

What we teach...

At our school, we believe that geography helps children understand the world around them and their place within it. Through comparing our local area with the wider world, children explore how physical and human geography has shaped communities, environments and the lives of people across the globe. We inspire curiosity through the study of places that have made a significant impact on our world, while encouraging children to think about sustainability, diversity and global responsibility. Every class creates a learning journey by adding each new location they study to a class map, helping children develop a secure sense of place and make meaningful connections between the places they learn about.

How we teach....

We adopt an enquiry focused approach to learning and teaching in geography which develops our children as young geographers. Through enquiry, our children not only build subject knowledge and understanding but become increasingly adept at critical thinking, specialised vocabulary and their grasp of subject concepts. We structure learning in geography through big question led enquiries about relevant geographical topics, places and themes. Our curriculum is therefore 'knowledge rich' rather than content heavy as we recognise that if we attempt to teach geographical topics, places, themes and issues in their entirety we restrict opportunities for children to master and apply critical thinking skills and achieve more challenging subject outcomes. We adopt a policy of immersive learning in geography that provides sufficient time and space for our children not only to acquire new knowledge and subject vocabulary but also to develop subject concepts and understand the significance of what they have learned. Our learning and teaching in geography is interactive and practical allowing opportunities for children to work independently, in pairs and also in groups of various sizes both inside and outside of the classroom. Learning activities are varied including the use of mysteries, maps at different scales, geographical puzzles, photographs and drama. Similarly, we provide varied and differentiated ways for children to record the outcomes of their work including the use of PowerPoint, concept mapping, annotated diagrams, improvised drama and the application of a wide range of writing genres. Only in this way will knowledge become embedded and 'sticky' and ensure that our children can build on what they know and understand from one year to the next. The schemes of work for each geographical enquiry highlight both the objectives and anticipated outcomes of the investigation. They are also carefully structured through the use of ancillary questions, to enable children to build their knowledge and understanding in incremental steps of increasing complexity until they reach the point where they are able to answer the question posed at the beginning of the investigation. Our learning and teaching in geography also recognises the importance of fieldwork with a number of our investigations involving observation, recording, presentation, interpretation and the evaluation of geographical information gathered outside of the classroom.

What the children learn...

Each enquiry which forms our programme of learning and teaching in geography sets clear objectives and outcomes for the children in terms of knowledge and understanding and skills acquisition. The schemes of work also suggest a range of ways in which the teacher can assess whether a child has achieved these outcomes. We ensure that when assessing our children evidence is drawn from a wide range of sources to inform the process including interaction with children during discussions and related questioning, day to day observations, practical activities such as model making and role play drama, the gathering, presentation and communication of fieldwork data and writing in different genres. The outcomes of each enquiry serve to inform the teacher's developing picture of the knowledge and understanding of each child and to plan future learning accordingly. We do not make summative judgements about individual pieces of children's work but rather use the outcomes to build an emerging picture of what the child knows, understands and can do.

At the end of each year we make a summative judgement about the achievement of each child against the subject learning goals for geography in that year. At this point we decide upon a 'best fit' judgement as to whether the child has achieved and embedded the expected learning goals, exceeded expectations or is still working towards the goals. This decision draws upon the professional knowledge and judgement that teachers possess about the progress of each child, developed over the

previous three terms which allows an informed and holistic judgement of attainment to be made. Achievement against the learning goals for geography at the end of the year is used as the basis of reporting progress to parents.

National Curriculum Objectives for KS2 Geography

Children should extend their knowledge and understanding beyond the local area to include the United Kingdom and Europe, North and South America. This will include the location and characteristics of a range of the world's most significant human and physical features. They should develop their use of geographical knowledge, understanding and skills to enhance their locational and place knowledge.

Children should be taught to:

Locational knowledge

- locate the world's countries, using maps to focus on Europe (including the location of Russia) and North and South America, concentrating on their environmental regions, key physical and human characteristics, countries, and major cities
- name and locate counties and cities of the United Kingdom, geographical regions and their identifying human and physical characteristics, key topographical features (including hills, mountains, coasts and rivers), and land-use patterns; and understand how some of these aspects have changed over time
- identify the position and significance of latitude, longitude, Equator, Northern Hemisphere, Southern Hemisphere, the Tropics of Cancer and Capricorn, Arctic and Antarctic Circle, the Prime/Greenwich Meridian and time zones (including day and night)
- Place knowledge
- understand geographical similarities and differences through the study of human and physical geography of a region of the United Kingdom, a region in a European country, and a region in North or South America

Human and physical geography

- describe and understand key aspects of:
- physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes, and the water cycle
- human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water

Geographical skills and fieldwork

- use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied
- use the 8 points of a compass, 4- and 6-figure grid references, symbols and key (including the use of Ordnance Survey maps) to build their knowledge of the United Kingdom and the wider world
- use fieldwork to observe, measure record and present the human and physical features in the local area using a range of methods, including sketch maps, plans and graphs, and digital technologies

Year 3

Our Local Area

Local Area Study (Year 3)

Specific skills:

- identify
- describe

During the enquiry children will have opportunities through the application and analysis of a wide range of geographical skills and resources to:

- Locate our local area on a map and give directions.
- Learn about physical and human features of our local area.

- reason - observe - record - explain - understand - make judgements - recognise	• Identify different types of services in our local area • Collect and record evidence. • Evaluate what the local area is like.
Geographical Concepts	• Change • Environment • Distribution • Interaction
Knowledge	Locate our local area on a map and give directions. • Create a target board for Galleywood, Chelmsford, Essex, south East, England, United Kingdom, Europe, World. • Look at OS maps. The division of OS maps into smaller squares is a method used to help map readers locate places easily. • Navigate around a map using eight points of a compass - North (N), East (E), South (S), West (W), Northeast (NE), Southeast (SE), Southwest (SW), and Northwest (NW). • Using google maps or similar - Children to zoom in and out of an aerial picture of Galleywood. Show the children how the view can be changed from satellite to the map view. Learn about physical and human features of our local area. • Use google maps to look at Galleywood and go on a local walk. • Physical features: Galleywood Common, River Wid, Woodland, Heathland, Ponds etc • Human features: roads, playgrounds, footpaths, buildings (school, shops and doctors) etc • Identify different types of services in our local area • List of local services includes: libraries, leisure facilities, dentists, petrol stations, rubbish dump • Look at how far away each of these services are. • Locate the services on the map and look at the distant to each. • Look at the services we don't have in Galleywood and we have to travel further for (e.g. hospital). Collect and record evidence. • Children complete a job questionnaire (homework): ○ How many different jobs did people have?

	○ How many of the adults they surveyed had to travel to a different town/city to get to work? ○ How many adults walk to work? ○ How many take public transport? ● Have a look on a map to see how far some people have to travel to get to work. ● Create a bar chart showing their findings. Evaluate what the local area is like. ● Children to describe their local area. ● What do they think the best thing about living in your local area is? ● What do they think is the worst thing about living in your local area? ● Whilst creatin an information guide children to consider: ○ What will visitors need to know about? ○ What interesting places might they want to visit? ○ Are there any dangerous places they should warn them about? ○ Are there any historical facts they could tell them about?
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Megacities	
Why do so many people in the world live in megacities? (Year 3) Specific skills: - Observe - Describe - Reason - Explain - Identify - Locate - Compare and contrast - Conclude	During the enquiry children will have opportunities through the application and analysis of a wide range of geographical skills and resources to: ● Observe and describe the key features of cities and suggest reasons for why people live in cities of such high density; ● Describe and begin to explain the distribution of megacities across the continents of the world; ● Explain some of the reasons why Baghdad was the first city in the world with a million inhabitants; ● Identify and locate the top 10 cities in the United Kingdom with the largest populations and compare and contrast these with the top 10 fastest-growing cities in the country; ● Understand the main reasons why the population of any city can increase and explain why Milton Keynes in particular is the fastest-growing city in the United Kingdom; ● Recognise and locate the largest cities in South America; ● Describe and offer reasons for the features of the city of Brasília, capital of Brazil; ● Explain and conclude why the Brazilian government built a new capital city in 1960; ● Compare and contrast the benefits and disadvantages of city life and reach a judgement as to which is most significant; ● Identify, describe and explain some of the main geographical features of one of the top 40 megacities in the world.

- Make judgement - Recognise	
Geographical Concepts	• Distribution • Location • Change • Environment • Diversity • Scale
Knowledge	<u>Year 3: Why do so many people in the world live in megacities?</u> Purpose and Context • Globally over half of the world's population now live in towns and cities – in the United Kingdom this figure has reached 80 per cent. • During the lifetime of the children' urban populations will continue to grow very rapidly around the world and particularly amongst the poorest countries as they develop economically AQ1: What are megacities and where are they located? • Megacities have more than 10 million residents • Asia has the most megacities; Oceania has no megacities; After Asia, North America has the next largest number of megacities. AQ2: Why did Baghdad become the first city in the world with one million people? • In AD 925 Baghdad was the first city in the world to reach one million inhabitants. • Work began on the city in AD 762 and it grew rapidly in size over the next 150 years as the capital of the early Islamic empire. • This rapid growth took place because, at the time, it was the main centre of learning, medicine and trade in the world. AQ4: Why is Brasilia the fastest-growing city in Brazil? • The city of Brasília in Brazil. This is the fastest-growing city in Brazil – increasing by 3 per cent a year. Its current population is 2 852 000 • In 1960 the government of Brazil decided to build a brand-new capital city – until then the capital had been Rio de Janeiro. So, from 1960 the country's parliament, government buildings, law courts, main sports stadiums, banks, finance centres such as the Stock Exchange and 124 embassies were moved from Rio de Janeiro to Brasília. Hundreds of thousands of people whose jobs were affected in some way were also moved. • Once the new city was established, a new airport was constructed and many shops and hotels set up creating thousands of new jobs particularly for people working in construction. • Brazil is the fifth largest country in the world, both in terms of land area and population (208 million), but two-thirds of this population is found in a very small area of the southeast coast between São Paulo, Rio de Janeiro and Belo Horizonte. • Overcrowding and the development of favelas, which house tens of millions of people, are commonplace in these cities. The interior of the country (mainly pampas grassland and tropical rain forest) is under exploited with a relatively low population density. In an attempt to encourage more businesses and people to move to the central areas of Brazil and away from the coast, the government moved the capital city away from the coast and over the mountains of the Brazilian Highlands to a more central location AQ5: How do the advantages of living in cities compare with the disadvantages?

- A particular kind of pollution known as smog (formed when moisture droplets in the atmosphere combine with particles of smoke and chemicals) often occurs in cities. This can affect people's health and quality of life, particularly if they are walking around outside.
- Congestion from both crowds of people in the streets or trying to use the transport systems such as the underground or metro, and driving vehicles on roads is common. As a result it may take a very long time to travel only very short distances.
- Because cities contain many more people than in the countryside, crime rates tend to be greater in cities than in rural areas.
- There are also many people looking for a place to live so the availability of accommodation is often scarce and very expensive. This can lead to people becoming homeless if they are unemployed or unable to work for one reason or another.

Specialised Subject Vocabulary:

City; Megacity; Urban; Rural; Capital; Population density; High-rise; Continent; Civilisation; Trade; Bridge; District; Employment; Economy; Migration; Housing; Services; Industry; Culture; Historic; Architecture; Smog; Pollution; Homelessness; Crime; Congestion; Urbanisation.

<u>Basic</u>	<u>Appropriate</u>	<u>Specialised</u>
Jobs	Occupations	Employment
Movement	Journey	Migration
Lifestyle	The arts	Culture
Busy	Overcrowding	Congestion

Jungles and deserts

**Why are jungles so wet and deserts so dry?
(Year 3)**

Specific skills:

- Observe
- Describe
- Explain
- Identify
- Reason
- Compare and contrast
- Conclude
- Construct

During the enquiry children will have opportunities through the application and analysis of a wide range of geographical skills and resources to:

- Observe, describe and explain in basic terms the pattern of climate in the United Kingdom;
- Identify, describe and begin to offer reasons for the diversity scale of different types of climate around the world;
- Compare and contrast the temperature and rainfall data in different climate graphs to reach conclusions about the climate in different locations in the world;
- Construct a climate graph from temperature and rainfall data for their home location and compare and contrast this with climate graphs of other locations to reach conclusions and make judgements;
- Understand how climate affects both the landscape of different biomes and the plants and animals that can live there;
- Observe, describe and explain why areas of tropical rainforest such as the Amazon Basin have so much convectional rainfall;
- Describe the natural environment of the Atacama Desert and explain why the city of Africa is the driest inhabited place in the world;
- Identify, locate; describe and explain how plants and animals are adapted to the climate of either the coniferous forest or savanna biome.

- Make judgements - locate	
Geographical Concepts	• Location • Distribution • Environment
Knowledge	<u>Year 3: Why are jungles so wet and deserts so dry?</u> Purpose and Context • Climate is the main factor determining the distribution of biomes on Earth • Climate varies, even across a relatively small country in terms of land area as the UK, • A biome is and how the landscapes, plants and animals within the different biomes of the world are determined largely by climate. AQ1: Why is climate different across the United Kingdom? • Weather happens from day to day. • Climate is the average pattern of the weather that a place receives over 30 years. • The United Kingdom is a small country, in terms of land area, and generally it is never very hot and never very cold. The UK has a temperate climate. • The further north in the UK towards the North Pole, the colder it becomes and the further south towards the Equator the warmer it becomes. • Not only is the pattern of average temperatures across the UK different from one location to another, so also is the distribution (how something is spread out over an area) of rainfall during an average year. • Average temperatures decrease from south to north (or increase from north to south) in the UK, • The prevailing (direction from which they most often blow) winds that travel across the UK come in a south-westerly direction in both winter and summer. • As the winds blow for thousands of kilometres over the Atlantic Ocean, the prevailing winds absorb a lot of moisture which then falls as rain when they reach the UK – most falls on the land they meet first (the west) and consequently less rain falls to the east. AQ2: What are the world's climates? • The Earth is divided up into different climates according to patterns of temperature and rainfall that places experience. • The wettest places on Earth are all found around the Equator and between the Equator and the Tropics of Capricorn and Cancer. • The distribution of very dry areas on Earth is much more evenly spread than the location of the wettest areas – there are very dry areas in every continent except Europe. AQ3: How do climate graphs help geographers compare the climate of one place with another? • Geographers draw and use climate graphs • Climate graphs allow geographers to see very quickly and easily the pattern of average temperature each month (shown by a continuous red line) and average monthly rainfall (shown by blue bars). • Temperature is read from the left-hand vertical axis and rainfall on the right-hand vertical axis. AQ4: How does the climate affect the plants and animals living in a place? • Such large communities of plants and animals covering distinct areas of the world are called biomes

- Hot deserts and tropical forest biomes can both be found in the continent of South America

AQ5: Why is the jungle of the Amazon Rainforest so wet and humid?

- The River Amazon is the world's greatest river in terms of the volume of water it carries and it is only a few kilometres shorter than the River Nile (the longest river in the world).
- At any second of the day or night one-fifth of all the river water in the world will be found in the River Amazon and its tributaries (smaller rivers that flow into and join a larger river).
- The River Amazon has its source (where it begins) high up in the Andes Mountains in Peru.
- It rains almost every day of the year in Manaus and this, combined with the hot temperature, makes the weather conditions very humid – perfect conditions for a jungle to grow.

AQ6: Why is Arica the driest inhabited place on Earth?

- Arica is the driest inhabited place on Earth with only an average of 0.76 mm of rainfall each year because it is surrounded by the Atacama Desert, which is the driest non-polar desert in the world (central Antarctica at the South Pole is drier).
- Some places in the Atacama Desert haven't had any rainfall for 500 years
- The Atacama Desert is very long and narrow – 1000 km from north to south and only 150 km at its widest point (west to east).
- The Atacama is a rocky or stony desert – the white colour that appears in some of the photographs is, in fact, salt deposits.
- Moist air flows in from the southeast across the Pacific Ocean towards Arica.
- Immediately the moist air is forced to rise into the atmosphere as it meets the Andes Mountains.
- As the air rises it condenses to form water vapour in huge clouds above the mountains.
- All the rain falls on the eastern side of the Andes Mountains.
- The city of Arica and the Atacama Desert remain the driest places on Earth.

Specialised Subject Vocabulary:

Weather; Climate; Temperature; Wind; Ocean; Drought; Annual; Coniferous; Tropical; Rainforest; Savanna; Hot desert; Ice cap; Tundra; Mountain; Grassland; Forest; Evergreen; Predators; Humid; Oxygen; Drought; Biome; South America; River; Amazon Basin; Amazonia; Nile; Andes; Tributary; Convection; Condensation; Inhabited; Polar; Sahara; Adaptation.

<u>Basic</u>	<u>Appropriate</u>	<u>Specialised</u>
Dry	Lack of water/rain	Drought
Sticky	Tropical	Humid
Killer	Hunter	Predator
Changing	Adjusting	Adaptation

Sustainability	
How can we live more sustainably? (Year 4) Specific skills: - Describe - Explain - Identify - Reason - Observe - Make judgement - Recognise	During the enquiry children will have opportunities through the application and analysis of a wide range of geographical skills and resources to: • Describe and explain using examples what living sustainably means; • Identify, describe and explain the differences between renewable and non-renewable resources; • Undertake an environmental review of different categories of sustainability at their school and draw up an Action Plan to identify and explain priorities to help the school become more sustainable; • Understand in basic terms how solar panels and wind turbines generate electricity; • Identify, describe and offer reasons for how sources of energy used to make electricity in the United Kingdom are changing; • Explain how electricity is generated in hydroelectric power stations; • Understand why creating new habitats for birds are good examples of sustainable development; • Describe, observe, explain and make a judgement as to why introducing solar cookers in some of the world's poorest countries makes the lives of people more sustainable; • Recognise and explain ways in which their lives at home could be more environmentally sustainable.
Geographical Concepts	• Sustainability • Change • Interaction • Interaction • Diversity
Knowledge	<u>Year 4: How can we live more sustainably?</u> Purpose and Context • The concepts of sustainability and sustainable development lie at the heart of a geographical world view that sees the subject as the study of the interrelationship of people with the environments in which they live and upon which they depend. • The greatest global challenge during the children's lifetimes will be how to marry economic and personal development with the principles of sustainability. • Sustainability is ensuring that everyone can enjoy a comfortable and fulfilling life without undermining the integrity of the lives of others or the environment that sustains them. • Sustainability is not just confined to how we interact with the environment. It also has equal relevance to many aspects of their life, especially in the context of personal and social wellbeing. AQ1: What does being "sustainable" actually mean? • The word 'sustainable' literally means being able to do something for ever without having a negative impact on the environment that supports life on Earth or on people living elsewhere in the world. • Living sustainably is essentially about using what we need now to live a comfortable lifestyle and, at the same time, doing what we can to minimise our impact on the environment so that everyone in the future has the same opportunity to live well, wherever they are in the world. • A high degree of sustainability (could continue fairly indefinitely into the future)

- A low level of sustainability (cannot continue in the same way for ever).
- Using the land resource for landfill, quarrying for rocks and minerals such as iron ore and coal, drilling to extract oil and gas are all examples of non-renewable and unsustainable activities
- Renewable and sustainable energy that will not run out, such as wind, tides and waves, to generate electricity to light and heat our homes, and to run factories and industry.
- Fisheries and forestry are both resources that can potentially be sustainable and infinite or unsustainable and finite depending on how they are used. If we conserve fish stocks by limiting how much we catch and protect breeding grounds then this resource has the potential to be sustainable.
- If felled trees are replaced with saplings, which will grow into mature trees then this resource and activity is also potentially sustainable.

AQ2: How can we help to make our school more sustainable?

- 11 areas of sustainability – energy; litter; waste; water; transport, healthy living; biodiversity; school grounds; global perspective; green procurement and participation.

AQ3: Why are we seeing more wind and solar farms in the countryside?

- All kettles have a coil or disc of metal called a heating element. When the kettle is plugged into an electrical outlet or socket and switched on, a flow of electrons called electric current flows into the heating element. The element's resistance (the tendency of any material to try to stop electricity flowing through it) causes the element to heat up. The element passes its heat by conduction to the surrounding cold water, which quickly warms up and eventually boils.
- Every day more energy (called solar energy) is received from the sun in one hour than all 7 billion people in the world use in one year! We can't use this solar energy directly so we have to convert it into other forms of energy, which we can use much more easily – such as electricity.
- Solar panels convert sunlight into electricity. Inside solar panels are lots of solar cells full of electrons. When the sun's light hits the cells the electrons inside begin to move and start to flow as a current of electricity.
- Wind turns the blades of the turbine, which spins a shaft that connects to a generator to make electricity.
- Both solar and wind power are renewable sources of energy.
- Coal is ultimately going to run out and this is one reason why we will be using less of it but the most important reason to cut down the use of coal to make electricity is because when it is burned, it releases a gas into the air: Carbon dioxide.
- Geographers call carbon dioxide a greenhouse gas because coal pollutes the atmosphere when it is burned to make electricity.
- why is making electricity from the wind and from sunlight much better than using coal? Making electricity from the wind and sunlight is better than coal because they are both renewable, will never run out and do not produce polluting greenhouse gases. These are the reasons why we are going to see many more wind and solar farms in the countryside in the UK in the future.

AQ4: How is sustainable development helping the lapwing out of the red?

- When we take action to improve the environment for both people and other living things, it is called sustainable development.
- An area of shallow water called a 'scrape' it is mostly flat fields with gentle hills in the background
- A Northern Lapwing chick grows up to become a beautiful British adult bird sometimes also called the Green plover or Peewit (after its characteristic call)
- Lapwings used to be found on farmland throughout the United Kingdom but their numbers have fallen drastically during the past 30 years.

- An important reason for this is that the places they prefer to nest in are disappearing. Lapwings nest from March until early June, in scrapes in the ground with short vegetation so that they can get a good all-round view of possible predators such as crows or foxes – they can see them coming from a long way off. They also like to be close to areas of shallow water with muddy edges where insects and worms are available for their chicks to eat independently within two to three hours of hatching.
- The problem for the lapwing is that the places they prefer to nest in during the breeding season, such as bare (fallow) ploughed fields; crops of wheat and barley that have been planted in the spring (so only short plants at the time of nesting); and areas of wet grassland (meadows) are to be found less and less in the UK.
- The land at Exminster Marshes is owned by the Royal Society for the Protection of Birds (RSPB) – the United Kingdom’s largest conservation charity – which works with many partners to protect threatened birds and wildlife by setting up nature reserves.
- The RSPB is creating shallow hollows or ‘scrapes’ in the fields, which collect water. As the water rises and falls, muddy edges form. This is the ideal feeding ground for young lapwing chicks. Today, the Exminster Marsh is the only place in Devon where lapwings nest!

AQ5: How are solar cookers helping Sunita and her family to live more sustainably?

- Nepal, which is one of the very poorest countries in the world – it is ranked 166th poorest out of the 198 countries in the world
- Only 24 per cent of people in Nepal have electricity
- Solar cookers work in just the same way as the highly technical solar panels by converting the sun’s rays of light to heat energy.
- There are 30 million people living in Nepal and 76 per cent of them rely on fuelwood for all of their energy – 640 kg per person is used every year. This results in 1000 sq km of forest being cut down annually.
- Whilst people still need to cut some wood to use when the weather is poor and the sun doesn’t shine, this now amounts to about 200 kg a year – which is a saving of almost 500 kg of wood per person.

Specialised Subject Vocabulary:

Sustainable, sustainability, finite, non-renewable, unsustainable, infinite, conserve, energy; litter; waste; water; transport, healthy living; biodiversity; school grounds; global perspective; green procurement, participation, solar ‘farms’, wind ‘farms’, wind turbines, solar panels, electricity, solar energy, Coal, Renewables, Carbon dioxide, greenhouse gas, pollutes, sustainable development, scrape, vegetation, solar cookers, agriculture, mountains; valley; river; gorge; forest; terrace, atmosphere

<u>Basic</u>	<u>Appropriate</u>	<u>Specialised</u>
Continued	Maintained	Sustainable
Save	Protect	Conserve
Set	Limited	Finite
Rubbish	Litter	Waste

Earthquakes

Why do some earthquakes cause more damage than others? (Year 4) Specific skills: - Locate - Describe - Observe - Record - Identify - Explain - Conclude	During the enquiry children will have opportunities through the application and analysis of a wide range of geographical skills and resources to: • Locate and describe the effects of the Christchurch earthquake of 2011 from a range of sources; • Observe and record the distribution of earthquakes in New Zealand over the past two hundred years; • Identify, describe and explain the causes of earthquakes; • Describe and explain why New Zealand experiences earthquakes when they don't occur at all in many other areas of the world; • Understand through explanation and reaching conclusions why the most powerful earthquakes in the world do not necessarily cause the most deaths and destruction; • Locate, describe and explain why so many earthquakes and volcanoes occur around the Pacific Ring of Fire.
Geographical Concepts	• Location • Change • Scale • Distribution • Processes • Interdependence • Diversity
Knowledge	<u>Year 4: Why do earthquakes cause more damage than others?</u> Purpose and Context • Earthquakes only tend to occur in particular areas of the world as a consequence of the pattern and movement of the tectonic plates of the Earth's crust • The level of technological development and overall quality of life of people in different countries of the world has an important influence of how well they can prepare for and cope with the occurrence of earthquakes. AQ1: Why won't Paula and Richard forget 22nd February 2011? • In New Zealand in February 2011 an earthquake occurred in the city of Christchurch, which is on South Island (Te Waiponamu) of New Zealand AQ2: How has New Zealand been affected by earthquakes in the past? • The earthquake that hit Christchurch in 2011 was not an unusual occurrence – they occur regularly through the country in both North Island (Te Ika-a-Māui) and South Island (Te Waiponamu). • Epicentre - The location or place on the Earth's surface directly above where an earthquake happens as the rocks move below. • Magnitude - The size or power of an earthquake, which is measured on a scale of 1 to 10 known as the Richter scale. • The higher an earthquake records on the Richter scale, the greater the amount of energy it releases when it occurs. • Pattern or distribution - how something is spread out over an area

AQ3: Why does New Zealand have so many earthquakes?

- The very thin (on average only 40 km thick) outer layer of the Earth called the crust is broken up into huge blocks called plates
- New Zealand sits right on top of the crack between one plate and another
- Earthquakes tend to occur mostly along the cracks or boundaries all around the world where one plate meets another. Geographers call these cracks faults. The fault between the Indo-Australian Plate and Pacific Plate runs through New Zealand and is known as the Alpine Fault.
- The plates of the Earth are not stationary but move very slowly in different directions. In New Zealand the Indo-Australian Plate and Pacific Plate are crashing into each other head on
- Beneath North Island (Te Ika-a-Māui) of New Zealand the rocks of the Pacific Plate are being squeezed underneath the rock of the Indo-Australian Plate. Beneath South Island (Te Waiponamu) the opposite is happening.
- When one plate plunges below another in this way the rocks are forced to bend and grind against each other. When the rocks 'stick' together, huge stresses build up until they slip apart causing massive amounts of energy to be released as they do so. The surface of the Earth above is shaken or 'quakes', thus earthquake.

AQ4: Why don't the largest earthquakes always cause the most death and destruction?

- Earthquakes are very common. Every day across the world there are on average about 250 earthquakes measuring 1–2 on the Richter scale (only noticeable by sensitive scientific recording instruments).
- Major earthquakes measuring 7–8 occur on average once a month and a large earthquake of 8 or more once a year.
- The effect of earthquakes can be devastating but not all earthquakes have the same impact.
- Generally speaking, the larger the earthquake on the Richter scale, the greater the damage is likely to be and so this is a good early indication.
- Where an earthquake happens is really important. A magnitude 7.5 earthquake occurring below a city will probably do more damage than a 7.5 earthquake occurring in the middle of an ocean or somewhere where there are few people living.
- The time that an earthquake happens can also have an influence. If it happens at night when everyone is at home then the result can be more serious than say, if it occurred during the middle of the day.
- Rich countries tend to suffer less from similar-sized earthquakes than poorer ones. This is because they can afford to design and construct buildings that are stronger and can resist the shaking caused by earthquakes. Poorer countries may only be able to afford cheaper and weaker building materials.
- The richer a country is, the more likely it is that emergency drills will be in place for people to follow when earthquakes hit and also have well-trained search and rescue services to hand.
- In 2010 Haiti had a 7.0 earthquake
- In terms of wealth Haiti ranks 176 out of 198 of the countries of the world – the 23rd poorest country.
- An estimated 220 000 people died, 188 000 homes were destroyed and 1.5 million people were made homeless.
- This was largely due to the poor design and construction of buildings. For example, cement with too much sand in it and multi-storey buildings too close together. In addition to this, the rescue and medical services were inadequate for the scale of the disaster
- In 2010 an earthquake hit close to the city of Concepción in Chile which had a magnitude of 8.8 (500 times stronger than the Haiti earthquake). It resulted in 525 deaths

- As a more prosperous country (the 51st wealthiest country in the world) Chile was able to design and build stronger buildings which, although damaged, did not collapse. In addition, the population knew what to do in the event of an earthquake and where the safe places to go to were. Rescue services were well trained and how to find people quickly who may have been buried.

AQ5: Why do most volcanoes happen in the same places as earthquakes?

- New Zealand, in North Island (Te Ika-a-Māui) as well as experiencing a lot of earthquakes, the country also has active volcanoes (volcanoes that have erupted within living memory).
- Red-hot liquid rock called magma rises up through cracks in the rocks of the Earth’s crust and erupts out onto the surface as lava. The biggest cracks are where one block or plate of the Earth’s crust meets another, such as between the Pacific Plate and Indo-Australian Plate through the centre of New Zealand.

Specialised Subject Vocabulary:
Earthquakes, New Zealand, latitude, longitude, damage, aftermath, epicentre, magnitude, Richter scale, plate, crust, faults, Alpine Fault, volcanoes, frequent

<u>Basic</u>	<u>Appropriate</u>	<u>Specialised</u>
Result	Consequence	Aftermath
Size	Enormity	Magnitude
Failings	Defects	Faults
Many	Regular	Frequent

Erosion	
Why is Jane's house only worth one pound? (Year 4) Specific skills: - Identify - Locate - Explain - Describe - Evaluate - Empathise - Make judgement - Recognise	During the enquiry children will have opportunities through the application and analysis of a wide range of geographical skills and resources to: - Identify and locate the four types of desert found in the world and explain how they are defined; - Describe and explain the process of wind erosion (abrasion) which leads to the formation of 'mushroom' or pedestal rocks in some hot deserts around the world; - Identify, locate and describe the main features of a river meander and explain why river cliffs often form on the outside banks of meanders and slip off slopes on the inside; - Recognise, locate, describe and explain the main physical and human features of the Isle of Dogs meander of the River Thames in London; - Describe and explain how people can cause erosion to footpaths in the Lake District National Park and evaluate the action taken to repair and restore the routes that are used most frequently by walkers; - Describe and explain the process by which waves are able to erode the coastline and cause cliff collapses; - Explain how coastal erosion can cause serious problems for people living close to where the land meets the sea;

	• Empathise with people who find themselves and their properties at risk of collapse into the sea because of coastline erosion and reach a judgement as to what should be done to assist them.
Geographical Concepts	• Location • Processes • Change • Interaction • Sustainability
Knowledge	<u>Year 4: Why is Jane's house only worth one pound?</u> AQ1: Why are mushrooms sometimes found in hot deserts? • One fifth or twenty percent of the land surface of the world consists of a desert of some kind. • Deserts are nothing whatsoever to do with temperature and entirely to do with how much precipitation (any form of moisture that falls from the atmosphere such as rain, snow, hail, fog, dew and frost) which a place receives. • Anywhere in the world with a precipitation total of 250 mm a year or less is defined as a desert whatever its average temperature. • Erosion by the wind which geographers call abrasion is when the wind blows in some hot deserts it will pick up millions of grains of sand. When the wind hits an outcrop of rock the sand it is carrying is blasted against it. The wind and therefore the erosion are most powerful between the ground and a height of about one metre. This means that the base of the exposed rock erodes faster than the top. Over many decades the 'stalk' or supporting pillar or pedestal of rock becomes narrower and narrower until it can't support the weight above any more. The mushroom rock then collapses. AQ2: Why are cliffs sometimes found in rivers? • A river's purpose is transporting water that the land doesn't require back to the seas and oceans as an integral part of the water cycle • A meander is a bend or loop in a river • Sometimes rivers also have cliffs in them • As a river flows around a bend in a river the water on the outside of the meander flows much faster than the water on the inside of the meander. The energy of the water on the outer bank is much greater than on the inner bank. As a result, the earth on the outer bank is constantly being eroded by the force and velocity of the fast-moving water. • The outer bank is being undercut by the sheer force of the water which crashes against it – this is known as hydraulic action and forms a feature called a river cliff. Because the speed of the flowing water on the inside of the river bend is much slower it has no energy to erode the bank. In fact the water flow is normally so slow on the inside of the meander that here sand, gravel and stones build up into a little beach called a slip off slope. • The River Thames and the huge meander which appears in the opening sequence of EastEnders is called the Isle of Dogs (where King Henry VIII kept his hunting dogs). AQ4: Why is Jane's house only worth one pound? • Jane's house is on the top of an eroding cliff. It hasn't always been at the edge of the cliff. • As more and more of the coastline has eroded over her house has gradually 'moved' closer to the cliff edge as the coastline has receded inland. • Happisburgh (pronounced Haze –bruh) is on the coast in Norfolk • Along this coastline the cliffs are being eroded • The energy of the waves erodes and undercut the base of the cliffs forming a cave.

- The unsupported rock face of the cliff above the cave collapses down onto the beach and into the sea below
- The cliff can be seen to be moving or receding inland as more and more of the cliff line is eroded away through undercutting and collapse. As a result, Jane and her house have eventually found themselves on the edge of the cliff.

Specialised Subject Vocabulary:

Hot, temperate, cold, polar deserts, desert, moisture, atmosphere, precipitation, temperature, climate, erosion, abrasion, river, cliff, meander, hydraulic action, river cliff, slip off, slope, trample, vegetation, exposed, waterlogged

<u>Basic</u>	<u>Appropriate</u>	<u>Specialised</u>
Wetness	Damp	Moisture
Sky	Air	Atmosphere
Wearing down	Weathering	Erosion
Walk on	Tread on	trample

Year 5

Fair trade

**Why is fair trade fair?
(Year 5)**

Specific skills:

- Describe
- Explain
- Evaluate
- Reflect
- Identify
- Compare and contrast
- Make judgement

During the enquiry children will have opportunities through the application and analysis of a wide range of geographical skills and resources to:

- Describe and explain why the Silk Road was the most important trading route in the history of the world; evaluate and reflect upon some of the changes that occurred as a result of the movement of people and commodities along it;
- Explain why and how countries trade with each other, identify and describe the commodities that are most frequently traded and evaluate some benefits and disadvantages of trading;
- Compare and contrast the range of commodities most commonly imported by the United Kingdom from China with some of the products that are frequently exported by companies in the United Kingdom to China and describe and explain the differences;
- Describe, explain and reflect on why the terms of international trade are not always fair for some producers of goods in other countries around the world;
- Explain what Fairtrade is compare and contrast the situation of Fairtrade-certified farmers with that of non-Fairtrade producers and evaluate and judge the benefits to be gained from Fairtrade certification;
- Evaluate and judge the extent to which their school currently engages with Fairtrade, understand any constraints that exist; reflect and make recommendations for the future linked, perhaps, to ultimately achieving Fairtrade School status;
- Understand what the ethical production and purchasing of clothes entails, evaluate and reach a judgement regarding the practice of popular clothing companies.

Geographical Concepts	• Change • Interaction • Scale • Distribution • Diversity
Knowledge	<u>Year 5: Why is fair trade fair?</u> Purpose and Context • 45 per cent of everything that young people in the United Kingdom eat and 90 per cent of everything they wear comes from abroad. • trade entails the manufacture, selling and buying of goods and services between countries through exports and imports • Trade has been operating for thousands of years. • The Silk Road remains the world's most enduring trade route between China and Europe • A key concept of trade is producing commodities that other people around the world don't have and are prepared to pay to obtain. • Two thousand years later, China is the United Kingdom's largest single-country trading partner AQ1: Why was this road so important two thousand years ago? • Merchants – someone who buys and sells commodities for profit. • For hundreds of years, China held the secret to making silk and even today, this country still has the reputation of producing the most delicate and beautiful silk. • Women workers made silk in the early days of China and today, 2000 years later, still stretch silk in a silk factory showroom in the city of Shanghai. • Merchants carried silk loaded onto camel caravans from China along the Silk Road to countries that did not possess the secret of making silk themselves and were desperate to buy it. Because these caravans carrying silk were so valuable they were often protected by armed guards all the way to the point where the buyer took possession. • In central Asia the Silk Road divides into two. It is the Tarim Basin. • In geography, a basin is a large bowl-shaped depression or dip in the earth's surface often oval or circular in shape. • At 906 000 sq km, the Tarim Basin is nearly four times larger in area than the United Kingdom. As it is enclosed by mountains to the north and south, it is extremely dry. The merchant caravans avoided the basin, keeping to areas where water was available in streams and rivers – the mountains to the north and south. • The most famous traveller along the Silk Road (and perhaps the most famous traveller that ever lived) was the Italian merchant and explorer Marco Polo, who was born and brought up in Venice. In 1271 at the age of 17 he set out with his father and uncle along the Silk Road on an epic journey to China, returning 24 years later with many riches and treasures. He was the first person from the West, which was predominantly Christian, to confirm the existence of territories and cultures in the Far East which, until then, had only been rumours and speculation. • He wrote up all of his experiences in a book called The Travels of Marco Polo. A hundred years later Christopher Columbus referred to Marco Polo as his greatest inspiration for his own travels and exploration of the world and took a copy of Marco Polo's journal with him on all of his expeditions. In his journal Marco Polo writes about things that had never been seen by any European before. • The greatest mystery that surrounds the travels of Marco Polo, and remains unsolved to this day, is what exactly the 'huge serpent' was that he wrote about in his journal

- Most people who read this description deduce that Marco Polo was describing a huge crocodile (although crocodiles also have a pair of rear legs and five claws on their front feet and four on their back feet).
- There are a few geographers however who think that Marco Polo may have been describing a giant monitor lizard which was believed to have died out at least 40 000 years ago.
- Carajan is in modern-day Myanmar (Burma) and covered in dense tropical rainforest and even today, huge areas are uninhabited
- the Silk Road remains the most famous trade route in the world even though merchants no longer use it to ship commodities from China to other countries (because it uses faster means of transport such as ships and aircraft).
- Trade is the buying and selling of commodities (a useful or valuable thing) between people, either in the same country (domestic trade), or between people in different countries (international trade).
- The Chinese merchants who travelled along the Silk Road to sell their valuable silk to the people of countries in Europe were engaged in international trade. Whilst in Europe, the Chinese traders encountered things that they had never seen before, which they took back home. These things included cucumbers, walnuts, sesame seeds, pomegranates and also the skills of using grapes to make wine.

AQ2: Why does Marco Polo visit the United Kingdom every eleven weeks?

- Marco Polo was the largest container ship in the world when it was launched in 2012 – it is 396 m in length, which is the size of four football pitches. Every 11 weeks it arrives at the port of Southampton carrying 16 020 containers full of commodities that the United Kingdom is importing (a commodity brought in from another country for sale) from China.
- The port of Southampton is the busiest port for cruise ships and the second largest for containers in the United Kingdom.
- To be able to cope with a ship the size of the Marco Polo an entirely new berth had to be constructed at the docks
- The United Kingdom imports more commodities from China each year than any other country in the world.
- Each year the United Kingdom imports (buys and brings in from China) products worth US\$960 billion (that's US\$960 000 000 000). In particular Britain spends more than US\$1.5 billion a year on nine categories or groups of products from China.

AQ3: What does the United Kingdom export to the people of China?

- Although the United Kingdom imports more from China than any other single country in the world, every day there are container ships travelling in the opposite direction with exports (items that are made in the United Kingdom and sold to people in other countries) from British companies to China.
- Sales amount to US\$1.5 billion a month and many people in China are particularly interested in purchasing cars, food items, clothing, jewellery and cosmetics but they are all classed as premium, luxury and designer brands

AQ4: Why isn't trade always fair for some people such as Melvin?

- For thousands of years people around the world have traded goods between countries because no single country can produce everything they need or desire.
- Today the world's countries import (buy and bring in goods from other countries) and export (sell and send out to other countries) – we have seen that the United Kingdom imports and exports things with China.
- When a country trades with another country it is known as international trade.
- Items have to be imported because we don't have the appropriate climate to grow them.
- Many items are grown by farmers in countries all over the world in preparation to export them to the United Kingdom.
- Shoppers (known as consumers) will then buy them, mainly from very large supermarkets – 74 per cent of all food bought by consumers in the United Kingdom is purchased from just four supermarkets: Tesco, Asda, Sainsbury's and Morrisons. In total 45 per cent of all the food eaten in the United Kingdom each year is imported from countries around the world.

AQ5: Why is fair trade fair?

- Fairtrade-certified farmers are guaranteed a minimum price for their crop at the beginning of each year so they know what they are going to earn in advance of doing the work.
- This allows them to plan ahead e.g. knowing whether she will be able to afford to hire additional casual workers or invest in simple machinery.
- For each box of [Fairtrade food], farmers will receive a Fairtrade premium (a little extra money), which goes into a fund to develop the community e.g. Renovating a school, creating a clean water supply, medicines for the local hospital and college scholarships for young people.
- Fairtrade farmers are able to set up co-operatives.
- A co-operative means that all of the small farmers agree to support each other in their farming e.g. by sharing machinery and workers (which means that each individual farmer doesn't have to buy their own) and, most importantly, when negotiating the price of their bananas with supermarket representatives. Rather than negotiating individually with supermarkets all the small farmers in the co-operative speak with one voice through its chairman. This way they always achieve a better price than trying to negotiate individually.

Specialised Subject Vocabulary:

Goods, services, consumption, manufacture, co-operative, market, import, export, profit, company, ethical,

<u>Basic</u>	<u>Appropriate</u>	<u>Specialised</u>
Stuff	Supplies	Goods
Spending	Intake	Consumption
Shop	Fair	Market
Money	Income	Profit

Rivers

What is a river? (Year 5)

Specific skills:

- Identify
- Describe
- Reason
- Explain
- Recognise
- Compare and contrast

During the enquiry children will have opportunities through the application and analysis of a wide range of geographical skills and resources to:

- Identify and describe how physical features of rivers change from source to mouth;
- Offer reasons to explain why the course of a river changes as it flows from higher to lower ground;
- Use OS maps, aerial photographs and GIS (graphic information system) to recognise, describe, compare and contrast and explain how physical features change along the course of a river;
- Identify and describe the features of river estuaries and explain why they are such important ecosystems for wildlife;
- Describe the components of the hydrological or water cycle and explain the important role that rivers play;
- Recognise, describe and explain the reasons why a river port can grow and become a vital part of a community and evaluate evidence and make a judgement about the causes of the decline and closures
- Interpret a range of geographical evidence to reach a conclusion as to why serious annual river flooding is becoming such a risk

- Measure - Record - Present - Conclude - Make judgement - Interpret - Reflect - evaluate	• Reflect upon and evaluate the techniques used by classical composers to portray the different stages and features of the course of a river and create and record a personal musical piece to evoke the features of a waterfall; • Understand climatically what the Little Ice Age refers to and how occasional severe winters impacted upon rivers in England • Explain why countries build dams and describe and evaluate some of the geographical impacts
Geographical Concepts	• Change • Environment • Interdependence • Processes • Interaction • Scale
Knowledge	<u>Year 5: What is a river?</u> Purpose and Context • Rivers are commonplace in a wide range of environments • Many settlements in the United Kingdom, no matter what size, will have rivers flowing through or close to them. • Rivers change over their course from source to mouth and develop distinctive physical features as they do so by altering the environment through erosion and deposition. Identify and describe how physical features of rivers change from source to mouth. Offer reasons to explain why the course of a river changes as it flows from higher to lower ground: • Almost every river in the world flows from the land to the sea – from its source where it begins in higher ground, such as hills and mountains, to its mouth in lower ground along the coast marinas are human or man-made • The upper course is generally steeper, with narrow, shallow channels, V-shaped valleys, waterfalls and rapids. • The middle course has a wider, deeper channel and valley, with features such as meanders. • The lower course has a wide, deep channel and broad floodplain, with features such as meanders, ox-bow lakes, levees and estuaries. • The river becomes generally wider, deeper and carries a greater volume of water towards its mouth. Use OS maps, aerial photographs and GIS to recognise, describe, compare, contrast and explain how physical features change along the course of a river. • Understand the purpose and features of an OS map, including grid references, contours, symbols and scale. • Contour lines show height and relief. • Recognise river features using maps and aerial photographs. • Aerial photographs provide a view of the landscape from above. • GIS allows geographical information to be collected, displayed, layered and analysed digitally.

Why are river estuaries such important places for wildlife?

- When most rivers approach and enter the sea, it becomes much wider with large areas of mud banks on both sides. These mud banks are covered and uncovered each day by the tide
- An estuary occurs when a river slows and widens to flow into the sea, such as with the River Exe. Here incoming salt water from the sea mixes with outgoing freshwater from the river. This creates brackish water (somewhat salty but not as much as pure sea water), which is important for wildlife.
- Estuaries are one of the richest ecosystems to be found anywhere in the world. They are incredibly important for wildlife especially wading birds that feed on the invertebrates living in the mud banks that are exposed at low tide.
- There are four components of a mud flat food chain:
 - In the shallow water above and in the mud are countless billions of Diatoms. A diatom is a minute microscopic plant that obtains its energy through photosynthesis using energy directly from the sun. Most diatoms are about 20–200 microns in size (a micron is 0.1 mm). This means that you could fit about 10 million in a coffee mug.
 - Preying on the diatoms is the Ragworm. This worm inhabits a vertically orientated burrow and can reach huge densities in the upper reaches of estuaries where conditions are unsuitable for other species. It is an omnivore and can feed in a variety of ways. It can filter diatoms by spinning a mucus 'web' inside its burrow, which catches particulate food such as phytoplankton from water drawn in from outside. The web is then ingested along with any catches.
 - Ragworm forms an important part of the diet of many estuarine birds such as the Greenshank, which probes for them with its long beak.
 - In turn, unsuspecting wading birds such as greenshanks on the mud flats can find themselves the food of birds of prey such as the Peregrine Falcon, the fastest of all falcons, which hunts unseen high above the mudflats before folding its wings back and swooping down at speeds of up to 100 km per hour.

Why are rivers such an important part of the water cycle?

- A river is a physical mechanism for returning excess precipitation from the land to the sea, where it originated (scientific, practical and functional term)
- Within the hydrological or water cycle, water in a river is collected mostly from precipitation that has run off the land surface and not been evaporated or absorbed and stored in underlying aquifers (underground layers of rock or soil that store water). It is a vitally important process, without which most of the land surface of the world would be permanently under water.
- All the water that has ever existed on earth is still present on earth today. Droplets of water as old as the earth itself go round and round the water cycle as part of a never-ending cycle.

Recognise, describe and explain why a river port can grow and become a vital part of a community, and evaluate evidence about its decline and closure.

- A river port is a place where goods and/or people can be transferred to and from boats.
- Ports often develop because of their location, accessibility and links to transport routes.
- Rivers have historically provided routes for transporting goods and raw materials.
- Ports can create employment and encourage the growth of settlements and industries.
- Changes in technology, transport, industry, trade and the size of ships can contribute to the decline of river ports.

Interpret geographical evidence to reach a conclusion as to why serious annual river flooding is becoming such a risk.

- Flooding occurs when water exceeds the capacity of a river channel or drainage system.
- Causes can be physical, such as prolonged/heavy rainfall, saturated ground and snowmelt.
- Human factors can include urbanisation, impermeable surfaces, deforestation and building on floodplains.
- Climate change may influence rainfall patterns and the frequency or intensity of extreme weather events.

Explain why countries build dams and describe and evaluate some of the geographical impacts.

- A dam is a structure built across a river to control or store water.
- Dams can provide water supplies, hydroelectric power, irrigation and flood control.
- Reservoirs created by dams can support agriculture and provide water during periods of low rainfall.
- Dams can change the natural flow of a river and affect sediment movement.
- They can alter habitats and ecosystems and may lead to the displacement of communities when land is flooded.

Specialised Subject Vocabulary:

River, source, mouth, stream, mud bank, waterfall, rapids, estuary, sea, erosion, marina, meander, tributaries, River Axe, Steep, Slope, Ox Bow, Lake, Estuary, Thames, Ouse, Dee, Mersey, Severn, Clyde, Forth, Test and Exe, Estuaries, Diatoms, Ragworm, precipitation, hydrological, water cycle, aquifers, Met Office, marsh, mud flats, creek, river, flood, dock, monsoon,

<u>Basic</u>	<u>Appropriate</u>	<u>Specialised</u>
Hill	Incline	Slope
Wearing down	Destruction	Erosion
Pier	Harbour	Dock
Heavy rain	Downpour	Monsoon

Volcanoes

How do volcanoes affect the lives of people?

(Year 5)

Specific skills:

- identify
- recognise

During the enquiry children will have opportunities through the application and analysis of a wide range of geographical skills and resources to:

- Identify, describe and explain the causes of volcanoes;
- Explain why volcanoes often occur at the same location as earthquakes in places such as New Zealand.
- Identify, recognise and describe, using appropriate or specialised subject vocabulary, where Saethor takes his dog Tiry for a walk each day;
- Identify, describe and compare and contrast the countries of Europe;

- describe - compare and contrast - explain - make judgement - observe - reason - conclude	● Recognise, describe and explain the key geographical features of the Westman Islands region of Iceland and the island of Hiemaey in particular; ● Compare and contrast, using appropriate or specialised geographical vocabulary, the physical and human geography of Vestmannaeyjar with that of the local area/region; ● Explain and reach a judgement, using appropriate and specialised subject vocabulary, why there are so few trees on Hiemaey; ● Explain how volcanoes form, observe the global pattern of volcanoes correctly and suggest plausible geographical reasons for this distribution; ● Understand how and why the environment of Hiemaey has changed over time and reach conclusions and make judgements about the positive and negative impact of these changes on the ways of life of the people of Hiemaey; ● Understand the stages in the manufacture of an economic activity – fish processing – together with what export, import and trade entails; ● Make a reasoned geographical judgement, using evidence and logical argument, as to whether earthquakes are more dangerous than volcanoes.
Geographical Concepts	● Location ● Environment ● Scale ● Distribution ● Interaction ● Change ● Processes
Knowledge	<u>Year 5: How do volcanoes affect the lives of people on Hiemaey?</u> Purpose and Context ● The island of Hiemaey (pronounced Hay – my and meaning Home Island) is the largest and only inhabited (population 4500) island of the Westman Islands, Iceland (Vestmannaeyjar pronounced Vestman – a, ei – jar in Icelandic). ● The Westman Islands form the most southerly region of Iceland and are very active volcanically. The island of Hiemaey came to international attention in 1973 with the eruption of the Eldfell volcano, which destroyed many buildings and forced a months-long evacuation of the entire population to mainland Iceland. ● Approximately one-fifth of the town was destroyed before the lava flow was halted by the application of 6.8 billion litres of cold seawater but not before it had increased the land area of Hiemaey by 20 per cent. Today the two volcanoes of Eldfell and Helgafell dominate the island and everyone lives quite literally in their shadow. ● Successive eruptions from seabed volcanoes over thousands of years have created a barren, largely treeless landscape with distinctive tall and imposing cliffs and black ash beaches. A Polar climate (albeit moderated to some extent by the warming effect of the Gulf Stream, it still has an average daily temperature of 4.8 °C) brings 190 days of rain, which totals 1588 mm on average each year, and very strong winds. This, along with the harsh physical geography, makes Hiemaey a very challenging place to try and farm. ● The surrounding seas offer much greater potential for local people and fishing and fish processing is by far the most important economic activity on the island. Two volcanoes combined with global awareness of the impact of the 1973 Eldfell eruption on the island and a rich and varied bird population (including iconic puffin colonies) now bring thousands of tourists to the island using the 30-minute ferry journey from the mainland. ● Local people have developed many ways of earning a living from these visitors. AQ1: Where does Saethor take his dog Tiry for a walk every day?

- A volcano is an opening in the Earth's crust that allows red hot (molten) liquid rock from beneath the crust to reach the surface.
- This molten rock is called magma when it is beneath the surface and lava when it erupts and flows from a volcano.
- Along with lava, volcanoes also release gases, ash and rock. It's a super-hot mix that can be both incredibly destructive and creative.

AQ2: Where do Saethor and Tiry live?

- There are no active volcanoes in the United Kingdom (although there were many in the past)
- The closest places to the UK that have active volcanoes are Italy, Iceland and the Azores (a group of islands that form part of Portugal).
- In a particular region or area of Iceland, off the southern coast is a collection of islands that people in Iceland call Vestmannaeyjar or in English the Westman Islands, it is here that Hiemaey can be found

AQ3: How do geographers describe the Westman Islands?

- Vestmannaeyjar or Westman Islands form the most southerly part of Iceland and are part of its southern region. Iceland is divided into eight geographical regions.
- Archipelago is a geographical term for a group, chain, cluster or collection of islands of which Vestmannaeyjar is an excellent example.
- In total 15 islands make up Vestmannaeyjar archipelago, many of which are quite small.
- The continent of Europe has many other examples of island archipelagos, including the largest in the world in terms of number of islands.
- The Åland Island Archipelago in Finland is the largest in the world in terms of the number of islands included within it. If the smallest rock pinnacles or stacks jutting out of the sea are included in the definition, then the number of 'islands' here is more than 50 000.

AQ4: How does the physical and human geography of Hiemaey compare with the area in which I live?

- Hiemaey is the largest of the 15 islands of Vestmannaeyjar and the only one of the archipelago on which people live – there are 4500 people there
- Physical geography is about the natural environment of a place and human geography about the presence of people and how the way in which they live interacts with that natural environment e.g. they build towns and cities, create farms and fish the seas and oceans.
- the human geography of the island is the things that people are doing to earn a living, the places in which they live (individual homes as well as settlements (groups of homes in villages and towns) and the services on which they depend, such as schools, shops and doctors etc.

AQ5: Why are there so few trees on Hiemaey?

- One of the most startling features of the physical geography of Hiemaey is that there are very few trees.
- Climate refers to the average weather conditions, particularly temperature and precipitation (any form of moisture that falls to Earth from the atmosphere), experienced in a place month by month. Average climate data is based on readings taken over a period of at least 30 years. Geographers show this information on very special graphs with two vertical axes (with different variables on each axis) called a Climate Graph.
- Once the temperature reaches 6 °C then plants and trees will grow.
- The history of Iceland begins in AD 874 with the arrival and settlement by Vikings and their slaves, who had been living in Britain before then
- Geographers estimate that, at that time, up to 60 per cent of Iceland, including Hiemaey, would have been covered in woodland.
- The Vikings quickly settled the land. They cleared the woodland for fuel, for use as building material for homes and boats, and also to make way for pasture upon which they could graze herds of sheep. Grass, moss and small shrubs replaced the trees and large herds of sheep grazed it all leading to serious soil erosion.

- To this day trees do not have a chance to grow back – the soil is too thin and infertile for them to take hold and sheep eating any saplings that do manage to germinate. Added to this is the fact that Hiemaey is the windiest place in Iceland, with regular gusts easily capable of ripping up any trees that do manage to grow.

AQ6: Why are there volcanoes on Hiemaey?

- Not everywhere in the world has a volcano. Volcanoes and earthquakes only occur at very specific places around the globe
- Geographers call the Pacific Ring of Fire, which has a total of 452 active volcanoes – 75 per cent of the world's total. Ninety per cent of all earthquakes also occur here. All but three of the world's 25 largest volcanic eruptions of the last 12 000 years have occurred at volcanoes in the Ring of Fire.
- The Eyjafjallajökull (pronounced A-ya-feckla-lock-ul) volcano erupted in 2010
- During the seven days between 14 and 20 April, a huge ash cloud covered a large area of northern Europe. This caused airports in 20 countries to be closed to commercial airlines. This affected 10 million passengers many of whom were forced to remain in holiday and business destinations for an extra week before they could return home
- Plate tectonics is the 'skin' or crust of the Earth is cracked and broken up into large pieces, which geographers call plates.
- Below the very thin crust (which ranges in thickness from a few kilometres below the oceans to 50 km under mountain ranges) is the mantle, which is 3000 km thick and made up of red-hot liquid rock called magma. The magma is under great pressure below the crust – rather like champagne in a bottle before the cork is removed.
- Iceland sits on top of where two plates meet.
- Geographers call the boundary between the two plates crossing Iceland the Mid-Atlantic Ridge
- Below Iceland two plates are moving apart and magma is rising up through the gap that is created.

AQ7: How were the people of Hiemaey affected when Eldfell erupted?

- Eldfell is one of two volcanoes on Hiemaey and is active, which means that it has erupted within living memory and could do so again with little or no warning – the rock surface on the top of Eldfell is still warm from its last eruption.
- In the early hours of the morning of 23 January 1973, when almost everyone on Hiemaey was asleep, magma began rising up the crack between the Eurasian Plate and the North American Plate – the Mid-Atlantic Ridge. Over the next three months a new volcano formed – Eldfell.
- The eruption continued for three months and there were vast efforts to save the harbour from the encroaching lava.
- One of the homes, which was buried by the lava on the night of 23 January 1973, has been excavated and now forms part of a museum commemorating the eruption.

AQ8: Why do the people of Hiemaey go on living next to an active volcano?

- People can't just move without a means of support unless they are willing to become refugees who move because their lives are at risk from war, natural disasters, disease or persecution on the grounds of religion or ethnicity.
- People continue to live on Hiemaey because of attractive employment opportunities in two economic activities – fishing and fish processing, and tourism. Economic activity is the production of goods (e.g. a car) or a service (e.g. a cinema) that other people purchase and the objective is always to make a profit on the transaction.
- The ocean waters of the North Atlantic and South Arctic are the richest fishing grounds for these two species anywhere in the world.
- The second most important economic activity on Hiemaey is tourism – people travelling to the islands to stay and enjoy a holiday.
- Thousands of bird watchers visit Hiemaey every year. As well as having the largest colony of Puffin anywhere in Europe, another 80 species of birds have been seen on the island at various times.

	Specialised Subject Vocabulary: Volcano, crust, molten, magma, lava, ash, active, geysers, fishing ports, glaciers, geothermal power stations, puffin colonies, fjords, archipelago, mountain, cliff, beach, hill, Climate Graph, earthquakes, Pacific Ring of Fire, plates, igneous, granite, basalt, eruption		
	<u>Basic</u>	<u>Appropriate</u>	<u>Specialised</u>
	Fountains	Springs	Geysers
	Ice sheet	Iceberg	Glaciers
	Blast	Explosion	Eruption
	Docks	Harbours	Ports

Year 3

Climate change		
How is climate change affecting the world? (Year 6) Specific skills: - Identify - Describe - Explain - Evaluate - Conclude - Make judgements - Reflect - Compare and contrast	During the enquiry children will have opportunities through the application and analysis of a wide range of geographical skills and resources to: ● Identify, describe and explain why communities in The Gambia are being affected by changes in weather patterns associated with climate change and evaluate the impact on people; ● Evaluate a range of evidence, reach a conclusion and make judgements as to the impact on people of changing weather patterns in Victoria in Southeast Australia; ● Understand why some coastal communities are having to make flood resilience plans in order to cope better with changes that are occurring in weather patterns and to sea levels and make judgements about what should be included in them; ● Reflect upon and evaluate different viewpoints and reach a personal judgement about the implications of changing weather patterns on the people of Greenland; ● Identify, describe, compare and contrast and explain how global warming is affecting weather patterns around the world and evaluate its impact in different places; ● Understand how and why countries around the world have acted to reduce global warming and reach a judgement about how effective this might be; ● Understand how as individuals, members of families and communities such as schools they can make a contribution to reducing greenhouse gas emissions; ● Describe and explain how each of the main renewable sources of energy works, evaluate their advantages and disadvantages and make a judgement regarding which would be most suitable for the poorest countries in the world.	
	Geographical Concepts ● Location ● Change ● Interaction ● Processes	● Environment ● Sustainability ● Diversity

Knowledge	<u>Year 6: How is climate change affecting the world?</u> Purpose and Context • The poorer the people and communities are that experience changes in weather patterns, the more serious the impact often is. AQ1: Why is Elhaji cleaning shoes on the streets of Banjul? • The Gambia is the smallest mainland African country by area and surrounded by Senegal on three sides with the Atlantic Ocean making up the fourth border. • At its widest point it measures only 48 km from north to south. • During the past decade, places such as Njar along the north bank of The Gambia River have suffered from increasing unreliability of rainfall during the wet season. This unreliability causes long droughts, crop failures and great poverty and hardship in a country where most people rely on farming for their livelihoods. • The wet southwesterly rain-bearing Trade Winds that blow over the Atlantic Ocean before reaching The Gambia can no longer be relied upon to give the country the rainfall it requires AQ2: Why can't Olivia afford to insure her home? • The principle of paying an annual premium (the amount she has to pay the insurance company each year) to an insurance company, is that the company will compensate you for any financial losses incurred should, for example, your car be damaged in an accident or your home be burgled and items of value stolen. • Having insurance to drive a car is a legal requirement. • Having insurance to cover damage to a home and the property within it is one of the most common types of insurance that is taken out. • 'Black Saturday', 7 February 2009. Victoria (Australia) - bushfires • The insurance companies argue that it is clear that both heatwaves and bushfires are becoming more frequent and lasting longer, as a result of weather conditions in Victoria becoming warmer and drier and this will continue throughout the century. • Average summer temperatures in Victoria are now 1 °C higher than they were 100 years ago and autumn and winter rainfall has decreased by between 10 and 20 per cent over most of the state during the same period. • From the insurance companies' perspective this means that the risk of damage to property as a result of bushfires is becoming much greater and, as a result, they have no option but to increase their premiums to cover the possible costs of another natural disaster such as Black Saturday. AQ3: Why are people living in Starcross making flood plans? • A settlement is a place of any size where people live. • A settlement may be as small as a single house in a remote area such as a farm, a village with a population of 1780 such as Starcross or a conurbation or megalopolis with 10 million or more residents. • The piece of land upon which a settlement is built is the settlement's site. • The situation of a settlement is its position relative to the surrounding physical features of the landscape. • A First Great Western train passes through Starcross and stops trains running from Paignton via Starcross to Exeter and Exmouth: holiday-makers and day visitors who arrive in Starcross use the trains • The residents of Starcross also depend on the railway line as the railway embankment protects over 600 properties and infrastructure (e.g. electricity, gas and water supplies, roads, sewerage pipes etc.) in Starcross. At its highest point the railway embankment reaches four metres and to the south of the village, the additional protective measure of adding rock armour along the wall has been taken.
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- The Environment Agency has told the Parish Council at Starcross that during the rest of this century, sea levels are going to increase by about one metre. Also that the village should expect more frequent, more severe and longer-lasting winter storms with wave heights at least 30 cm taller than they are now, which will at times cause powerful tidal surges and flooding as the railway embankment is overtopped.
- In response the Starcross Parish Council is urging all residents to make sure they are:
 - aware of the risks of flooding, both from the high tide, and from surface water during exceptionally heavy rainfall, and the importance of our flood defences and water management systems in keeping us dry and safe ...
- The Parish Council is urging all residents in Starcross to make sure they have their own flood plan so that the community is more resilient.
- Resilient means to be strong and unaffected when faced with something such as a difficult situation. If someone is resilient then they are not changed by anything unless they choose to be.

AQ4: Why do Lars and Sofie disagree about how nice the weather is?

- With an average monthly temperature of -18°C and only 467 mm of precipitation (below 250 mm is officially designated as a desert), all falling as snow, Greenland is extremely cold and dry – a polar climate.
- The Greenland Ice Sheet covers 1 710 000 sq km – the second largest ice sheet on Earth, after the Antarctic Ice Sheet. It covers 80 per cent of Greenland and extends 2400 km north–south and 1100 km east–west .
- It has an average thickness of 2135 m. However, the weather is changing quickly
- Since the 1970s the average temperature in Greenland has increased by 2°C . As a result, the ice sheet is melting.
- The melting is quickest around the coastline where the ice is thinnest and slower inland where the ice is thicker
- Each year since 1979 the number of days of melt across Greenland have increased as the weather has become warmer.

AQ5: Why are people all over the world noticing that the weather they are used to is changing?

- The average temperature of the earth is rising, a process called global warming. Global warming is causing changes to normal weather conditions in places all over the world. As a result it is having serious effects on people's lives. Global warming is causing:
- Ice sheets, sea ice and glaciers around the North Pole and South Pole and in high mountain ranges to thaw.
- More extreme weather events around the world such as long heat waves and droughts in some places and short intense storms with very heavy rainfall and flooding elsewhere.
- Sea levels to rise.
- Since 1960 geographers here have been measuring how much carbon dioxide (CO_2) there is in the atmosphere.
- Each year the amount of carbon dioxide in the atmosphere is increasing and this is contributing to causing global warming. Carbon dioxide is referred to as a greenhouse gas because, along with other gases such as methane, it stops heat bouncing back into space from the Earth's surface. It is very important at this point for children to understand that naturally occurring greenhouse gases in the atmosphere are vital for the Earth because, without some of these gases, temperatures on the planet would be $20\text{--}30^{\circ}\text{C}$ lower than they are today!
- It is really important for the Earth to have enough greenhouse gases in the atmosphere to ensure that some of the heat radiated from the Earth's surface is kept close to the surface to keep the planet warm enough for life to survive and thrive.
- The main reason is that 85 per cent of all the energy consumed in the world comes from burning fossil fuels, in particular petroleum (oil), gas and coal
- Because fossil fuels are made of the dead remains of plants and animals that lived millions of years ago, they contain a lot of carbon dioxide, which is released into the atmosphere when burnt.

- Fossil fuels are the main source of carbon dioxide emissions which, along with other greenhouse gases such as methane, are the principal cause of changes in weather patterns around the world.

AQ6: What have the countries of the world agreed to do about global warming?

- In December 2015 in Paris, representatives of 200 countries agreed to ensure that the surface temperature of the earth would not increase by more than 2.5 °C by 2100 and that this would be achieved by decreasing carbon dioxide emissions
- They also agreed that to make sure this happened, the use of fossil fuels to create energy in all of the countries of the world would be phased out by the end of the century.
- Much more effort and money would be spent on developing renewable and non-polluting sources such as solar, wind, geothermal, tidal and wave energy to replace the energy now produced by burning fossil fuels.
- They also agreed to find ways of reducing the demand for energy by living more sustainably in the future.

Specialised Subject Vocabulary:

Droughts, crop failures, poverty, livelihoods, rainfall, insurance, compensate, heatwaves, bushfires, settlement, conurbation, megalopolis, site, situation, floods, high tide, storms, embankment, infrastructure, resilient, committee, climate, precipitation, temperature, weather, Global warming,

<u>Basic</u>	<u>Appropriate</u>	<u>Specialised</u>
Supplies	Services	Infrastructure
Rain	Rainfall	Precipitation
Melt	Defrost	Thaw
Leak	Release	Emissions

Mountains

**Why are mountains so important?
(Year 6)**

Specific skills:

- Recognise
- Identify
- Explain
- Locate
- Describe
- Reflect

During the enquiry children will have opportunities through the application and analysis of a wide range of geographical skills and resources to:

- Recognise, identify and explain what geographers define as mountains and understand how this can lead to disagreements;
- Identify, locate and describe the location of the largest ranges of mountains in the world and the countries that they cover;
- Explain how the movement of plates of the Earth's crust can form ranges of fold mountains;
- Reflect upon, evaluate evidence and reach a conclusion and judgement regarding the success or failure of expedition of Mallory and Irvine to climb Mount Everest in 1924;
- Demonstrate that they understand how fossils form and can explain why Edmund Hillary and Tenzing Norgay discovered fossils of sea animals on the summit of Mount Everest in 1953;
- Identify, describe, compare and contrast and explain the differences between the Cambrian Mountains of Wales and the Himalaya Mountains;
- Measure, record, compare and contrast climate data for Derek's farm with where they live and begin to offer reasons for their observations;

- Evaluate - Conclude - Make judgement - Compare and contrast - Measure - Record - Observe	● Explain and reach a conclusion as to why the mountains of the north and west of the United Kingdom are generally wetter and cooler than places in the south and east; ● Identify, locate, describe and explain the tourist attractions of the Cambrian Mountains by interpreting and making judgements from evidence presented on Ordnance Survey maps; ● Evaluate a range of evidence to make a judgement as to why reservoirs were constructed by the City of Birmingham in the mountains of central Wales over one hundred years ago; ● Understand that even 'green' and 'renewable' energy schemes will have environmental costs, evaluate both sides of an argument and make a judgement about the most appropriate way forward; ● Understand why Scotland is an attractive winter sports centre.	
Geographical Concepts	● Location ● Change ● Processes	● Interaction ● Scale ● Sustainability
Knowledge	<u>Year 6: Why are mountains so important?</u> Purpose and Context ● The study of mountains is the physical and human importance of a biome that covers one-fifth of the world's land surface. ● Key concepts of physical geography include plate tectonics and the formation of different rock types, as well as erosion and geological deep time. ● The mountains of the north and west of the United Kingdom have a much wetter and colder climate than southern and eastern areas and this presents real challenges to people such as hill farmers (the most important type of farming in the UK by area) who attempt to make a living from the land. ● Mountainous areas are important to human economic activity including tourism and the exploitation of natural resources, such as water and the generation of hydroelectric power. AQ1: Why are the three mountains of Olympus, Mauna Kea and Everest so famous? ● Most geographers agree that a mountain is a large mass of earth or rock taller than 304.8 m (1000 ft) that rises up above the surrounding land. ● Mauna Kea is a mountain that is also a volcano - the tallest volcano in the world. Mauna Kea on the Island of Hawaii in the Pacific Ocean is the highest mountain in the world from base to summit (10 203 m or 33 474 ft) although only 4205 m (13 796 ft) is above sea level. ● Mount Everest it's the highest mountain on the planet ● Mount Everest is famous because it has always been defined as the highest mountain on Earth. But strictly speaking this is not true – it is the highest mountain on Earth that is entirely above sea level from base to summit – 8848 m (29 029 ft) above sea level. ● Mount Olympus is, in fact, on the planet Mars and is the highest mountain that geographers know of anywhere in our Solar System. AQ2: How were the world's greatest mountain ranges formed? ● About one-fifth (20 per cent) of the surface of Earth is covered by mountain ranges. ● A mountain range is a large area where many mountains can be found close together. Among the greatest are the Himalaya, Andes, Rockies, Alps, Urals and Atlas. ● All the major mountain ranges in the world are called fold mountains after the way in which they were formed.	

- The Earth's crust is divided up into huge slabs or sections called plates that fit together like parts of a huge jigsaw. Along the edges of these plates, where one meets another, earthquakes and volcanoes occur. There is also a connection between the edges of the plates and fold mountain ranges
- Two plates meet right underneath the Himalaya Mountain range are the Eurasian and Indian Ocean plates.
- When two plates move towards each other, all of the layers of rock that lie in between them become crumpled or 'folded' up into the air to form mountain ranges. Today these layers or strata can be easily seen in all of the fold mountains of the world

AQ3: Why is the legend of Mallory and Irvine the greatest unsolved mystery of mountaineering?

- George Mallory and Andrew Irvine were two British mountaineers who, in 1924 with basic equipment and very little supplementary oxygen by modern standards, attempted to climb to the summit of Everest.
- At 12:50 pm on 8 June 1924, they were seen for the last time by Noel Odell.
- They were never seen again until the body of Mallory was discovered in 1999. Irvine has never been found.
- When they were last seen they were within striking distance of the summit.
- The search continues to find the body of Irvine, which many believe remains high on the north ridge together with the camera that he was carrying.
- On 24 June 1924 the deaths of Mallory and Irvine were reported widely in British newspapers of the time

AQ4: Why did Edmund Hillary and Tenzing Norgay find fossils of sea animals on the summit of Everest?

- On the 29 May 1953 two mountaineers (Edmund Hillary of New Zealand and Tenzing Norgay of Nepal) climbed to the summit of Everest. When they returned they brought down rocks containing fossils of sea animals called crinoids, which means 'like a lily flower'
- We know exactly what this 400 million year old fossil looked like because many species of crinoids are alive today in warm shallow seas and oceans all around the world. They have a very simple structure and most are free swimming with a 'holdfast' to attach them when required to rocks or the bottom of the sea
- Fossils are the remains of animals and plants that lived long ago. To be classified as a fossil the remains must be over 10 000 years old and are either body fossils or trace fossils.
- Body fossils are the remains of animals or plants such as bones, shells and leaves. Sometimes this includes whole animals such as woolly mammoths that have been frozen in ice or insects caught in the sap of trees, which fossilises to form amber.
- Trace fossils, on the other hand, record only the activity of animals such as footprints, track ways or coprolites (fossilised poo!).
- Within warm, shallow waters of The Tethys Sea, which once lay in between the Indian and Eurasian tectonic plates between 50 and 400 million years ago, swim billions of crinoids
- As crinoids died they floated to the sea bed where they were covered with silt and sediment and slowly compressed into fossils within layers of limestone rock
- The Indian Plate and Eurasian Plate move towards each other. As the Tethys Sea narrows the layers of limestone rock containing crinoid fossils begin to buckle up into the air;
- About 25 million years ago the Indian and Eurasian Plates meet below what is now the huge Himalaya fold mountain range, nearly 8 km high and containing Mount Everest with crinoid fossils at the summit;
- In 1953 Hillary and Tenzing become the first people to reach the summit of Everest where they find rocks containing crinoid fossils.

AQ5: How are the Cambrian Mountains different from the Himalaya Mountains?

- The north and west of UK have the greatest proportion of high ground and mountains
- The south and east of UK smallest proportion of high ground and mountains

- The mountain ranges of Britain are all very much lower, less rugged and more rounded than the fold mountains studied earlier. This is mainly because they are a great deal older.
- Most of the rocks that make up the Cambrian Mountains of Wales are around 400 million years old compared with the much younger age of the rocks of the Himalayas, which are around 55 million years old.
- Because the mountains of Britain are much older than the Himalaya, Andes, Rockies etc. the forces of erosion such as the rain, wind and ice have had eight times as long to wear them down and round them off

AQ6: Why is the climate such a challenge for Derek?

- The Met Office provides weather averages for the period 1981–2010 for 300 locations across the United Kingdom
- The mountains of the north and west of the United Kingdom have higher rainfall and lower summer and winter temperatures than the lower lands of the south and east.
- Rainfall increases with height in the United Kingdom as the prevailing winds, which blow from the southwest are moist because after blowing over the Atlantic Ocean, they are carrying a great deal of water vapour.
- When the air reaches the mountains of the north and west it is forced to rise. As the air rises, it cools and because cool air is not able to carry as much moisture as warm air, the water vapour condenses to form water droplets that fall as rain.

AQ7: Why do tourists visit the Cambrian Mountains?

- Diversification (geographical diversification) is the process of a business enlarging or varying its range of products or field of operation)

AQ8: Why were the 'treasures of untold value' to be found in the Cambrian Mountains so precious to the people of Birmingham?

- Reservoirs are huge artificial lakes of water that are created by building dam walls across valleys through which rivers are flowing. The water builds up behind the dam wall to create a reservoir.
- By 1898 it had been discovered that cholera was spread by the consumption of water and food contaminated with bacteria. This knowledge led the council of Birmingham to seek out sources of fresh water. They identified the mountains of Wales and the valleys of the River Elan and Claerwen in particular as the ideal location to construct reservoirs to collect the water, which could then be piped all the way to the city 118 km away.
- These valleys were considered ideal because they had:
 - an average annual rainfall of 1830 mm;
 - narrow valleys, which made the building of dams easier;
 - impermeable bedrock, which prevented the water seeping away;
 - an elevation 52 m higher than the city of Birmingham, enabling water to be transported by pipeline to Birmingham using gravity alone.
- An Act of Parliament was passed in 1892 for the compulsory purchase of the total water catchment area of the Elan Valley (180 sq km) and in 1893 building work began. The 100 tenant farmers occupying the area were evicted and only landowners received compensation payments from the City of Birmingham.
- Today, submerged forever below the Claerwen Reservoir are 18 farms, 3 manor houses, a school and a church. The Elan Valley scheme was opened in 1904.

AQ9: How else is the precious resource of water used in the Cambrian Mountains?

- Nant-y-moch Reservoir in the Cambrian Mountains of Wales, which has been created by building a dam across the River Rheidol.

- Hydroelectric power is produced by the force of falling water. In mountainous areas such as mid-Wales, hydroelectric power stations have been built to provide electricity to homes, schools, farms and businesses. The annual energy production is about 85 GWh (gigawatt-hours) – enough to power 12 350 homes. An underground shaft takes water from the main reservoir to the Dinas Reservoir in grid square 7482 where further water is added. The underground shaft carrying the water continues to Bwa-drain at 715798. At this point the water drops vertically down a 250 m surge shaft to the power station where it spins the blades of a giant turbine
- The turbine is connected to a generator. As the generator spins it makes electricity, which is transmitted away from the power station along high tension cables suspended between pylons
- After passing through the turbine, the water flows back into the river on the other side of the dam
- The electricity produced is ‘clean’ and ‘green’ in the sense that it doesn’t result in the production of harmful greenhouse gases, such as carbon dioxide, that contributes to global warming and climate change
- Companies have to flood a very large area, normally a deep valley, to create the reservoir and the huge head of water that is required.

Specialised Subject Vocabulary:

Mountain, Mount Everest, Mauna Kea, volcano, Mount Olympus, sea level, base, summit, satellites, telescopes, Solar System, mountain ranges, Himalaya, Andes, Rockies, Alps, Urals and Atlas, fold mountains, crust, layers, strata, atmosphere, mountaineers, descended, fossils, crinoids, tectonic plates, compass direction, erosion, economic activity, natural, environmental, water vapour, diversification, reservoirs, elevation, contour lines, dam, reservoir,

<u>Basic</u>	<u>Appropriate</u>	<u>Specialised</u>
Top	Peak	Summit
Rise	Hump	Elevation
Bottom	Ground	Base
Bones	Remains	Fossils