



NATURE



GIRAFFE CONSERVATION FOUNDATION

WORKBOOK

Name:

Home
address:

Telephone
number:



Building a culture of environmental awareness, social responsibility and action, and equipping our future leaders with the skills to live sustainably for a better environment.

This Nature Workbook was developed by the Giraffe Conservation Foundation (GCF).

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GALANTHUS FOUNDATION

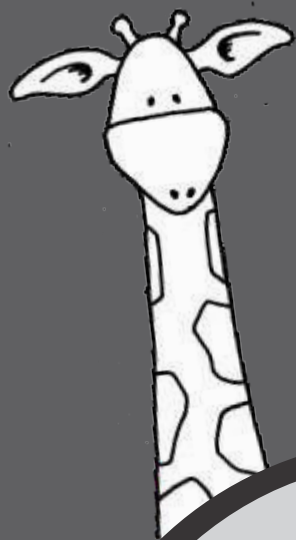
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thewaterloofoundation



NATURAL
SELECTION
SAFARI OF CHARACTER

OAK
FOUNDATION

Auckland
ZOO



**Hi!
I am
LOPIE**

I am from the Giraffe Conservation Foundation. Together with my colleagues, we protect and support the safety of giraffe in 16 African countries.

I am an Angolan giraffe. I live in the wilderness in the far north-western part of Namibia, where the rocks are a deep orange colour and most of the big trees grow on the banks of river beds.



We teach many children about their environment and the wonders of the natural world, as well as those things that threaten our natural world. In this Nature Workbook, we are going to share and explore lots of environmental facts and activities with you.

This is your own Nature Workbook. There are many drawings to colour in, interesting and wonderful things to learn and investigate, and exciting activities for you to do.

EXTRA PAPER OR NOTEBOOK

For some of the activities and investigations, you need extra paper or a notebook so that you can record your answers and drawings.



You can collect scrap paper and make it into a little notebook for yourself.

If you are unsure about what the underlined words mean, you can find their meanings in the glossary at the back of your workbook.



▶ Enjoy learning and exploring.

🌀 Do not hesitate to ask questions.

🐛 Be a part of looking after the environment around you.

QUIZ YOURSELF



How environmentally friendly are you?
(Tick your answers in the boxes.)

1 While brushing your teeth, do you let the water run?

- a) No ☐
- b) Sometimes ☐
- c) Yes ☐

2 Do you switch off the lights whenever they are not needed?

- a) Sometimes ☐
- b) No ☐
- c) Always ☐

3 Do you take your own shopping bags to the shops to avoid using single-use plastic bags?

- a) Yes ☐
- b) Sometimes ☐
- c) No ☐

4 Do you litter?

- a) Sometimes ☐
- b) Never ☐
- c) Yes ☐

5 Do you switch off the television and other appliances at the wall socket whenever they are not in use?

- a) Sometimes ☐
- b) No ☐
- c) Always ☐

6 How do you feel about insects?

- a) If they avoid me, I will avoid them ☐
- b) I do not like them, and sometimes I kill them ☐
- c) They are an important part of the natural world ☐

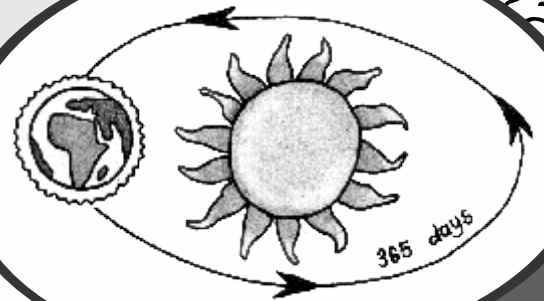
7 How many of the light bulbs in your home are low energy ones?

- a) All of them ☐
- b) None ☐
- c) Some of them ☐
- d) I do not know ☐



PLANET EARTH

- Our planet, Earth, is a very special place.
- In our solar system, there is a group of planets that travel around the sun; Earth is one of these planets.
- Earth is the third planet from the sun, and it is the fifth largest planet in the solar system.
- Earth travels all the way around the sun in 365 days – this is known as a Year (January to December).



Why is it so important to look after our planet?

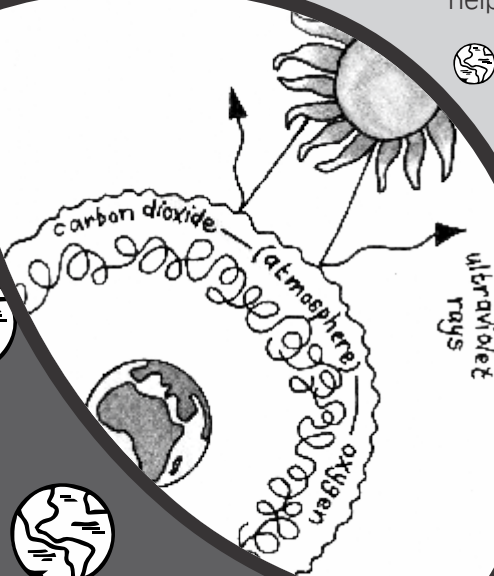
As far as we know, Earth is the only planet that supports life. This is because Earth has two very important things that all living creatures and plants need to survive: lots of water and an atmosphere.

- Earth is surrounded by a layer of gases called the atmosphere.
- The atmosphere is the air that plants and animals breathe. Air is made up of many gases, but the two most important gases are oxygen and carbon dioxide.
- The atmosphere is very important because it protects all life on Earth and helps it to survive.

- The atmosphere surrounds Earth like a big blanket. This blanket absorbs heat from the sun which helps Earth to stay warm.

- Some of the sun's rays are harmful; these rays are called ultraviolet rays. The atmosphere also protects Earth from the sun's harmful ultraviolet rays.

- The atmosphere also helps to stop most of the meteorites from hitting Earth. Meteorites (we also call them shooting stars) are lumps of rock that come from outer space. When these meteorites reach the atmosphere, most of the time they burn up. Sometimes though, they make it through the atmosphere but usually they are small, like a pebble.





DID YOU KNOW?



Up to 20 000 meteorites can fall to Earth each year. Luckily most of them are very small, like a pebble.



Earth is about 4.5 billion years old.



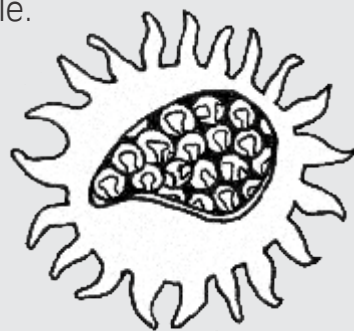
The sun is so huge that more than 1 million Earths could fit inside it.



The light from the sun takes about 8 minutes to reach us.



The sun is so far away that if you tried to drive there, driving at 100 kilometres per hour, it would take you 170 years to reach the sun.



It is very important to understand the natural world and how to keep it safe and healthy, because we have nowhere else to live.



INVESTIGATE

The atmosphere is divided into five layers.



Find out the names of these five layers that protect Earth, and how far up they are from Earth's surface. To start you off, the first layer is called the:

1. **Troposphere**, **18** kilometres from Earth's surface

2. _____ sphere, _____ kilometres from Earth's surface

3. _____ sphere, _____ kilometres from Earth's surface

4. _____ sphere, _____ kilometres from Earth's surface

5. _____ sphere, _____ kilometres from Earth's surface

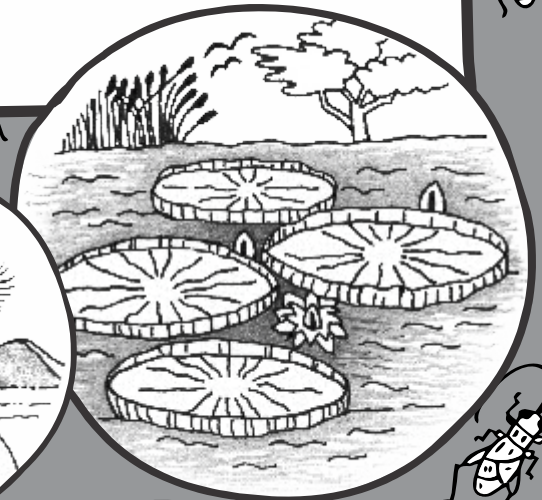
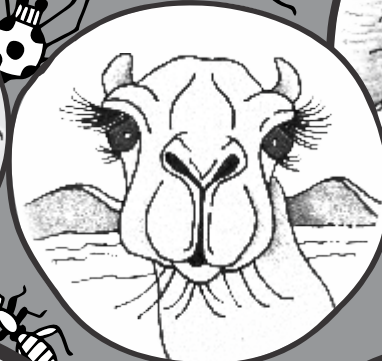
THE NATURAL WORLD

Life on Earth began millions of years ago.






The natural world is full of millions of different kinds of beautiful, amazing and surprising plants and animals that live in every corner of our planet.

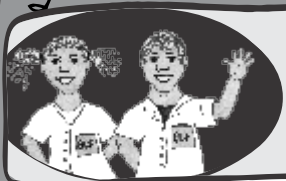
They range in size from tiny plants and animals that are too small to see with the naked eye, to large animals like the elephant and enormous trees like the Baobabs in Africa.

Whether these plants and animals live in the deepest, darkest parts of the ocean; in dry, sandy deserts; in wet, rainy forests; or in places with very cold winters and lots of snow, they have all found ways to survive.



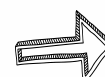
DID YOU KNOW?

-  The Fangtooth is a scary-looking fish that lives in the deep parts of the ocean. Their teeth are so long, they cannot close their mouths properly.
-  The Red Kangaroo in Australia can cover more than 8 metres in one leap.
-  Vultures can fly higher than the world's highest mountain. They can go as high as 11 kilometres, which is 2 kilometres higher than Mount Everest.
-  The Amazon water lily has enormous leaves. They measure 2 metres across, and they look like large plates floating on the water.
-  Camels' eyelashes are 11 centimetres long. Their long eyelashes stop the sand from getting into their eyes during windy desert sand storms.



INVESTIGATE

How many animals and plants do you know in your country?

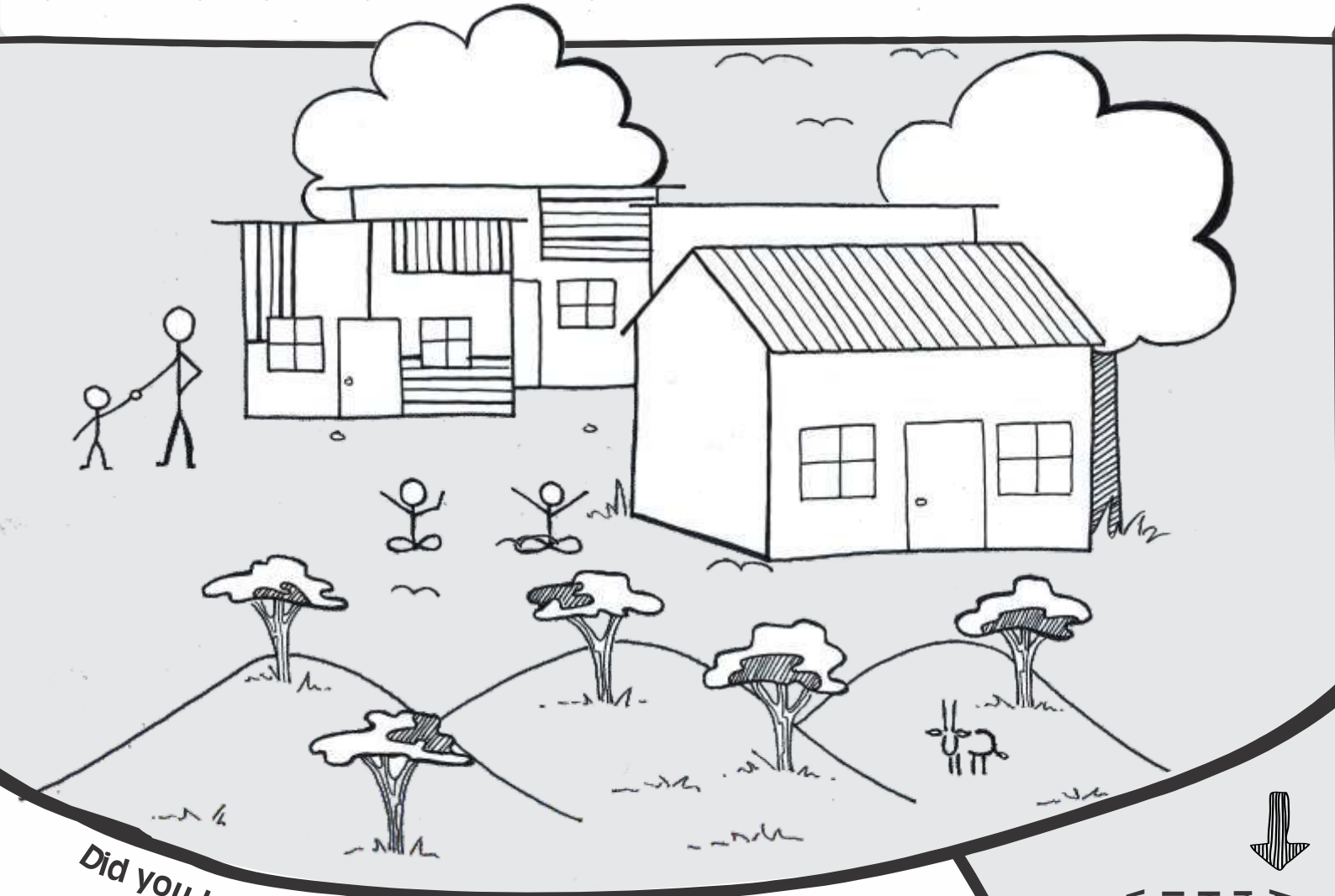


In your notebook, make a list of all the animals and plants you know about or have heard about in the area where you live.

ENVIRONMENT

What do you think of when you hear the word environment? Wherever you are right now, look around you...

An environment is where you are and everything that is around you. Your environment can be your home, your garden, your school, a hospital, or somewhere out in nature.



Did you know that different environments can change how you feel and how you do things?

look

touch

wet

cold

listen

smell

happy

feel

afraid

dry & warm

↓
An environment includes living, non-living and man-made things. How can we tell the difference? It is easy when we know what to look for.

LIVING THINGS

Living things are alive. They breathe, grow and use energy, and they adapt to their environment.

BIRDS

INSECTS

PLANTS

PEOPLE

ANIMALS

NUTRITION

All living things need food for energy. Energy allows humans, animals and plants to grow. Without energy, we would not be able to carry out our daily activities like running, playing, working and thinking. People and animals get energy from the food they eat. Plants make their food and energy by combining sunlight and carbon dioxide from the air with water and minerals from the soil (this is called photosynthesis).

GROWTH

All living things become larger in size. Think about how tiny you were when you were born, and look at yourself now. Think about the new green grass that grows after the first rains.

ADAPTATION

All living things are able to change according to the environment they are in. For example, when you are in a cold environment, you wear a jersey and long pants; when it is hot, you wear short-sleeved shirts. When it is too hot, some animals stay underground, hide in caves or lie in the shade; when it is very cold, most animals will find a comfortable place to bask in the sun. Plants like the Welwitschia have adapted to living in the Namib Desert: they have very long roots which are able to reach the water deep under the ground.

SENSITIVITY

All living things are able to sense what is happening in their environment. For example, living things respond to changes in sound and temperature; they react when they are touched; and plants will always grow towards the light.

REPRODUCTION

All living things are able to make new life (reproduce). Humans and animals give birth to babies, other creatures such as reptiles and birds lay eggs, and plants grow again in the next season from the seeds they have made.

MOVEMENT

All living things are able to move from one position to another. People move from one area to another. For example, on a school day, you leave home in the morning and travel to school. Animals move in the same way as people; they walk and run. Plants also move; their branches, stems, and leaves swing about when it is windy.

RESPIRATION - BREATHING

All living things need to get energy from food to stay alive. The process of producing energy is called respiration, and it is done by using oxygen. Humans and other animals need to breathe for respiration to take place. The oxygen that is breathed in joins with sugar inside the body's cells, and this makes energy. Fish do this by opening and closing their gills. When animals breathe in, they take in oxygen; and when they breathe out, they release carbon dioxide from the body. Although plants do not breathe the same way as animals, these gases still need to pass in and out of their leaves for them to stay alive. Plants are important because they use carbon dioxide and release oxygen.

EXCRETION

All living things are able to get rid of unwanted substances from their bodies. People and animals do this by pooing, peeing and sweating. Plants release unwanted substances through their leaves and stems.



NON-LIVING THINGS

Non-living things are not alive. They are found naturally in the environment.

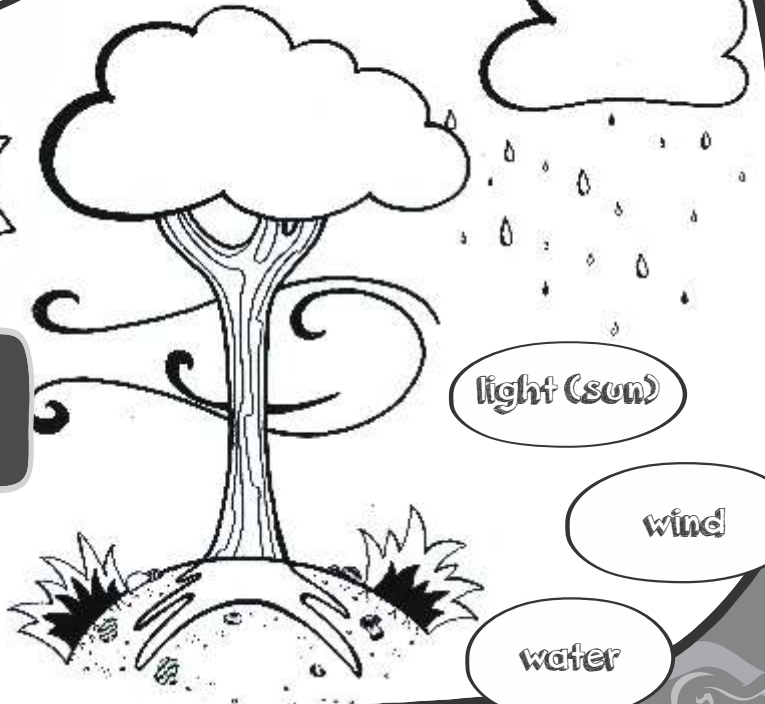
soil

air

temperature
(hot/cold)

Non-living things do not breathe, they are not made of cells, they do not eat and grow, they cannot feel, they cannot reproduce, and they do not need to adapt to the environment.

Non-living things are important because all living things need them to survive. For example, trees (living) need the soil (non-living) to be able to grow.



light (sun)

wind

water

MAN-MADE THINGS

Man-made things are also non-living, but they are NOT found naturally in the environment. They are here because people make them.

plastic bottles

cars

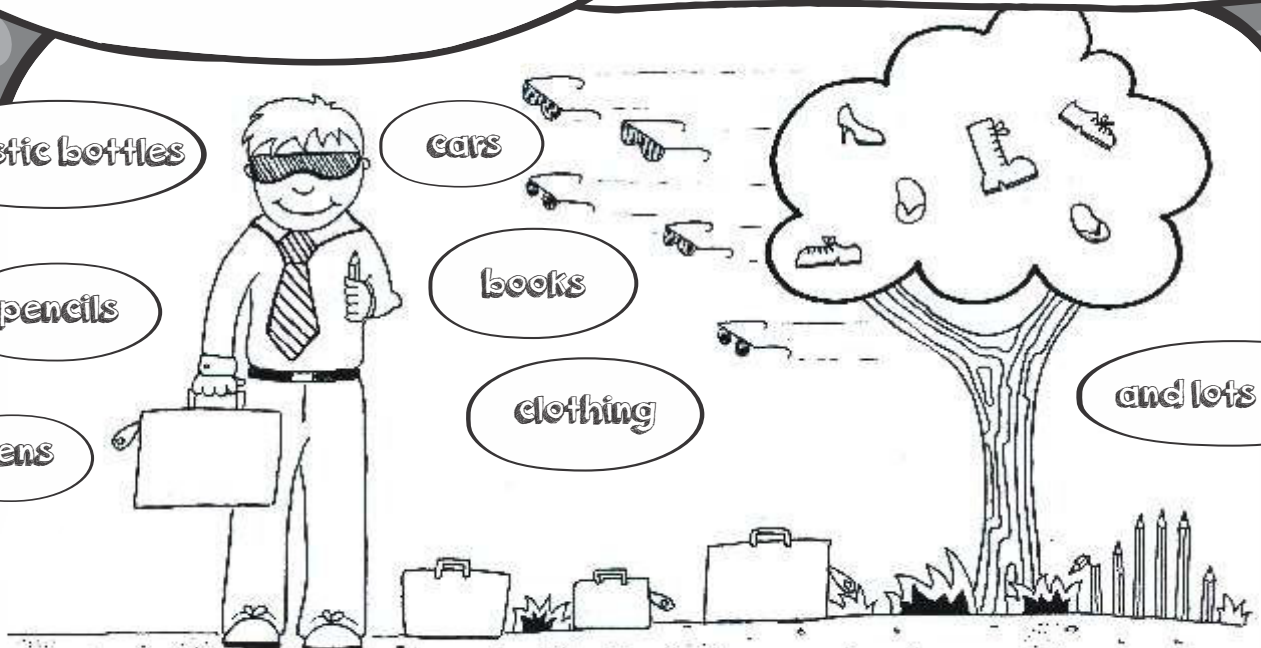
pencils

books

pens

clothing

and lots more



Some man-made things are **good**. They can help by keeping us and our environment healthy and safe. For example, **machines that measure the weather help us to know when big storms are coming and houses give us a safe place to live.**



Some man-made things are **bad**. For example, **litter and waste harm the environment and they can also make us sick.**

THE FIVE BASIC NEEDS

All living things have five basic needs. Without these, they would not be able to survive.



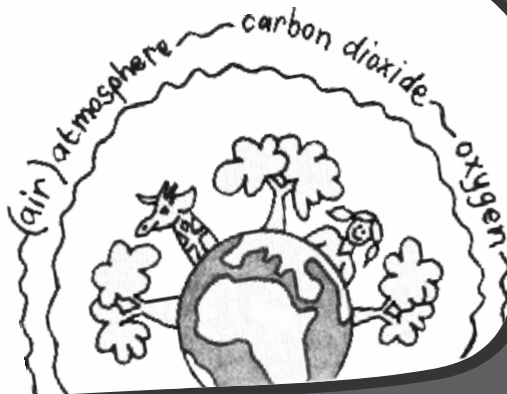
SUNLIGHT

This is probably the most important need for all living things because it is the source of all energy. Plants need sunlight for the energy it gives them to grow. Humans and animals need sunlight to survive, because it gives light, warmth and nutrients.

We also need sunlight to grow the fruit and vegetables that we eat.

AIR

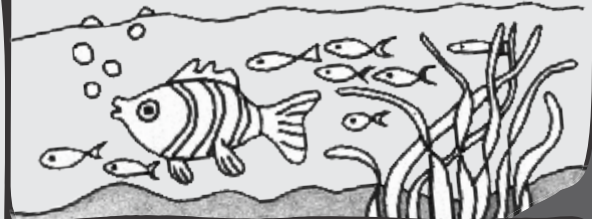
Air (the atmosphere) is made up of many gases, but the two most important gases are oxygen and carbon dioxide. Without oxygen, animals will die, and without carbon dioxide, plants cannot survive.



WATER

Animals need water so that they can perform important functions like digestion, and the cells in their bodies need water to work properly. Plants need water to grow and make seeds or fruit. Water is also home to many kinds of plants and animals.

If you think about humans and animals like fish, we all need water, but for different reasons. For example, we need to drink water to stay healthy and alive, and fish need water as a home.



FOOD

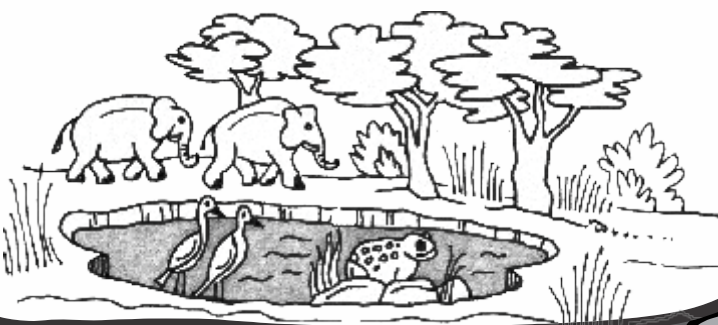
All living things need energy to be able to function properly. Energy is needed to grow, move and reproduce. Food gives us energy.

Think about what would happen if you did not eat for three days...



HOME

All living things need a home, a place where they have shelter and safety.



INVESTIGATE

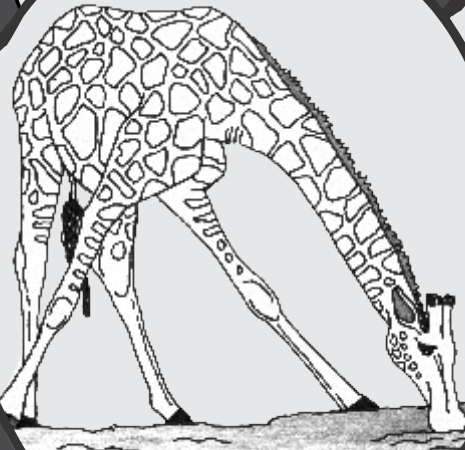
Be an artist!

- ➡ Look around you. Investigate, plan and draw your environment in your notebook.
- ➡ You could also give your drawing a heading, for example, My Environment.

Remember, an environment includes living and non-living things, and depending on the kind of environment, it can also include man-made things.

WATER

ALL LIVING THINGS NEED WATER TO SURVIVE



Many giraffe in different parts of Africa are able to live in a hot and dry environment. If giraffe get enough water from the food they eat, they can survive without drinking every day. People are not like giraffe, we can survive several weeks without food, but only a few days without water. We need to drink six to eight glasses of water every day to stay healthy!



WHERE DOES WATER COME FROM?

Like you, water is always moving and changing.

The water cycle is the constant circulation of water between Earth and the atmosphere.

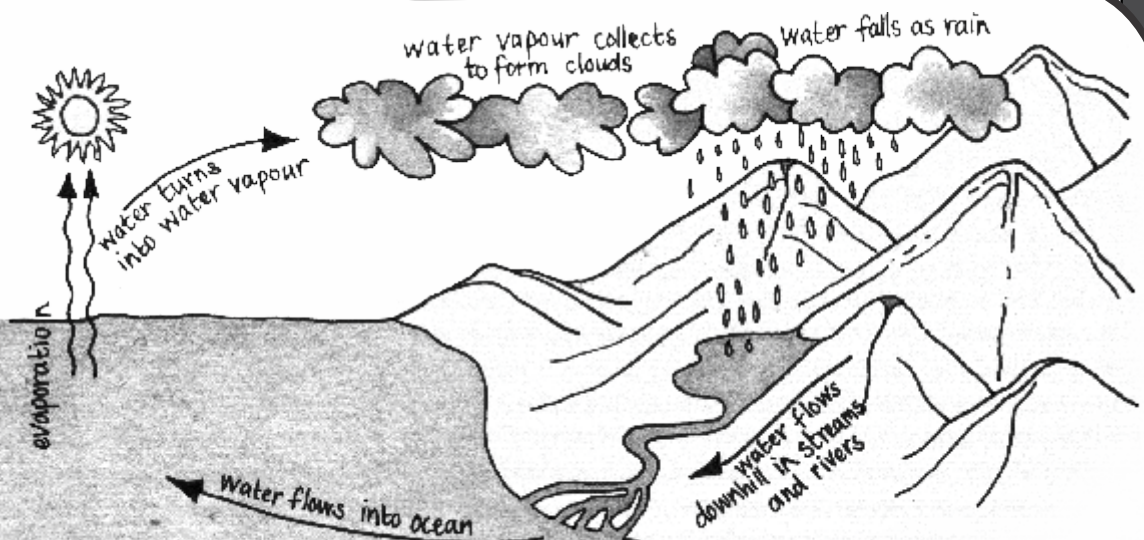
Water in the oceans, rivers and lakes is heated by the sun and then evaporates.

This evaporated water rises into the atmosphere as water vapour (a gas in the air). This water vapour then cools down, and changes from a gas into water droplets. These water droplets form clouds, and then fall back to Earth as rain. This rain runs into the oceans, rivers and lakes, and the whole cycle begins again.

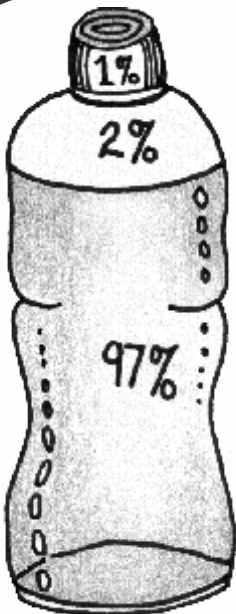
Our water is always there. There is no new water being made. Our water is the only water we have. Our water is simply the non-stop process of evaporation and rain going round and round in a cycle –

The Water Cycle.

THE WATER CYCLE



WATER ON EARTH



1% of the water on the planet is available for us to use, and we have to share it with all the other living creatures. Do you think this is enough water for all of us?

2% of the water on the planet is in the polar icecaps, where penguins (South Pole) and polar bears (North Pole) live.

97% of the water on the planet is in the oceans. Can we drink this water? No, sea water is salty!

DID YOU KNOW?



All the water on Earth has remained the same for about 2 billion years.

Wow, imagine, you are most probably drinking the same water that dinosaurs drank!



WHY IS RAIN IMPORTANT?

Rain is an important part of the water cycle. Unlike the salty water in the ocean, rain is fresh water.

Rain supports all life on land with salt-free water.

It provides water for plants to grow and animals to drink.

It fills rivers, dams and lakes, where many plants and animals live, and it also fills underground water systems.

When there is too little rain, it could cause drought conditions.

When there is too much rain, it could cause floods.

RAIN IN YOUR COUNTRY



INVESTIGATE

Some countries get more rain than others. Also, the rain inside one country does not always fall evenly. Think about your country. Find out whether some areas get less rain than others.

➡ Which area gets the most rain in your country?

➡ Which area gets the least rain in your country?

SAVE WATER

Turn off your taps properly and report burst pipes.

TREES and PLANTS

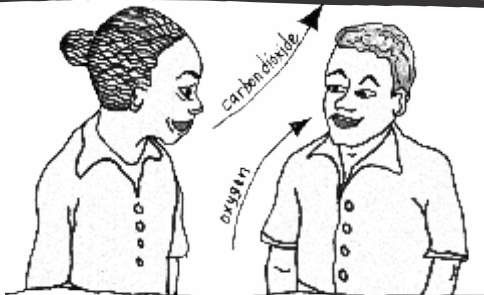
HOW DO TREES AND PLANTS HELP US TO BREATHE?

To be able to live and grow, trees and plants need soil, sun, clean water and clean air. Trees and plants are important because they provide shade and food, as well as homes for many kinds of birds, insects and small animals.

They also help us to breathe.

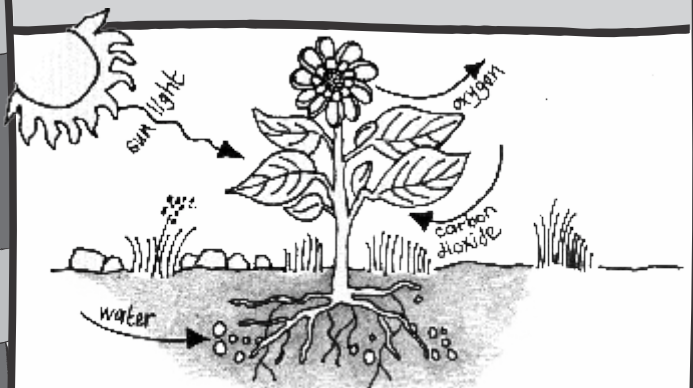
How does this work?

In order to survive, animals and humans breathe in air, which contains oxygen. During respiration (see page 6, Living Things), energy and a gas called carbon dioxide is produced. When we breathe out, this carbon dioxide is released into the air.



Animals and humans cannot use carbon dioxide, but trees and plants can.

During a process called photosynthesis, plants use sunlight, water and carbon dioxide to make their own food and oxygen.



So, in a way, it is a cycle. Plants help animals and humans breathe by providing oxygen, and animals and humans help plants 'breathe' by providing them with carbon dioxide.



ACTIVITY

GROW MORE OXYGEN

Be a provider! Even the smallest plant helps to provide more oxygen in the world. We would like you to grow a plant. It could be a vegetable like a tomato or something pretty like a sunflower plant.

- ➡ Find a pot or a container, some good soil, a container for water, and a healthy-looking seed.
- ➡ Fill your container with soil. Make sure that the soil is damp. Make a shallow hole in the centre of the container. Carefully place the seed in the hole and cover it up with loose soil. Keep the soil moist so that your plant can begin to grow.
- ➡ Once your plant begins to grow, do not forget to give it water and make sure it gets enough sun during the day.





INVESTIGATE

Be observant!



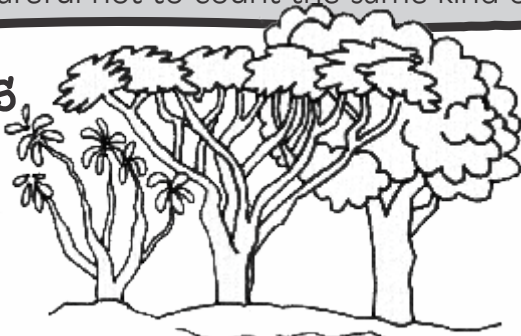
Look carefully at the plants and trees in your environment.



Count how many different kinds of trees there are, and how many different kinds of plants there are.

(Be careful not to count the same kind of tree or plant more than once.)

Trees



Plants



INDIGENOUS
AND
ALIEN

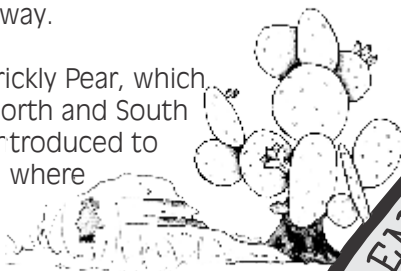
TREES
AND
PLANTS

There could be trees and plants growing in your country that do not belong there. If there are, these plants are called alien plants because they have been introduced from other countries and continents. Plants that belong naturally in your country are called indigenous plants. So, if you would like to plant one or several trees at home or at school, be sure to choose indigenous trees that belong in your country.

Alien trees and plants spread out in the natural environment where they steal growing space, water, nutrients in the soil and sunlight from the indigenous plants. This makes it difficult for indigenous plants to grow in a healthy way.

This plant is the Prickly Pear, which is indigenous to North and South America. It was introduced to Southern Africa, where it has become a serious problem

because it spreads very fast and steals growing space from indigenous plants.



ENDEMIC PLANTS

Plants that are found only in one particular area and nowhere else in the world are called endemic plants. A very good example of an endemic plant is the Welwitschia, which grows only in the Namib Desert in Namibia.



NUTRITION

NUTRITION IS THE FOOD WE EAT.

People are omnivores. This means that we eat fruit, vegetables and meat. Not everything we eat is good for us. We cannot live only on lollipops, biscuits, cake and soda cooldrink.

Eating the right food is very important because it keeps us healthy and gives us energy. Food gives us energy to do all the things that living things do – to grow, to reproduce, to move, and to learn.

WHAT ARE NUTRIENTS?

Nutrients are all the important things (like vitamins and minerals) found in healthy foods that keep you alive, healthy and strong. Water is also an important nutrient. More than half (70%) of your body is made up of water. Without water, your body is not able to use all the other nutrients, and you would die in a short time! Your body uses the food you eat as fuel to keep you going, just like a car uses fuel to keep running. But just like a car, you need to make sure you put the right fuel in.

ACTIVITY 1

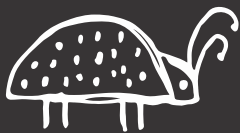
Below, there are good and bad foods floating around together.

- ➡ We would like you to cook a healthy lunchtime pot stew.
- ➡ Draw arrows from all the foods you are going to use to the pot.

ACTIVITY 2

DESSERT TIME!

- ➡ Look at the picture again.
- ➡ Draw a circle around all the healthy foods you can use to make a dessert.
- ➡ Pick your foods carefully – choose only those foods that are full of nutrients.



FOOD CHAINS

Where do you get your energy from?

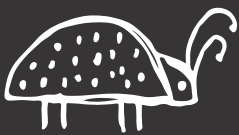
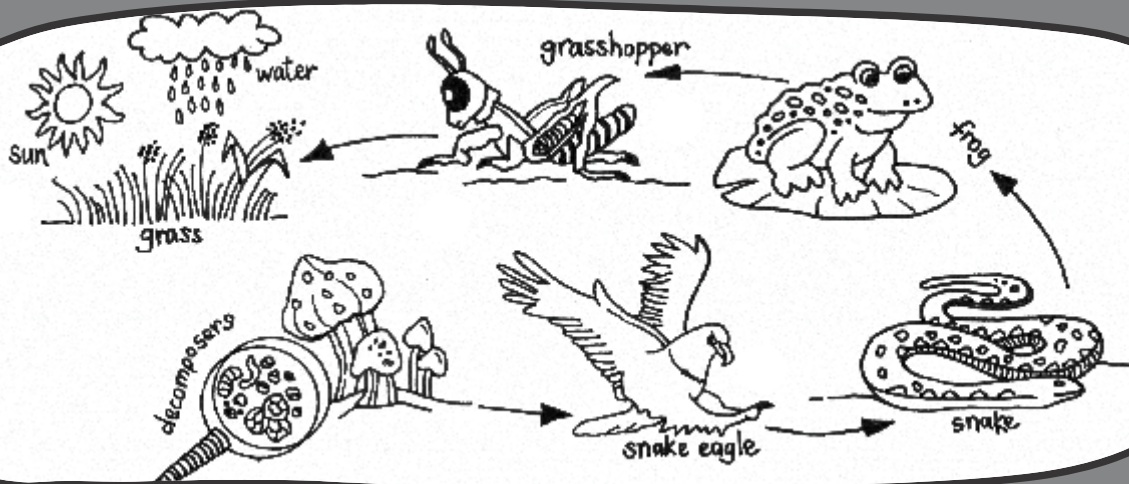
We get it from food. In nature it works the same way.

A food chain shows us how one living thing becomes food for another. Each living thing eats or decomposes the one that comes before it. This keeps energy flowing in nature.

Food chains always begin with plants.

Plants make their own food and they are called producers. Living things that eat other living things are called consumers.

Decomposers are the final stage in a food chain. Decomposers are bacteria, fungi and other small organisms that break down the tissues of dead animals and plants. This adds nutrients to the soil so that new plants can grow. Then the food chain starts again.

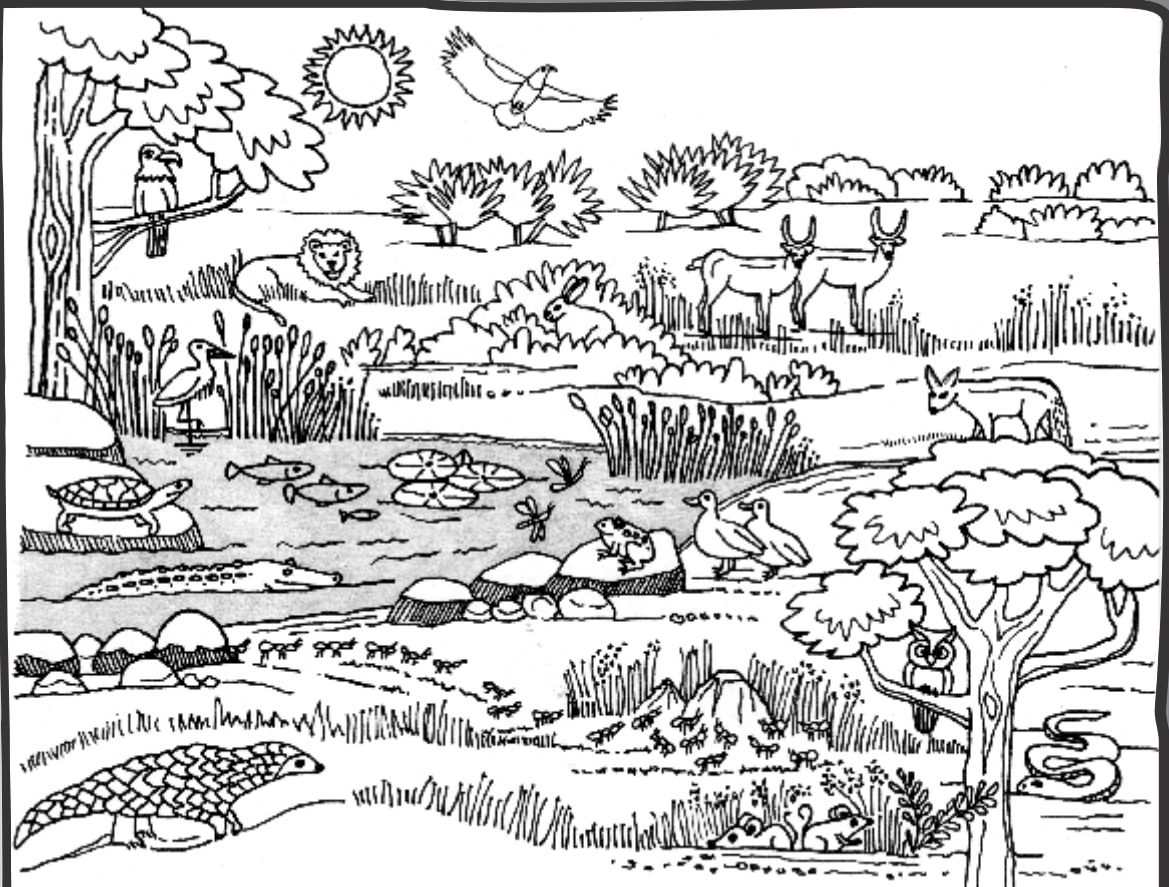


ACTIVITY

Be a builder!

➡ Study this environment.

➡ Look at who eats who or what. In your notebook, write down all the simple food chains you can find.



ECOSYSTEMS

What is an ecosystem?

What comes to your mind when you hear the word ecosystem?
Think of a community...

An ecosystem is a group (a community) of living and non-living things that interact with each other together in a particular area.

There are many different types of ecosystems, and they have no specific size.

Ecosystems can be large, but they can also be very small.

Large ecosystems are areas like a savanna (grassland), a desert, a forest, and the ocean.

Small ecosystems are areas like a pond, an individual tree, or a branch that has fallen on the ground.

The most important parts of an ecosystem are air (atmosphere), water, sunlight, soil, plants and animals.

They all work together, help each other, and depend on each other for survival. Everything in an ecosystem is balanced and connected.



HOW DO LIVING AND NON-LIVING THINGS INTERACT WITH EACH OTHER?

The atmosphere provides oxygen and carbon dioxide for all life on Earth.

Water keeps animals alive, it allows plants to grow, and provides a home for plants and animals.

Plants provide homes and food, and the **animals** form healthy food chains.

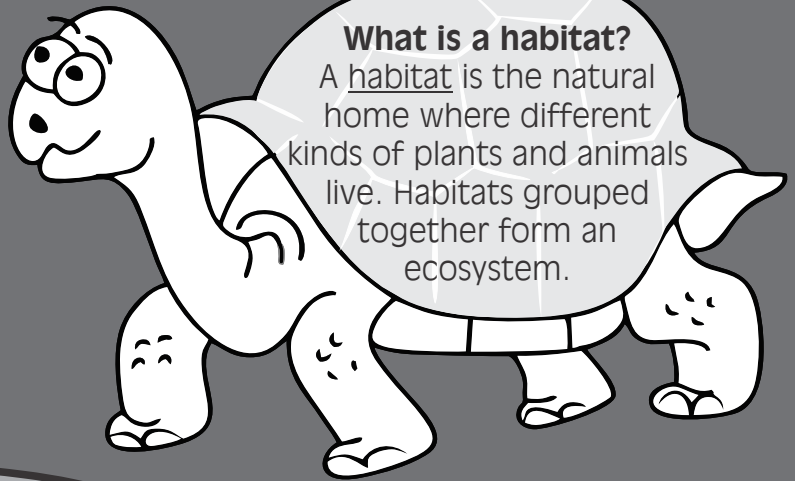


Sunlight allows plants to grow and make their own food, it keeps plants and animals warm, and it helps with the water cycle.

Soil provides nutrients for plants to grow, it holds water for plants to use, and it provides homes for animals that live under the ground.

WHY ARE ECOSYSTEMS IMPORTANT?

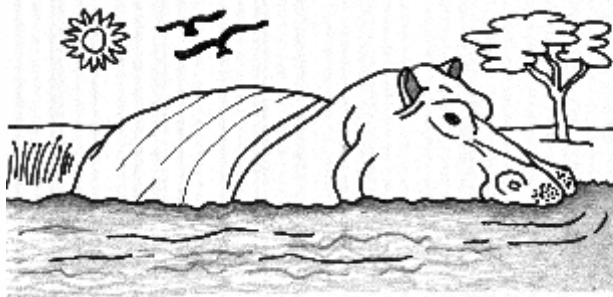
Ecosystems play an important role in an environment because they provide habitats, food, and the five basic needs that all living things need to survive.



ADAPTATION IN A HABITAT

Over long periods of time animals adapt to fit their habitat. This means that they have developed certain things that help them to survive where they live.

Animals adapt so that they can stay safe, travel well, and find food in their habitat.



- 🍃 Hippopotami do not have much hair on their bodies, so they stay in the water during the day and come out at night to eat.
- 🍃 During the cold winter months, animals grow thick coats of fur to keep them warm (like horses and donkeys).
- 🍃 Many animals that live in the snow have white fur so that their enemies cannot see them (like rabbits and foxes).

- 🍃 Tortoises have hard shells to keep in moisture and protect them from enemies.
- 🍃 Dolphins have long, sleek bodies so that they can swim fast.
- 🍃 Giraffe have long necks so that they can reach the leaves at the tops of trees.
- 🍃 Many desert plants have very hairy small leaves to protect them from losing too much moisture.



INVESTIGATE

BE A RESEARCHER!

- ➡ Find out how other animals and plants have adapted to where they live.
- ➡ Find out more ways that desert plants have adapted to their habitat.

(Ask your parents, teachers and friends, and record what you find in your notebook.)

BE AN EXPLORER!

- ➡ Visit a garden, a park, or any outside area.
- ➡ Look around carefully for a small ecosystem.
- ➡ When you find one, spend time watching the different living things. Notice what they are and what they do.
- ➡ Describe this small ecosystem that you have found in your notebook, and then draw it (remember to record the non-living things).

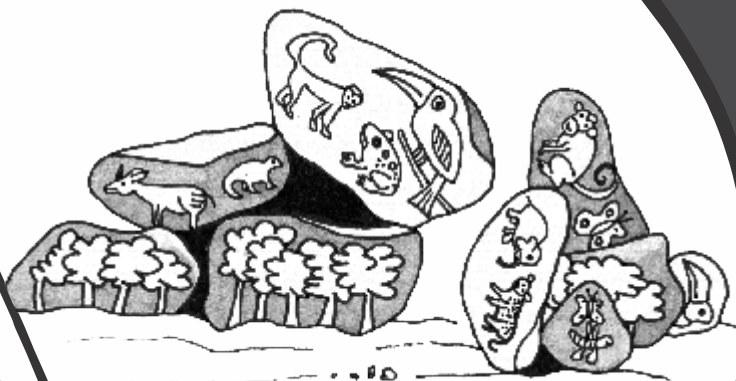
If you look closely, it is amazing what you can find!



When humans disturb, remove, or poison and pollute one part of an ecosystem, it will unbalance the balance of another part of the ecosystem, and sometimes even the whole ecosystem.

If you do not water the vegetable garden, all the plants will eventually die.

Some of the insects will also die,
and the other insects and
birds will have to move
somewhere else.



What happens to the rocks that are the animals, birds and insects when a part of the rainforest is removed? They fall to the ground, because they are no longer able to balance. This means that many of the animals, birds and insects die, and others are forced to move away to find new homes.

We need to look after our natural world because, remember, there is nowhere else for us to live.



INVESTIGATE


Be an ecosystem investigator!


➡ What human activities are harmful in an ecosystem, and how do they affect other parts of the ecosystem?

(Ask your parents, teachers and friends, and record what you find in your notebook.)



WORLD POPULATION and GROWTH

 The world population is the total number of humans living on Earth.

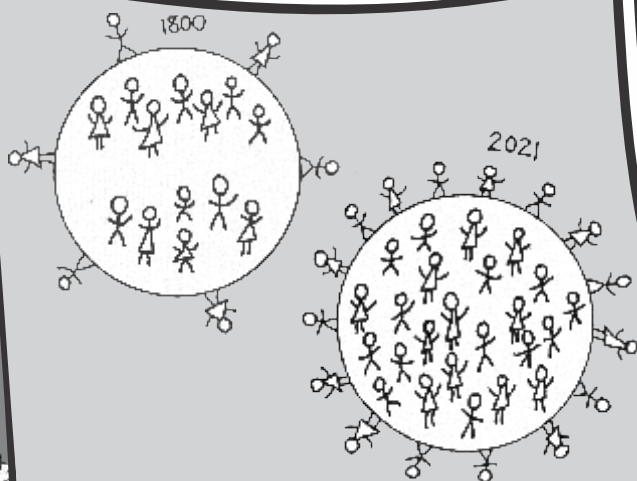
 Population growth is the increase in the number of humans in the world.



How many people are there in the world?

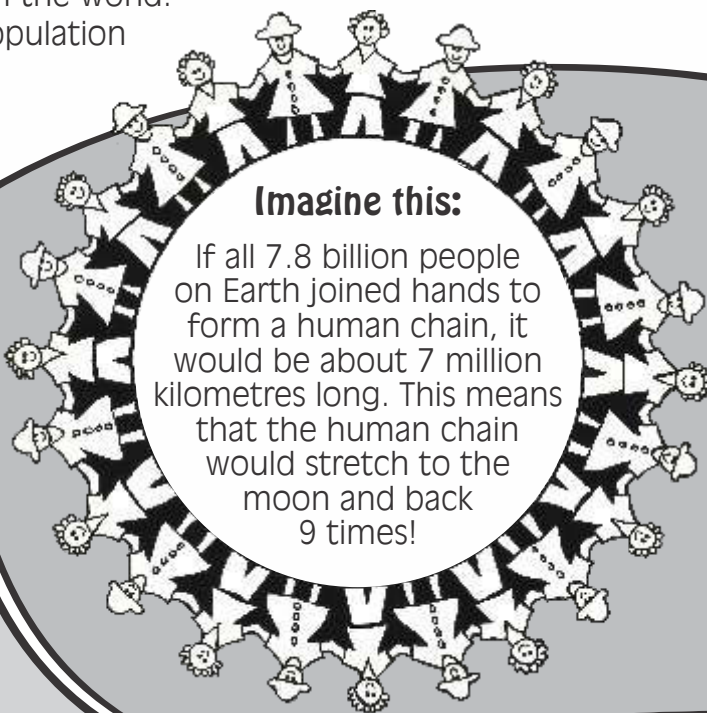
Today, in 2021, there are 7.8 billion people in the world. It took over 2 million years for the world's population to reach 1 billion people by the year 1800. But, it took only 221 years for it to reach 7.8 billion by the year 2021.

Wow, that was fast!



Imagine this:


If all 7.8 billion people on Earth joined hands to form a human chain, it would be about 7 million kilometres long. This means that the human chain would stretch to the moon and back 9 times!



DID YOU KNOW?




 The human population is growing fast.


 At the moment, in 2021:

- About 260 babies are born every minute.
- About 385 000 babies are born every day.
- About 140 million babies are added to the population every year.

Have you ever wondered whether there are too many people in the world?

What caused this fast population growth?

 Before the year 1800, people did not know much about medicine and growing their own food. When we discovered more about medicine and growing food, we started to live longer because we now have more food and better health care.

 Because people live longer, the number of children being born is more than the number of people who die.

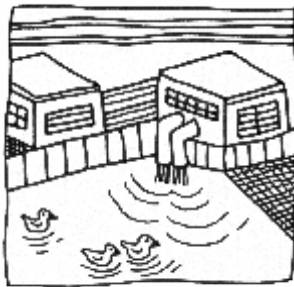
WASTE

WHAT IS WASTE?

Waste is all the unwanted things that we no longer need. They are thrown away or removed from where they are.

We throw away things like containers (these can be plastic, glass, aluminium or metal), cooldrink cans, plastic bags, cardboard packaging, paper and plastic wrapping, batteries, things that are broken (like furniture and electrical equipment), food waste from the kitchen, and this list really does go on and on...

Factories and warehouses also produce waste, which is called industrial waste. They remove waste like metals, used oil and chemicals, and smoke. Many factories pollute oceans, rivers, dams, and the air by pumping their waste into them.



DID YOU KNOW?

All of our man-made waste takes a very long time to break down and disappear.

- cooldrink can ➡ 140 years
- cotton t-shirt ➡ 2-5 months
- plastic bag ➡ 10-20 years
- nylon string ➡ 30-40 years
- foam cup ➡ 50 years
- glass bottle ➡ 1 million years
- throw-away nappy ➡ 450 years
- small battery ➡ 120 years

WHY IS WASTE A BIG ISSUE?

As the human population grows, so does the amount of waste that we create every day.

More and more people = More and more waste

Did you know that a lot of our waste gets dumped and buried in landfills all around the world?

If landfills are not properly organised and looked after, they can be very dangerous and harmful.

For example:

Electronic equipment like computers, televisions, mobile phones, batteries and fluorescent light bulbs are poisonous.

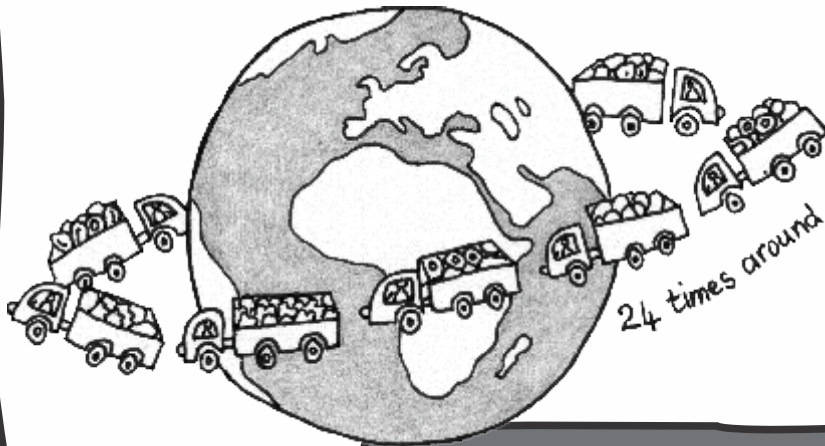
- They need to be separated and handled in the proper way.
- If they are just thrown into landfills, they release poisonous substances like lead, acids and mercury.
- These poisonous substances then leak into the soil and water around the landfills, which is very dangerous for the health of people, plants and animals.



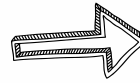
WHAT IS A LANDFILL?

A landfill is a large deep hole where waste is dumped and buried. Some landfills are properly managed, where harmful waste is separated.

HOW MUCH WASTE DO WE CREATE?



Remember, there are 7.8 billion people in the world today.



Every year, we create 2.12 billion tons of waste.

If all this waste was loaded into trucks, the trucks would form a chain that goes around the world 24 times.

WE ALSO CREATE WASTE BY LITTERING

What is littering?

Littering is when we throw our waste in the environment and do not dispose of it properly.

For example, littering is when someone throws an empty cooldrink can and chip packet out of the car window while travelling, or throwing a sweet wrapper on the ground while walking.



Litter is dangerous to life.

Litter can harm people.

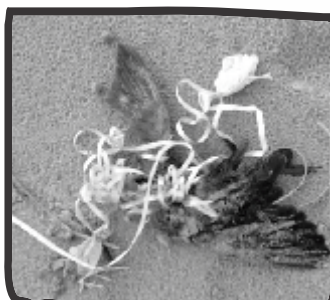
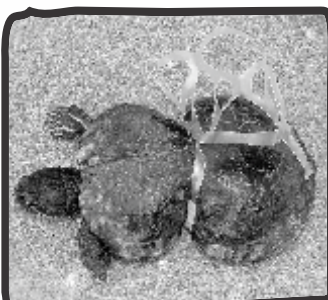
For example, you could cut your foot on an old rusty soda can or broken glass while playing barefoot outside.

Our litter harms or kills animals.

Every year, more than 1 million land animals, insects and birds, and water creatures such as dolphins, whales, fish and turtles die because of litter.

For example:

- ✦ They can choke or get very sick when they accidentally eat plastic things.
- ✦ They can get stuck inside plastic bags and suffocate.
- ✦ They can get tangled in fishing line, string, plastic wrapping and wire.
- ✦ They can get their heads or entire bodies stuck in containers.
- ✦ They can cut themselves on cans and broken glass.



HOW TO DEAL WITH WASTE

With so many people living in the world today, dealing with waste has become an even more difficult job for all cities, towns and communities.

To keep people and animals safe, all waste needs to be managed properly.

The big question is:

WHAT CAN YOU DO TO CREATE LESS WASTE?

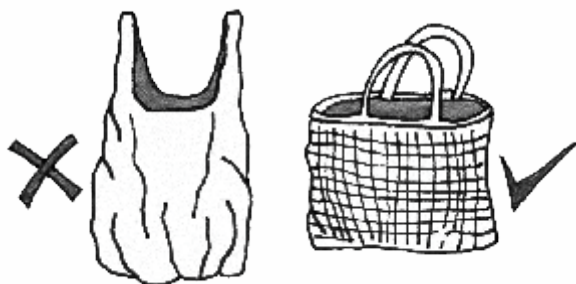
You can follow the **4 Rs**: Refuse Reduce Reuse Recycle

Refuse

means that if something is not necessary, you simply do not do it.

For example:

- ✗ Say NO to plastic bags when you go shopping – take your own bags or a basket.
- ⚠ Say NO to straws. Would you enjoy your cooldrink just as much if you did not use a plastic straw?
- Say NO to littering.

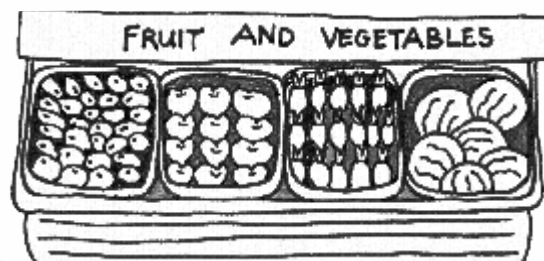


Reduce

means to lessen or lower the amount of waste you produce.

For example:

- > Buy bigger packages rather than lots of small ones. So, instead of buying a small bottle of cooldrink for each person, rather buy a large bottle of cooldrink that everyone can share.
- ☐ If you can buy loose fruit and vegetables, do this instead of buying those that are already packed in plastic bags.



Reuse

means to use something more than just once.

For example:

- Instead of just throwing away a juice bottle after drinking all the juice, you can reuse it as a water bottle.
- ☐ If you would like to use a straw to drink your cooldrink, think about keeping your own straw and reusing it.
- You can use empty containers to grow food plants like spinach.



Recycle

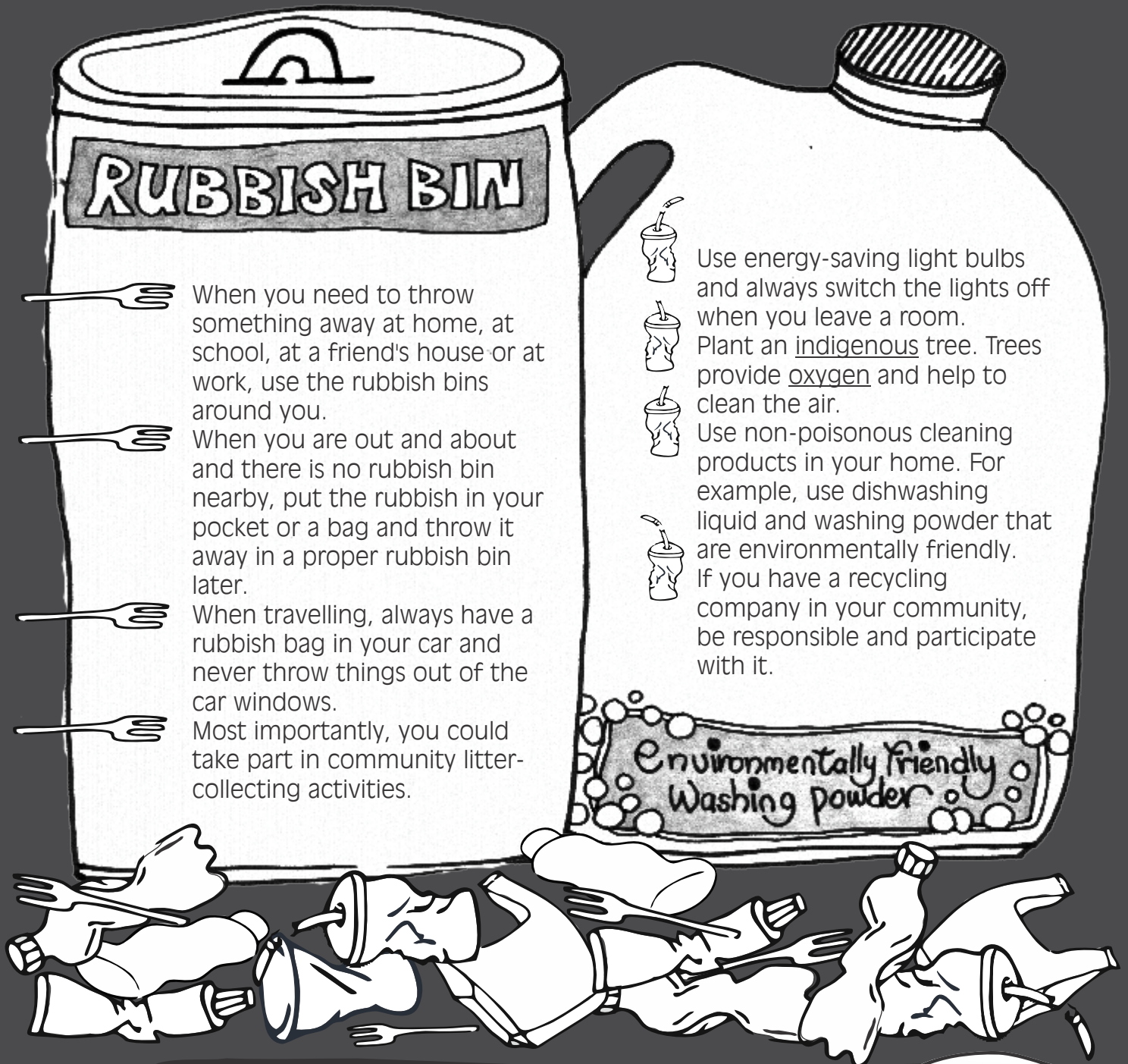
means to change something into something else that can be used again. In some towns and cities, waste material is collected for commercial recycling.

For example:

- You can make a swing out of an old car tyre.
- You can turn empty tea-bags into fire-balls to light a fire.
- ✗ You can use bottles and bottle tops to make musical instruments.



Now that we have explored the 4 Rs to help you create less waste in your everyday life, here are a few extra actions and ideas to help keep your environment safe and healthy.



When you need to throw something away at home, at school, at a friend's house or at work, use the rubbish bins around you.

When you are out and about and there is no rubbish bin nearby, put the rubbish in your pocket or a bag and throw it away in a proper rubbish bin later.

When travelling, always have a rubbish bag in your car and never throw things out of the car windows.

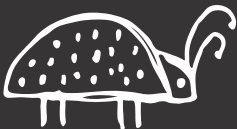
Most importantly, you could take part in community litter-collecting activities.

Use energy-saving light bulbs and always switch the lights off when you leave a room.

Plant an indigenous tree. Trees provide oxygen and help to clean the air.

Use non-poisonous cleaning products in your home. For example, use dishwashing liquid and washing powder that are environmentally friendly.

If you have a recycling company in your community, be responsible and participate with it.



ACTIVITY



Be an activist!

➡ Share and spread the news about waste and litter with your family and friends.


➡ Find out about whether there are any litter-collecting activities in your community. If there are, you could take part. If there are not, you could suggest to have one.


REMEMBER, EVERY ACTION COUNTS BECAUSE OUR WORLD COUNTS!


OCEANS


WHAT IS THE OCEAN?


The ocean is a huge body of salt water that covers about 71% of Earth's surface. The seven continents divide the ocean up into five different oceans, but it is still one connected ocean.

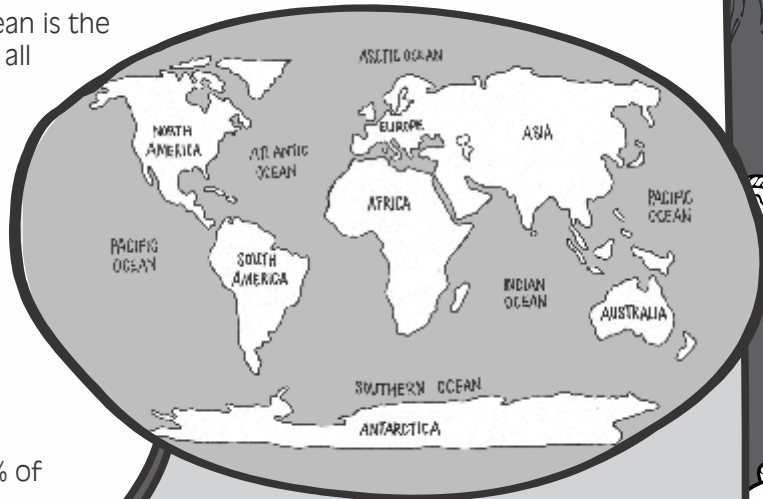
 The Pacific Ocean is the largest and deepest of all the oceans, and it covers more than 30% of Earth's surface.

 The Atlantic Ocean is the second largest ocean, and it covers about 20% of Earth's surface.

 The Indian Ocean is the third largest ocean, and it covers about 14% of Earth's surface.

 The Southern Ocean is the second smallest ocean, and it covers about 4% of Earth's surface.

 The Arctic Ocean is the smallest and shallowest ocean, and it covers about 3% of Earth's surface. This ocean is at the North Pole where there is no land, only floating ice.



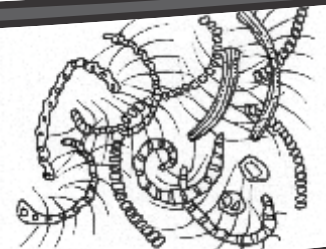
The ocean is the largest habitat on Earth, and it is home to nearly 95% of all life on Earth. Each ocean supports lots of different animals and plants. Apart from lots of different fish, seaweed and other sea plants, there are also many different whales, dolphins, sharks, turtles, stingrays, seals, sea lions, starfish, squids, jellyfish, octopuses, penguins and many more. The polar bears live on the ice in the Arctic Ocean.



Very important plants also live in the ocean; they are called phytoplankton. Phytoplankton float freely in the water, often near the surface to get sunlight. They are really tiny and we cannot see them with the naked eye. Like plants on land, they use carbon dioxide and release oxygen.

Why are phytoplankton important?

Phytoplankton are important because they are food for many different sea animals, including whales.



The ocean is the heart of the planet

WHY IS THE OCEAN IMPORTANT?

- ★ Phytoplankton produces up to 50% of the world's oxygen.
- ★ The ocean is home to nearly 95% of life on Earth.
- ★ The ocean absorbs heat from the sun and it absorbs carbon dioxide. This keeps the climate on Earth in balance.
- ★ The ocean is a source of food (fish, seafood and sea plants), job opportunities and relaxation for people.

HOW DO OUR ACTIVITIES HARM THE OCEAN?

- Many ocean habitats have been harmed in some way or destroyed because of drilling and deep-sea mining.
- Many dangerous waste chemicals from industries on land are pumped straight into the ocean and into rivers and dams, which find their way into the ocean. This is called pollution. The ocean animals are either killed immediately because they take the chemicals into their bodies, or they are harmed in such a way that they cannot function properly anymore.
- Oil spills from ships still happen all over the world. The oil covers the surface of the ocean, where it harms sea birds, and then it sinks down and kills ocean plant life and a wide variety of fish and other sea animals.
- Global warming is raising ocean temperatures, and increasing the water level because the ice at the South and North Poles is melting.
- Large-scale overfishing has almost destroyed certain local fish stocks, which leaves too few adult fish to breed for the future.

DID YOU KNOW?

80% of all waste and pollution in the ocean comes from land activities. 8 million metric tons of plastics are dumped into the ocean every year. Plastic waste kills up to 1 million sea birds, 100 000 sea animals and countless fish each year.

Litter in the ocean causes a lot of damage, especially plastic. A lot of this litter is carried to the ocean from land by wind and rivers. Some countries also deliberately dump huge amounts of their waste into the ocean. In the sea, plastic takes a very long time to break down. Sea animals get tangled up in the plastic and strangled to death, or they eat it and choke to death.

WHAT CAN WE DO TO HELP LOOK AFTER OUR OCEANS?

- Stop using plastic things such as single-use bags, straws, cutlery, cups, water bottles and balloons.
- Can you think of any other plastic things to add to this list?
- Help to clean up. Get involved in or organise clean-up activities in your community.

DID YOU KNOW?

The longest mountain range in the world is in the ocean. It is called the Mid-Oceanic Ridge. It runs through the middle of the Atlantic Ocean, and then into the Indian and Pacific Oceans.

DESERTS IN AFRICA



WHAT IS A DESERT?

A desert is a place where very little rain falls. They are the driest places on Earth. Deserts are made up of hilly and flat areas of rocks and gravel, as well as sand dunes. Some deserts have larger areas of sand dunes than others.

Sahara Desert

This is the largest desert in Africa. This desert is in the northern part of Africa, and it exists in 11 different countries: Egypt, Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Sudan, Western Sahara and Tunisia.



Namib Desert

This desert is in Namibia. It is the oldest desert in the world, and it is the second largest desert in Africa.



Kalahari Desert

This desert lies in the heart of Southern Africa. It exists in three countries: Namibia, Botswana and South Africa.



ADAPTATION IN A DESERT

Desert environments have very little rainfall, water and plants, and they have very hot and cold temperatures. Many different animals and plants have had to adapt to be able to live in desert environments. This means that they have developed certain things that help them to survive.



Many desert plants have long tap roots that help them to get water from deep, deep down under the ground. The Welwitschia in the Namib Desert has roots that can grow to 30 metres deep.



Cactus plants have fat stems that store water. Instead of leaves they have thorns (too much moisture gets lost through leaves).



Animals hide in shady places or dig themselves into the sand during the heat of the day, and they only come out at night when it is cooler.



The camel can drink up to 45 litres of water at once, and then go for a week or more before drinking again.



ACTIVITY

→ Draw a line from each animal to its correct adaptation for survival in a desert.

Desert Mice



Chameleons



Sociable Weaver Birds



Sidewinding Snakes



Fogbeetles



Desert Cactus



A Instead of leaves, they have thorns. When it rains, they store water in their fleshy stems.

B They build large communities of joined nests. These villages of nests stay cool in the day and warm at night.

C In the early morning, they crawl up the dunes. They do a headstand, raise their bottoms upwards, and wait for the morning fog. When the fog arrives, it collects on their bodies and rolls down to their mouths so they can drink.

D They live in burrows under the ground, and only come out at night when it is cooler to feed on plants.

E To keep cool during the heat of the day, they change their skin colour to a lighter colour to reflect more sunlight.

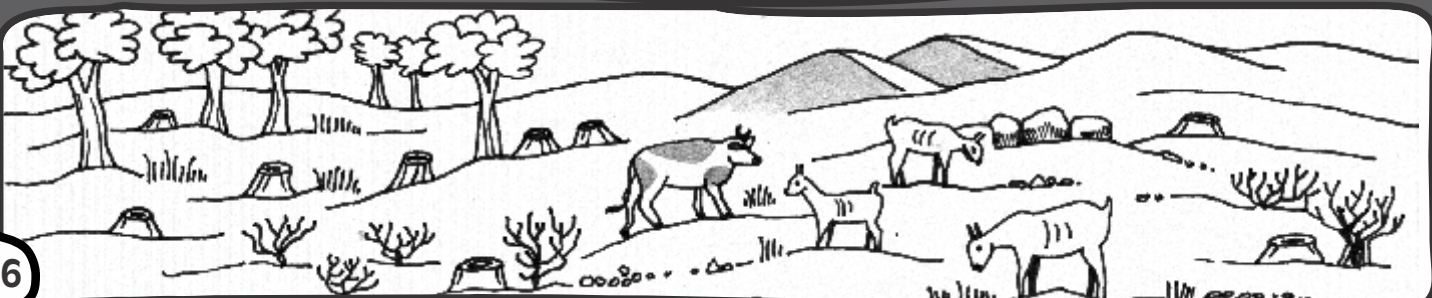
F So that only small parts of their bodies touch the hot desert sand while moving during the day, they bounce themselves sideways and very fast.



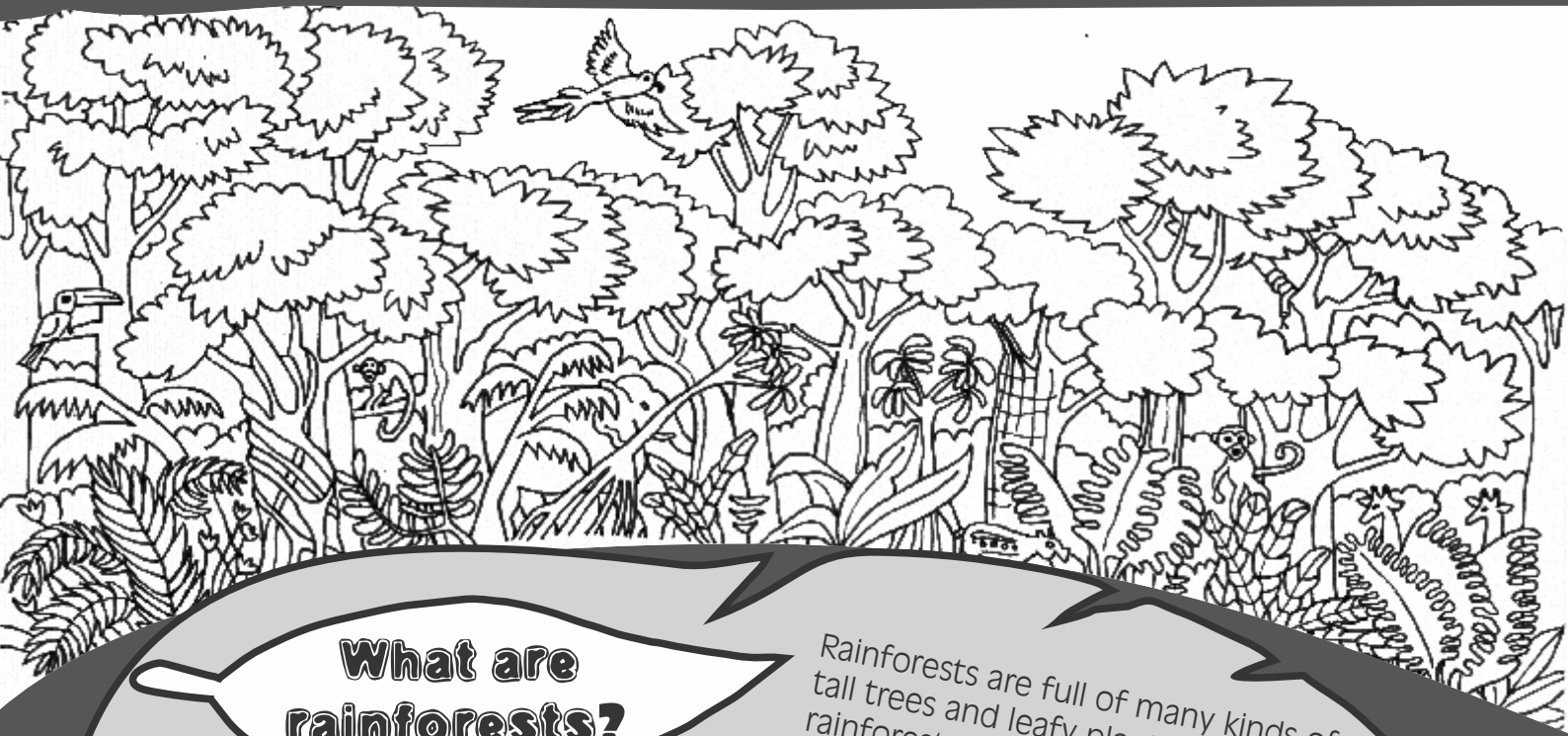
DID YOU KNOW?

- ☞ Not all deserts in Africa are natural.
- ☞ Some deserts are man-made. They have been created by people.
- ☞ When too many trees are chopped down in already dry areas for cooking fires, building material and to make space for growing crops, the soil is blown away by the wind and washed away when it rains. Chopping down too many trees is called deforestation.
- ☞ When too many sheep, cattle and goats eat the grass and plants

in an area that does not have enough, the grass and plants cannot grow faster than they are eaten. This is called overgrazing.
 ☞ Deforestation and overgrazing lead to desertification (man-made deserts).
 ☞ Desertification is one of Africa's biggest problems.
 ☞ When there are too many people living in dry areas, it can cause man-made deserts.



RAINFORESTS



What are rainforests?

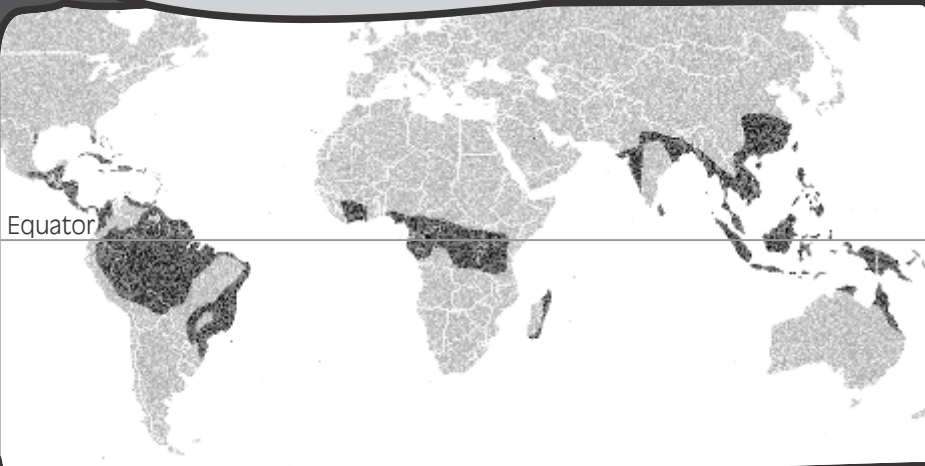
About 80% of life in rainforests can be found in the canopy. The canopy is where the branches and leaves of the highest trees join together to form a kind of umbrella. Animals move around the canopy by flying, jumping or swinging. Bigger animals like the jaguar (a cat) and forest elephant live on the ground under the canopy.

Rainforests are full of many kinds of tall trees and leafy plants. They are called rainforests because they get a lot of rain every year, which helps the plants to grow very fast. Because rainforests are warm, very wet and so full of trees and plants, they are also full of life. Millions of different fascinating, beautiful and interesting animals live in them.

Are rainforests in trouble?

Yes, rainforests are in trouble. Rainforests in many parts of the world are being destroyed because of mining and the building of roads. Their trees are being chopped down for building and furniture, to make space for people to live, and to make space for cattle and crop farms.

Most rainforests are found near or along the equator (where it is warm) in South America, Central America, Africa, Asia and Australia.



WHY IS IT IMPORTANT TO PROTECT RAINFORESTS?

- Half (50%) of all the land plants and animals in the whole world live in the rainforests.
- About 20% of the medicines we use come from plants in the rainforests.
- They produce 20% of the oxygen that humans and animals need to breathe.
- They help to look after the world's climate by bringing rain.
- They absorb lots of carbon dioxide, which is good because too much carbon dioxide in the atmosphere will make the planet too hot.



DID YOU KNOW?



Rainforest trees are very, very tall. Some of the trees can grow up to 50 metres tall. Because rainforest trees are so tall, they also have enormous roots to support them.



Rainforests are so thick and full of plants and trees, that it can take 10 minutes for a raindrop to travel from the canopy through to the forest floor.



In the Amazon rainforest in South America, there is a wonderful, strange creature called the sloth. Sloths move very, very slowly. They spend most of their time up in the canopy, moving through the trees using large hooked claws to help them along. They eat leaves and fruit. They sleep up to 15 hours at a time. They go down to the forest floor once a week to go to the toilet.



Every hour, a piece of rainforest the size of 4 000 soccer fields is destroyed.



If we do not stop destroying the rainforests at the speed it is happening now, they will be completely gone in 100 years.



INVESTIGATE

Be a researcher!



Try to find out more about some of the fantastic animals that live in our world's rainforests.

GLOBAL WARMING

Did you know that our world is getting warmer?

What is global warming?

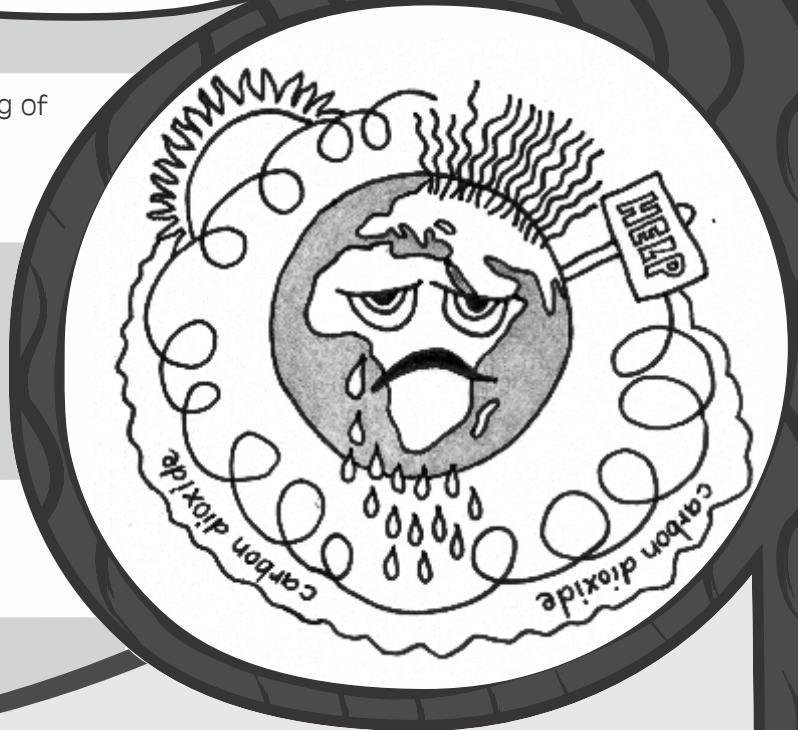
Global warming is the term used to describe the rising of Earth's overall temperature.

Because of some of the things humans do, Earth is getting warmer and warmer every year.

Remember we looked at how the atmosphere works like a blanket to keep Earth warm? Carbon dioxide, water vapour and other gases are all part of the atmosphere. They are important because they trap heat from the sun before it escapes back into space. This trapped heat helps to keep Earth warm. If this heat is not trapped, Earth would be too cold for us.

Remember we looked at why carbon dioxide is important? Plants use carbon dioxide, sunlight, and water to make their own food and oxygen.

But, too much carbon dioxide in the atmosphere will trap too much heat. Too much heat will raise Earth's temperature.



What causes too much carbon dioxide in the atmosphere?

We need to look at FOSSIL FUELS

Fossil fuels are oil, natural gas and coal. Oil, natural gas and coal are formed deep under the ground over millions of years. They are made from the remains of plants and animals.

We use oil, natural gas and coal to create electricity to run things like our fridges, lights, televisions and kettles, and to create petrol and diesel to run aeroplanes, cars and trucks.

When we burn these fuels, carbon dioxide is created and it is released into the atmosphere.

Remember, carbon dioxide traps heat in the atmosphere.

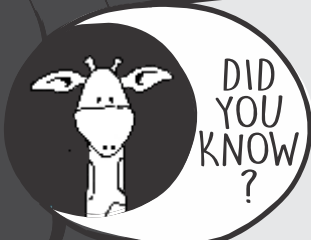
So, too much carbon dioxide will raise Earth's temperature.

➡ Because we are 7.8 billion people in the world, we use more electricity, we drive more cars and trucks, and we fly more aeroplanes.

This means that we need to burn more fossil fuels to make more electricity and diesel and petrol. Burning more fossil fuels means that we are making more carbon dioxide.

➡ Remember the rainforests? Because the trees and plants remove carbon dioxide from the atmosphere in order to make their own food, they keep the amount of carbon dioxide in the atmosphere in balance. If we keep chopping down trees, there will be more carbon dioxide in the atmosphere.

➡ Too many bush fires, burning too much wood for cooking, and too much factory smoke also create more carbon dioxide.



Because they take millions of years to form, fossil fuels cannot be replaced fast enough once they have been used.



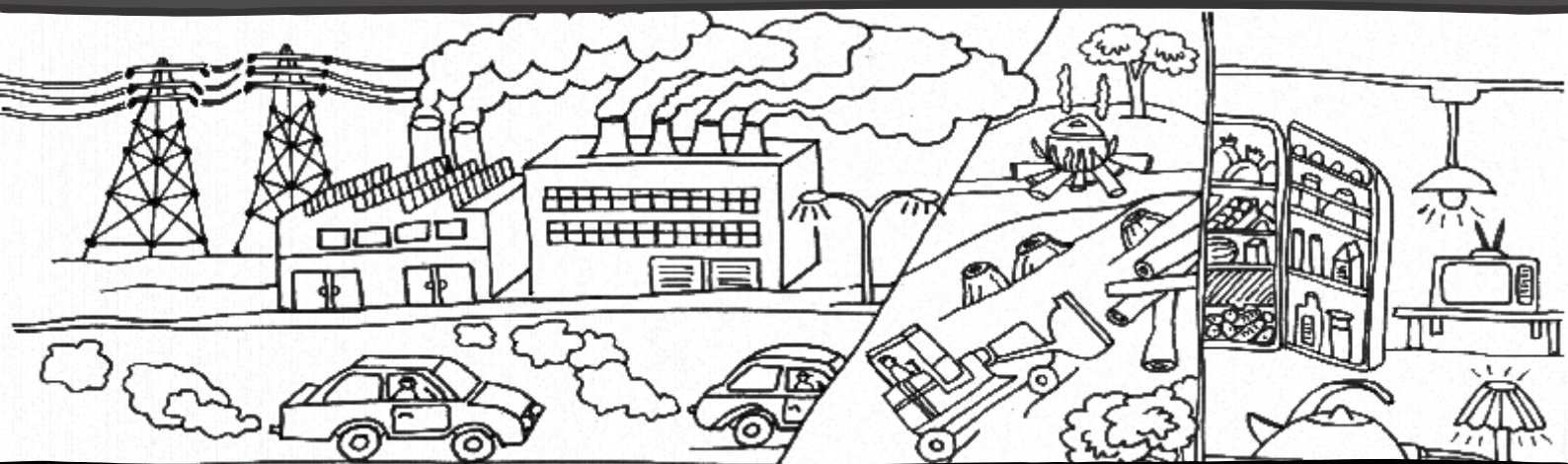
Soon, they will run out.



Fossil fuels cannot be replaced in our lifetime, nor in many, many lifetimes.




Global warming is a very serious problem in our world today.





WHAT HAPPENS WHEN EARTH'S TEMPERATURE GETS WARMER?

When Earth's temperature changes, even if it is a small amount, it can have a very harmful effect on the environment.


 The ice at the North and South Poles will begin to melt (like an ice-cream in the sun).

 When this ice melts, the amount of water in the oceans will increase.

 Many towns and cities that are near the sea could be damaged or destroyed by floods.

 Many animals will move when their homes become too hot.

 Some plants and animals might even die.

 These changes will also unbalance many food chains.

WHAT CAN WE DO?

The most important thing we need to do is reduce the amount of carbon dioxide that we are releasing into the atmosphere.

We need to:



reduce the amount of open fires and how much wood we burn



reduce the amount of electricity we use (for example: stop leaving lights and televisions on when they are not needed)



use other environmentally friendly supplies of electricity that do not use fossil fuels (for example: solar/sun power and wind power)



use a solar/sun oven on sunny days to cook your lunch and dinner



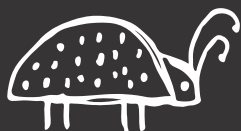
use wood-friendly cooking stoves that use less wood



stop chopping down trees and forests



grow more trees



ACTIVITY

TEST YOUR KNOWLEDGE (Tick the box for your answers.)

1. What is global warming?

- a) Ultraviolet rays from the sun ☐
- b) The increase in Earth's overall temperature ☐
- c) Carbon dioxide ☐

2. Which of the following are examples of activities that do not burn fossil fuels?

- a) Going to the market in a car ☐
- b) Walking to the shop down the road ☐
- c) Using a solar/sun oven to cook your lunch ☐
- d) Cooking supper on an electrical stove ☐
- e) Riding a bicycle to visit your friend ☐