

Mountains And Volcanoes: YEAR 6 GEOGRAPHY MEDIUM TERM PLAN
Curriculum links to Year 3 work about rocks and Year 4 & 5 mapping

At the end of this geography unit of work pupils will

Know:
Where the world's highest mountains are.
That the Earth is made of 4 distinct layers.
How dome and fold mountains are created.
Where most volcanoes are located.
Why a volcano erupts.

Can do: make maps, read six figure grid references, read contour lines, create annotated diagrams.
Understand the vocabulary listed below – able to explain and discuss it without reading it from their geography folder.

Disciplinary knowledge: Reading grid references, referring to OS symbols, reading contour lines, using atlases.
Substantive: Knowledge and vocabulary of mountains, plate tectonics and volcanoes.

The expectation is that ALL pupils can learn, explain and write coherently about the aspects below.

Trip and Visit: N/A

Reading of books at home and in school on mountains and volcanoes, teaching of how to use the glossary and contents.

Pupils will learn	Vocabulary pupils will learn	Writing using a genre/tables Geographical skills and knowledge	Fundamental principles and teaching techniques to ensure that work is of a high standard from all pupils
<p>Week 1 – 2 hours</p> <p>Revise seven continents of the world.</p> <p>Where the world's highest mountains are.</p> <p>Know that Everest is the tallest mountain and recognise the historic</p>	<p>Continents - names Hemisphere Equator Political map Physical map Satellite image Peak Mountaineer Mapping convention</p> <p>(Ability to read, understand and explain)</p>	<p>Teacher led:</p> <p>Show pupils the photograph of Tenzing Norgay at the summit of Everest (with no contextualised information)</p> <p>Pupils identify enquiry questions: who, what where, when, why? What is the evidence?</p> <p>1953 climbed Everest with Edmund Hillary... tallest mountains in the world.</p> <p>Watch https://www.youtube.com/watch?v=NhBzhi9jPFs</p>	<ul style="list-style-type: none"> • Clear expectations for listening – repeating and learning the information. Clear bite-size instruction and explanation from the teacher using parts of videos where appropriate. • Behaviour from all pupils is exemplary and

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<p>challenge of conquering this peak.</p>		<p>Set enquiry ... how are mountains formed and how do mountain ranges get their shape.</p> <p>Use atlases – revise political & physical maps and satellite view of the Earth. Also revise the seven continents – launch Google Earth to show 3D model of globe and look where the continents are.</p> <p>Mapping: Locate each mountain in the atlas then accurately mark it on your blank map. Copy its name carefully to label the peak and write its height in metres. Explain why mountain ranges are shaded in brown or purple.</p>	<p>comments are made on sitting and listening.</p> <ul style="list-style-type: none"> • Bite sized chunks of knowledge making time for repetition discussion and rehearsing in pairs. • Emphasis on learning and exploring key vocabulary. Repetition in oral WORK AND INSISTENCE THAT THE CORRECT TERMS ARE USED IN WRITING. • Drafting process for tables and writing • Demonstration and insistence on high standards of construction and presentation • Finger under words to copy words – insist accurate. • The vocabulary is broken down into the weekly learning, it is revised and used in writing • Pupils write their own vocabulary into their books putting their finger under the words to copy correctly. • End products – handwriting and colouring is beautifully presented.
<p>Week 2 and 3: 3 hours</p> <p>That Mount Everest is a mountain within the Himalayas.</p> <p>Key vocabulary to describe the features of a mountain</p> <p>Where Mount Everest is located.</p> <p>How high Mount Everest is.</p> <p>What the landscape is like.</p> <p>How the features of the landscape change at altitude.</p> <p>What the weather is like.</p>	<p>Mountain range Peak Ridge Moraine Glacier Habitable Foothills Temperature</p>	<p>Teacher led:</p> <p>Look at where Mount Everest is using Google Earth. Explain that the mountain is part of a range of mountains called the Himalayas. Point out the continent and the countries in which the Himalayan range is located. Explain to pupils that Everest is 8849 metres above sea level (29028 feet). It is just one of 30 peaks of the Himalayan range. Compare this to the highest peak in the UK, Ben Nevis at 1344 metres.</p> <p>Pupils look at photographs of highest peaks on each continent - compare with Himalayas.</p> <p>Show pupils the photograph of Mount Everest. In pairs pupils examine the photograph. Teacher asks: What can you see? What words would you use to describe the landscape? The name Himalaya is an old Sanskrit word meaning ‘abode of snow.’ Is this a suitable name? Would it be easy or hard to climb? Other than climbing, what is the mountain used for? Is it habitable?</p> <p>The landscape: Explain that the landscape of the mountain is of barren rocks, snow and ice with no visible vegetation. The peaks are covered in</p>	

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<p>What the conditions are like for people climbing the mountain.</p> <p>Who Edmund Hillary and Tenzing Norgay were.</p> <p>How they reached the summit of Mount Everest.</p>		<p>ice and snow. In the foothills of the mountain, however, there is farming of potatoes, barley, buckwheat, lentils and rice. Sherpa people use local forests for timber for building, firewood and for animals. Wood is also used for heating homes.</p> <p>The temperature on the mountain changes; it is colder at higher altitudes so the higher up the mountain you go, the colder it gets. At 5000 metres (at Base Camp, where all expeditions begin) the temperature can range from minus 3°C during the summer, to minus 17°C during the winter. In the summer, during the day, it can feel warmer, and climbers must use sunscreen to protect their skin.</p> <p>Near the summit of Mount Everest, the temperature drops as low as minus 60°C. In July, the warmest month, the average temperature at the summit is minus 18°C (the same temperature as a domestic freezer). It never gets above freezing on the mountain.</p> <p>Ask the pupils whether they think Mount Everest could ever be a habitable environment.</p> <p>Watch: https://www.youtube.com/watch?v=-hTVNidvg2s</p> <p>Naming the parts of the mountain: Use POWERPOINT FROM GA TO SHOW FEATURES AND MOUNTAINEERS</p> <p>Using the annotated photograph of Mount Everest, introduce the terminology to describe the physical features of the mountain. Explain the definitions. Pupils annotate a diagram of the mountain.</p> <p>Peak: encourage pupils to use the term peak or summit, rather than 'top' SHOW IMAGES</p> <p>Ridge: where two sides of mountain meet</p> <p>Glacier: like a frozen river, the ice slowly moves down the mountain</p> <p>Moraine: rock debris deposited in front of an advancing glacier</p>	
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Pupils use Everest base camp map – mapping – looking at glaciers, international boundaries. Focus on revising compass direction.

Research about this magnificent mountain and Edmund Hillary and Tenzing Norgay who reached the summit.

Watch archive video footage:

<https://www.youtube.com/watch?v=GewZueJtkkg>

Stop at 2.15

Read 'Everest: The Remarkable Story of Edmund Hillary and Tenzing Norgay' comprehension questions – focus pages.

Read with pupils pg. 11 – pg. 18 of Freaky Peaks & complete reading questions and pg. 29 – 49 Everest (hardback book)

Use websites:

https://kids.kiddle.co/Mount_Everest

<https://www.bbc.co.uk/newsround/22702860>

<https://kids.britannica.com/kids/article/Mount-Everest/346112>

<https://www.konnecthq.com/mount-everest/>

<http://www.alanarnette.com/kids/everestfacts.php>

<https://www.sciencekids.co.nz/sciencefacts/earth/mounteverest.html>

Collect 15-20 facts about Everest. Show how to create a mountain fact-file. SEE RGS EXEMPLAR.

Where is Mount Everest located?

How high is Mount Everest?

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		<p>What is the landscape like?</p> <p>How do the features of the landscape change at altitude?</p> <p>What is the weather like? How does this change?</p> <p>What are conditions like for people climbing the mountain?</p> <p>Who were Edmund Hillary and Tenzing Norgay?</p> <p>How did they reach the summit of Mount Everest?</p> <p>What did they experience during their ascent?</p> <p>What did they do when they reached the summit?</p> <p>Everest Expedition 2021: The survival story of a man from the LOWLAND The first Vlog from SUMMIT</p> <p>https://www.youtube.com/watch?app=desktop&v=c0tXn8-Pqw8</p>	
<p>Week 4: 1 hour</p> <p>Where the mountains in the UK are located.</p>	<p>Mountain Relief Peak</p>	<p>Discuss- What is a mountain? Is all high land a mountain? Use atlases to look at shading of hills on map of British Isles (brown shading – why no purple?)</p> <p>What is a mountain? Definitions vary. One convention, often used in the UK, is a peak above 3000 feet</p> <p>Complete ‘Mountain Ranges in UK’ map – see folder</p>	
<p>Week 5:</p> <p>To know what an OS map is.</p> <p>To look at and learn the mapping conventions</p>	<p>Compass Bearing Direction Symbols Key Four figure grid reference</p>	<p>To understand what an OS map represents. Discussion about the history of maps and how/why they developed. Compare with current use of maps e.g. sat nav. Used daily in vehicles.</p> <p>To look at photos of Snowdon and locate it on an OS map. Watch video to compare height with that of Everest</p>	

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<p>needed to be able to interpret an OS map.</p>	<p>Six figure grid reference Easting Northings Scale Grid</p>	<p>https://geniustravels.co.uk/adventure-activities/hiking/climbing-snowdon-mountain-guide-for-beginners/.</p> <p>Revise 6 fig grid refs from Castleton work</p> <p>To understand the key features of an OS map including:</p> <ul style="list-style-type: none"> • Compass directions • The key – look at symbols and what they represent. Pupils need OS symbols sheet. Pupils complete work on using and interpreting the standard OS mapping symbols. • Four and six-figure grid references – revise four fig grid refs and OS symbols. Then move on to board work (whole class), Cambridge sheet to introduce 6 fig grid refs and then move on to OS maps– see mountains folder. • Grid squares • Scale <p>To interpret an OS map to answer questions about a locality: Snowdon. Look at photos on RGS PowerPoint that relate to locations.</p>	
<p>Week 6: 2 hours</p> <p>To use six figure grid references in context.</p> <p>To interpret an OS map - reading relief and features located on the mountain.</p> <p>To read the height of the land using contour lines.</p>	<p>Ordnance Survey Summit Feature Height Relief Contour line</p>	<p>Main Teaching - Ordnance Survey maps: Look at the OS Map Extract of Snowdon which shows, in detail, the height of land, the type of vegetation, the footpaths and other features of the landscape.</p> <p>Locate Snowdon on Google Earth and ensure pupils know that it is in Snowdonia National Park, north Wales. Then, using copies of the map itself, work through the maps skills below.</p> <p>Snowdon: First find the summit of Snowdon. The summit of Snowdon is in grid square 6054. The symbols for a tourist feature, visitor centre and train station are all highly visible. The summit itself is marked with the dot and blue triangle symbol demarking a trig point and the height of 1085 (heights are in metres, although this unit of measure is not written on the map).</p> <p>Ask pupils what other symbols and features they can see marked on the summit. Footpaths, railway lines, contour lines and crags are also</p>	

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		<p>evident. Allow pupils to familiarise themselves with the key and discover what these symbols mean.</p> <p>Ask pupils what evidence there is on the map to indicate the shape of Snowdon's summit. They may see that three footpaths meet at the summit. This is the convergence of three ridges, one to the north, one to the south east and one to the south west. This indicates that the summit is a pyramidal peak. This is the same shape as the summit of Mount Everest, although it is not as high!</p> <p>Next look at the other main features marked on the map extract. There are three areas of water in the centre of the extract: Glaslyn, Llyn Llydaw and Llyn Teyrn. Llyn means lake in Welsh.</p> <p>Ask the pupils which of the lakes is higher. Spot height markers are evident and are written in red.</p> <p>Ask pupils to give you the four-figure and six- figure grid reference for Pen-y-Pas. (6455 and 647557). Ask for the height. The spot height is clearly visible at 359 metres.</p> <p>Using the key, ask pupils what they would find at Pen-y-Pas. The symbols for youth hostel, parking, public conveniences and telephone are all marked. The A 4086 road also passes through Pen-y-Pas.</p> <p>Snowdon: Moving back to the summit of Snowdon. Can pupils give the six-figure grid reference for the summit? (609544)</p> <p>Contours are lines showing land of equal height (introduce). Contour lines that are close together show land that is steep, contour lines drawn further apart show land that is more gently sloped.</p> <p>Pupil independent work: Using the OS map extract pupils should complete the Mapping Snowdon worksheet (see folder). This covers compass directions, grid references, using the key and calculating distance using scale.</p>	
Week 7: 2 hours	Contour line	Model on board how relief / height above sea level is calculated.	

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<p>How to interpret contour lines.</p> <p>To know that when contour lines are closer together the land is steeper.</p> <p>To know that when contour lines are further apart the slope is not as steep.</p>	<p>Relief Height above sea level Steep Shallow</p>	<p>Pupils complete dot-to-dot contour sheet.</p> <p>Pupils read OS map – interpreting height of land. (see folder)</p> <p>Make contour line models- coloured layers of paper indicating height of land.</p>	
<p>Week 8: 3 hours</p> <p>To know that the Earth is made of 4 distinct layers.</p> <p>To know that the Earth's crust is broken into tectonic plates.</p>	<p>Structure Inner core Outer core Mantle Crust Magma Molten Iron Tectonic plates Boundaries</p>	<p>The structure of the Earth</p> <p>Show pupils the diagram of the structure of the Earth... prep diagram. Label the diagram as we discuss the structure.</p> <p>The Earth is made from four distinct layers: the inner core, the outer core, the mantle and the crust. Each layer has a different thickness and is composed of different materials which have different characteristics.</p> <p>Inner core The inner core is the centre. It is primarily a solid ball of iron. It has a temperature of 5500OC, which is almost as hot as the outer layer of the sun.</p> <p>Outer core The outer core is composed of iron and nickel. Unlike the inner core, the outer core is liquid.</p> <p>Mantle This is the thickest part of the Earth. The mantle is viscous and composed of semi-molten rock or magma.</p> <p>Crust This is the outer layer of the Earth's surface, and it is the thinnest layer. The crust is composed of solid rock and rests on the top layer of the mantle. It is up to 60km thick.</p> <p>Pupils use textbooks to research the 4 layers and create a detailed annotated diagram.</p>	

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		<p>Introduce concept of 'plate tectonics'</p> <p>Explain that the Earth's surface (the crust) is not one smooth unbroken covering but is made up of different sections called plates. Give pupils the example of a cracked eggshell / apple pie crust. Show pupils the world map showing the position of each plate. There are eight plates floating on the mantle.</p> <p>Ask pupils to name and locate these on the map. Ask pupils which plates include more than one continent, and which do not mark the boundaries of continents. The major plates mainly mark the boundaries of the continents. Which plates are oceanic? Look at GB – are we near the edge of or in middle of a plate? Pupils complete plates jigsaw.</p> <p>Tell pupils that the Earth's plates are constantly and slowly moving, and then ask how they think this could happen. Show pupils the diagrams of convection currents. Explain that convection currents in the mantle cause the plates to move. Heat rises and falls throughout the molten rocks that compose the mantle. As the magma moves so do the plates above. The Earth's plates are constantly moving. On average this movement is between 1 and 10 cm per year. Give pupils the analogy of bubbling porridge or custard.</p> <p>See Oak Academy video</p>	
<p>Week 9: 2 hours</p> <p>To learn how dome and fold mountains are formed.</p>		<p>So, how are mountains formed?</p> <p>Occasionally two plates move closer to each other or converge. This creates intense pressure, causing the plates to buckle in different ways and this process forms a mountain.</p> <p><u>Fold mountains</u> Show pupils the diagram of a fold mountain: Formed over millions of years, these are the most common type of mountain. They are formed when two plates move towards each other. This causes the plates to</p>	

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buckle and pushes the crust upwards, forming a mountain. Use hands to simulate plates pushing against each other.

TOWEL INVESTIGATION. This is similar to how a fold mountain is formed. The upward folds are known as anticlines and the downward folds are synclines. These can be labelled on the diagram.

** Pupils create diagram

Then show pupils the photograph of the fold mountain rock formation. The Himalayas are another good example of a range of fold mountains. These were formed 25 million years ago when the Indo-Australian plate pushed against the Eurasian plate.

Explain to the pupils that there are fossilised seashells and marine deposits within the rocks that make up the summit of Everest. Then ask them how they think they got there?

Other examples of fold mountains include Mount Aconcagua in the Andes, South America, Mont Blanc in the Alps in Europe and the Rocky Mountains in North America. Ask pupils to locate these using an atlas.

See Oak Academy video

Dome mountains

Show pupils the diagram of a dome mountain: Dome mountains are the result of a great amount of molten rock (magma) pushing its way up under the Earth's crust. Without actually erupting onto the surface, the magma pushes up the overlaying rock strata. At some point the magma cools and forms hardened rock.

The uplifted area created by the rising magma is called a dome because it looks like the top half of a ball.

** Create diagram

An example of dome mountains is the Black Hill range in South Dakota. Mount Rushmore is also a dome mountain. Show pupils the

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		<p>photographs of Bear Butte and Mount Rushmore, depicting the faces of the four presidents.</p>	
<p>Week 10 & 11:</p> <p>To learn what volcanoes are, where they occur and why an eruption happens.</p>	<p>Core Mantle Crust Plate tectonics Lava Magma Vent Granite Basalt Pumice Composite Shield</p>	<p>The word volcano is derived from the name Vulcan, the Roman God of fire.</p> <p>Revise: The structure of the Earth: Pupils should already be familiar with the structure of the Earth (the inner core, outer core, mantle and crust). Consolidate this understanding if necessary.</p> <p>Plate tectonics: Then, remind pupils that the Earth is not a smooth sphere, but has a crust divided into eight major tectonic plates. These tectonic plates move constantly through the action of convection currents in the mantle. Each year the Earth's plates move 1-10cm. Plate boundaries are important: Volcanoes are usually formed at the boundary between two tectonic plates. ... look at Pacific Ring of Fire on the map. Mapping sheet completed by pupils.</p> <p>Watch: https://www.natgeokids.com/uk/discover/geography/physical-geography/volcano-facts/</p> <p>Why does an eruption happen? Magma is a mixture of molten rock and gas. Huge pressure is placed on the magma when it is deep underground. When the magma rises through a volcano's vent this pressure is released. Lava and gas then erupt from the vent. Some of this lava cools before it lands (small lumps are called cinders, larger lumps are called bombs), but some of this lava flows down the sides of the volcano and onto the surrounding area.</p> <p>When lava cools it forms igneous rocks such as basalt, granite and pumice. Show pupils examples of these rocks if they are available.</p> <p>Volcanoes come in different shapes: The shape of a volcano depends on the type of eruption that occurs and the type of lava present. Two main types of volcano are the shield volcano and the composite volcano.</p>	

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Read to gather information for extended piece of writing – explanation text.

Shield volcanoes: Shield volcanoes have very runny lava (they are not viscous); because of this they do not have an ‘explosive’ eruption. Lava spreads quickly across the landscape. With each eruption a new layer of rock is built on the previous one. Gradually a wide dome of rock is built up. It is called a shield volcano because it looks like a curved shield lying on the ground (or an upside-down dinner plate). The slopes of a shield volcano are very gentle. The Hawaiian Islands are a chain of shield volcanoes. Show pupils the photograph of Mauna Loa in Hawaii as you talk through the case study. Locate Hawaii using either Google earth or an atlas.

Composite volcanoes: Composite volcanoes are the most common type of volcano. When you think of a volcano you are probably picturing the classic shape of the composite volcano. They are formed by hardened layers of lava and ash from successive eruptions. The lava is viscous (therefore thicker than with shield volcanoes), and it cools and hardens before spreading very far.

Draw and label a diagram showing the cross section of a composite volcano.

Does the UK have volcanoes?

There are no active volcanoes in the UK. However, there is evidence of past volcanic activity. Castle Rock the seat of Edinburgh Castle; The Giant’s Causeway in Northern Ireland; Fingal’s Cave in Scotland and The Hebrides Terrace Seamount are all examples.

Extended piece of writing (English policy) Why do volcanoes erupt?
Explanation text.