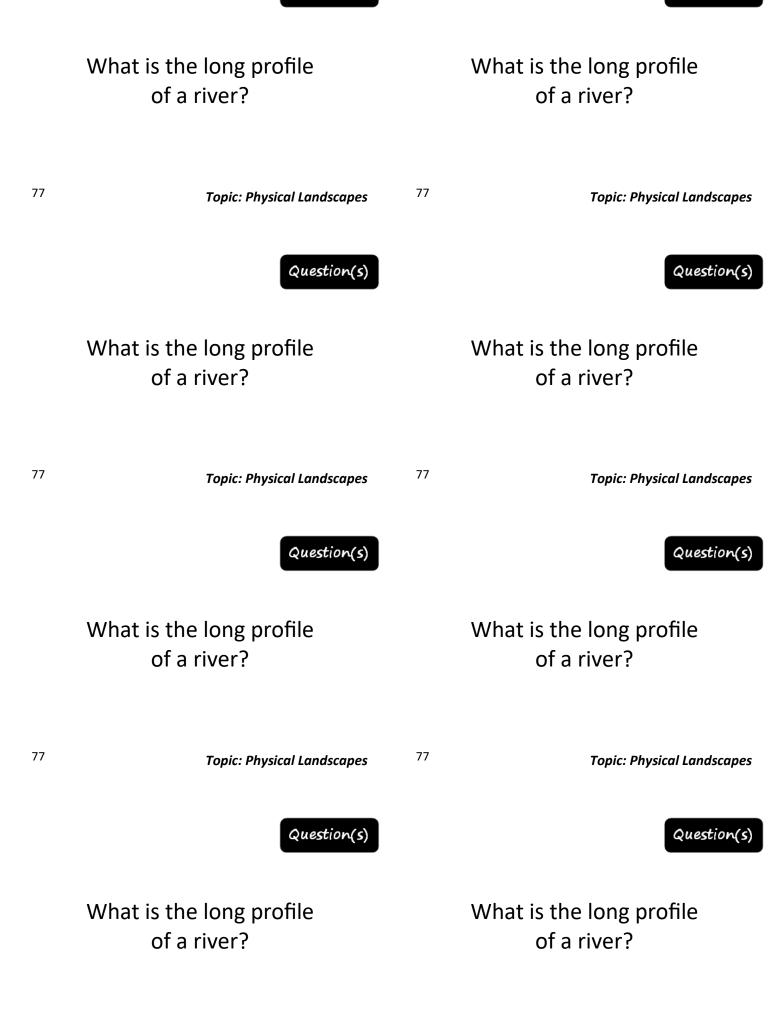
74

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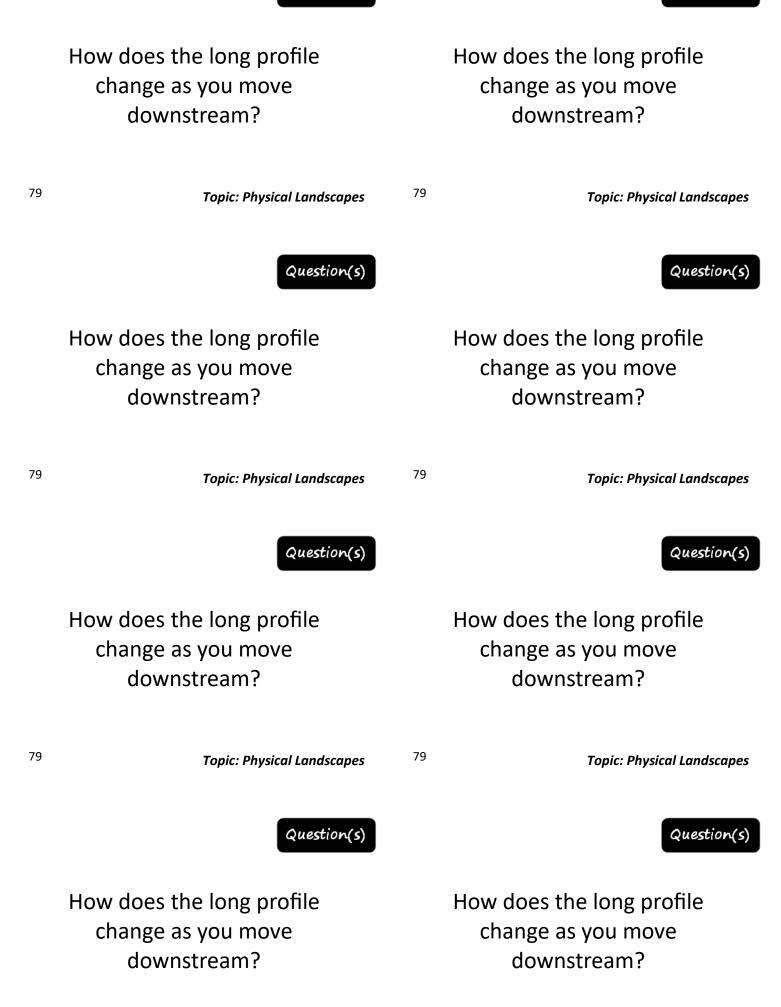


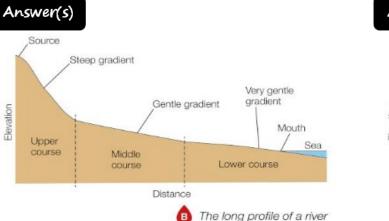
A	ns	Ne	r(s)
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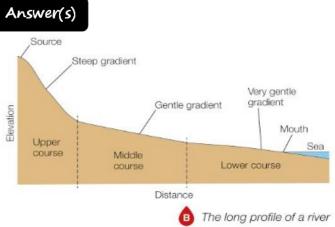
	Upper, middle and lower courses	Upper, middle and lower courses
76		76
Answ	er(s)	Answer(s)
	Upper, middle and lower courses	Upper, middle and lower courses
76		76
Answ	er(s)	Answer(s)
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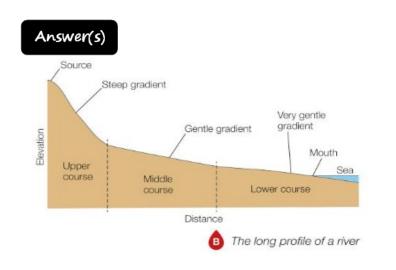


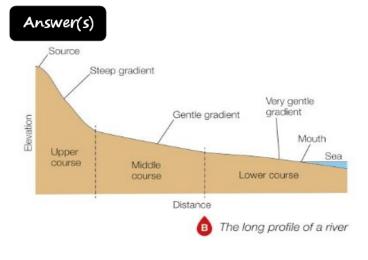
A Long profile shows the gradient (steepness) of the river from its source to mouth	A Long profile shows the gradient (steepness) of the river from its source to mouth
78	78
Answer(s)	Answer(s)
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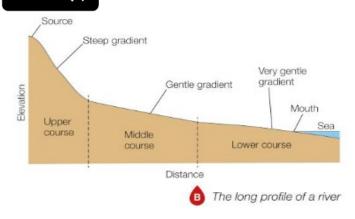


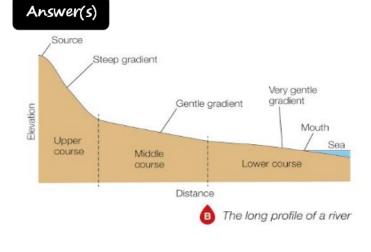


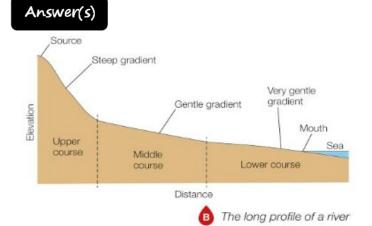


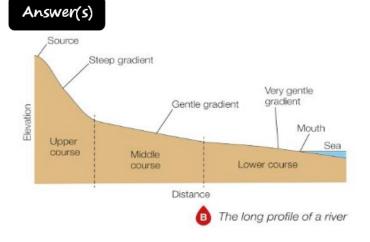


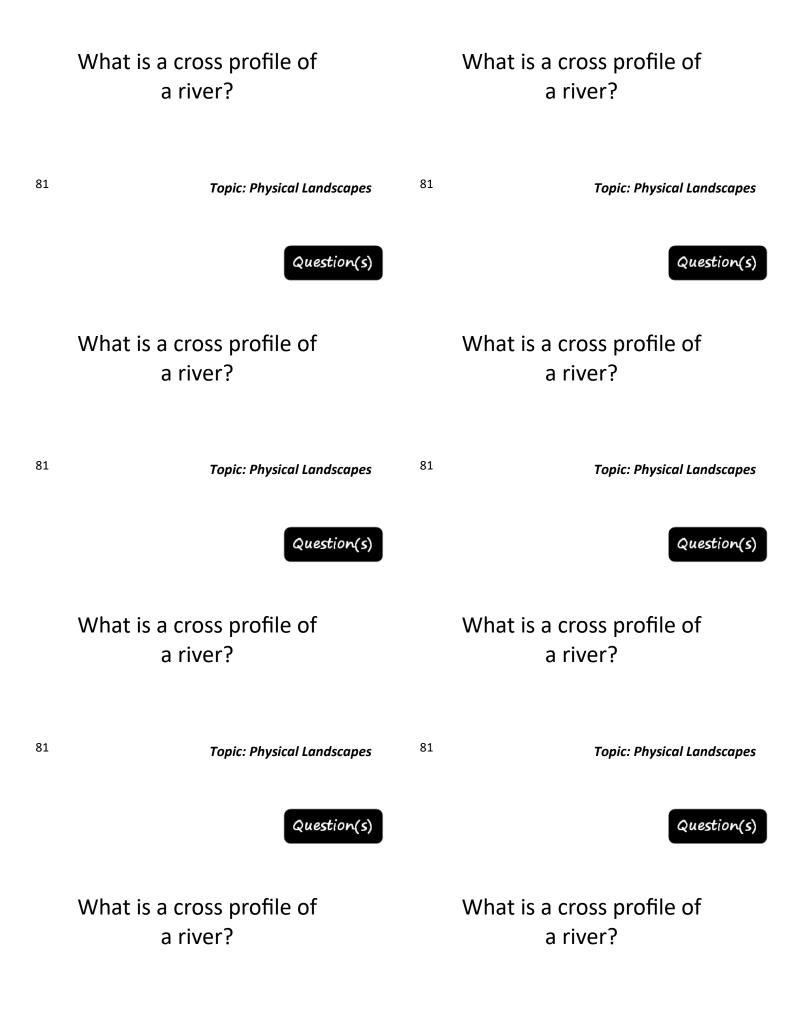












River cross profiles show you a cross section, of a river's channel and valley at certain points in the river's course.

82

Answer(s)

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River cross profiles show you a cross section, of a river's channel and valley at certain points in the river's course.

How does the cross profile change as you move downstream?

How does the cross profile change as you move downstream?

Topic: Physical Landscapes

Question(s)

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How does the cross profile change as you move downstream? Topic: Physical Landscapes

Question(s)

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83

83

83

Topic: Physical Landscapes

Question(s)

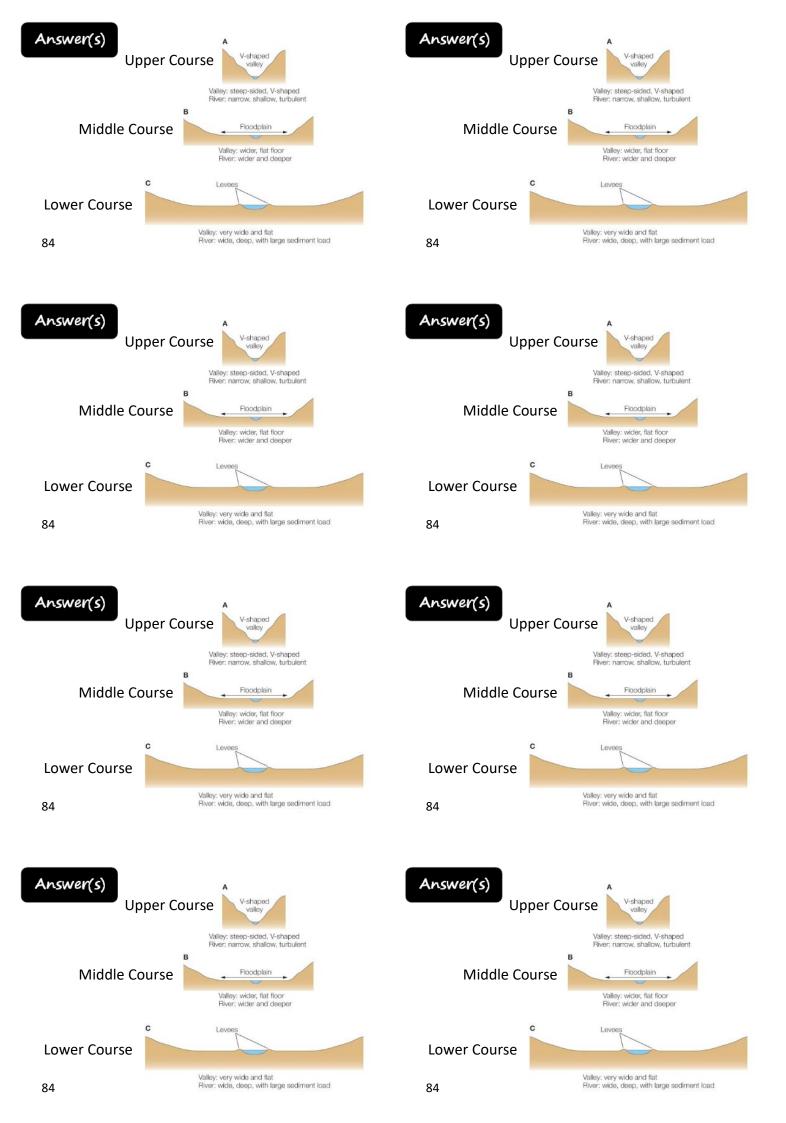
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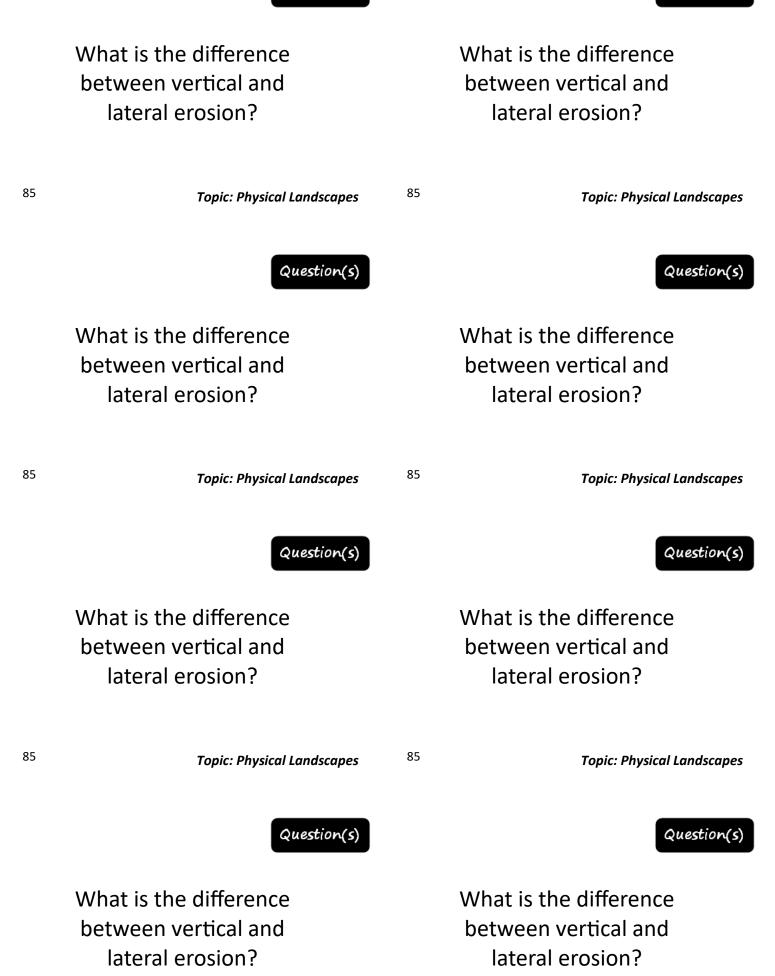
Topic: Physical Landscapes

Question(s)

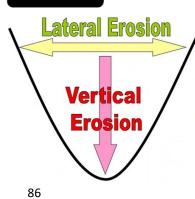
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83





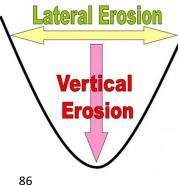




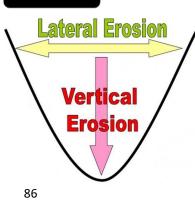
In the upper course the river does not have enough energy to erode laterally, so erodes vertically.

In the lower courses, vertical erosion continues but the river erodes sideways causing the valley floor to flatten.





Answer(s)



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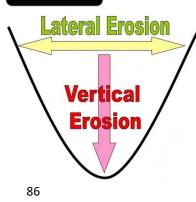
Vertical Erosion 86

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Answer(s)

Answer(s)



Lateral Erosion

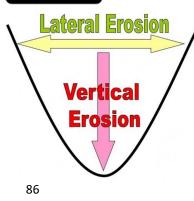
Vertical

Erosion

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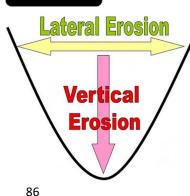
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87

87

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Question(s)

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Topic: Physical Landscapes Question(s)

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What landforms do you find at each course of the river? Topic: Physical Landscapes

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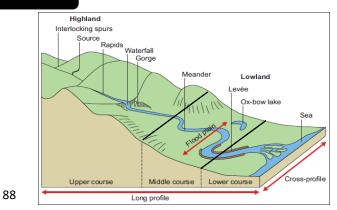
Topic: Physical Landscapes

Question(s)

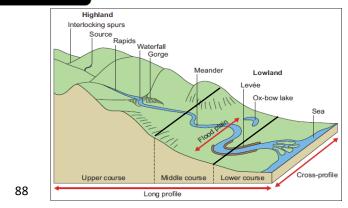
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87

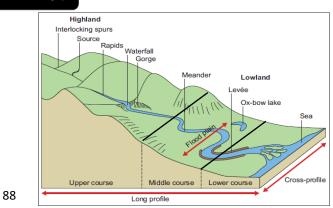
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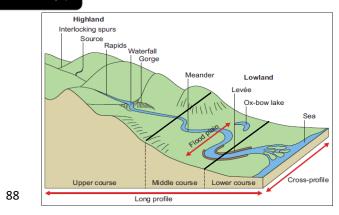




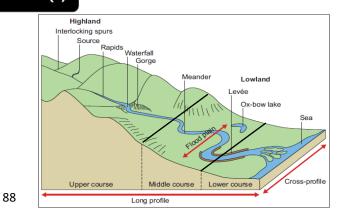
Answer(s)



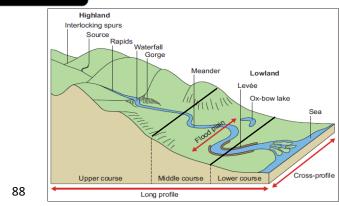
Answer(s)



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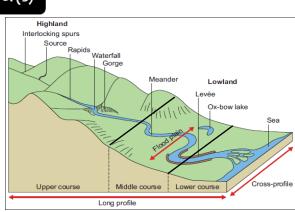


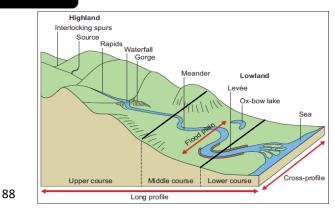


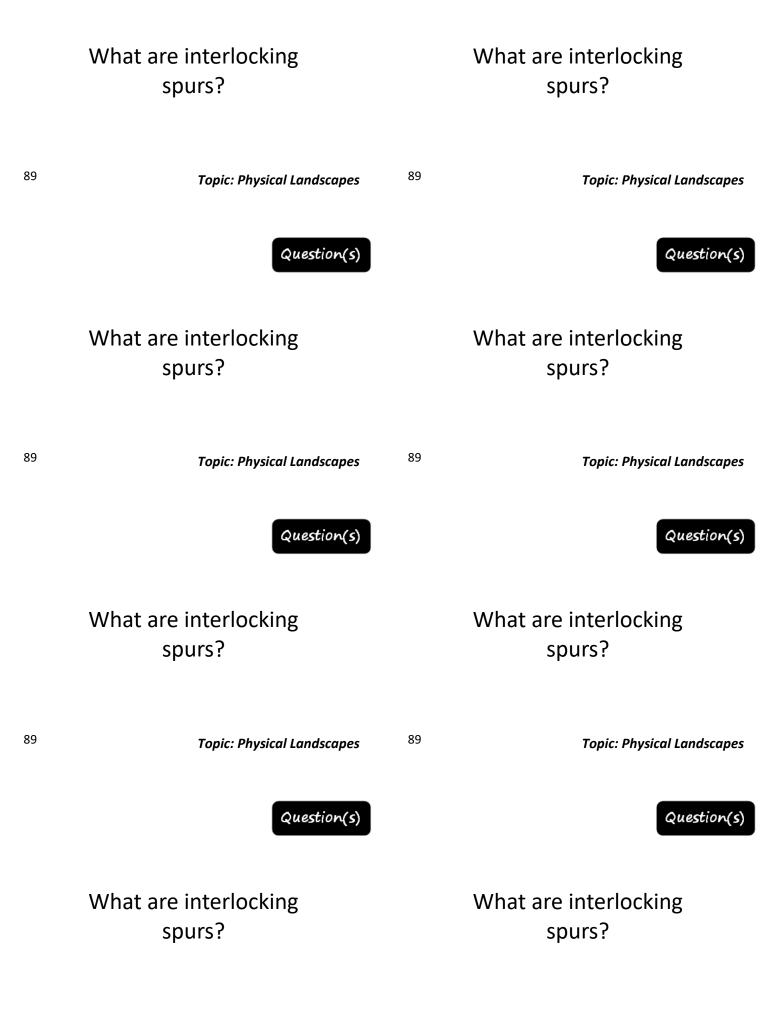


Answer(s)

88







Answer(s)



Interlocking spurs are fingers of land that jut out into the river valley that streams and rivers are forced to flow around in the upper course

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Answer(s)



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Answer(s)



Interlocking spurs are fingers of land that jut out into the river valley that streams and rivers are forced to flow around in the upper course

90

Answer(s)



Interlocking spurs are fingers of land that jut out into the river valley that streams and rivers are forced to flow around in the upper course Answer(s)



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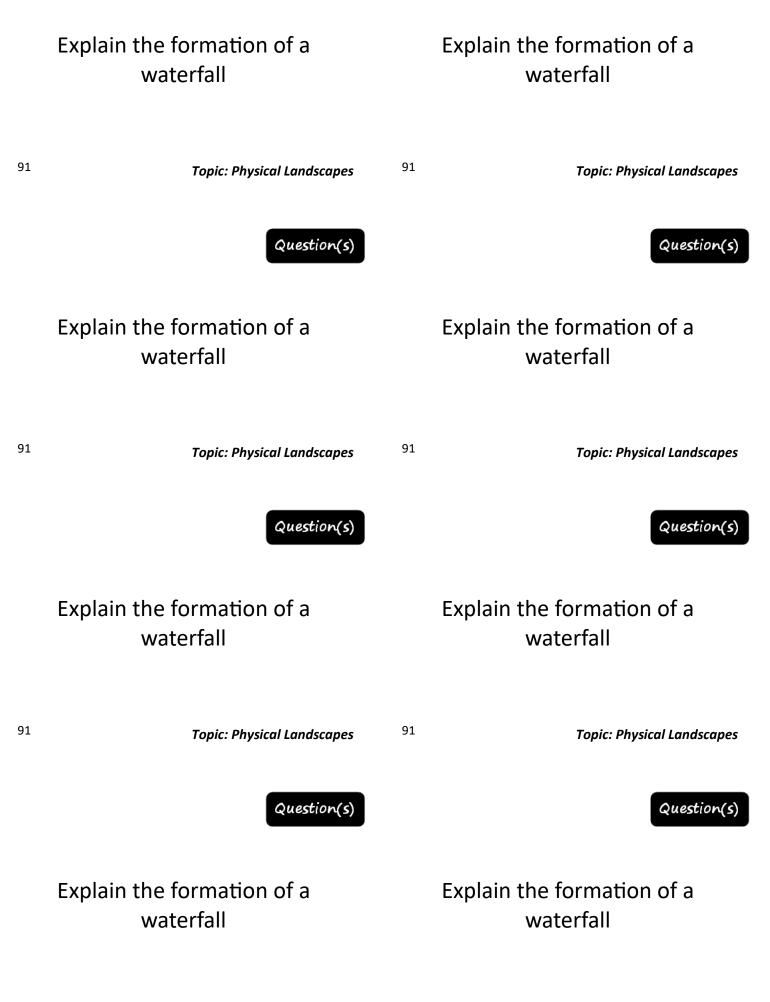


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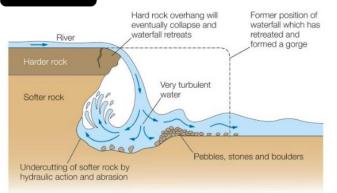
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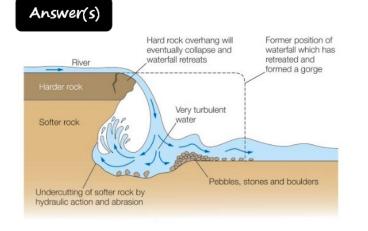


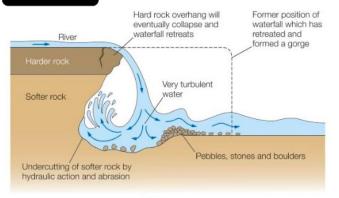
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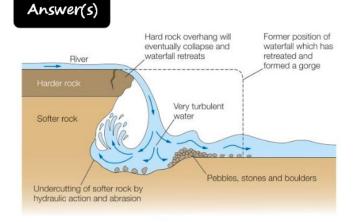




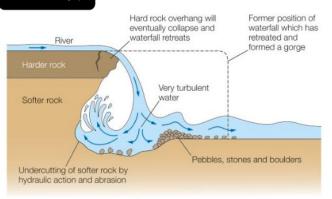


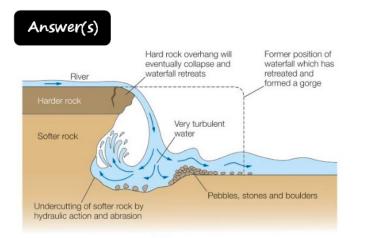


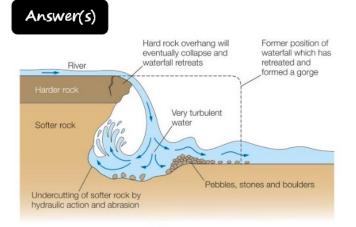




Answer(s)







What is a gorge? Give three characteristics of a gorge

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Topic: Physical Landscapes Question(s) What is a gorge? Give three characteristics of a

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Topic: Physical Landscapes

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What is a gorge? Give three characteristics of a gorge Topic: Physical Landscapes

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Topic: Physical Landscapes

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Topic: Physical Landscapes

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93

93

A gorge is a narrow steep-sided valley that is usually found immediately downstream of a waterfall. It is formed by the gradual retreat of a waterfall over hundreds or thousands of years

Steep, near vertical sides Narrow and shallow channel Water travelling around rocks in the channel



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Straight river

Answer(s)

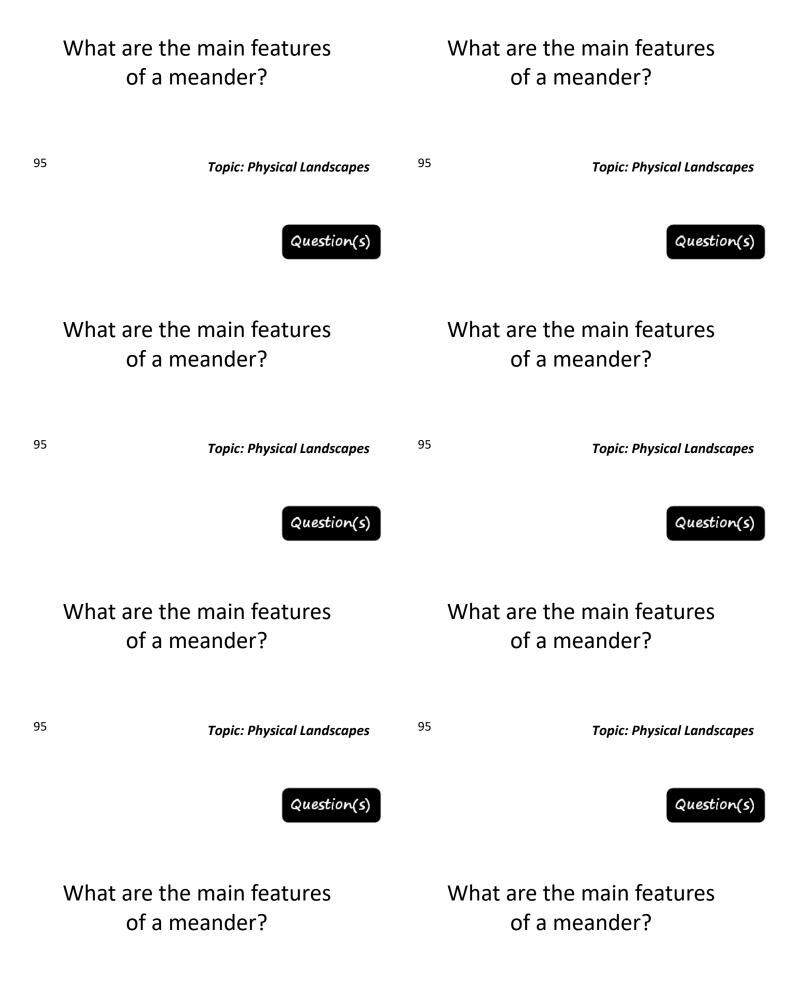
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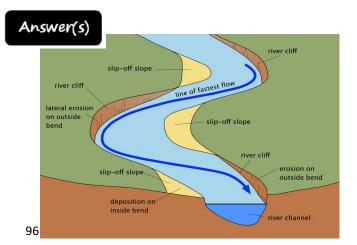


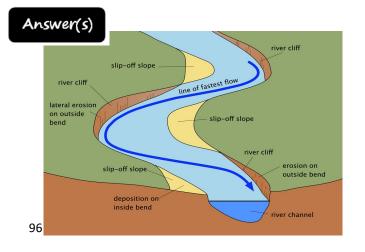
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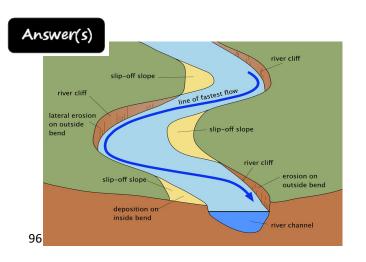
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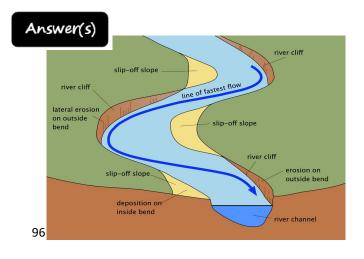


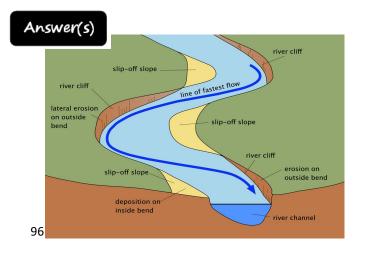


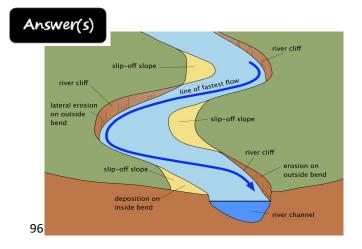


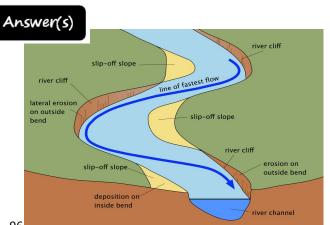


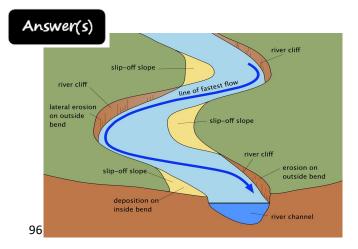


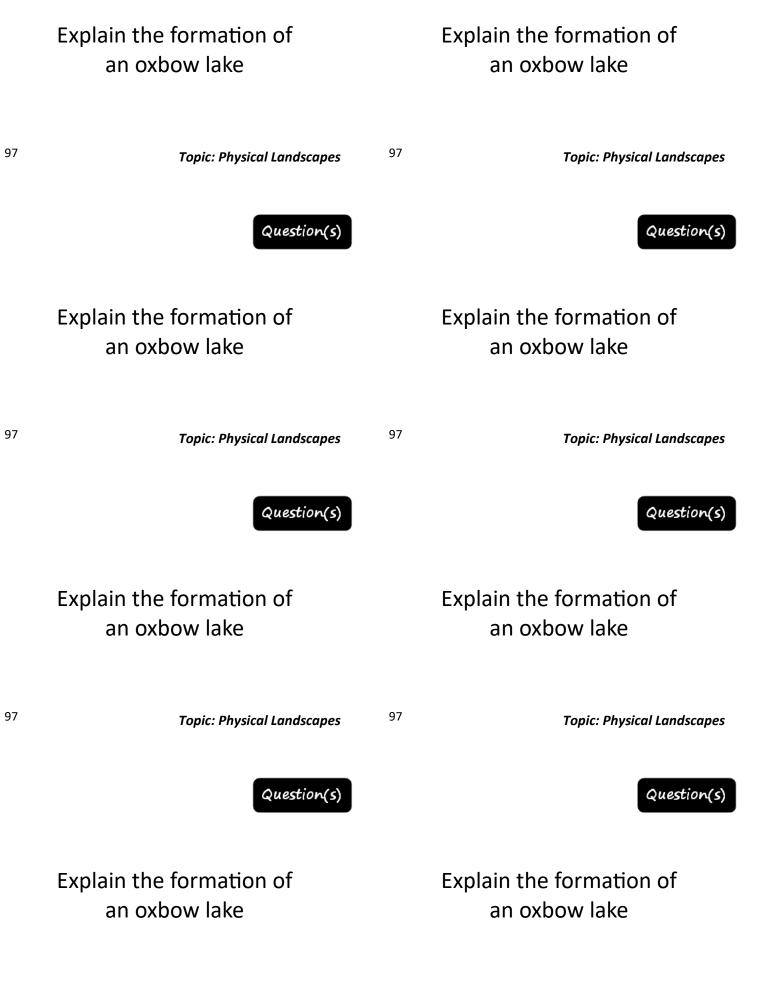












Due to erosion on the outside of a bend and deposition on the inside, the shape of a meander will change over a period of time. Erosion narrows the neck of the land within the meander and as the process continues, the meanders move closer together. When there is a very high discharge (usually during a flood), the river cuts across the neck, taking a new, straighter and shorter route. Deposition will occur to cut off the original meander, leaving a horseshoe-shaped oxbow lake. 98

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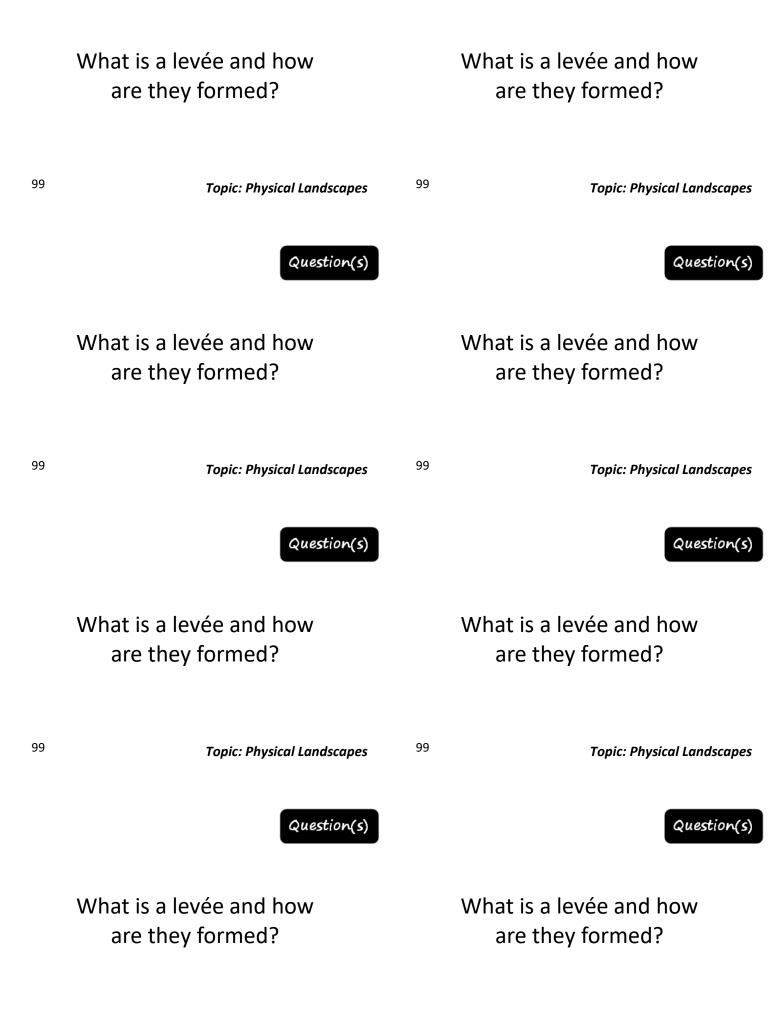
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Levees are naturally raised riverbanks found along the sides of the river channel that has experienced flooding.

When a river floods friction with the floodplain leads to a rapid decrease in the velocity of the river and therefore its capacity to transport material. Larger material is deposited closest to the river bank. This often leads to large, raised mounds being formed. Smaller material is deposited further away and leads to the formation of gently sloping sides of the levees.

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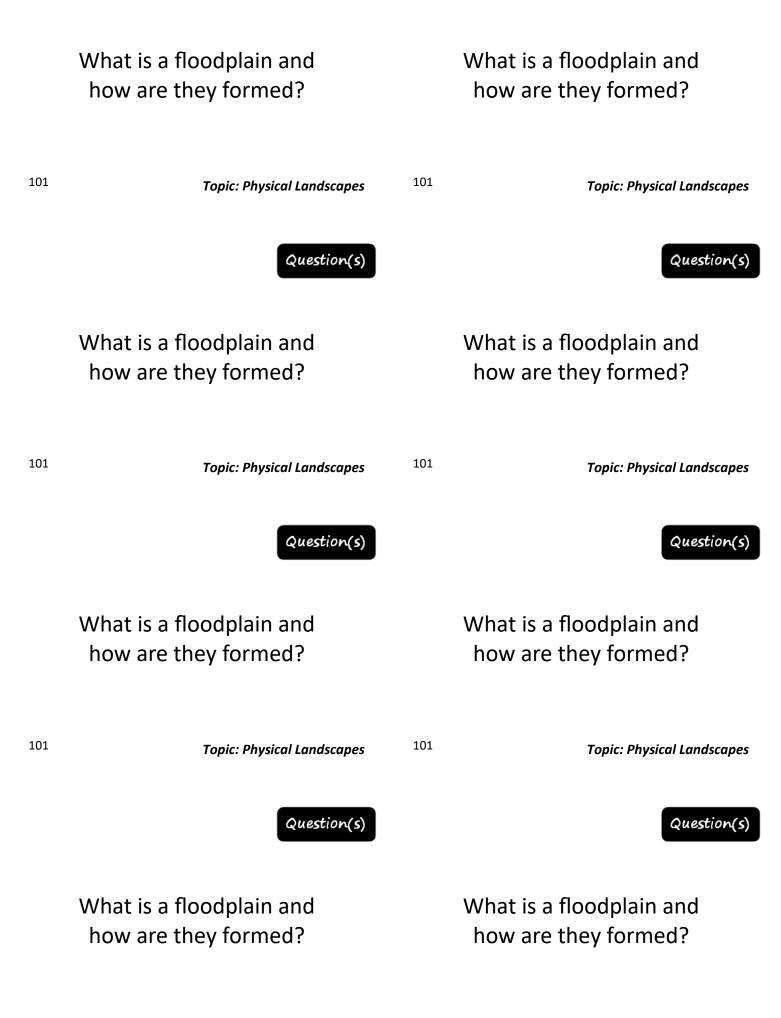
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A flood plain is a large area of flat land either side of the river that experiences or has experienced flooding.

Floodplains form due to erosion and deposition. Erosion removes any interlocking spurs, creating a wide, flat area on either side of the river. During a flood, material being carried by the river is deposited (as the river loses its speed and energy to transport material). Over time, the height of the floodplain increases as material is deposited on either side of the river. The floodplain is often a wide, flat area caused by meanders shifting along the valley.

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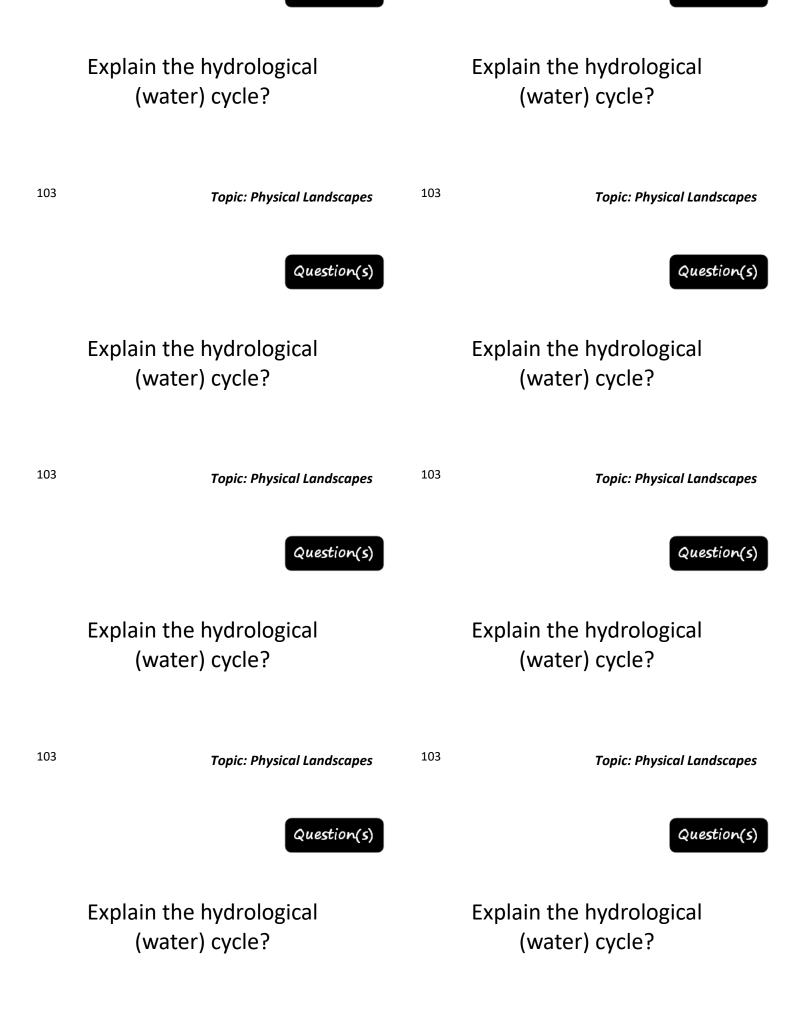
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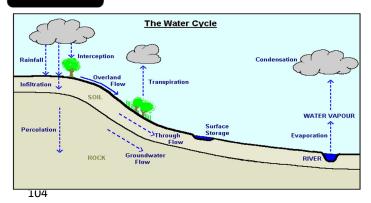
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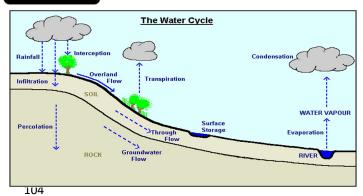
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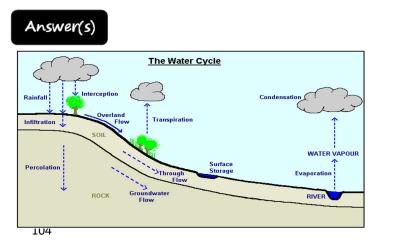


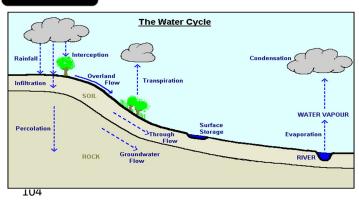


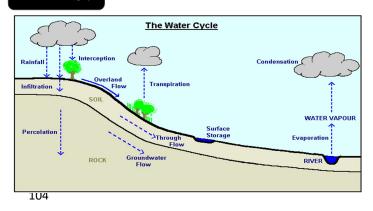




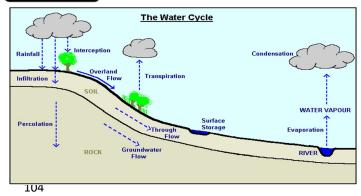
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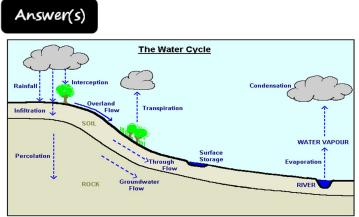




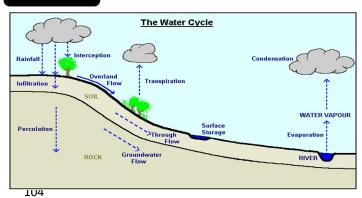












What do the following key terms mean?

- Precipitation a.
- b. Interception
- Surface Run-off c.
- d. Infiltration
- Evaporation e.

Topic: Physical Landscapes

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105

Topic: Physical Landscapes

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105

105

Topic: Physical Landscapes

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Topic: Physical Landscapes

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105 **Topic: Physical Landscapes**



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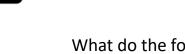
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Topic: Physical Landscapes

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Question(s)

105

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- a. **Precipitation** Any source of moisture reaching the ground e.g. rain, snow, sleet etc.
- b. Interception Water being prevented from reaching the surface by vegetation or buildings
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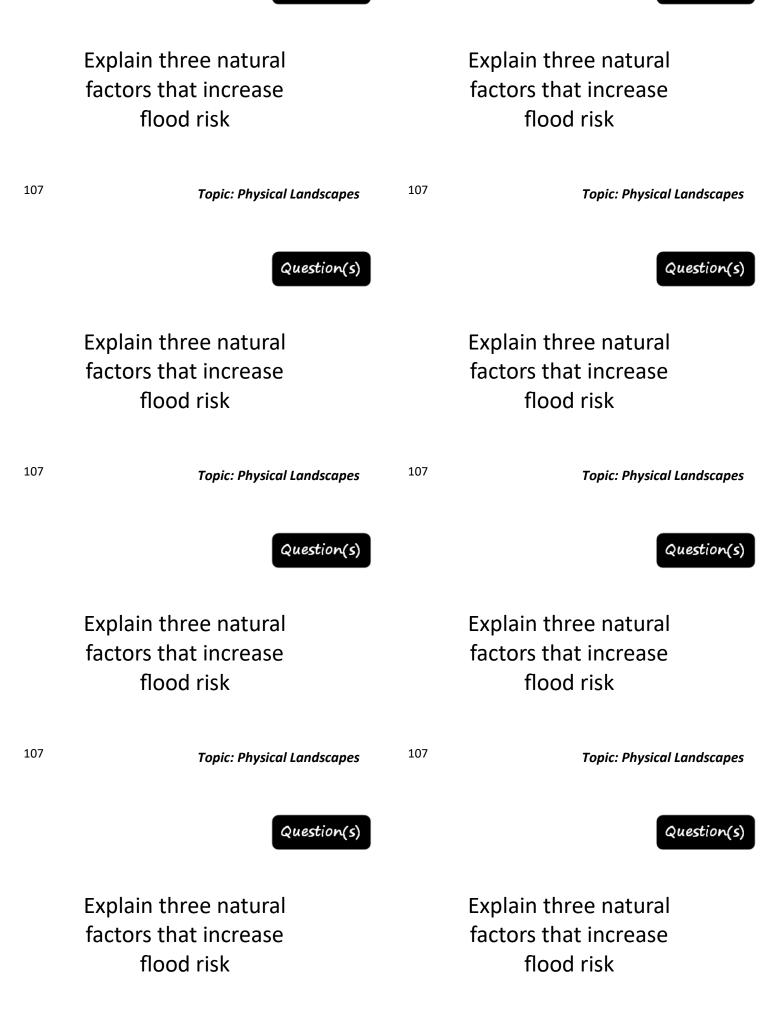
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- **Geology** can increase the risk of flooding when the bedrock is impermeable, such as slate or clay, which means there is more surface run-off.
- **Relief** can increase flood risk because steep-sided slopes mean that it is hard for infiltration to occur which leads to greater surface run-off.

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Explain three human activities that increase flood risk

109

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109 **Topic: Physical Landscapes Topic: Physical Landscapes** Question(s) Explain three human Explain three human activities that increase activities that increase flood risk flood risk 109 **Topic: Physical Landscapes Topic: Physical Landscapes** Question(s) Explain three human Explain three human activities that increase activities that increase flood risk flood risk 109 **Topic: Physical Landscapes Topic: Physical Landscapes** Question(s) Explain three human Explain three human activities that increase activities that increase flood risk flood risk

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- **Deforestation** removes vegetation that would normally intercept the rainfall before it hits the ground. This increases the amount of water reaching the river.
- Farming increases the risk of flooding because once crops have been harvested the soil is sometimes left bare in the winter. This reduces interception because there is no vegetation. 110

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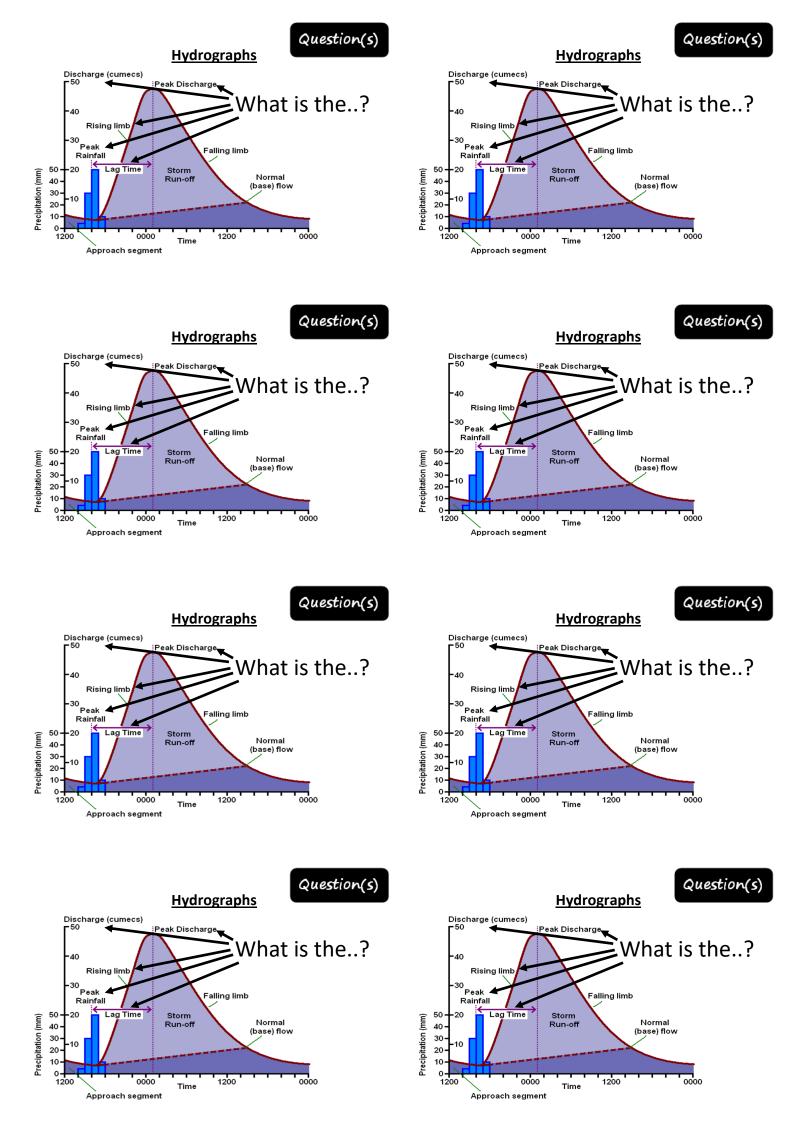
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- **Peak Discharge** The highest amount of discharge following a rainfall event
- Peak Rainfall The highest amount of rainfall in that period
- Lag Time The time between the peak rainfall and the peak discharge
- Rising Limb How quickly the discharge increases after a storm event 112

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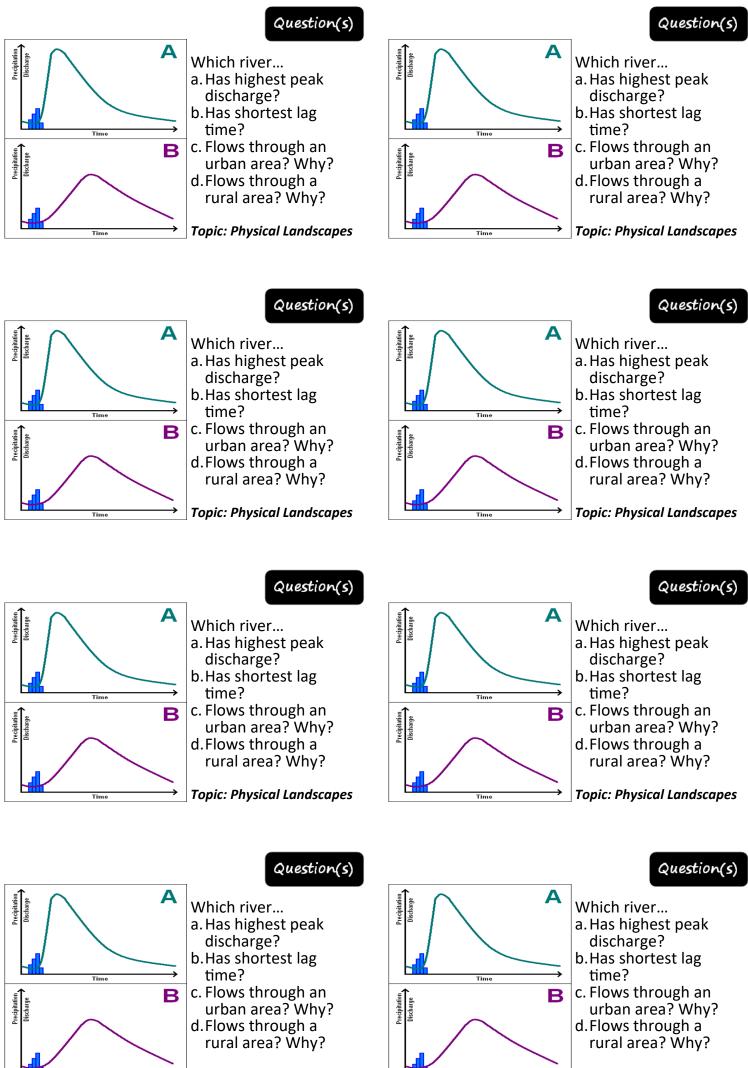
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Topic: Physical Landscapes

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Which river...

a. Has highest peak discharge? River A b. Has shortest lag time? River A c. Flows through an urban area? River A Why? The lag time is short so that means the rainfall is getting to the river quickly. This could be because the ground is tarmac, so impermeable. a.Flows through a rural area? **River B** Why? The discharge is lower so maybe the water is infiltrating into the ground instead of getting to the river. This could be because it is fields.

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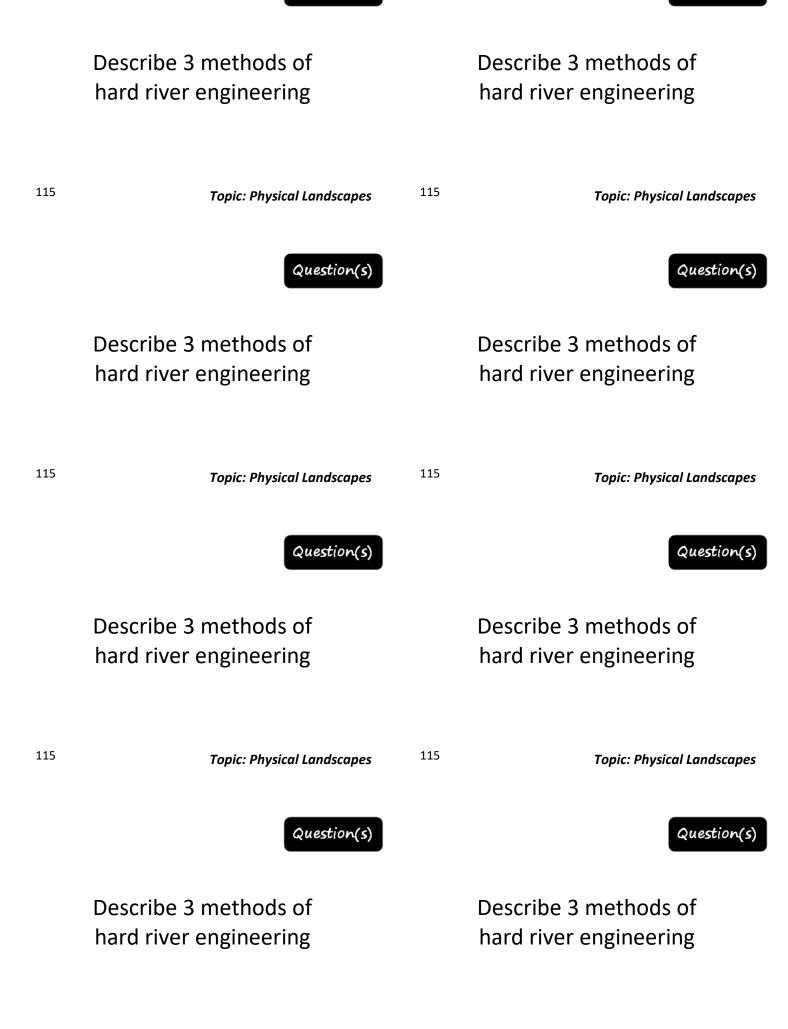
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- 2. Channel Straightening The rivers course (path) is straightened cutting out meanders by building artificial channels.
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- 4. Flood Relief Channels Divert the water around important areas if the river level gets too high. 116

Question(

What are the costs and benefits of these methods

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and benefits of these

methods

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Topic: Physical Landscapes

Question(s)

117

Topic: Physical Landscapes

Question(s)

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Topic: Physical Landscapes

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Topic: Physical Landscapes

Question(s)

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Method	Costs	<u>Benefits</u>
Dam	V.expensive, flood land behind them, hold sediment back	Store water, generates HEP, controls flow of water in the river
Straighten- ing	Flooding occurs down- stream instead, More ero- sion as water flowing faster	Water moves from the area quicker so less flooding
Embank- ments	Quite expensive, severe flooding if they break	River holds more water so less flooding, protects build- ings on the flood plain
Relief Channels	Increased discharge when water rejoins river. Chan- nels could also flood	River discharge is reduced. Gates releasing water can be controlled

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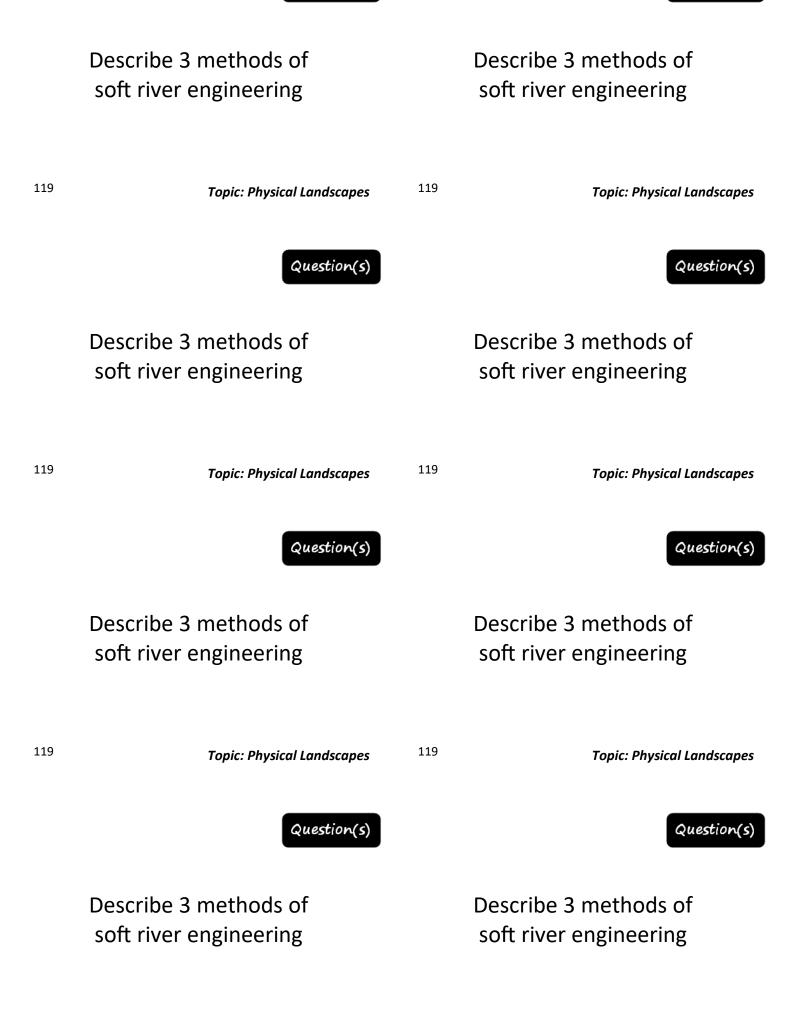
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- 2. Flood Plain Zoning Restrictions prevent building on parts of a flood plain likely to be affected by a flood.
- 3. Afforestation Planting trees increases interception and increases the lag time.
- 4. **River Restoration** Make the river more natural and allow it to flood naturally.

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Topic: Physical Landscapes

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Question(s)

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121

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Question(s)

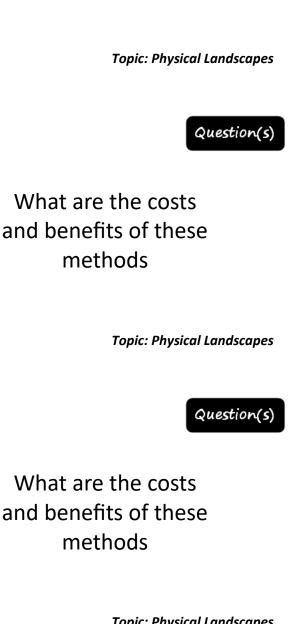
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<u>Method</u>	<u>Costs</u>	<u>Benefits</u>
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Zoning	No help for land already built upon. Maybe no other suitable building sites	Impermeable surfaces are not created, risk of flood damage reduced
Plant Trees	Takes years for trees to grow. Lose farmland	Discharge, flood risk and erosion reduced. Produces habitats
Restora- tion	Local flood risk increases	Little maintenance is need- ed. Better for wildlife

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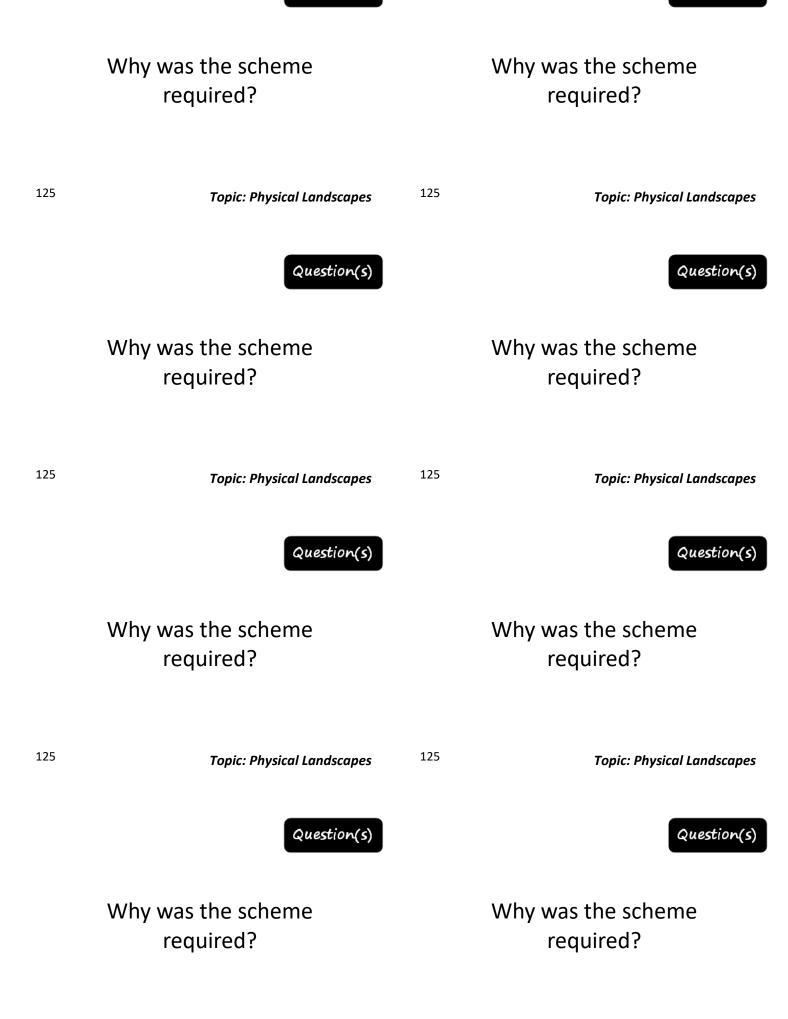
Identify the flood management scheme you have studied

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123 123 **Topic: Physical Landscapes Topic: Physical Landscapes** Question(s) Question(s) Identify the flood Identify the flood management scheme management scheme you have studied you have studied 123 123 **Topic: Physical Landscapes Topic: Physical Landscapes** Question(s) Question(s) Identify the flood Identify the flood management scheme management scheme you have studied vou have studied 123 123 **Topic:** Physical Landscapes **Topic: Physical Landscapes** Question(s) Question(s) Identify the flood Identify the flood management scheme management scheme you have studied you have studied

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	Cockermouth, Cumbria November 2009	Cockermouth, Cumbria November 2009
124		124
Answer	(s)	Answer(s)
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- Steep relief caused lots of surface runoff to enter the river.
- The River floods at the confluences of the river Derwent and Cocker in Cockermouth.
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- Several bridges destroyed, businesses lost trade, 1300 made homeless, schools forced to close

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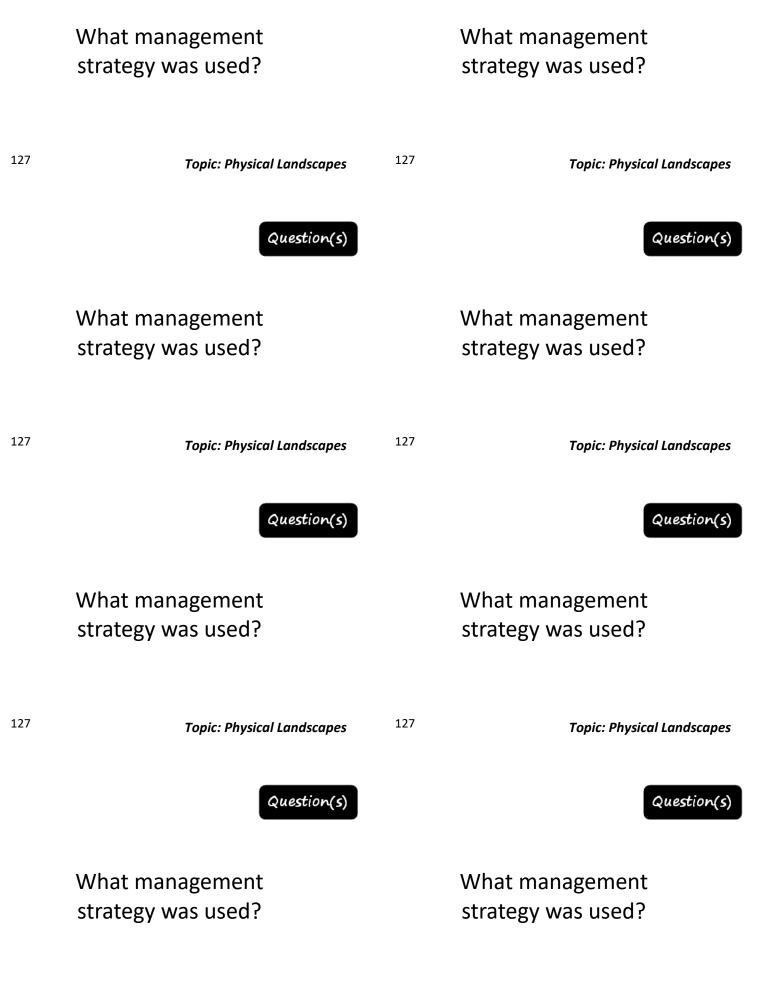
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- Automatic Flood Walls These rise by 1m automatically as the level of the river rises
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Topic: Physical Landscapes

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Topic: Physical Landscapes

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BENEFITS

Social - Peoples homes less likely to flood, people feel more secure in their homes

Economic - Businesses are less likely to have to close, increasing income. Insurance costs will go down. Only 1/4 of the cost footed by local people. **Environmental** - Floodwalls clad in local stone to fit in with the surroundings. Most wildlife not affected by the defences

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<u>COSTS</u>

Social - Residents disrupted for a long time while work commenced. Higher walls block people's views from their houses.

Economic - The building works are expensive £4.4m

Environmental - Some river habitats damaged by the deepening of the river. Flood gates look unsightly.

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