



# Under Pressure

## Parent Support Booklet

These booklets are designed to help with your child's revision. There are a series of questions that you can ask your child. *The answers are provided at the end of the booklet.*



## **Coastal Processes**

1. What controls tides?
2. Sketch the formation of a wave.
3. Sketch a constructive wave.
4. Sketch a destructive wave.
5. Describe the 3 types of weathering.
6. Describe the 4 erosional processes.
7. Describe the 4 transportation processes.
8. Sketch longshore drift.

## **Coastal Landforms**

1. Sketch a diagram to show headlands and bays.
2. Describe the formation of headlands and bays.
3. Sketch a diagram to show caves, arches, stacks and stumps.
4. Describe the formation of a stump.

## **Skills**

1. How do you use 6 figure grid references?
2. How do you measure distance?

## **Managing Coastal Erosion**

1. Describe the impacts of coastal erosion.
2. Define the term hard engineering.
3. Define the term soft engineering.
4. Describe how sea walls, groyne, gabions and rip-rap work.
5. Give the advantages and disadvantages of sea walls, groyne, gabions and riprap.
6. Describe how beach nourishment and doing nothing works.
7. Give the advantages and disadvantages of beach nourishment and managed retreat.

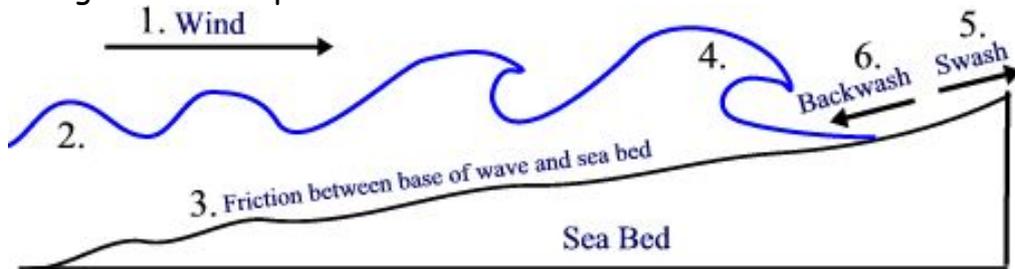
## **Sea Level Rise**

1. Explain why sea level is rising.
2. Describe 2 impacts of sea level rise.
3. Describe 3 management strategies to reduce the impacts of sea level rise.

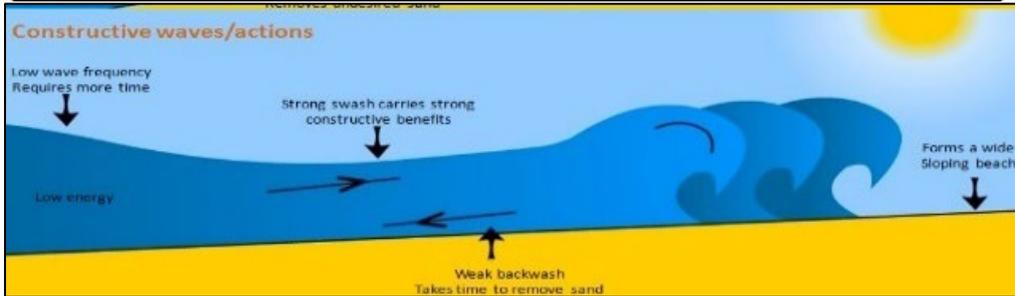
# ANSWERS

## Coastal Processes

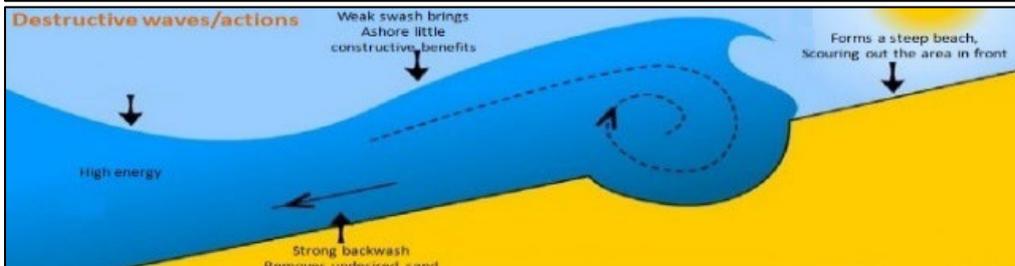
1. The gravitational pull of the moon.



- 2.

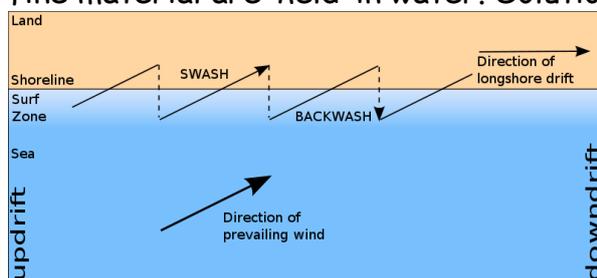


- 3.



- 4.

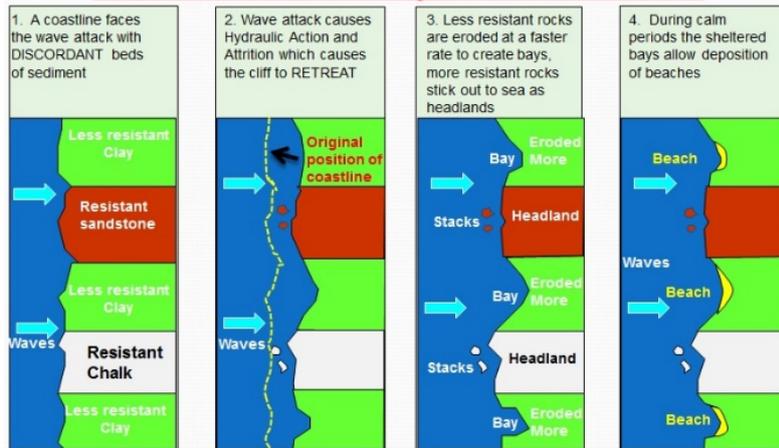
5. Physical - water gets in to cracks and freezes - it expands, then melts and contracts, repeats and weakens the rock, Chemical - acid in water dissolves the rock, Biological - animals and roots break up the rock.
6. Hydraulic action - force of the water. Abrasion - rocks scrape along sea bed. Attrition - rocks and pebbles collide. Solution - weak acid dissolves minerals
7. Traction - large boulders are rolled along. Saltation - small pebbles 'skip'. Suspension - fine material are 'held' in water. Solution - dissolved minerals



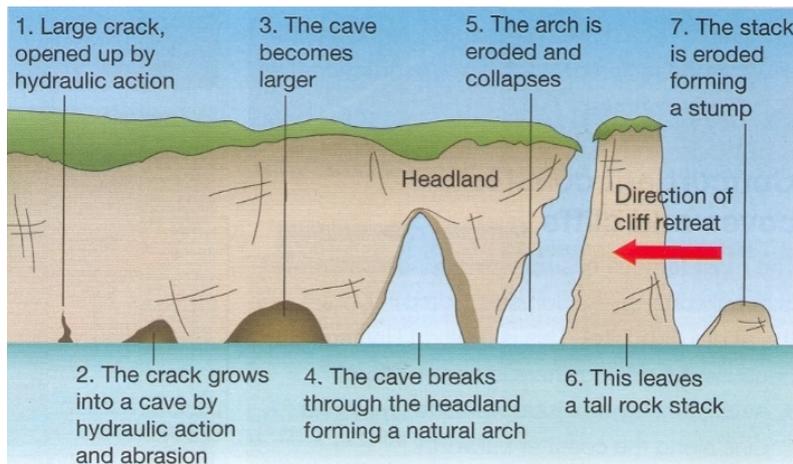
- 8.

## Coastal Landforms

### The formation of Bays and Headlands



- 1.
2. Headlands and Bays form on **Coastlines** where there are differing bands of hard (resistant) rock and soft (weak) rock. The **weak rocks** like **clay** erodes faster than the **resistant rocks** like **limestone**. This leaves the resistant rocks jutting out as **headlands**. The Weaker softer rocks develop as **bays** and often accumulate **beaches** as **sediments** are deposited in their **sheltered** areas as constructive waves deposit material.



- 3.
4. **Cracks** in the side of a **headland** are enlarged by **erosion (Hydraulic action, abrasion etc.)** creating a **Cave**. The cave eventually is eroded through the headland to form an **Arch**. Over time the arch is eroded from the base and weathered from the top until its roof collapses leaving behind a **Stack** detached from the headland. The stack will eventually collapse leaving a **Stump**.

## Skills

1. First, find the four-figure grid reference but leave a space after the first two digits. Estimate or measure how many tenths across the grid square your symbol lies. Write this number after the first two digits. Next, estimate how many tenths up the grid square your symbol lies. Write this number after the last two digits. You now have a six figure grid reference. In this instance, the tourist information office is located at 476334.
2. You can measure straight line distances on a map with a ruler - there's often one included on the side of your compass. However, if you use the technique above, you can use almost anything - your pencil, fingers or a twig - to get a distance and compare it to the map scale. No maths required!

This does have one big drawback - you can only measure straight lines, which are not that common outside cities. While you could take lots of small measurements and add them up, there's an easier way using just a bit of plain old string. Try using the lanyard from your compass or a spare shoelace if you don't have a handy bit of string in your pocket.

Lay the string out along the route. You may need to use some extra fingers to pin it in place. Once you have covered the route, carefully mark the string (or just hold it in the right place) and compare it to your map scale.

## Managing Coastal Erosion

1. Loose homes, roads, railway, bird nesting sites and green land are lost, dangerous to walk along the top, cost of putting in defences, Barmston caravan park retreating backwards by 10 sites, distress over loss of money, reduced tourism, loss of farmland, Sue Earl lost her dairy farm and had to pay £3000 demolition fees, gas terminal at Easington is at risk (25% gas supply), reduced longshore drift, expensive or no insurance, loss of services
2. Hard engineering - physical structures that are made of rocks, concrete or steel to prevent or stop erosion.
3. Soft engineering - working with nature and using natural materials to slow erosion down
4. Sea Wall - Made of concrete, the wave approaches the wall and curves back on itself, breaking the wave energy up. Gabions - rocks in cages, as the wave hits the rocks the rocks break the waves up. Groyne - trap the sediment moved by longshore drift, building up the beach, the wave no has further to travel and increased friction slows the wave and its energy down. Rip-rap - large boulders that break up the wave energy.
5. Sea wall - expensive, most effective, long life span. Gabions - effective, cheaper than sea wall, ugly, doesn't last long. Groyne - traps sediment, increases beach and tourism, prevents LSD down coast. Rip-rap = cheapish, ugly, can move in storms
6. Beach nourishment - adding sand to the beach, this increases the distance that the wave has to travel and increases friction, slowing the wave down. Managed retreat - abandoning existing sea defences, allowing some areas to flood / erode.
7. Beach nourishment - cheap, natural, removes material from elsewhere. Managed retreat - some areas erode / flood, cheap, creates natural habitats

## Sea Level Rise

1. Thermal expansion - oceans become warmer and expand. Melting ice - melting of ice on land increases the volume of water
2. Houses destroyed. Homelessness, destroyed habitats, loss of beaches, loss of tourism, communities split up, loss of jobs, buying land from other countries, Airport in danger, costly sea defences, Gov policies pledge to reduce GHGs, lack of freshwater, aid from Japan to build sea wall around Male (\$60m), disruption of fishing, loss of topsoil.
3. Building dykes to hold back sea water. Protecting the islands from flooding and allowing tourism to continue for now. Build the islands upwards, Educate world leaders on the impacts of climate change and populations at risk. Build sea walls in densely populated areas Begin to abandon the islands slowly, becoming environmental refugees. Ask for foreign aid to build defences and offer advice.