Year 7— Unit 2-Our Planet

continent – a major landmass which includes several countries (aside from Antarctica).	**orbit –** to move around something in a circular motion.
landmass – a huge area of land above the level of the sea.	**planet –** a large, round object made of rock, metal and/or gas that moves around the sun.
ocean – a huge body of saltwater.	**seafloor –** the land at the bottom of the ocean.

continental drift – the slow movement of continents due to the crust sitting on top of the moving mantle.	**mantle –** a thick layer of molten rock beneath the crust layer.
core – a layer of extremely hot metal at the centre of the Earth.	**molten –** rock or metal that is melted due heat.
crust – Earth's outer layer, made of solid rock.	**Pangea –** a supercontinent that existed about 250 million years ago.

atmosphere – a thin layer of gas around Earth.	**habitable –** providing conditions that are good enough to live in.
carbon dioxide – a gas in Earth's atmosphere which is used by plants to make their own food.	**oxygen –** a gas in Earth's atmosphere which is vital for animals to breathe.
gas – a substance that is neither liquid nor solid, e.g., oxygen, water vapour, carbon dioxide.	**troposphere –** the layer of the atmosphere closest to Earth's surface.

cycle – a group of events that happen in a particular order and are repeated.	**saltwater –** salty water found in the oceans. It is not drinkable.
evaporation – the process when a liquid turns into a gas.	**water cycle –** the continual movement of water through ocean, atmosphere, and land.
freshwater – water without salt. It is stored in rivers, lakes, and underground. It is drinkable.	**water vapour –** water in the form of gas. It is found in the atmosphere.

income – the amount of money earned.	**MIC –** Middle Income Country – a country with an average income of between $1,100 - $13,200 per person.
HIC – High Income Country – a country with an average income of more than $13,200 per person.	**quality of life –** how happy, comfortable, safe and healthy a person is.
LIC – Low Income Country – a country with an average income of less than $1,100 per person.	**wealth –** how much money a person or place has.

dense – a lot of people living in an area (crowded).	**sparse –** few people living in an area.
distribution – how something is spread over a geographical area.	**urban –** a built up area such as a city or town.

Year 7— Unit 2—Our Planet

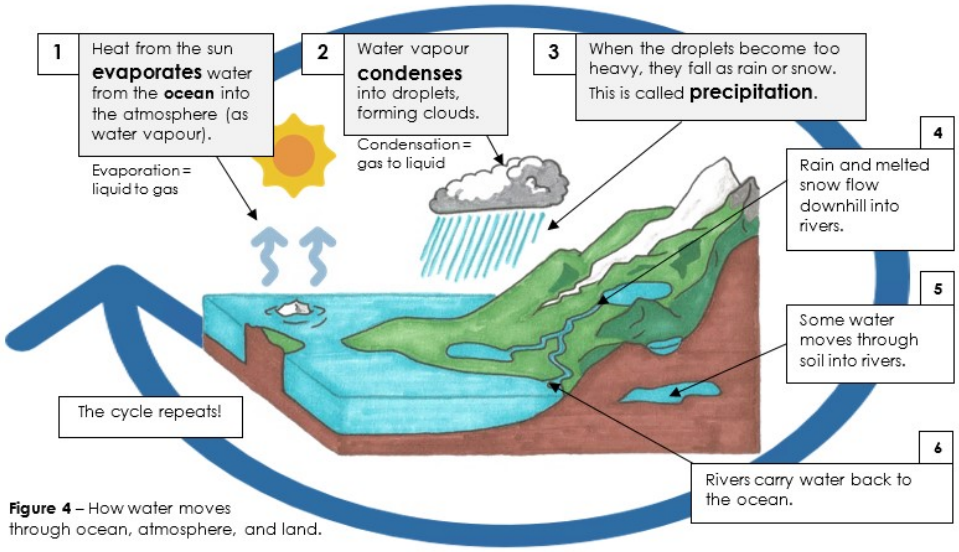
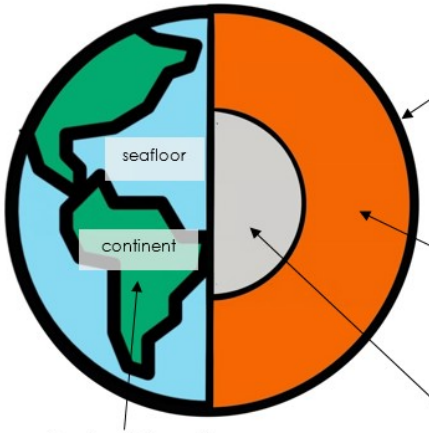


Figure 4 – How water moves through ocean, atmosphere, and land.

Water cycle – the continual movement of water through ocean, atmosphere and land, due to evaporation, condensation and precipitation.



Crust

The crust is the outermost layer. It is a thin layer of solid rock.

Mantle

The mantle lies beneath the crust. It is hot melted rock.

Core

The core lies at the centre of the Earth. It is extremely hot metal.

Figure 4 – Cross section showing Earth's structure.

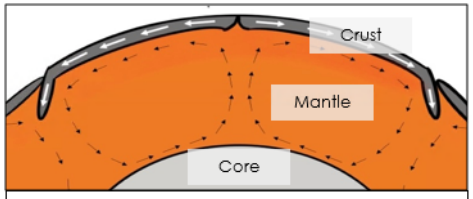


Figure 5 – Crust floating on top of the mantle.

Knowing about the crust and mantle layers can help us understand why continental drift occurs. The **continents** and the **seafloor** (which are part of the crust) are **floating** on the mantle layer. In Figure 5 we can see sections of crust moving on top of the mantle. This happens because the mantle layer is **molten** (melted) while the crust layer is **solid**.

1. Earth's atmosphere contains gases that are vital (needed) for plants and animals to live.

For example, Earth's atmosphere is 21% **oxygen** (O_2), unlike the other planets in our solar system which have almost none. Oxygen is **vital** (needed) for life. Animals (including humans) breathe it in and use it for energy and to keep organs working. Animals would not survive without oxygen.

Another important gas in our atmosphere is **carbon dioxide** (CO_2). Plants use carbon dioxide to make sugars which gives them **energy**. It's a bit like making their own food. This then enables plants to live and grow!

Figure 3 – People and animals breathe oxygen.

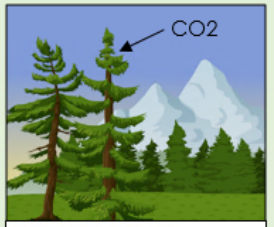


Figure 4 – Plants use carbon dioxide to create energy.

2. Earth's atmosphere stops water escaping to space.

Water is essential for all life on Earth. When water in the ocean or the ground is heated by the sun it becomes a gas called **water vapour**. The atmosphere holds this water vapour which stops it escaping to space. Eventually the water vapour forms clouds, which bring rain back to Earth's surface. This provides water for animals and plants to survive.

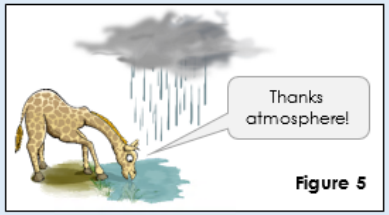


Figure 5

3. Carbon dioxide helps to keep Earth warm.

Heat from the sun travels through the atmosphere to Earth's surface. Some of this heat **escapes** back into space. Carbon dioxide **traps** some of the heat and directs it back to Earth's surface, keeping the air around our planet warm. As a result, Earth's average temperature is 15°C. Without carbon dioxide it would be -18°C. Few species could survive those temperatures!

Did you know? Some human activities like driving cars and burning coal are adding extra CO_2 into the atmosphere. This is causing climate change, which we will learn about in Year 8.

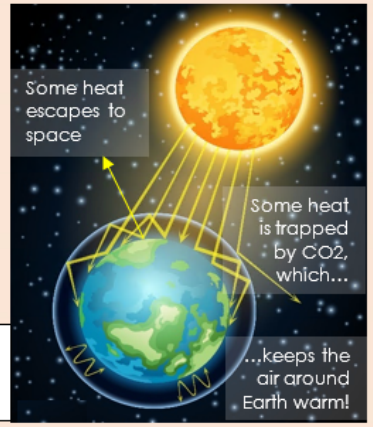


Figure 6 – Carbon dioxide traps heat in Earth's atmosphere.

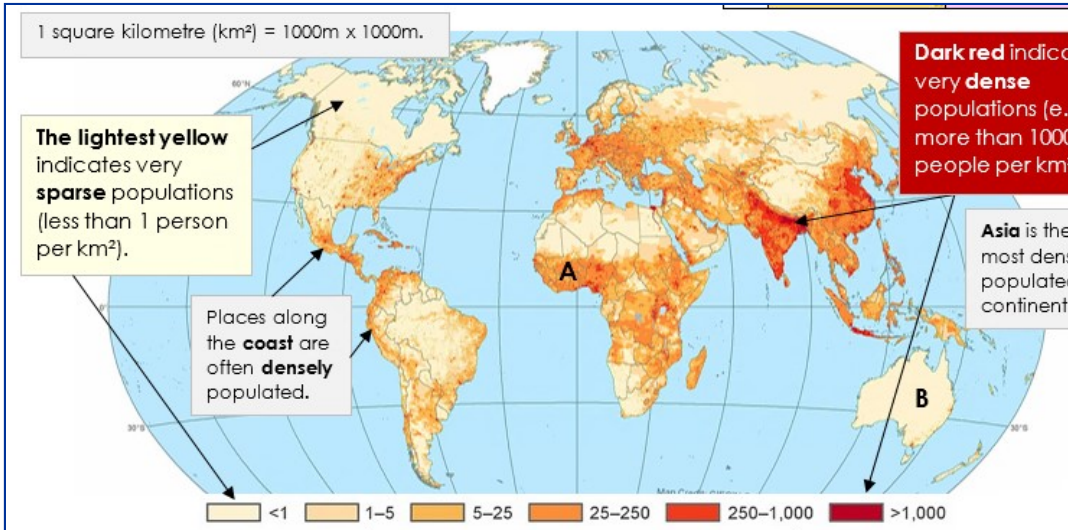


Figure 3 – People per square kilometre

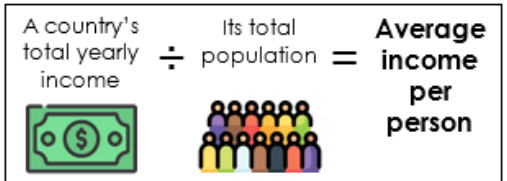


Figure 3 – How to calculate **average** income

Figure 4 – World Bank income categories (2023)

Income category	Average income (per person, in $US)
Low Income Country (**LIC**)	Below $1,100
Middle Income Country (**MIC**)	$1,100 - $13,200
High Income Country (**HIC**)	Above $13,200

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Why has the global population increased?

1. Medical improvements

A **vaccine** is a medicine that stops you from being harmed by a disease. Many vaccines were created in the 1800s, reducing the number of people who died from diseases like **smallpox**.

In the past, **infections**, even those caused by a small cut, often killed people. In 1842 **antibiotics** became available to treat infections. The deaths caused by infections decreased rapidly.

2. Improved nutrition

Over the past two centuries **food supplies** improved, reducing the risk of starvation. Diets improved as new technology, such as **refrigeration**, allowed food to stay fresh for longer. As people had access to a wider variety of foods their bodies had more energy to grow and fight disease.

3. Cleaner water

In the 1800s scientists realised the importance of clean water for washing, drinking, and preparing food. Improved water quality reduced the spread of **germs**.

4. Improved sanitation

In the 1800s networks of pipes and tunnels were created to move toilet waste far away from drinking water. These **sewage systems** helped stop the spread of disease found in polluted water.

Figure 4 – Four key reasons for decreasing deaths.

Why is the global population unevenly distributed?

Many cities are built near the coast

For thousands of years people have decided to live at the **coast** (where land meets the sea). This is because coastal land is often flat and easy to build on. Also, being near water makes it easy to **trade** (buy and sell) goods. As a result, living near the sea can offer **jobs** and income (money). Over time, these benefits have attracted more people, causing large **urban** (built up) areas to form at the coast.

Figure 4 – Istanbul (Turkey), a coastal city.

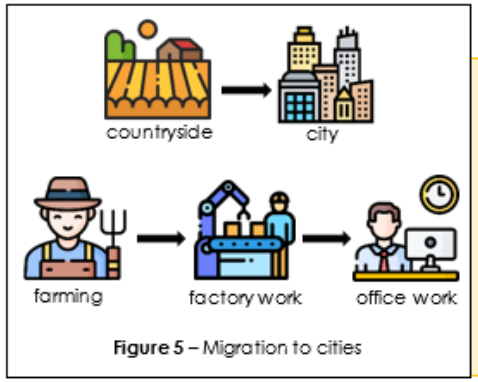

Figure 5 – Migration to cities

People move to cities for a better life

For most of human history, people lived in the countryside, often as poor farmers. When factories were built in the cities, many left the countryside in search of work.

As well as better incomes, cities often provided a better **quality of life**, e.g., **healthcare**. In Europe this happened around 200 years ago. In Asia it started around 50 years ago, and in Africa more recently. Today, **more than half** of the world's population lives in urban areas!

Some environments are too harsh!

For example, people find it difficult to survive and grow food in places with extreme temperatures like Antarctica (freezing!) or the Sahara desert (too hot!). Other places are too difficult to build on, for example mountains.

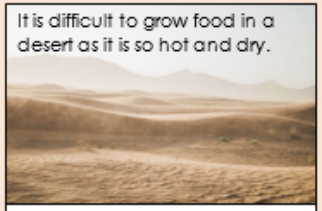

Figure 6 – Sahara Desert, Africa

Figure 7 – Himalayas, Nepal