

Coasts and Coastal Processes

Erosion, transport and deposition, coastal landforms and coastal management.

Name _____ Date _____ Class _____

Learning objective: I can explain how coastal processes create landforms and evaluate ways to manage the coast.

✓ I can describe coastal processes ✓ I can sequence landform formation ✓ I can evaluate coastal defences

1 Coastal processes Match each process to its description.

1 hydraulic action	☐	A rocks collide and become smaller and rounder
2 abrasion	☐	B the movement of sediment along a beach by waves
3 attrition	☐	C waves force air and water into cracks, breaking the rock apart
4 longshore drift	☐	D waves lose energy and drop the sediment they carry
5 deposition	☐	E rock fragments carried by waves scrape and wear the cliff

2 From headland to stump Number the stages in order (1-5).

☐	A the arch roof collapses, leaving a stack
☐	B waves erode a crack in the headland
☐	C the stack is eroded to form a stump
☐	D the cave erodes right through to form an arch
☐	E the crack is widened into a cave

3 Waves and beaches Use the word bank.

Word bank: spit prevailing northerly Destructive stack Constructive

- _____ waves have a strong backwash and erode the coast.
- _____ waves have a strong swash and build up beaches.
- A long ridge of sand or shingle that sticks out into the sea from the coast is a _____.
- Longshore drift moves sediment in the direction of the _____ wind.

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4 Protecting the coast Complete the table.

Method	Hard or soft engineering?	One advantage or disadvantage
sea wall		
groynes		
beach nourishment		
managed retreat		

5 Calculate and explain

1 A cliff is retreating by an average of 1.8 m per year. How far might it retreat in 40 years?

2 Give **two** reasons why some cliffs erode much faster than others.

3 Some people say we should protect every part of the coast. Do you agree? Give reasons.

Answer Key

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Question	Answers
1 Coastal processes	1 C; 2 E; 3 A; 4 B; 5 D
2 From headland to stump	Correct order: B, E, D, A, C waves erode a crack in the headland → the crack is widened into a cave → the cave erodes right through to form an arch → the arch roof collapses, leaving a stack → the stack is eroded to form a stump
3 Waves and beaches	1 Destructive; 2 Constructive; 3 spit; 4 prevailing
4 Protecting the coast	sea wall – Hard or soft engineering?: hard , One advantage or disadvantage: strong protection, but expensive and can increase erosion further along groynes – Hard or soft engineering?: hard , One advantage or disadvantage: trap sand to build a wider beach, but starve beaches further along beach nourishment – Hard or soft engineering?: soft , One advantage or disadvantage: looks natural, but must be repeated as sand is washed away managed retreat – Hard or soft engineering?: soft , One advantage or disadvantage: cheap and creates wetland habitats, but land and buildings are lost
5 Calculate and explain	1. $1.8 \times 40 = 72$ m 2. Any two: soft rock such as clay erodes faster than hard rock; a long fetch gives bigger waves; destructive waves/storms; lack of a beach to absorb wave energy; weathering and slumping. 3. Balanced answer: protection is costly and can move the problem along the coast; worth it for towns, roads and valuable land, but managed retreat may be better for farmland or low-value areas.

Teaching note: the cliff retreat figure is for practice. The Holderness coast in East Yorkshire is a good UK case study; it is one of the fastest-eroding coastlines in Europe.