

Name: _____

Geography

Homework Booklet



Year 7

Term 5: Coasts

Homework 1	Learn keywords	Due date:	Completed?
Homework 2	Guided Reading Activity	Due date:	Completed?
Homework 3	Prepare for knowledge test	Due date:	Completed?

Geography Homework Tasks Term 5

Homework 1 - Learn the keywords below for a mini test at the start of next lesson. You could read through the words, write them out, create a match up activity or get someone to test you.

Keyword	Definition
Coastline	Where the sea meets the land.
Constructive waves	Waves that have a strong swash and a weak backwash. They build beaches.
Destructive waves	Waves that have a weak swash and a strong backwash. They destroy a beach.
Erosion	The loss of land, or the long-term removal of sediment and rocks along the coastline due to the action of waves.
Coastal landforms	Any of the features present along the coast which are formed as a result of a coastal processes e.g. caves, arches, stacks and stumps.
Longshore drift	The zig-zag movement of sediment along a coastline in the direction of the prevailing wind (most common wind direction).
Spit	An extended stretch of beach material that projects out to sea and is joined to the mainland at one end. Spits are formed where the prevailing wind blows at an angle to the coastline, resulting in longshore drift . An example of a spit is Spurn Head, found along the Holderness coast
Coastal defences	Coastal defences are management techniques designed to protect shorelines from flooding and erosion caused by waves and rising water levels . Sea walls and groynes are examples of sea defences.
Managed Retreat	the controlled flooding of a low-lying coastal area and the creation of a wetland area, such as a salt marsh. If an area is at high risk of erosion, managed retreat could be an option. It usually occurs where the land is of low value, for example farmland.

Homework 2 — Complete the guided reading activity below.

You may wish to write your answers out on paper, so you have more space.

Homework 3 — Revise the information on the knowledge organiser for a mini test in class. You could highlight the key information, create revision cue cards or get somebody to test you.

5 Explain the first reason why the Holderness coast is eroding so rapidly.

6 Explain the second reason why this area of coast is eroding so rapidly.

9 Which type of coastal management solutions are used at Holderness?
Challenge: Can you think of any examples of this type of coastal management?

1 Where is the Holderness coast located?

2 How quickly does the Holderness coast erode?

3 What might the impact of losing so many towns and villages be?

4 Describe the geology of the Holderness coast.

THE HOLDERNESS COAST

A case study of the Holderness coastline



The Holderness Coast is located on the east coast of England. It extends 61km from Flamborough in the north to Spurn Point in the south. The Holderness Coastline is one of Europe's fastest eroding at an average annual rate of around 2 metres per year. This is around 2 million tonnes of material every year. Approximately 6 miles (5kms) of land has been lost since Roman times including 26 towns/villages.

Underlying the Holderness Coast is bedrock made up of Cretaceous Chalk. However, in most places, this is covered by glacial till deposited over 18,000 years ago. It is this soft boulder clay that is being rapidly eroded.

There are two main reasons why this area of coast is eroding so rapidly. The first is the result of the strong prevailing winds creating longshore drift that moves material south along the coastline. The second is that the cliffs are made of soft boulder clay which erodes rapidly when saturated.

The Holderness Coast is a great case study to use when examining coastal processes and the features associated with them. This is because the area contains 'textbook' examples of coastal erosion and deposition. The exposed chalk of Flamborough provide examples of erosion, features such as caves, arches and stacks.

Coastal management at Hornsea and Withern sea are examples of hard engineering solutions to coastal erosion. Erosion at Skip sea illustrates the human impact of erosion in areas where coastlines are not being defended. Mableton is an excellent case study of an attempt at coastal management which has a negative impact further along the coast. Spurn Point provides evidence of longshore drift on the Holderness Coast. It is an excellent example of a spit. Around 3% of the material eroded from the Holderness Coast is deposited here each year.

7 Why is the Holderness coast a good case study?

8 What erosional features are there at Holderness?
Challenge: Explain the formation of one of the features.

10 What are the impacts of coastal erosion?

11 Why might the coastal defences at Mableton have a negative effect further down the coast?

12 Explain how a spit is formed.



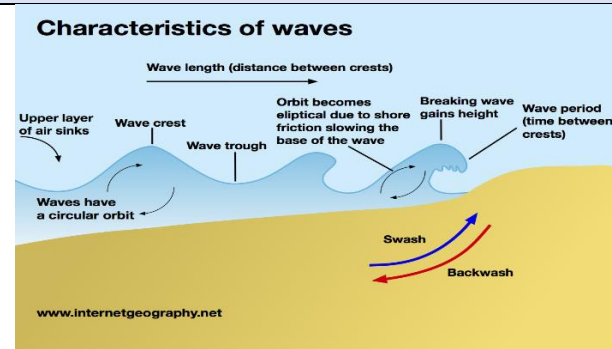
Keywords

- **Coast:** where the land meets the sea.
- **Erosion:** the wearing away of the coastline by the four processes: hydraulic action, solution, abrasion and attrition.
- **Transportation:** the movement of sediment along the coast, usually by longshore drift.
- **Deposition:** when material is dropped once the waves lose their energy.
- **Coastal management:** protection of the coastal through the use of hard engineering strategies, including sea walls, rock armour and groynes, and through the use of soft engineering strategies such as managed retreat.

Case Study: Storm surge 2013

On 5th and 6th December 2013, our coastline took a battering from the sea. Gale force winds pushed big waves towards the coast. In some places, seawater flooded over sea walls that had been built to keep it out. It swept along streets, and into shops and homes. Britain's east coast got the worst of it. A high volume of water rolled down the North Sea, in a storm surge. The waves lashed at the coast. Thousands of people were evacuated from their homes, for safety. Hundreds of homes were flooded. In Norfolk, the village of Hemsby, the cliff fell away below seven homes. Three of them slid into the water, and were carried off like toys.

Waves



Waves are caused by the wind dragging on the surface of the water. The length of water the wind blows over is called its **fetch**.

- The stronger the wind is, and
- the longer it blows for, and
- the longer the fetch...

the larger the waves will be and the more energy they will have.

When a wave breaks on a beach the turbulent water moving up the beach is the **swash**, while the water that rushes back to the sea is called the **backwash**.

Coastal processes and landforms

The more energy waves have, and the softer the rock, the faster erosion will be.

Processes of erosion

Hydraulic action
This process involves the force of water against the coast. The waves enter cracks (faults) in the coastline and compress the air within the crack. When the wave retreats, the air in the crack expands quickly, causing a minor explosion (cavitation).

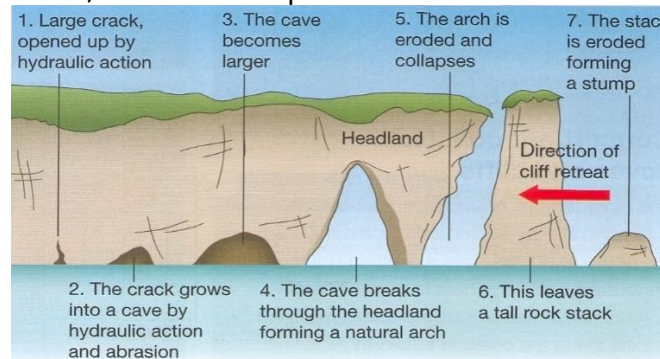
Corrasion
This involves fragments of rock being picked up and hurled by the sea at cliffs. The rocks act like tools that gouge and scrape the rock.

Abrasion
This is the sand-papery effect of pebbles grinding over a rocky platform, often causing it to become smooth.

Attrition
This is where rock fragments carried by the sea knock against one another, causing them to become smaller and more rounded.

Solution
Some rocks are vulnerable to being dissolved by seawater. This is particularly true of limestone and chalk, which form cliffs in many parts of the UK.

By eroding and depositing material, the waves create various landforms along the coastline including headlands and bays; wave cut platforms; and caves, arches, stack and stumps.



Coastal management

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