5 The Four Domains of the Earth

Topics covered

- Hydrosphere
- Atmosphere
- Lithosphere
- Biosphere

Talk about this picture. It has things you can see. It also has things that you cannot see. Put a circle around the words that tell you about the picture:

water	houses	plants	air
birds	road	clouds	land
trees	car	sunlight	

Water, air, land and all living things make up the four **domains** of the earth. A domain is a region that has its own special features. The four domains of the earth are the hydrosphere, atmosphere, lithosphere and biosphere. In these four words, '-sphere' used at the end of the word means a region that surrounds a planet. Now read what these four domains are.

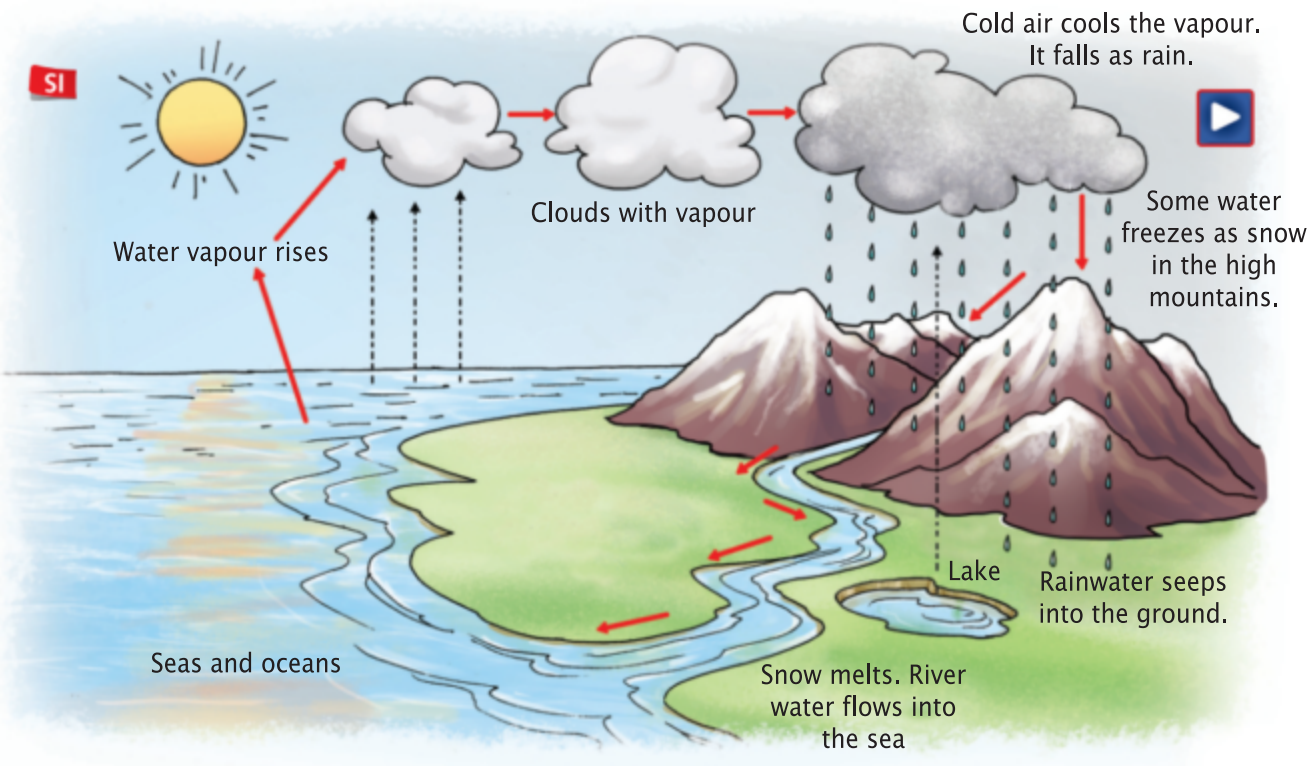
HYDROSPHERE

All the water on earth makes up the hydrosphere (hydro=water). As you learnt earlier, most of the earth's surface is water. Water is found in three forms—liquid water, ice and snow and water vapour—the gaseous form of water. When water is heated, it turns into water vapour. This is called **evaporation.** When water vapour cools, it turns back into water. This is called **condensation**.

Evaporation and condensation of water happen on earth. The sun heats up the water in the seas. It evaporates and forms clouds. The clouds move up, where it is very cold. Here the water vapour in the clouds cools. It changes back into water. This falls as rain. In very cold places it falls as snow. This is called **precipitation**. Some rainwater falls on the seas, lakes and ponds, some seeps into the ground, and some fills the rivers from where it flows into the sea. The sun again heats this water. This continuous change of water on earth is called the water cycle. The diagram explains this to you.

Discuss

Where have you seen evaporation and condensation in your daily life? (Hint: the kitchen.)



The water cycle

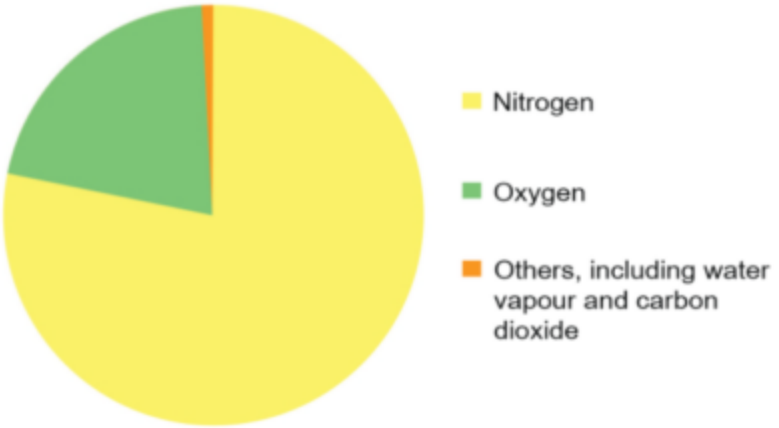
Water is essential for life to exist on earth. Living things cannot do without water.

SI **Discuss**

What are the different ways in which we use water?

ATMOSPHERE

As you know, the earth is surrounded by a layer of air called the atmosphere (atmos=vapour or gas). The atmosphere is made up of many gases. Of these, nitrogen is the most, followed by oxygen. Other gases, water vapour and carbon dioxide form a very small part of the atmosphere. The diagram on the next page shows you the composition of the atmosphere.



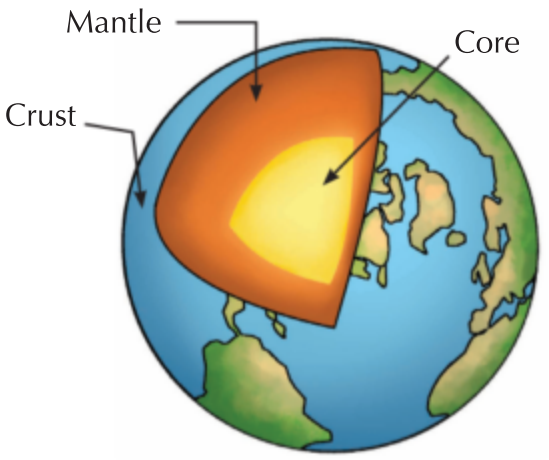
Gases in the earth's atmosphere

Did you Know?

Oxygen is also dissolved in the water found on land. Fish and other water creatures use this oxygen to survive.

- The atmosphere blocks out the harmful rays of the sun and only lets in rays that are necessary for living things.
- When we breathe in, we take in oxygen from the air. People and animals need oxygen to survive.

LITHOSPHERE



The three layers of the earth

The lithosphere is the solid part of the earth (lithos=stone). The earth has three layers—the crust, the mantle and the core.

The crust is the outermost part, the surface. It has water. It also has rocks and the soil that is formed when rocks break down over many hundreds of years. These form the lithosphere. The mantle is the next layer. Its upper part is hard rock, which too is part of the lithosphere. The innermost layer of the earth is the core. It is very hot. It is so hot that the rocks have melted! The lower part of the mantle, which is next to the core, is also **molten** (melted) rock. The molten rocks keep moving all the time, but we usually cannot feel this movement because it happens very slowly and gradually.

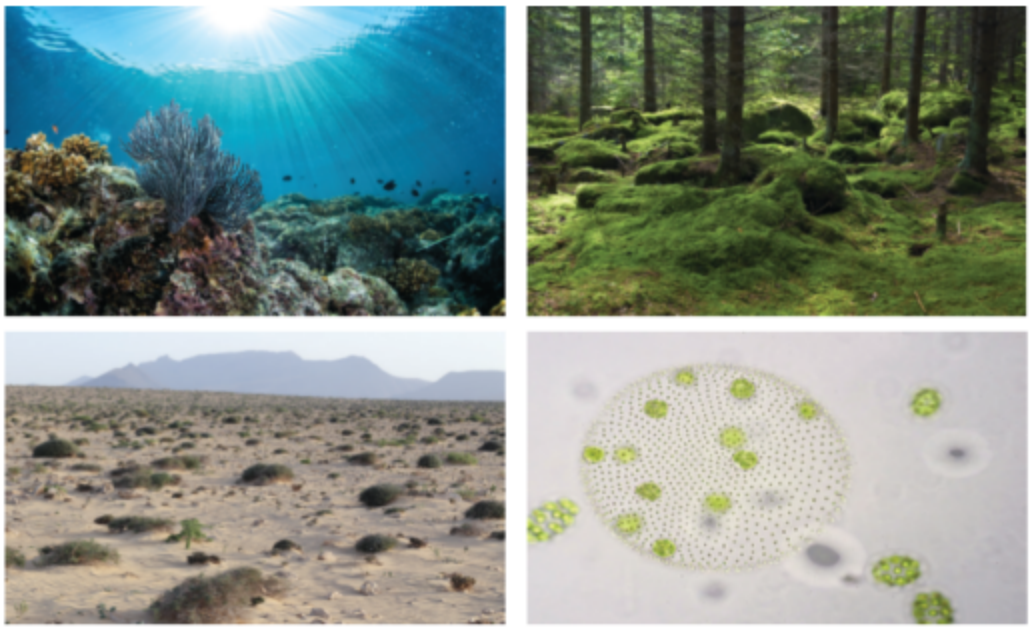
- Many essential things that we need, such as iron and coal, are found in the rocky layers of the earth.
- When rocks break down over hundreds of years, soil is formed. All plants grow in this soil.

Think and answer

Why is soil important? What would happen if there was no soil?

BIOSPHERE

The biosphere is the part of the earth's surface and atmosphere in which plants and animals can live (bios=life). Living things, from the smallest ones that we cannot see to big plants and animals, have their own special type of environment in which they can live and grow. This is called their **habitat**. The earth has many, many different kinds of habitats. The great variety of life on earth exists in these different habitats.



Four different kinds of habitats in the biosphere—underwater, jungle, desert and a watery one for tiny organisms that can only be seen with a microscope

Did you Know?

'Hydor' from which we get hydro, 'atmos', 'lithos' and 'bios' are all words from the Greek language.

Values and Life Skills

- Can you list two ways in which people depend on the four domains of the earth?
- Why should we take care of these four domains?

REMEMBER

1. The earth has four domains—the hydrosphere, atmosphere, lithosphere and biosphere. These make up our environment.
2. The hydrosphere, atmosphere and lithosphere contain numerous habitats.
3. The different habitats are essential for plants and animals to survive.

WORDS

Domain	a region of the earth that has its own special features
Evaporation	the process of a liquid changing or being changed into a gas
Condensation	drops of water that form on a cold surface when warm water vapour becomes cool
Precipitation	rain or snow that falls
Molten	melted
Habitat	the place where a particular type of animal or plant is normally found

EXERCISES

A. Match the following.

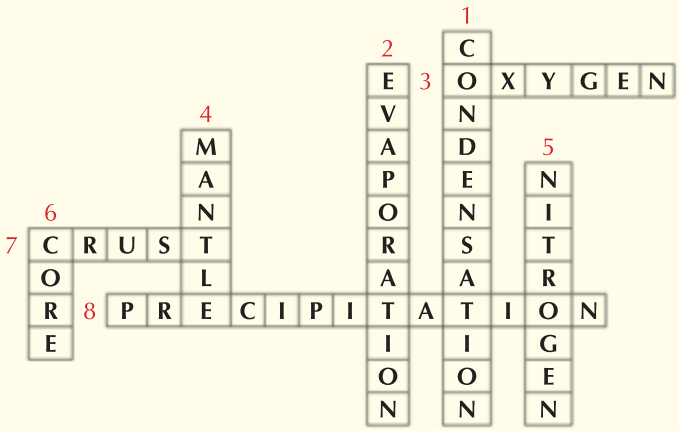
A	B
1. Hydrosphere	a. the solid part of the earth
2. Atmosphere	b. the part of the earth's surface and atmosphere in which plants and animals live
3. Lithosphere	c. all the water on earth
4. Biosphere	d. the layer of air surrounding the earth

B. Fill in the blanks.

1. The gaseous form of water is called ....
2. The .... keeps circulating the water on earth.
3. People and animals need oxygen to ..... .
4. The earth has ..... layers.
5. The place where a particular type of animal or plant is normally found is called its ..... .

C. Crossword

In your notebook, write clues for this crossword.



D. Choose the correct answer.

1. Water is found in **four**/**three** forms.
2. The largest amount of a gas in the atmosphere is **nitrogen**/**oxygen**.

3. The innermost part of the earth is **hard**/**molten** rock.
4. The earth has **many different**/**only a few** habitats.
5. Life is found on the **surface**/**mantle** of the earth.

E. Answer the following questions.

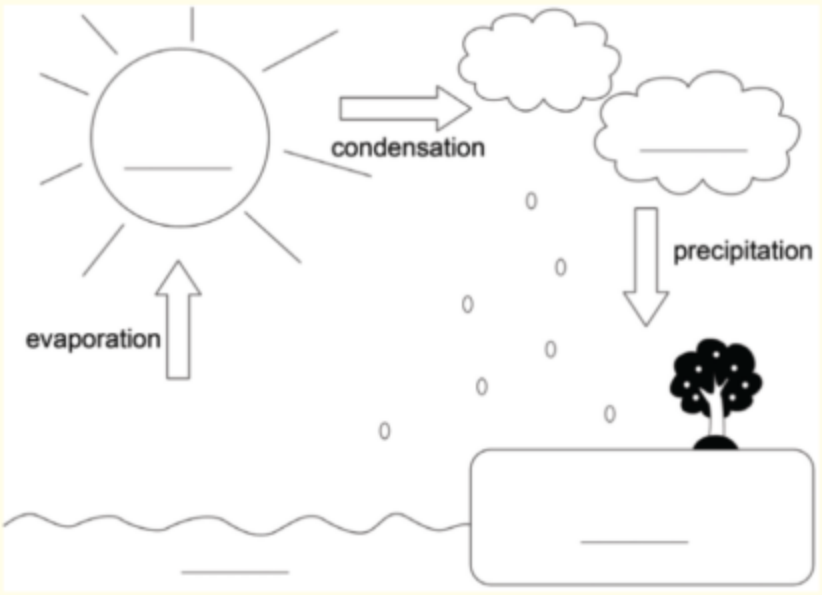
1. Why is the water on earth essential?
2. Give two ways in which the atmosphere is useful.
3. How is the lithosphere useful? Write in two or three sentences.
4. Write a short paragraph to explain how the biosphere depends on the other three domains of the earth.
5. Give three examples of habitats found on earth.

THINGS TO DO

SI

A. Picture study

1. What does this diagram show? .....
2. Label the blanks in the diagram.
3. Colour it if you wish.



B. On your own

Keep a week's diary to record the daily changes you notice in the earth's domains in the surroundings around your house. There may be changes in the atmosphere and the biosphere and also in the hydrosphere if there is any water in the area. There may not be changes in the lithosphere.

TP

C. In a group

Working in small groups, put together a presentation on a chart, a scrapbook or as a PowerPoint to explain the four domains of the earth.

TP

WEBLINK

The four spheres: https://www.youtube.com/watch?v=5FooHD0atuc (accessed on 27 July 2017)