

N5

National 5 GEOGRAPHY

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BrightRED Study Guide

Curriculum for Excellence

N5

GEOGRAPHY



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INTRODUCTION

This book has been written to help supplement the course you are being taught in school. It is intended to give you a chance to consolidate your knowledge by covering all the basic points of the course as well as looking at case studies from around the world. Communities in the twenty first century are increasingly interconnected by globalisation, the internet and social media, so geography is more important than ever in helping us to understand other environments, people and cultures. The up-to-date, original and detailed examples described in this book should help your understanding of each topic, give you facts which may be useful in your exam answers and highlight the relevance of what you are studying.

NATIONAL 5 GEOGRAPHY

National 5 Geography is a National Qualifications course which is externally assessed by SQA. The course assessment consists of the exam paper, which accounts for 80% of your overall mark, and the coursework assignment which accounts for 20% of your overall mark.

The National 5 Geography exam is marked out of 80 and is split into three sections. These are:

- Physical Environments
- Human Environments
- Global Issues.

There is very little choice in the first two sections and you will be expected to answer all the questions, except that in the Physical Environments section you will have the choice of answering a question about **either** rivers or upland limestone **or** about coasts or upland glaciated scenery. In the Global Issues section there will be six questions but you will only be asked to answer **two** of them. Your choice will depend on which topics you have studied in class. The contents page will give you an idea of what is covered in each section of the course.

By covering the course fully and building up a detailed set of notes from which you can revise, you should be able to answer the questions in the exam. The best way to do this is by working hard in school throughout the session. The aim of this book is to help you with this process by providing everything you need to know in one place.

COURSEWORK ASSIGNMENT

The coursework assignment is a piece of original geographical research that you will be asked to carry out. It is essential that you use **at least** two research methods to gather your information, such as two different geography fieldwork techniques, map interpretation or internet research. If you choose a topic for which you gather a lot of your information from the internet, you must also ensure that you have used another research method such as analysing a map or taking notes from a book.

It is likely that you will be asked to carry out most of the research for your assignment in your own time as there will be a lot of coursework to get through in class.

While it is perfectly acceptable to choose a topic for which much of your information might be sourced via the internet (i.e. secondary sources), it might be worth considering whether there is a local topic or geographical issue in your area that you could research in person (i.e. primary sources). This would have the advantage of being a completely original topic and also something that is close enough to allow you to carry out your own fieldwork (i.e. independent research). Your teacher should be able to offer you advice about this.

Your topic should be geographical in nature and include explanations of your findings. It should not be purely descriptive. There are some examples of possible topics on page 5.

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Examples of coursework assignment topics:

- A sphere of influence study in your local area.
- The effect of new housing developments on local traffic.
- Comparing the environmental quality of different areas of a town.
- Explaining the factors which affect the land uses on a farm.
- Measuring weather conditions and comparing them with forecasts.
- Recording and explaining the flow of water in a stream over a period of time.
- Finding out people's views on a local development such as a wind farm.
- Explaining the reasons for the varying impact of extreme weather on two different locations.
- The impact of deforestation on indigenous people.
- Explaining the population distribution of an island/area/country.

The coursework assignment section of National 5 Geography is marked out of 20 and will be marked externally by SQA. To complete the assignment you will have to answer a number of set questions about the research that you have carried out. You will have one hour to complete these and you will answer them under exam conditions. To help you with this report about your research, you are allowed to prepare **two A4 sheets** beforehand that show information that you have collected and analysed as part of your assignment. This is referred to as **processed information**. In your report you would be expected to refer to this information, **which will also be submitted to SQA along with your answers. You must not copy information** directly from these sheets as you will not receive any credit for this. The table below shows what you will be asked to do in the report about your coursework assignment.

The processed information that you take with you when you write up your report should be produced beforehand, based on your research findings. Below are some examples of what your processed information might consist of. You should take in whatever information is most helpful to you in describing and explaining your findings, but this should not include any information which you intend to copy directly into your assignment report. You should try to **explain** your findings as fully as possible to be able to access all of the available marks.

Examples of processed information for the coursework assignment report:

- An annotated photograph(s) or field sketch(s).
- An annotated cross-section or land use map.
- A table(s) or graph(s) showing figures about your topic or issue.
- Results of a questionnaire you used to survey shoppers about traffic problems, together with details of the number of people surveyed.
- A letter, with questions, you sent to the local council planning department.
- Data you have gathered from internet sources.
- A screenshot of a list of websites you found using a search engine with the most relevant ones highlighted.
- Weather data and weather maps you have gathered over a certain period of time.
- A spider diagram showing key information taken from watching a video/TV programme/DVD, upon which you can elaborate.
- A mind map containing prompts to help you write your report.

In the report conclusion you should do one or more of the following:

- make decision(s) or recommendation(s) about your topic or issue
- explain the most important things you found out in your research
- provide answers to the question or questions you set yourself at the start of your research
- say whether or not the statement you started with has been proved or disproved.

An early start to your coursework assignment would allow you time to gather plenty of information. If possible, do some of this during the summer holiday when good weather might allow you to carry out physical fieldwork in more pleasant conditions! A good coursework assignment should enable you to secure a high mark in the report, giving you a better chance of a good overall grade.

Coursework assignment report

Task	Marks
1. Write down the topic or issue which you have researched.	0
2. Describe two research methods used to collect information about the topic or issue.	6
3. Describe and explain, with reference to processed information, your findings about the topic or issue. Reach a well-supported conclusion about the topic or issue.	14

PHYSICAL ENVIRONMENTS

WEATHER: HIGH PRESSURE SYSTEMS (ANTICYCLONES)

HIGH PRESSURE SYSTEMS: AN OVERVIEW

High pressure systems, also known as **anticyclones**, form when there is no uplift, so there is less chance of clouds forming. Anticyclones consist of just one air mass, so there are no fronts and the weather is much less changeable than in a depression. In fact, high pressure systems are known for their stable weather conditions, which can often last for many days or even weeks. The type of weather associated with high pressure depends on the season, but usually conditions are relatively clear and there is not too much wind.

ANTICYCLONES ON SYNOPTIC CHARTS

High pressure appears as a zone of stable weather conditions on a synoptic chart. This means there are no fronts and the **isobars** are much further apart than in a depression. The isobars are more elliptical (oval shaped), unlike the circular isobars in a depression, while the isobar values rise towards the centre. A high pressure zone often covers a large area and can be many hundreds of kilometres across, covering the whole of Scandinavia, for example.

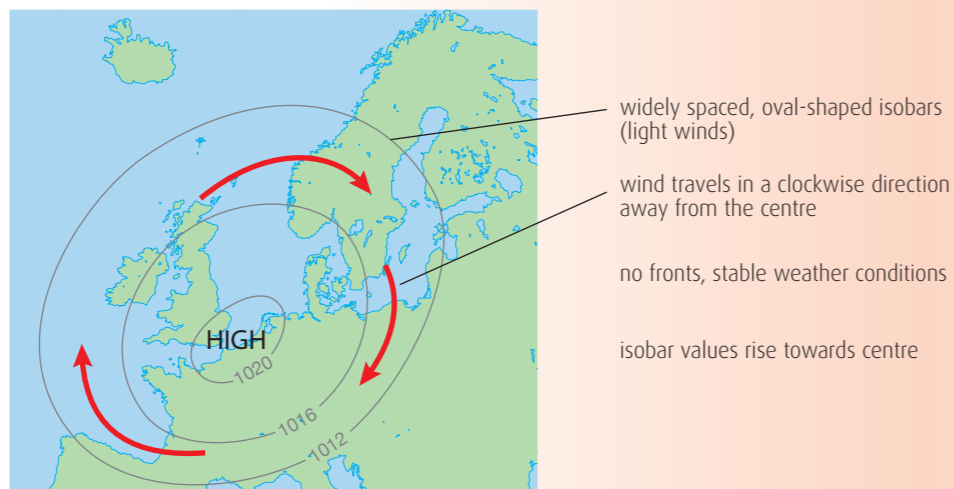


Diagram 1.17 Synoptic chart showing an anticyclone.

DON'T FORGET +

Winds travel in a clockwise direction around high-pressure zones, but because the isobars are widely spaced, winds are usually light.

WEATHER ASSOCIATED WITH ANTICYCLONES

Anticyclones bring stable weather conditions. Air is descending within a high pressure zone so there is no uplift, giving fewer clouds and so rain is unusual.

Widely-spaced isobars result in weaker winds, so anticyclones are characterised by light winds or calm, tranquil weather.

Anticyclones in summer and winter bring very different weather conditions.

In summer, the lack of cloud cover allows intense sunshine to reach the land surface, giving high temperatures. High pressure in summer is associated with calm, clear, sunny, hot and dry weather. This can result in a heat wave and, if it lasts long enough, can result in droughts and water restrictions.

In winter, the lack of cloud cover also gives bright, sunny weather, but at night heat is lost rapidly, leading to very cold conditions often with severe frosts, as there is no

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blanket of clouds to trap heat. High pressure in winter is associated with calm, clear, sunny weather but intensely cold frosty nights. Often fog or even freezing fog forms early in the morning as the condensation level is close to the ground, but as the Sun rises this usually burns off quickly. If an anticyclone persists in winter, it can lead to weeks of clear, sunny days but bitterly cold frosty nights. The Sun is not high enough in the sky to give significant warmth and so temperatures remain low even during the day.



High pressure in summer (Whiten Head, Sutherland).



High pressure in winter.

ONLINE

Learn more about high and low pressure systems online by following the link in the BrightRED Digital Zone.

ONLINE TEST

Take the test on high pressure systems online at www.brightredbooks.net/N5Geography



THINGS TO DO AND THINK ABOUT

- 1 Watch the clip about the problems a summer anticyclone and heat wave could cause at www.brightredbooks.net/N5Geography
- 2 Copy and complete this table by adding two or three further examples to each section.

	Advantages	Disadvantages
Winter anticyclone	<ul style="list-style-type: none"> • clear sunny weather • • 	<ul style="list-style-type: none"> • very cold frosty nights • •
Summer anticyclone	<ul style="list-style-type: none"> • nice weather for a visit to the beach • • 	<ul style="list-style-type: none"> • summer heatwave could cause drought • •

PHYSICAL ENVIRONMENTS

LANDSCAPES: COASTS 1

Britain's coastline, including the main islands, is about 19,491 miles long and nowhere is more than 70 miles from the sea. Being an island nation, our landscape has been shaped by the sea for millions of years. Two principal types of coastline can be identified: coastlines of erosion and coastlines of deposition.

ONLINE



Learn more by following the 'Erosion' link in the BrightRED Digital Zone.



Diagram 1.20 Fetch and prevailing wind direction.

COASTLINES OF EROSION

The amount of erosion that happens along the coast depends on a number of factors, such as the rock type, weather conditions and the fetch. The **fetch** is the distance over which waves build up. The bigger the fetch the larger the waves. The most common wind direction affecting the British Isles, known as the **prevailing wind**, is south-westerly. This allows waves to build up over the whole width of the Atlantic Ocean and they are therefore large and powerful when they hit the western coastline of the British Isles, causing extensive erosion.

There are several ways in which the sea erodes the land:

- **Wave pounding** is where the weight of water hitting the cliff face repeatedly erodes it. Large breaking waves can exert pressure of 30 tonnes per square metre.
- **Hydraulic action** happens when air is trapped by waves in cracks and crevices on the cliff face, causing it to be compressed and then released with explosive force.
- **Corrasion** is when stones and fragments of rock are flung against cliffs by the breaking waves and erode them.
- **Corrosion** is where rock is dissolved by carbonic acid found in sea water.
- **Attrition** is where stones and boulders swirled around by the waves are gradually broken up and made smaller. The end product of this process is sand.

VIDEO LINK



Check out the 'Coastal erosion' clip at www.brightredbooks.net/N5Geography

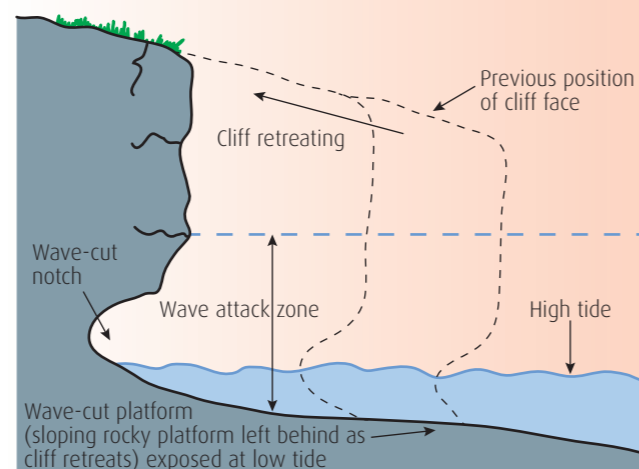


Diagram 1.21 Retreating cliffs.

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If the coastline consists of alternate bands of hard and soft rock, **differential erosion** will take place. This is where the sea erodes the areas of soft rock more quickly because they are less resistant. This can lead to the creation of **bays**, where there is soft rock, and **headlands** extending out beyond the bays, where there is harder rock.

On the headlands the processes of coastal erosion often produce the most spectacular coastal landforms. Erosion quickly acts on weaknesses in the cliff such as fault lines. Before long, because of the processes of erosion listed, these can be hollowed out to form **caves**. If the roof of the cave is eroded all the way to the surface, a **blowhole** is formed. In stormy weather, spray may be ejected from the blowhole just like a spouting whale. Occasionally, caves can extend all the way through to the other side of the **headland** to form a **sea arch** (one of the best known examples being the Green Bridge of Wales). With further erosion the arch may eventually collapse to leave a **pillar** of rock known as a **sea stack** (the largest of these in Britain is the Old Man of Hoy, at 137 metres high). Finally the sea stack too will succumb to erosion and collapse into the sea, leaving a **stump**.

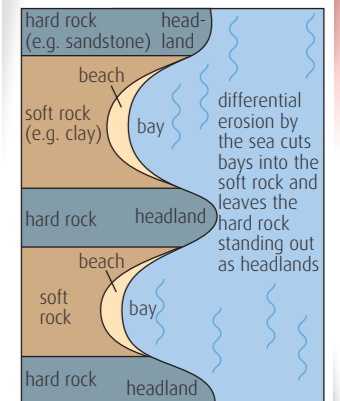


Diagram 1.22 Headlands and bays.

DON'T FORGET

Coastal erosion is most rapid at high tide, when there are strong winds blowing on shore. Other factors affecting the rate of erosion include the rock type and the width of the beach. Wide beaches absorb wave energy.

VIDEO LINK

Check out the clip about eroding coastlines at www.brightredpublishing.co.uk/N5Geography

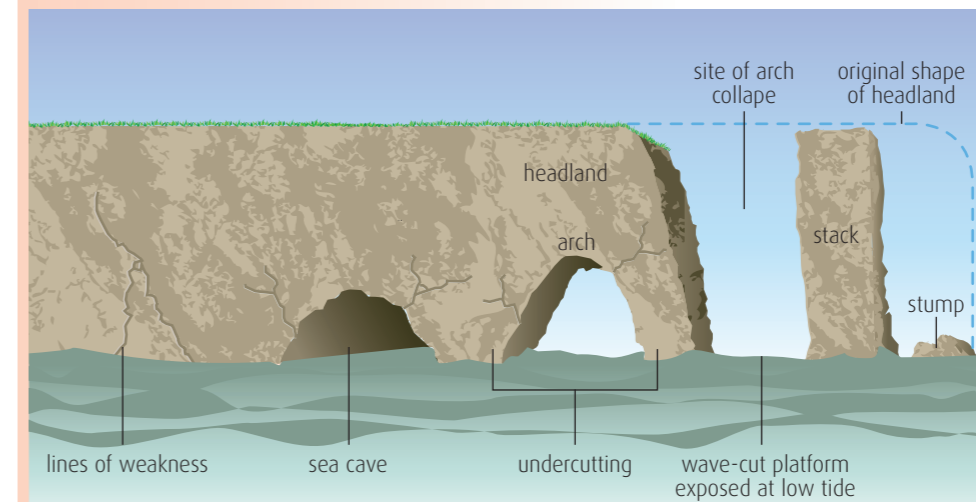
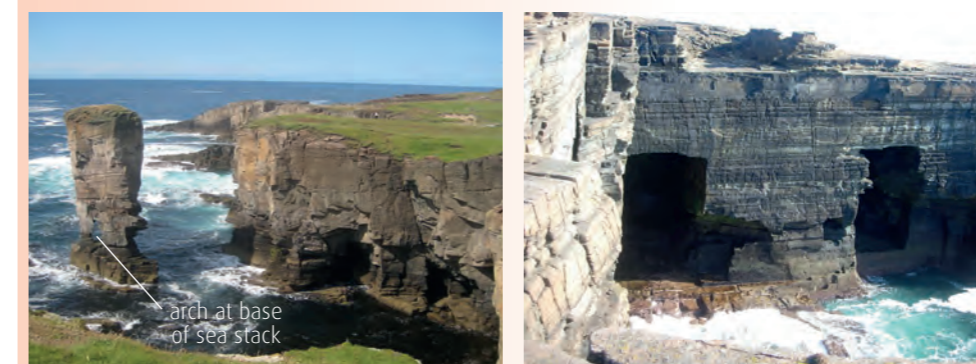


Diagram 1.23 Coastal erosion features.



Coastline of erosion at Yesnaby, Orkney.

Sea caves at Yesnaby.



THINGS TO DO AND THINK ABOUT

- 1 Use a search engine to find pictures of some of the best-known coastal erosion landscapes in Britain. Look for the **Green Bridge of Wales**, **Old Harry Rocks**, **Elephant Rock near Montrose** and the **Old Man of Hoy**.
- 2 On an outline map of the British Isles, plot the locations of the places above and label them appropriately as **sea stack** or **sea arch**.
- 3 Practise drawing diagrams of coastal erosion features. Add explanatory labels to show how each feature is formed.

VIDEO LINK

Watch the animation of cliffs retreating at www.brightredbooks.net/N5Geography

GLOBAL ISSUES

ENVIRONMENTAL HAZARDS: VOLCANOES, EARTHQUAKES AND THEIR CAUSES

The Earth's crust is made up of a series of plates. Oceanic crust is usually thin and dense, while continental crust is thicker but less dense. Sometimes crustal plates can be made up of both oceanic and continental crust. Earthquakes and volcanoes result mostly from movements of the Earth's crustal plates.

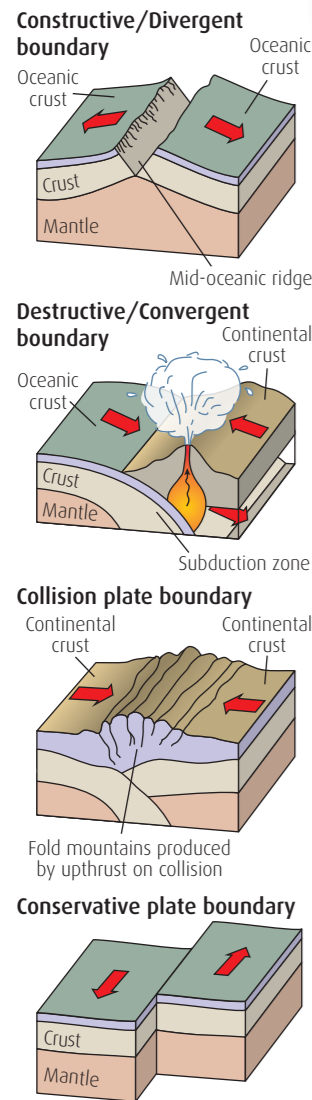


Diagram 3.15 Plate boundaries.

PLATE BOUNDARIES

Most earthquakes and volcanic activity occur close to, or on, the plate boundaries. There are four different types of plate boundary:

- constructive plate boundaries
- destructive plate boundaries
- collision plate boundaries
- conservative plate boundaries.

Constructive plate boundaries are where two oceanic plates are moving apart. This causes a weakness in the Earth's crust and makes volcanic eruptions more likely. Often these plates can be in the form of a line of volcanoes, as is found along the Mid-Atlantic ridge. Ascension Island, the Azores and Iceland are all volcanic islands which owe their existence to volcanic activity along the Mid-Atlantic ridge. As the plates move away from each other, volcanic eruptions spew out lava, which solidifies to form new crust.

At a **destructive plate boundary**, where the oceanic and continental crusts collide, one plate is forced beneath the other in what is known as a **subduction zone**. The friction caused by the collision of the two plates often stops them from moving further until, as tension builds up, they suddenly jolt apart, causing a major earthquake. The subducted oceanic plate may melt due to intense friction, heat and pressure, creating **magma**. This magma, which is less dense than the surrounding rocks, forces its way to the surface, creating volcanoes. The Andes is a chain of fold mountains caused by the continued collision of the Nazca and South American plates. A series of volcanoes, such as Nevado del Ruiz in Colombia and Cotopaxi in Ecuador, have been formed, and the area is subject to violent earthquakes such as in Chile in 2010 when a subsea earthquake reaching 8.8 on the Richter scale caused a huge earthquake and tsunami.

At a **collision plate boundary**, two continental plates collide, causing the crust to buckle and form fold mountains. This mountain building is known as orogenesis.

Earthquakes can occur here although, because there is not a subduction zone, volcanic activity is less likely. The Himalayas, the world's greatest fold mountain range, has been created where the Indo-Australian plate collides with the Eurasian plate.

A **conservative plate boundary** is where two plates slide past each other and crust is neither created nor destroyed. Often friction causes tension to build up and large earthquakes can occur. The San Andreas fault is a conservative plate boundary where the Pacific and North American plates are moving parallel to one another.



Diagram 3.16 Worldwide location of volcanoes.

VOLCANOES

Volcanoes occur along plate boundaries, although there are some that occur on so-called 'hot spots' away from plate margins. Hawaiian volcanoes, such as Muana Loa, are an example of this. Around the margins of the Pacific and Nazca plates where they meet continental plates lies the Pacific Ring of Fire, a particularly active ring of hundreds of volcanoes which encircles the Pacific Ocean.

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An **extinct** volcano is one that will never erupt again, while a **dormant** volcano is one that has not erupted for a long time but could still do so. **Active** volcanoes erupt regularly, such as Mount Etna in Sicily, which can erupt several times a year.

A typical volcanic cone is made up of a central pipe or **vent** leading from the **magma chamber** to the **crater** at the top, from which eruptions may happen. Sometimes this may be blocked by solidified **lava** known as a **plug**. As pressure builds from the magma below, a violent eruption can blow the plug off, leading to an explosion of **volcanic ash**, dust and **poisonous gas** that can rise high into the atmosphere. **Volcanic bombs** are lumps of semi-molten rock that can be catapulted several kilometres from the volcano, while molten rock emitted from the crater runs down the volcano's side as a **lava flow**. The most devastating volcanic eruptions may result in a **pyroclastic flow**, a lethal mix of hot rocks, volcanic ash and gases that travels very rapidly under force of gravity killing anything in its path. Sometimes, there may be a secondary vent and crater on the side of the volcano known as a **secondary** or **parasitic cone**. A vent from which sulphurous gases are emitted is known as a **fumarole**.

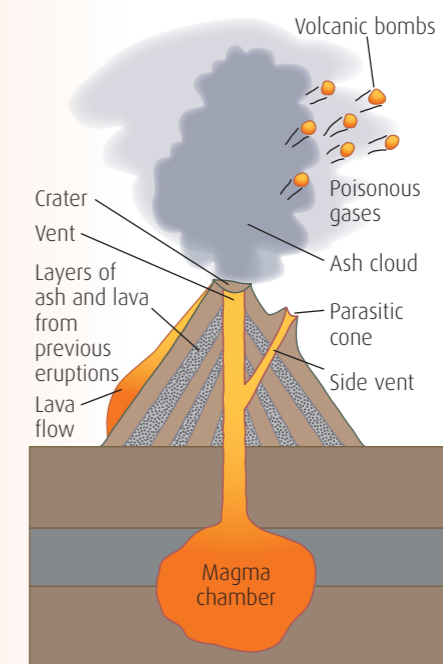


Diagram 3.17 Volcano cross-section.



Ngauruhoe: An active cone-shaped volcano in New Zealand.

DON'T FORGET

Plate boundaries are fault lines that separate the Earth's tectonic plates. One of the most notorious fault lines is the San Andreas fault in California.

VIDEO LINK

Check out the volcanoes clip to learn more at www.brightredbooks.net/N5Geography

EARTHQUAKES

Most earthquakes occur on, or close to, plate boundaries. Although there are hundreds of earthquakes every day, most are very small and are not noticed by people in the area. The severity of an earthquake is measured on the **Richter scale**, which is logarithmic, with a force 6 earthquake being 10 times stronger than a force 5 earthquake. The highest recorded earthquakes have not exceeded force 9. The 2011 Tohoku earthquake off the Japanese coast measured 9.0 and generated a devastating tsunami.

Earthquakes are caused by the movement of rocks along the edges of the Earth's crustal plates. The point beneath the surface where the movement takes place is known as the **focus**, and earthquake shockwaves radiate outwards from here while the point directly above this on the surface is known as the **epicentre**. Damage is worst close to the epicentre. There are three types of earthquake waves:

- P waves (primary or pressure waves), which move rocks up and down and travel the fastest
- S waves (secondary), which move the rocks from side to side and travel at 60% of the speed of P waves
- L waves (long waves), which travel along the Earth's surface in a similar way to waves on the ocean surface. These are the slowest waves but because of their rippling effect they cause the greatest damage.

L waves travel along the surface, causing the greatest damage

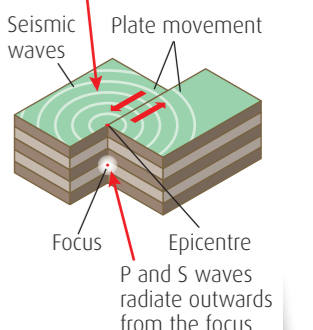


Diagram 3.18 Earthquake features.

VIDEO LINK

Watch the clip about earthquakes to learn more at www.brightredbooks.net/N5Geography

ONLINE TEST

Take the test on volcanoes and earthquakes at www.brightredbooks.net/N5Geography

THINGS TO DO AND THINK ABOUT

- 1 Explain why volcanic activity is particularly likely at destructive and constructive plate margins.
- 2 At the boundaries of which plates are these famous volcanoes found?
 - (a) Mount Fuji
 - (b) Mount Etna
 - (c) Cotopaxi
 - (d) Mount St Helens

GEOGRAPHY

Ralph Harnden



This BrightRED Study Guide is just the thing you need to tackle your course and gain the exam skills essential to succeed at National 5 Geography. Written by trusted author and experienced Geography teacher Ralph Harnden, this book is packed with brilliant examples, tasks and advice. It is the ultimate companion to your studies:

- ▶ **Completely up to date with all SQA changes**, so you can be confident the content is right for you.
- ▶ **Contains all of the essential course information**, arranged in easily digestible topics.
- ▶ **Designed in full colour, highly illustrated, accessible and engaging** to make sure all that study sticks!
- ▶ **Don't forget!** pointers offer advice on key facts and on how to avoid common mistakes.
- ▶ **Things to do and think about** sections at the end of each topic allow for further practice and research.
- ▶ **A glossary of key terms** helps you really learn and revise important course concepts.

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ISBN 978-1-906736-36-5



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