

Year 8 Easter geography homework booklet



This booklet is split up into 6 sections. Each section should take around 1 hour to complete.

Section I: Skills

Study the map below.



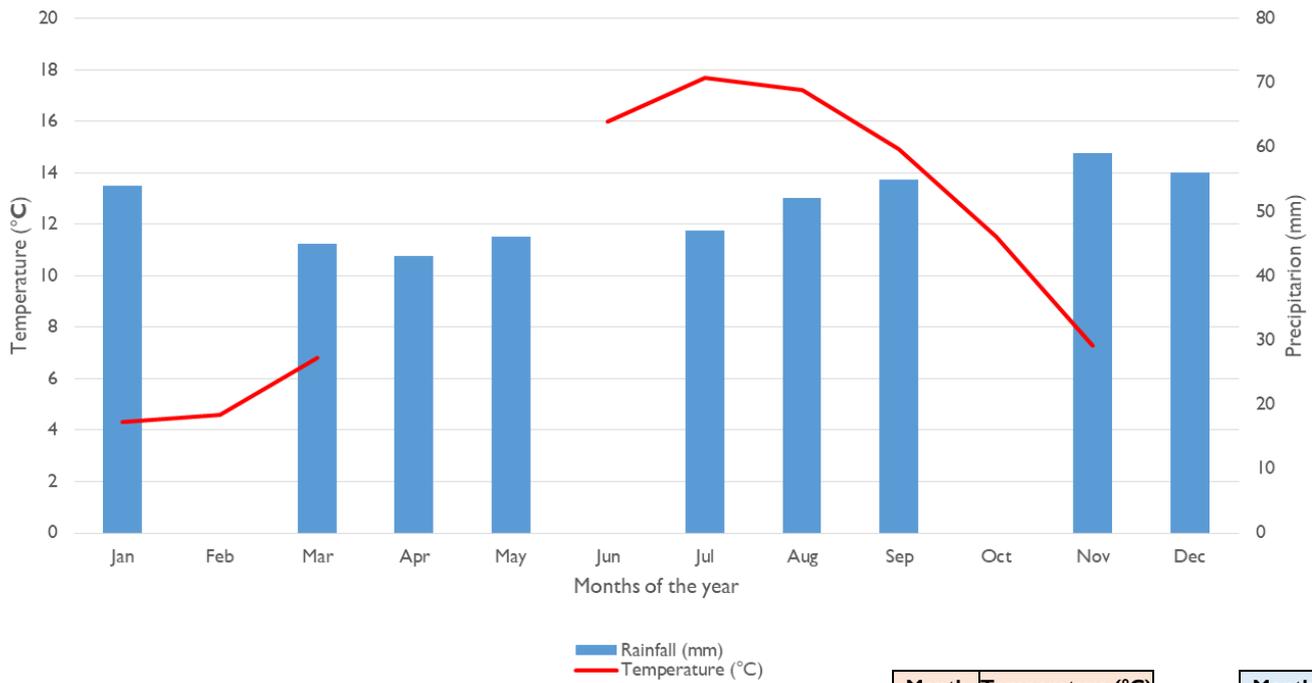
1. Give the 4 figure grid references for:
 - a. Place of worship in Girton. _____
 - b. Place of worship in Landbeach. _____
 - c. Public phone in Horningsea. _____
 - d. Rectory Farm _____

2. Give the 6 figure grid references for:
 - a. Place of worship in Rampton. _____
 - b. Public house in Horningsea. _____
 - c. Public phone in Waterbeach. _____
 - d. Manor farm building. _____
 - e. Public house in Girton. _____
 - f. Place of worship in 45 58. _____

3. The scale is 2cm:1km. Using your answers for questions 1 and 2, work out the distance between:
 - a. Manor farm building and Place of worship in Girton. _____
 - b. Place of worship in Rampton and Place of worship in 45 58. _____
 - c. Rectory Farm and Public phone in Waterbeach. _____
 - d. Public phone in Horningsea and Public house in Horningsea. _____

3. Study the graph and data below.

Climate graph for Barking, London.



- Complete the climate graph using the data in the tables.
- Which month is the driest? _____
- Which month is the most cold? _____
- Calculate for rainfall:
 - Mean _____
 - Median _____
 - Range _____
- Calculate for temperature:
 - Mean _____
 - Median _____
 - Range _____

Month	Temperature (°C)
Jan	4.3
Feb	4.6
Mar	6.8
Apr	9.3
May	12.5
Jun	16
Jul	17.7
Aug	17.2
Sep	14.9
Oct	11.5
Nov	7.3
Dec	5

Month	Rainfall (mm)
Jan	54
Feb	37
Mar	45
Apr	43
May	46
Jun	49
Jul	47
Aug	52
Sep	55
Oct	60
Nov	59
Dec	56

4.

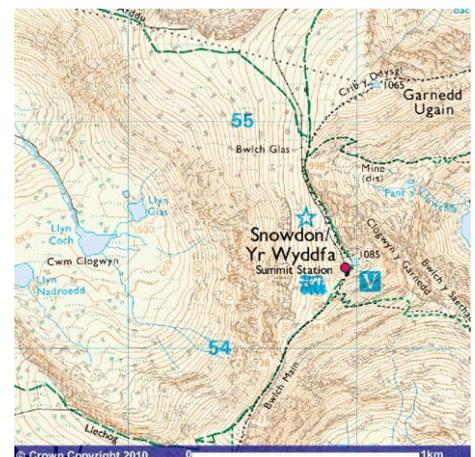
- Fill in the blanks using words from the choices below

Choose from... *relief* *contour* *slope* *close* *gentle*

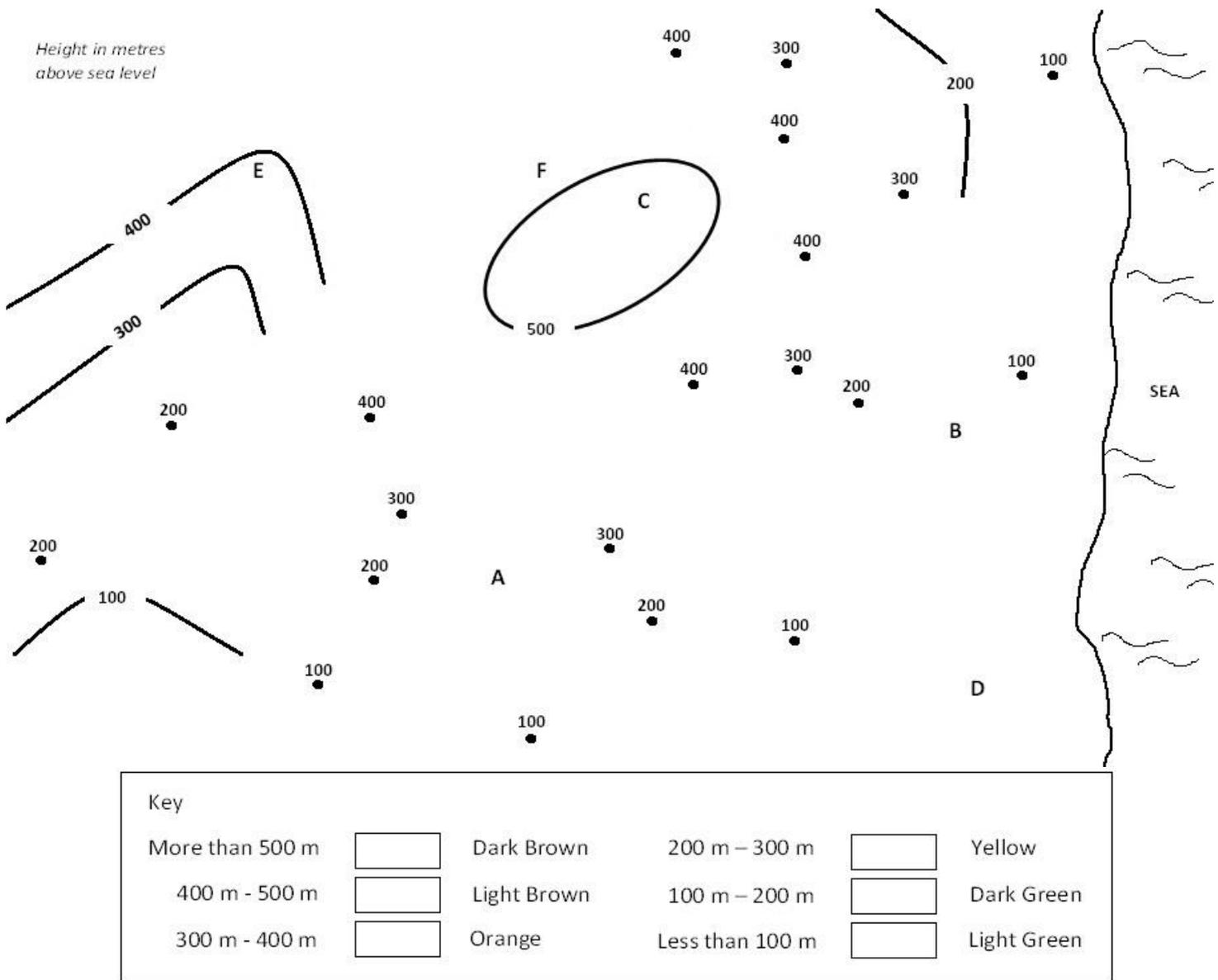
_____ lines are a good way of showing the height and _____ on a map.

Contour lines that are _____ together show a steep _____ and contour lines that are far apart show a _____ slope.

- Look at the map. Describe the relief of the land.



c. The map below is an incomplete contour map.



- i. **In pencil** join up all the places that are 100 metres above sea level.
- ii. Join up all the places that are 200 metres above sea level.
- iii. Join up all the places that are 300 metres above sea level.
- iv. Join up all the places that are 400 metres above sea level.
- v. Fill in the key by colouring the boxes.
- vi. Shade the map using those colours. Colour lightly in pencil.

What is the height of each letter on the map?

Choose your heights from: 50m 470m 220m 110m 390m 520m

Letter	A	B	C	D	E	F
Height						

5. Read the information below. Identify the causes and consequences of river flooding.

Heavy rain is causing chaos and severe flooding as it spreads across the UK.

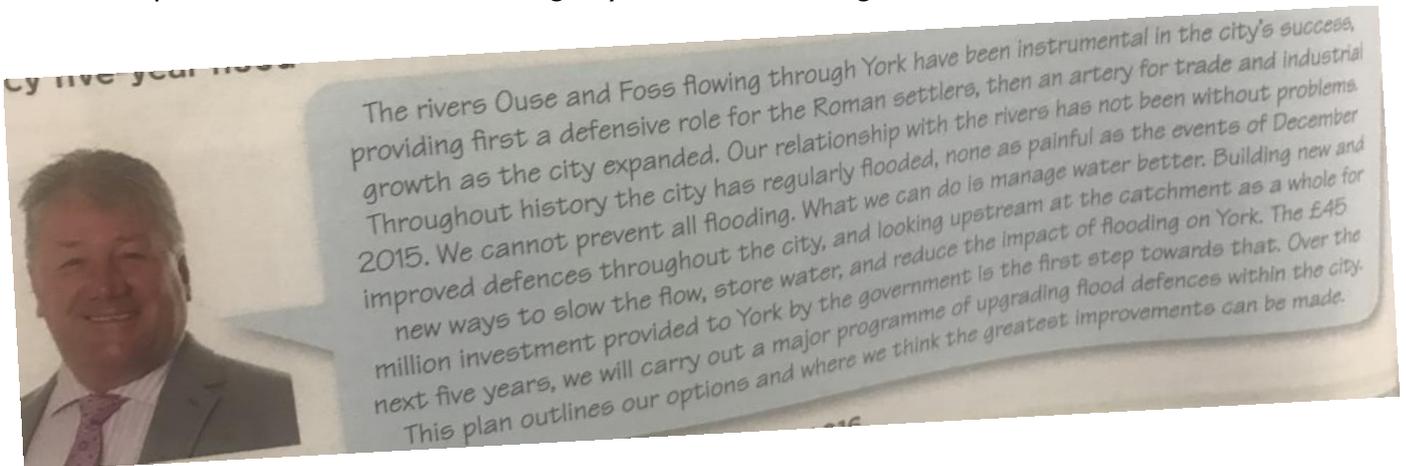
Rivers have burst their banks and several schools and roads have been close due to the torrential downpours and days of endless rain. Train services have been badly affected in Yorkshire, the East Midlands and Northern Ireland, with parts of the railway left under water.

Weather experts have issued more flood warnings for the north and south west of England and say the heavy rain will continue to spread north into Scotland. They warned that in some areas, several centimetres of rain could fall in a very short period of time. Areas most at risk include built up areas where paving stones and concrete are preventing the rain from draining into the ground.

Drivers in Northern Ireland had to abandon their cars as flood waters rose. The fire service and police have received hundreds of calls from people affected by the bad weather and loads of homes have had to be evacuated.

<u>Causes</u>	<u>Consequences</u>

Below is a quote from the Environment Agency about the flooding in York.



a. Why are the River Ouse and Foss so important for the development of York as a settlement?

b. Why are the rivers dangerous to York?

c. How much has been invested in defending against floods?

Section 3: Development

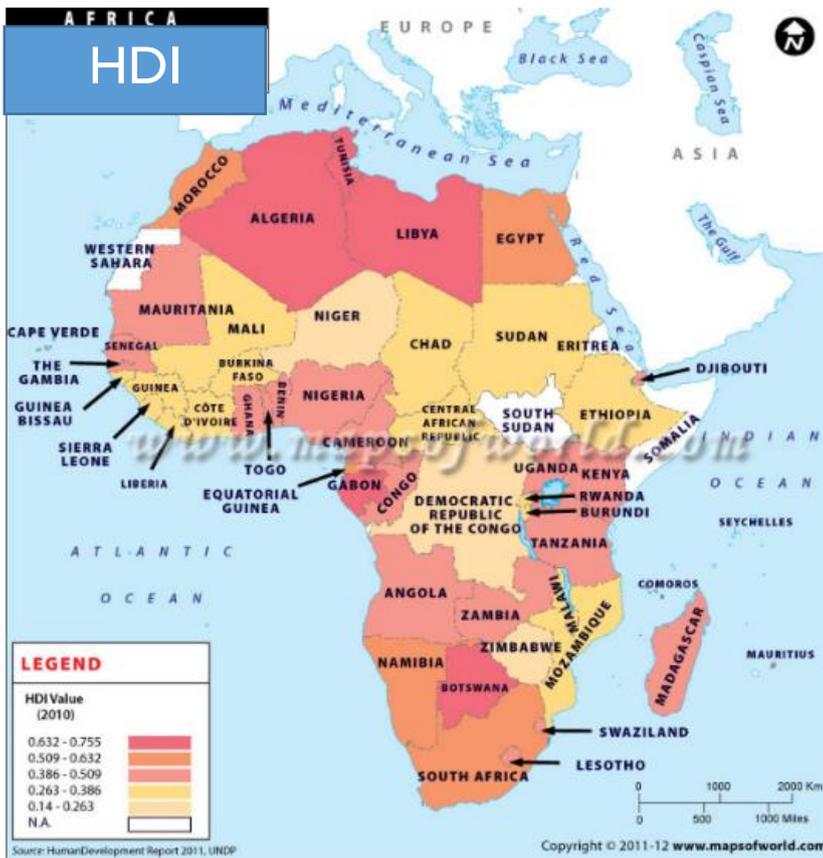
1. Label each of these countries – whether they are an AC, EDC or LIDC

Country GDP (PPP) Life expectancy Adult literacy rate	Congo, Democratic Republic of \$55.73 billion 56.54 years 61.2%	Ethiopia \$139.4 billion 60.75 years 39%	Uganda \$66.65 billion 54.46 years 73.2%
Mali \$27.1 billion 54.95 years 33.6%	Kiribati \$180 million 65.47 years No data	Comoros \$1.211 billion 63.48 75.9%	Solomon Islands \$1.046 billion 74.89 years 84.1%
Brazil \$3.073 trillion 73.28 year 91.3%	China \$17.63 trillion 75.15 years 95.1%	India \$7.277 trillion 67.8 years 74%	Mexico \$2.143 trillion 75.43 years 94.2%
Argentina \$927.4 billion 77.51 years 97.9%	United Arab Emirates \$605 billion 77.09 years 90%	United States \$17.46 trillion 79.56 years 99%	United Kingdom \$2.435 trillion 80.42 years 99%
Singapore \$445.2 billion 84.38 years 96.4%	Switzerland \$444.7 billion 82.39 years 99%	Germany \$6.321 trillion 80.44 years 99%	Australia \$1.1 trillion 82.07 years 99%

2. Match up the correct definitions with a line. One has been done for you.

Goods		Functions or skills carried out by people. These functions can be sold to other people.
Services		How much money and material goods a person owns.
Standard of living		The total value of goods and services produced by the citizens of a country (wherever they live in the world) per year.
Quality of life		The total value of all goods and services made within a country's borders per year.
Development indicators		People's overall well-being. Economic well-being in addition to other factors such as personal freedoms, healthcare, education and safety.
Gross national product		Items which can be bought and sold.
Gross domestic product		Factors which give us information on a country which can be used to assess how developed it is. Some examples are birth rate, life expectancy and freedom of speech.

3. The map shows a choropleth map for HDI in Africa.



a) Identify two countries with the highest HDI score

b) Identify two countries with the lowest HDI score

4. Fill in the gaps gap by matching the development indicator to the definition.

a) In the box next to the indicator, draw an arrow showing whether it would increase \uparrow or decrease \downarrow as a country develops.

- _____ The % of people who own a car.
- _____ The % of people over 15 who can read and write.
- _____ The average amount of money a country earns per person.
- _____ The number of people for each doctor.
- _____ The number of children (under the age of 1) who die per 1000 babies born.
- _____ The % of people with a well or tap close to their home.
- _____ The average age that people can expect to live to.
- _____ The % of people living in towns and cities.

- GDP per capita
- Adult literacy rate
- People per doctor
- Life expectancy
- Population with access to safe water
- Infant mortality
- Car ownership
- Urban population

b. Which development indicator do you think is the most important?

I think that _____ is the most important development indicator because...

c. Which development indicator do you think is the least important?

I think that _____ is the least important development indicator because...

5. Read the text below and answer the questions.

The cycle of poverty traps people and their families into poverty all their lives. In LIDC's the cycle of poverty has a much more severe effect than in AC's.

The Kapur family live in rural Karnataka, in India. They are poor and cannot afford to buy food most of the time. Most of what they eat they must grow. When there is no rain the crops they grow fail and they go hungry. They have to use drinking water from a river, which is about 1 mile away from their home. The water is not clean, but they have no other source.

Disease is common in the Kapur family because of the unclean drinking water and lack of food. This affects the children and the adults in the family. The youngest child, Maya, is 18 months old, but she looks much younger because she is underweight. She already has a terrible cough and has suffered from lots of illnesses in her short life so far.

Mr and Mrs Kapur are both around 30 years of age. They have had 7 children together, but only three are still alive. The rest have died from one illness or another, mostly because they don't have enough food to eat or clean water to drink. There is a clinic, which is a five mile walk, but the health care it offers is very basic and the Kapur family cannot afford to buy medicines.

Mr Kapur looks for work whenever he can, but there is very little available where they live and he has very little education. He must travel to the Gold mining towns in the Kolar district of Karnataka to work in the mines to get a decent wage. Unfortunately Mr Kapur is not able to work as much as he would like to because he has malaria. This combined with a lack of food and no money for medicines mean that he is unable to work for most of the year, which makes the family even poorer.

The older children can only go to school when there is enough money to pay for the school fees and uniform, which are compulsory in all schools in India. Even when there is enough money for uniform and fees the children are sometimes too poorly to walk the 6 miles to school and back each day. They too face a future of poverty because they will lack an education.

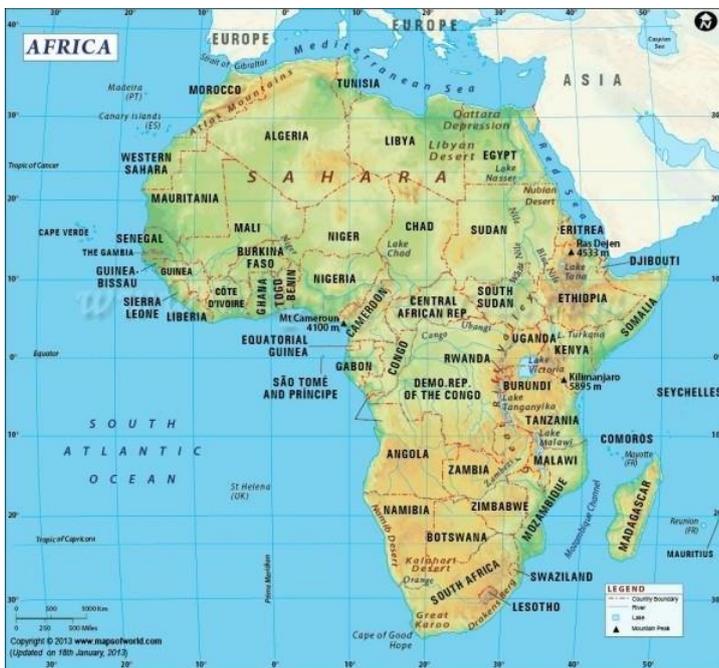
a. Why is the effect of poverty worse in LIDC's compared to AC's?

b. What is the cycle of poverty?

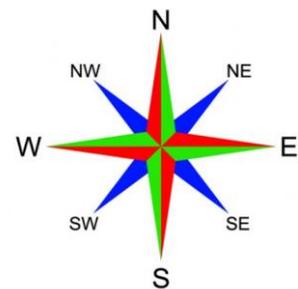
c. Fully explain two causes of poverty in India.

Section 4: Africa

Study the map of Africa.



- ✓ Hemisphere
- ✓ Equator
- ✓ Surrounding continents
- ✓ Compass directions
- ✓ Oceans or seas
- ✓ Do not use the words: **near, next to, above, below**



1. Describe the location of Africa using the success criteria

2. Complete the gap fill to explain how colonialism has affected Africa.

History can help explain why some countries have not been able to (1) _____ as quickly. Between 1650 and (2) _____ European countries such as the (3) _____ ran many countries in (4) _____. This had an effect on the countries. This meant that: Europeans took and (5) _____ the African countries' resources such as coal and (6) _____. They took African (7) _____ without wages. The European countries did little to help the (8) _____ countries to develop so they had few (9) _____ or hospitals.

gold slaves African sold develop schools Africa
1900 UK

3. Read the information about Kenya.

Physical Characteristics

- Kenya covers an area of 582 650 km², more than twice the area of the UK.
- Kenya is on the **equator** giving it a tropical climate where the sun stays overhead all year.
- Kenya has two rainy seasons: the 'long rains' from April to June and the 'short rains' from October to December. Total annual rainfall for Kenya is 1390 mm (similar to the UK's).
- The hot dry season is from January to March (average temperature 29°C) and the cool dry season is from July to September (average temperature 26°C).
- Being on the equator also means that the times of sunrise and sunset stay the same all year (6:00–6:30am and 6:30–7:00pm).
- Kenya has five main environmental zones:
 - 1 Steppe, consisting of desert-like scrub and grassland, covering most of the north and east.
 - 2 Hot desert in the far north.
 - 3 **Tropical equatorial forest** on the east coast.
 - 4 **Savannah grasslands** covering the south.
 - 5 **Montane forest** in the Kenyan Highlands of Western Kenya (tropical evergreen forests with high temperatures and humidity, and high densities of orchids, ferns, mosses and lichen).
- Kenya's highest mountain is Mt Kenya at 5119 m. It is a stratovolcano, formed over three million years ago.
- The Great Rift Valley runs through the west of Kenya. It is being formed as the African **tectonic plate** splits in two and has been partially filled by lakes such as Lake Turkana.

Key Point

The savannah is the most well-known environmental region in Kenya. It consists of vast plains of grass with scattered trees such as the baobab and acacia. The savannah is where the majority of Kenya's wildlife is to be found, such as giraffe, lion, elephant, leopard, cheetah, hippo and rhinoceros.

a. Where is the Rift Valley in Kenya?

b. How was the Rift Valley formed?

- Kenya is a poor country, sometimes defined as less economically developed. It struggles to cope with rapid population growth.
- The Masai are a distinctive ethnic group in Kenya who are **nomadic pastoralists**. In 2009 there were over 800 000 Masai in Kenya. The Masai move their herds of cattle around the Kenyan savannah and steppe in search of water and grazing.
- The largest city in Kenya, and the capital, is Nairobi, with a population of 3.1 million. Kenya's second largest city is Mombasa, population 1.2 million.
- Kenya was a **colony** of the British Empire from 1888 to 1963 when it gained independence under the leadership of President Jomo Kenyatta.
- Brooke Bond has been growing and selling tea in Kenya since the 1920s. It is now owned by Unilever, and produces 32 million kg of tea a year.
- Kenya exports 35 000 tonnes of flowers to Europe each year. Kenyan flowers are sold by the main British supermarkets.
- In 2010 1.5 million tourists visited Kenya. Most tourists come to Kenya to go on safari to view the wildlife in the national parks and to enjoy the coral reefs and tropical beaches on the east coast near Mombasa.
- Tourism accounts for 22% of Kenya's export earnings (money that comes in to Kenya from other countries) and tourism employs 800 000 people. In 2012 nearly 200 000 tourists from the UK visited Kenya.

c. Which of the following are Kenya's 3 main exports? Circle the correct answers.

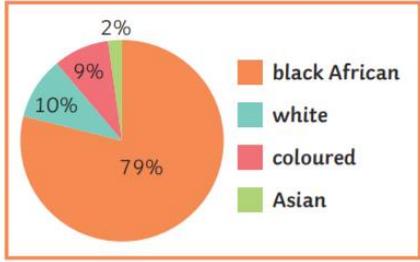
- Rice Coffee Tea
- Cocoa Cotton Flowers

d. Fill in the gaps using information from the text.

In 2012, _____ tourists from the UK visited Kenya. They come to Kenya mainly to go on _____ and to visit the beaches near Kenya's second largest city, _____.

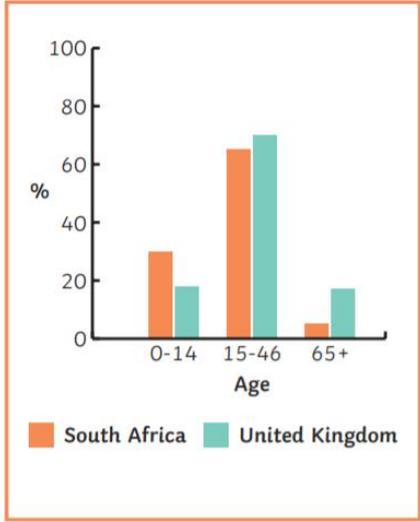
4. Using the text and you knowledge, compare the climate of Kenya to the UK.

Study the fact file for Cape Town, South Africa below.



	United Kingdom	South Africa
Life expectancy	78.7 years	42.4 years
People with access to the internet	37,600,000	5,100,000

Key Industries in Cape Town: construction, tourism, information technology, mining



Townships were created as living areas for non-whites under the old political system of apartheid. Townships are still home to a large percentage of Cape Town's wider population today. Townships are extremely poor settlements. **Langa** is Cape Town's oldest black township, and is home to **49,667 people**.

In Cape Town:

- 39% of people live below the poverty line;
- 7% of people have no access to clean drinking water;
- 6% have no access to sanitation.



f. How many times bigger is South Africa than the UK?

g. Describe the location of Cape Town using compass directions.

h. What is a township?

i. What is the biggest township near Cape Town?

j. Name a key industry in Cape Town. What does this industry do?

k. What ethnicity are most people in South Africa?

l. In which age category are there more people in South Africa than in the UK?

m. What is the life expectancy in South Africa?

n. On average, how many years longer are people expected to live in the UK than South Africa?

How Do People Survive in the Desert?

There are approximately four million Bedouin people living in North Africa and Asia, including in the Sahara Desert. Life in the Sahara is incredibly difficult because of the lack of water, limited food supply, extreme heat during the day and cold during the night (regularly below freezing because of lack of cloud cover) and exposure to the elements. The word "Bedouin" means desert people and they have lived in these harsh conditions for thousands of years, adapting to their environment to ensure their survival.

Water

- They plan all journeys carefully so that they are always near an oasis: a place where water comes to the surface.
- They collect dew water overnight from plants and stones by putting cloths over them and then squeezing out the water in the morning.
- They look for lines of plants in the desert; this shows a river may flow underneath the surface.
- They look out for flies, birds and mosquitoes; these only live near water.



Food

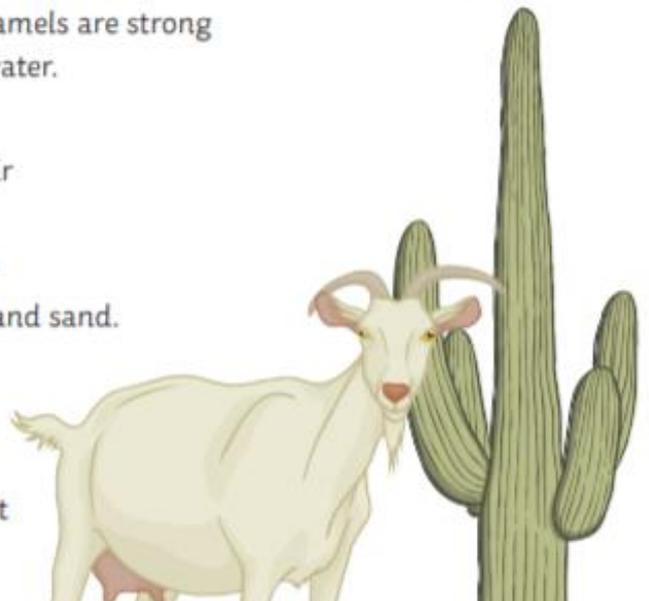
- They herd camels, sheep, goats and cattle, primarily for food.
- They are nomadic: they move around to find the best places for their animals to graze.
- In winter, when there's some rain, they travel deeper into the desert to find places for their animals to graze.
- In summer, when there is very low rainfall, they have to stay near to a reliable source of water.
- They use camels to help them carry their belongings. Camels are strong and able to walk long distances on minimal food and water.

Extreme Temperatures

- They wear woollen clothing made from the wool of their animals to keep them warm at night.
- They wear loose-fitting clothes to allow air to circulate.
- They wear head coverings to keep out heat, cold, wind and sand.

Protection from the Elements

They make long low tents from goats' hair. These are waterproof, provide shade in the daytime, keep them warm at night and shelter them from the strong desert winds and sandstorms.



o. List 4 conditions that make life in the Sahara Desert extreme

p. Why do the Bedouin people plan their journeys so that they are always near an oasis?

q. How does being nomadic help the Bedouin people find food?

r. How do the Bedouin people use clothing to help them cope with the Sahara's extreme temperatures?

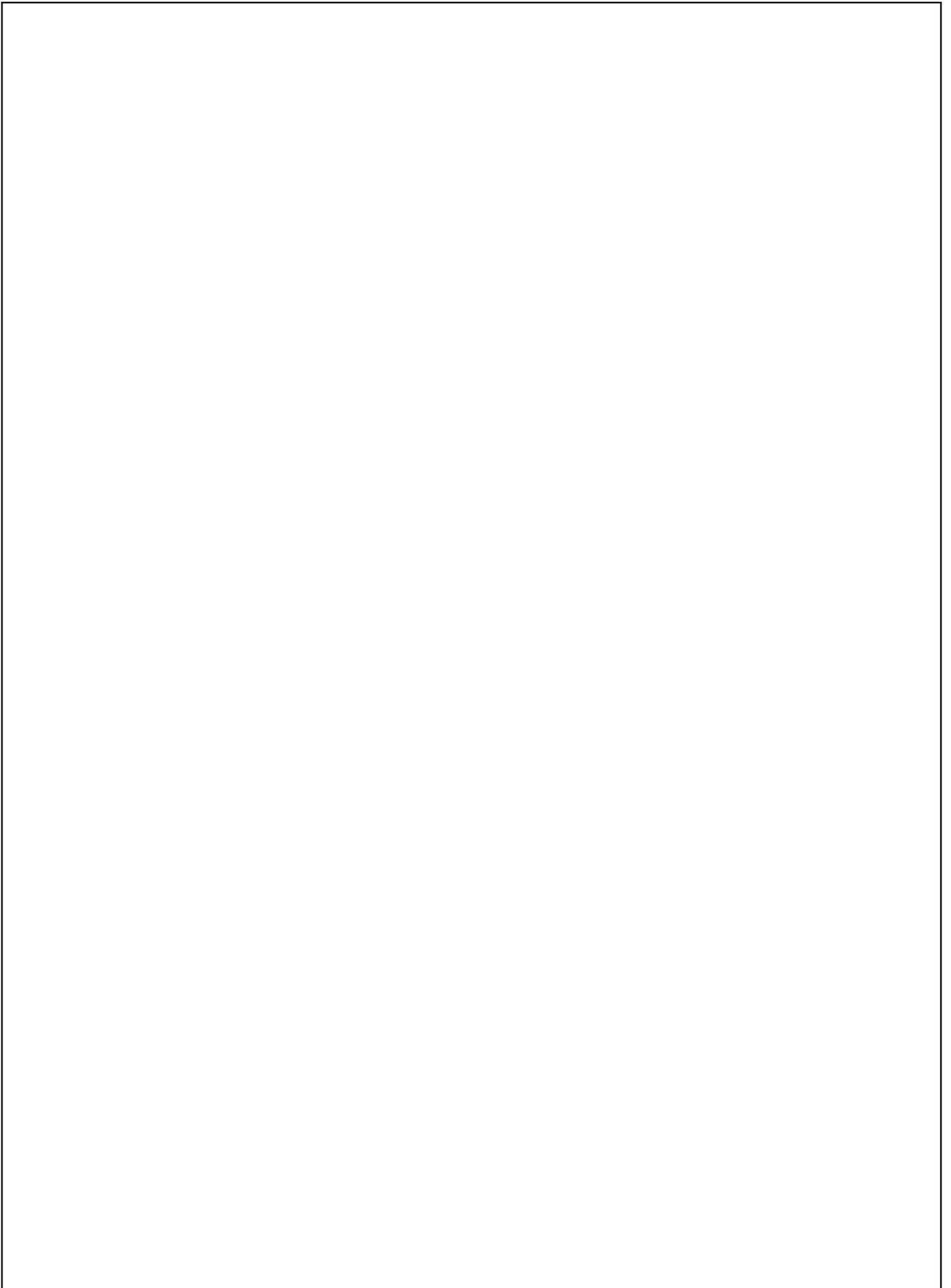
s. Why are the Bedouin people's tents essential for their survival?

18. Using the "How do people survive in the desert" text, create a poster

The BBC is planning a new reality television programme called "Sahara Survivor". They will place a group of people from the UK in the Sahara and film them living in the desert for a year. Create a "Sahara Survival Guide" to give to them on their first day in the desert, using examples from the Bedouin way of life.

You should include:

- how to find water and food;
- how to cope with the temperature;
- how to build a shelter;
- any other tips of your own, such as key items of kit to take with them (remember: they will not have electricity, WiFi or access to shops).



Section 5 – Russia



- Success criteria
- ✓ Hemisphere
 - ✓ Equator
 - ✓ Surrounding continents
 - ✓ Compass directions
 - ✓ Oceans or seas
 - ✓ Do not use the words: **near, next to, above, below**

1. Using the map, describe the location of Russia.

2. Create a timeline. Sort the statements into the correct order to understand the history of Russia.

1917 Tsar Nicholas is forced to abdicate and the 'Dictatorship of the Proletariat' is established.

2000 Vladimir Putin wins presidential election.

1613 Michael Romanov becomes tsar, ending a long period of political instability.

1991 Russia becomes independent as the USSR collapses.

9th century Founding of Kievan Rus, the first major East Slavic state.

1922 The Union of Soviet Socialist Republics (USSR) was formed.

2015-current Controversy surrounds Russia's involvement with Syria.

2008 Dmitry Medvedev wins presidential elections as Mr Putin cannot serve a third consecutive term. Putin becomes prime minister.

1939-45 World War Two

2012 Putin wins election to become the President again.

1947 The 'Cold War' with the West begins.

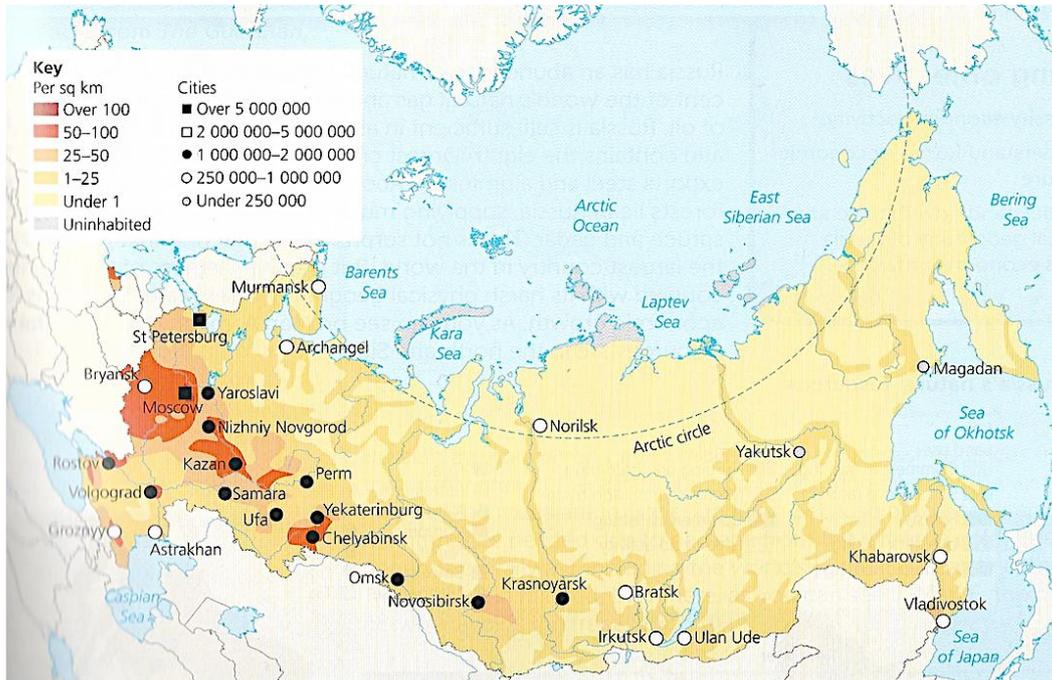
1237-40 Mongols invade Rus and take power.

1929 Joseph Stalin becomes dictator of USSR.



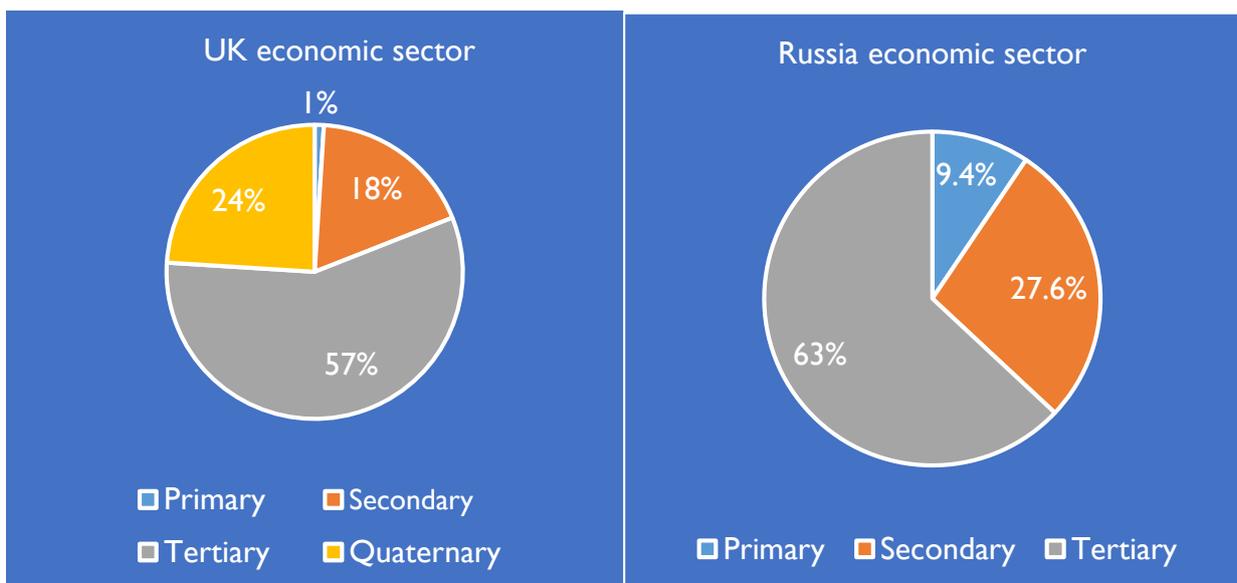
Population density is the number of people living in a given area, usually a square mile or kilometre. When there are lots of people living in an area, the population is dense. When there are not many people living in an area, the population is sparse.

Study the population density map of Russia.



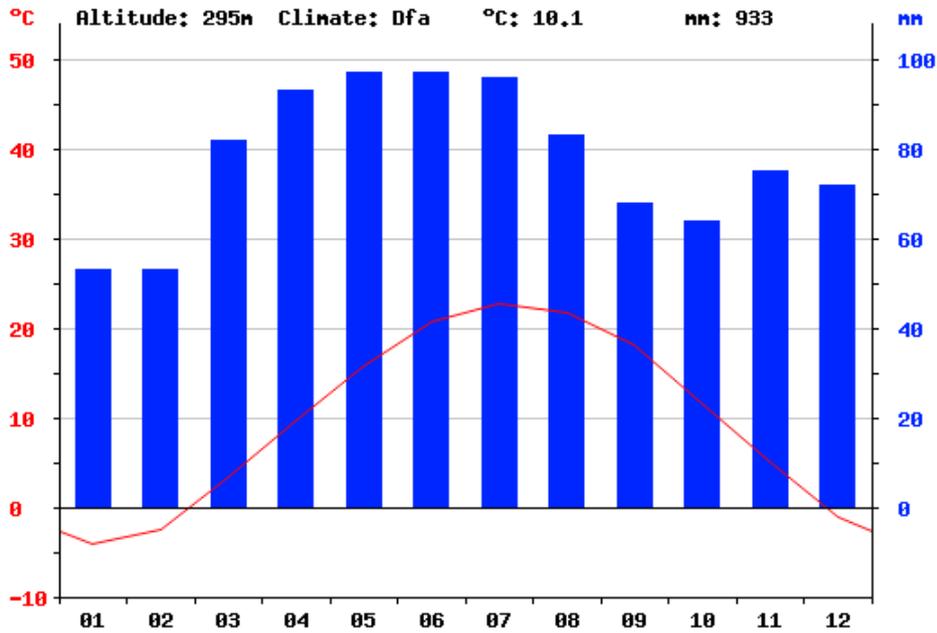
3. Name the densely populated cities in Russia

4. Why do you think such a large area of Russia has a sparse population?



5. Compare the similarities and differences between the UK and Russia's economic sectors.

Study the climate graph of Russia.



month	1	2	3	4	5	6	7	8	9	10	11	12
mm	53	53	82	93	97	97	96	83	68	64	75	72
°C	-4,1	-2,4	3,4	9,8	15,8	20,8	22,8	21,8	18,2	11,5	5,2	-1,1

Mode – The number that occurs the most

Mean – The average. Add up all the numbers and divide by how many there are

Median – Order the numbers from smallest to biggest and find the middle number.

6. Which months are the warmest in Russia? What are the temperatures?

7. Which months are the coldest in Russia? What are the temperatures?

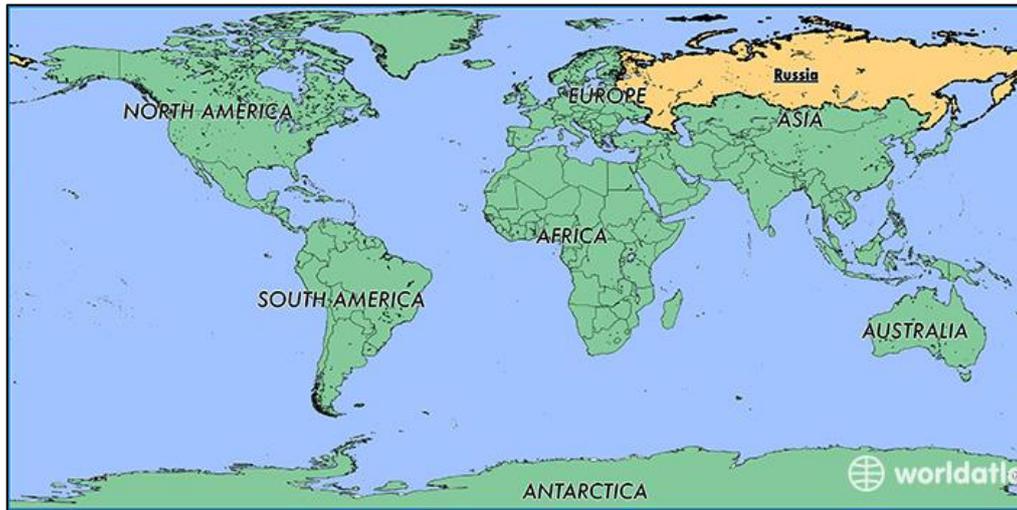
8. What is the mean temperature for Russia? (add all temperatures together and divide by 12)

9. How much rainfall does Russia receive in a year? (add all the rainfall together)

10. What is the wettest month in Russia? What is the amount of rainfall?



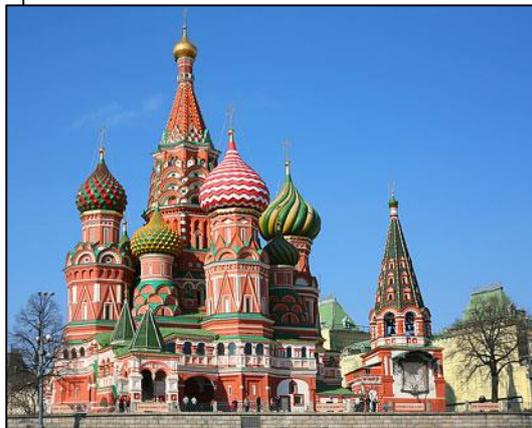
Russia fact sheet



- Northern hemisphere.
- Neighbouring countries:
 - Finland
 - Estonia
 - Latvia
 - Lithuania
 - Poland
 - Belarus
 - Ukraine
 - Georgia
 - Azerbaijan
 - Kazakhstan
 - Mongolia
 - China
 - North Korea
 - Japan (sea)
 - United States (sea)

Saint Basil's Cathedral

- It was commissioned by Ivan IV (Ivan the Terrible), for Saint Basil the Blessed.
- Stories and myths abound of Ivan's raging temper, one of which involves him purposefully blinding the cathedral's (unnamed) Italian architect so that its design could never be replicated!
- It is in the area called Red Square. It was built in 1555-1560.
- In 1990, the Kremlin and Red Square were named a World Heritage Site by the United Nations Educational, Scientific, and Cultural Organization.
- Saint Basil's Cathedral contains much religious symbolism, although the centre of Saint Basil's Cathedral is now a museum and is open to public.



Russia is the 9th most populated country in the world. It is the largest country in the world in terms of area with a total area of 17,075,400 square kilometers!

Ural Mountains

- The mountain range spans 2,500 kilometers (1,550 miles) passing through Arctic tundra to the north and through forested and semi-desert landscapes to the south.
- The Urals are a narrow mountain range, at its widest point they are about 200 kilometers (125 miles) wide.
- The highest point of the mountains is the peak of Mount Narodnaya, which stands at 1,894 meters (6,214 feet).
- The Ural Mountains are among the world's oldest mountains, 300 to 250 million years old, and erosion has lowered them considerably. For its age, the elevation of the mountains is unusually high.
- The Ural Mountains are among the richest in minerals in the world and have been mined for hundreds of years. They provide coal, iron, silver, gold, platinum, lead, salt, aluminum, magnesium, diamonds and a wide range of other gemstones.



- The currency used in Russia is the ruble.
- Lake Baikal is the largest freshwater lake in the world. It reaches 1642 metres (5,387 feet) in depth and contains around 20% of the world's unfrozen fresh water.
- With its 11 local times, Russia is one of the countries with the most time zones worldwide

Moscow Kremlin and Red Square

- The Kremlin, located in Moscow, Russia, is a complex of buildings enclosed within a wall, originally designed as a medieval fortress.
- The buildings within it include churches, palaces, armories, and a variety of watchtowers from the 15th and 16th centuries.
- Lenin's Mausoleum, for example, contains the embalmed body of Vladimir Ilyich Lenin, the founder of the Soviet Union
- The Kremlin also integrates beautiful gardens and a forest, which are well maintained with footpaths so that visitors can walk through.
- The red square is an area which is used for various public ceremonies and proclamations, and occasionally a coronation for Russia's Tsars (ruler) would take place. The square has been gradually built up since that point and has been used for official ceremonies by all Russian governments since it was established.
- Together they are a joint UNESCO World Heritage Site.
- It has been center of Russian politics since the 12th century.
- President Putin works here.



Lake Baikal

- It is located in Eastern Siberia (see red square on map on other side of sheet), and it is the biggest and deepest freshwater lake in the world, and a UNESCO World Heritage Site.
- It is the world's largest body of freshwater, containing over one fifth of the world's supply.
- The geological formation started around 20-25 million years ago, making it one of the oldest lakes in geological history and even nowadays it is continuing to widen 2cm a year!
- Tourists come often, making use of the roads, ferries and railway facilities. There are cruise tours available.
- People make a huge effort to keep the lake clean – rubbish and waste is banned.
- It can be known as the "Pearl of Siberia" and it is the home to more than 2,000 endemic plant and animal species of exceptional value to evolutionary science.
- The lake freezes five times a year, and its ice is so thick that it can handle a vehicle over 15 tons!

Russia lies in both Europe and Asia: one quarter of its territory is in Europe and three quarters in Asia. Notably, only 22% of the population resides in the Asian section.

Russia has the world's longest railway. The Trans-Siberian spans nearly the whole country, departing Moscow in the west and travelling to Vladivostok in the east. The entire journey is 9,200km long (5,700mi) and would take 152 hours and 27 minutes to complete non-stop.



Russia is home to Oymyakon, the coldest inhabited place on Earth. On 6th February 1933, its weather station recorded a temperature of -67.8 °C.



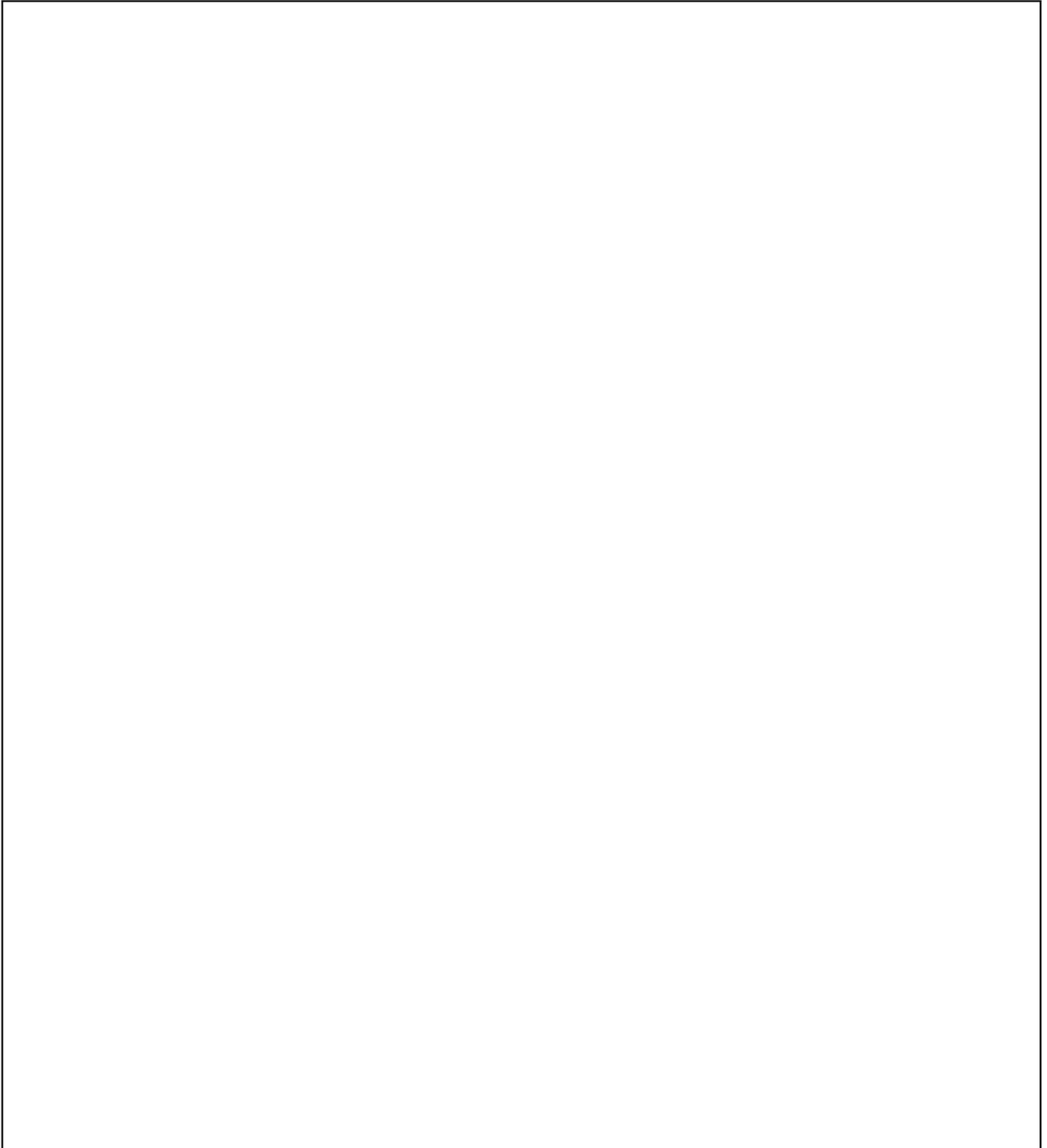
11. Imagine you work for the Russian Federal Agency for Tourism.

It is your job to **create a leaflet or poster** which explains some of the features of Russia to a tourist.

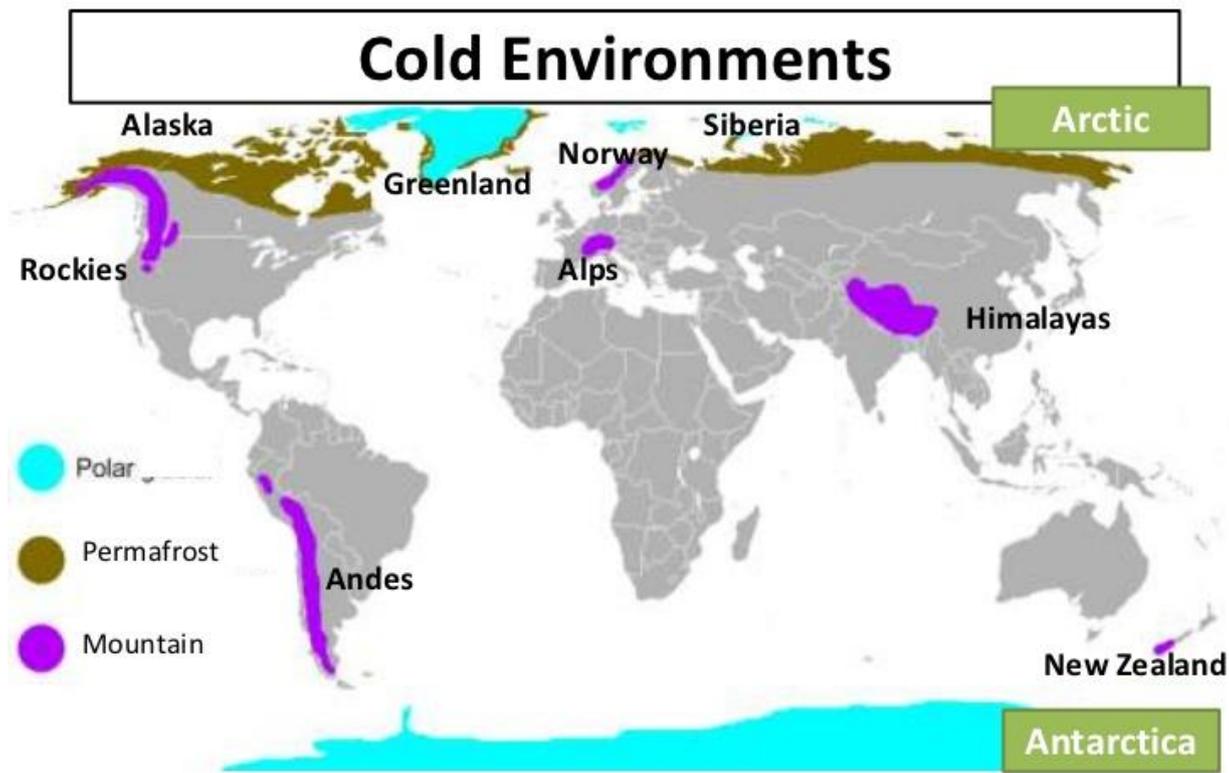
You will use the success criteria and the research fact-sheet to do this.

Success criteria:

- ✓ You have made it clear where Russia is in the world.
- ✓ You use persuasive language as you are trying to interest tourists.
- ✓ You use facts to make your work geographically accurate.
- ✓ You feature at least 1 human and 1 physical feature of Russia.
- ✓ The poster/leaflet must be clear and easy to read.



Section 6 – Cold environments



- ✓ **Polar** = land that is permanently covered in ice
- ✓ **Permafrost / tundra** = land where there is a layer of soil under the surface that remain frozen throughout the year. The surface may melt in summer.
- ✓ **Mountain** = areas with high mountains that therefore get cold due to altitude.

Most polar areas are found in _____

The permafrost areas are found slightly closer to the equator than the _____

The permafrost areas are mostly in _____

Cold mountain environments are found _____

The Andes are found in _____

Other mountainous areas are found in _____

Albedo is the ability of surfaces to reflect sunlight (heat from the sun). Light-coloured surfaces return a large part of the sunrays back to the atmosphere (high albedo). Dark surfaces absorb the rays from the sun (low albedo).

Ice- and snow-covered areas have high albedo. Grassy areas have a lower albedo.

When ice and snow melt, there will be more dark surfaces, which means more energy will be absorbed.

This means the temperature will increase and even more ice and snow will melt.

1. Define the albedo effect in your own words

2. Why do ice and snow covered areas have a high albedo?

3. How does global temperature increase affect the levels of albedo?

The Earth is tilted at 23.5 degrees. This means that the Sun's rays hit the earth at different angles. When the Sun is directly overhead to the ground, the energy is more concentrated which leads to higher temperatures. When the Sun is at an angle to the ground, the energy is less concentrated which leads to lower temperatures.

4. What is the climate like at the equator and why?

5. What is the climate like at the north and south poles and why?

Altitude

The picture opposite was taken in Kenya. Kenya lies on the equator and has a pleasant, tropical climate. However, we can see snow on Mount Kilimanjaro. This is because of the altitude of the mountain.

Altitude is the distance above sea level.

Distance from sea - continentality

Oceans heat up and cool down much more slowly than land. Oceans hold heat much better than land too. This means that the temperature varies less across the year at the coast compared to inland. Coastal areas tend to be cooler across the year, especially if the surrounding waters are cold. If there is a coastal area which has the same altitude and albedo as an inland area, the coastal area is almost always more likely to be cooler.

6. Use the information from the cold environments section to decide whether each statement is true or false.

- a) High albedo means that a lot of sunlight gets absorbed.
- b) The Earth's tilt is at 25.5°.
- c) Temperatures are higher at the equator because the sun is directly overhead.
- d) Temperatures drop at a higher altitude because the air pressure increases.
- e) Altitude is the distance above sea level.
- f) Oceans heat up and cool down much more slowly than land.



7. Study the image above of the Russian tundra. This is a cold environment. Using the image and the word bank, fill in the gaps below.

Word bank: **Permafrost, Snow, extreme, wind, precipitation, uninhabited, landscape, absorb**

- There is little p_____.
- Any precipitation usually falls as s_____.
- The ground is frozen solid in a state of p_____.
- The _____ is quite bare, trees are few and far between.
- Tundra plants are small. This helps them a_____ heat from the dark soil. Roots also are short and grow sideways, as they cannot penetrate the permafrost. These plants tend to grow in clumps as it offers protection from the cold and w_____.
- Generally _____ by humans and animals due to the _____ environment.

How Plants and Animals Adapt to the Physical Conditions

<p>Plants adapt to cope with the low temperatures, rainfall and high winds.</p>	<p>Animals adapt to find food and the harsh climate.</p>
<p style="text-align: center;">Plants:</p> <ul style="list-style-type: none"> • are small and round to survive high winds; • become dormant (stop growing) to survive the dark and cold winters; • have shallow roots because of the thin soil and permafrost; <ul style="list-style-type: none"> • have small leaves to reduce transpiration in the dry conditions; • can only grow in temperatures above 6°C and adapt to the short growing season (50-60 days) during the summer, when the Sun shines 24 hours a day; • must adapt to survive during summer, when the soil may be water-logged; • reproduce by growing runners and bulbs, rather than seeds. This is because of the high winds and short growing season. 	<p style="text-align: center;">Animals:</p> <ul style="list-style-type: none"> • must be well insulated with a thick layer of blubber, e.g. seals; • huddle together to conserve heat during the long winters, e.g. penguins; • hibernate to survive the winter (Arctic ground squirrels line their burrows with great insulators like Musk Ox hair, leaves, and lichens before winter); • migrate to warmer areas in winter, e.g. caribou migrate and spend the summer months grazing in the tundra; • are camouflaged to protect themselves from predators e.g. arctic hares are white to blend in with the snow.

8. Read the information on how plants and animals adapt to cold environments. Use the table above to fill in the gaps.

How Plants and Animals Adapt to the Physical Conditions

Plants must adapt. For example:

1. Plants are small and round to survive high _____.
2. Plants become _____ (stop growing).
3. Most plants have shallow _____ because of the thin soil and permafrost.
4. Small leaves reduce transpiration due to the _____ conditions.
5. Plants adapt to the short growing season (50-60 days) during the _____.
6. During _____, the soil may be water-logged so plants must adapt to survive

Animals adapt to the harsh environment. Some are well insulated with a thick layer of _____ (e.g. seals) or fur. Some animals huddle together to conserve _____ (e.g. penguins) during the long winters. Many animals hibernate to survive the _____ (e.g. arctic ground squirrels). Other animals _____ to warmer areas in winter. Many animals are _____ to protect themselves from predators.