



GOVERNMENT OF TAMIL NADU

STANDARD FOUR

**TERM - III
VOLUME - 2**

**MATHEMATICS
SCIENCE
SOCIAL SCIENCE**

A publication under Free Textbook Programme of Government of Tamil Nadu

Department of School Education

Untouchability is Inhuman and a Crime

Government of Tamil Nadu

First Edition - 2019

Revised Edition - 2022, 2023

Reprint - 2020, 2021, 2024

(Published under New Syllabus in
Trimester Pattern)

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Content Creation



State Council of Educational Research
and Training

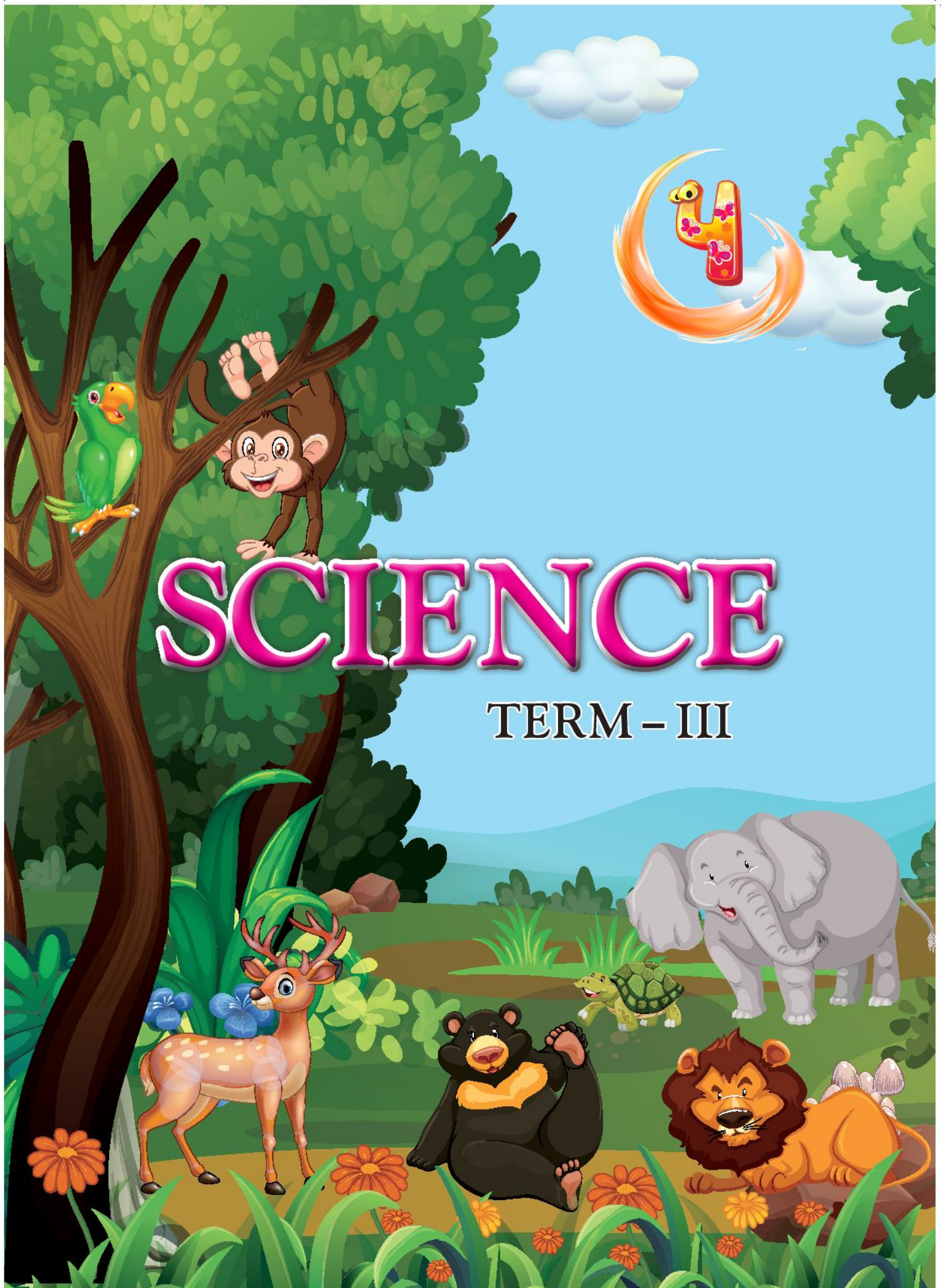
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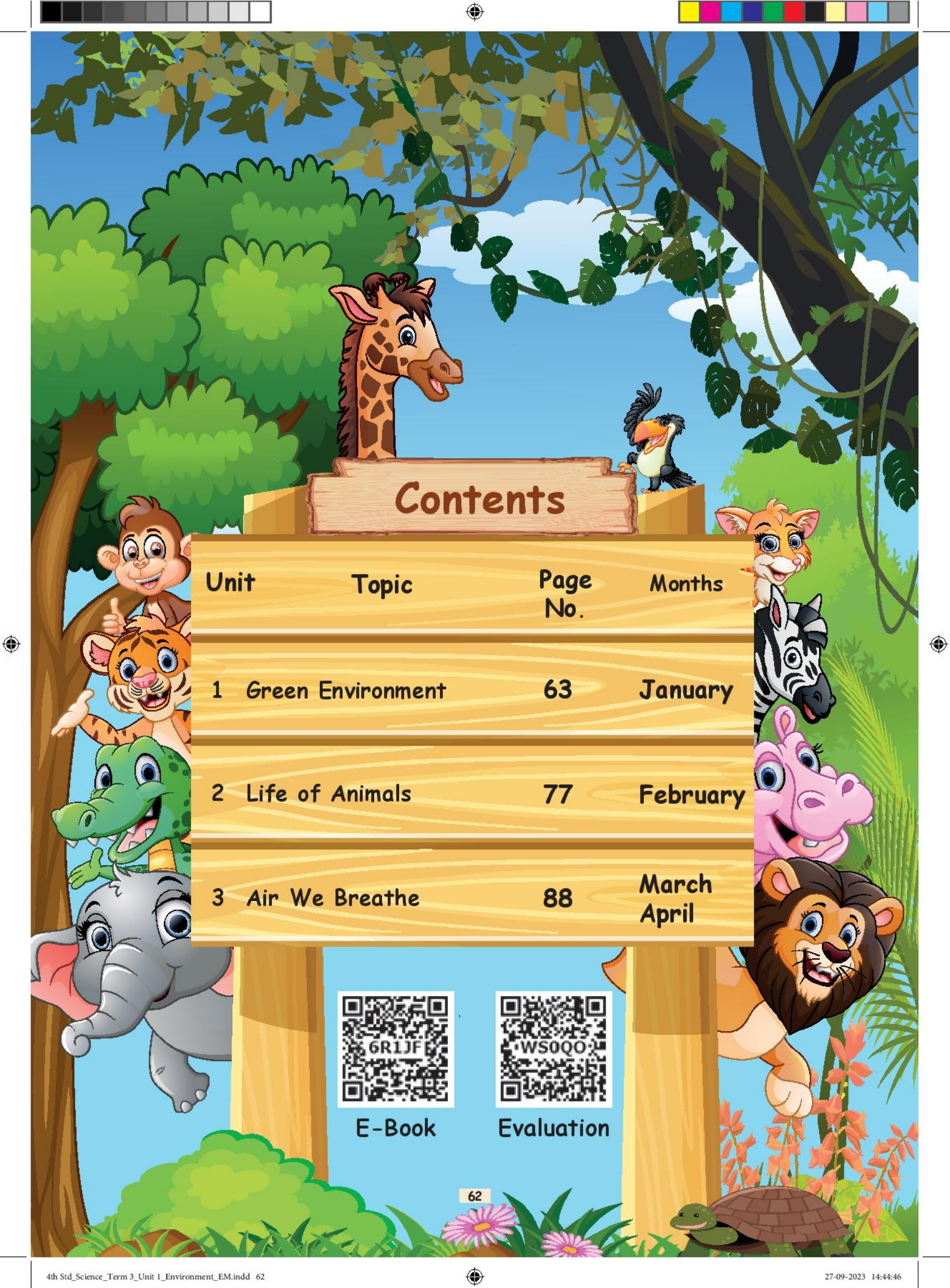
Printing & Publishing



Tamil NaduTextbook and Educational
Services Corporation

www.textbooksonline.tn.nic.in





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E-Book



Evaluation

Green Environment

Unit 1



Learning Objectives

After the completion of this unit students will be able to

- ❖ understand the importance of waste management.
- ❖ understand the role of 3Rs in waste management.
- ❖ learn how to conserve the environment by practising good habits.
- ❖ recognise eco-friendly materials.



Introduction

Nature provides us with a lot of useful things. Factories use these natural resources to make things that we buy in shops. When we are finished using these things, they become waste. **Waste is any object or material that has been used but is not wanted anymore. It is not useful to us because it is broken, worn out or cannot be used again.** Waste can be solid, liquid or gas and can come from many places such as houses, schools, markets, hospitals, shops, etc. Generally waste pollutes our environment.

Waste Management

Srithika : Madam, I see a lot of waste things in our surrounding. Is there any way we can reduce wasting things?

Teacher : Yes. There are many ways to reduce waste. Reducing the waste is the first and most important step in waste management.

Vimal : What is waste management, Madam?

Teacher : It is the step we take to handle our waste and to make sure our environment does not get dirty and polluted. Waste management deals with both biodegradable and non-biodegradable waste.

Janani : Can you please explain the steps in waste management Madam?

Teacher : Yes, sure. There are four steps in waste management. They are

1. Separation of Waste
2. Waste collection and transportation
3. Waste recycling and composting
4. Waste disposal.

- 1. Separation of Waste:** This is a very important step in waste management. It means to sort or divide the waste in different waste bins. Each bin should have different type of wastes. It is good to separate waste in three different bins. Green for biodegradable waste, Blue for recyclable waste and Red for non-recyclable waste. Non-biodegradable waste can be classified as recyclable and non-recyclable.



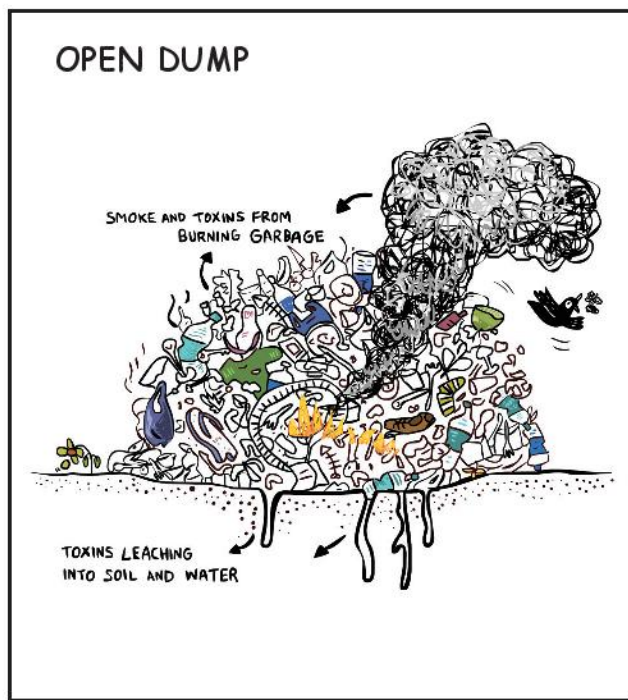
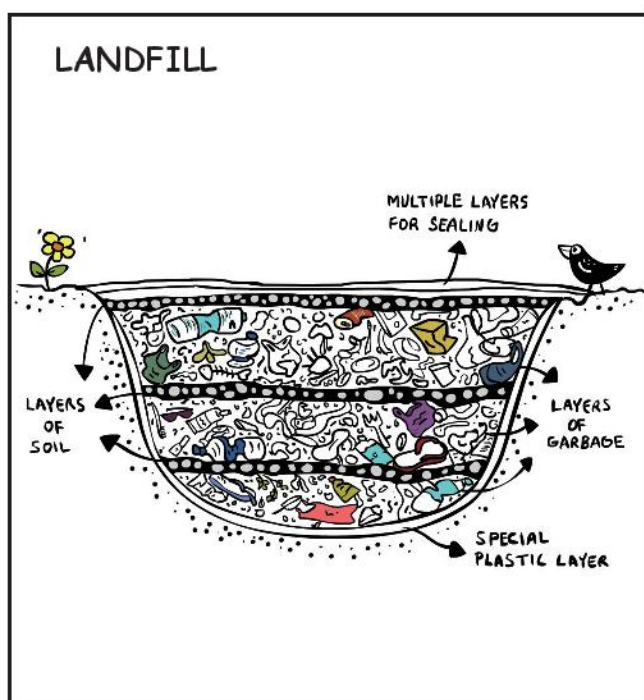
- 2. Waste collection and transportation:** Once we separate our waste in our homes and schools, it is important to keep it ready to be picked up by our panchayat, municipality or corporation. Picking up the waste is called Waste collection. Moving the waste from one place to another is called Waste Transportation.



- 3. Waste recycling and composting:** Biodegradable waste is taken to a place where it can be converted into compost. Compost is food for plants and helps to make our soil healthy. Non-biodegradable (recyclable) waste is taken to recycling factory for making new products.



4. Waste disposal: The waste that cannot be recycled (non-recyclable waste) needs to be sent for final disposal. This waste is sent to an open dump or landfill.



Activity

Write the waste management process in the correct order.

(Waste disposal, Waste collection and transportation, Waste separation, Waste recycling and composting)

1. _____
2. _____
3. _____
4. _____

Rahul : How can we manage waste at home?

Teacher : There are many things we and our family can do to manage waste at home. 3Rs help to manage waste.

Gomathi : What are the 3Rs, Madam?

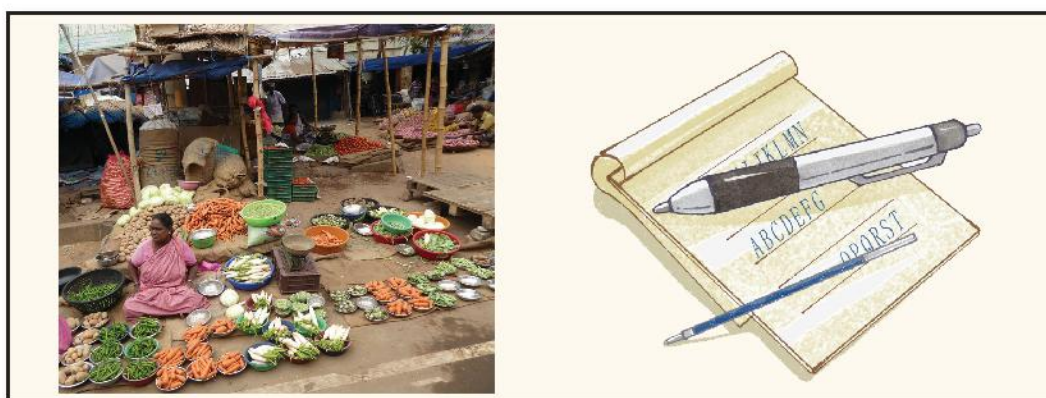
Teacher : The 3Rs stand for **REDUCE, REUSE, RECYCLE**. We must first reduce, then reuse and finally recycle. They are in this order to help us remember what to do first.



THE 3Rs

Reduce is to make and use less materials. This is to make, buy and use things that create less waste. It is the best thing to do first. How can make less waste? Some examples are given below.

1. You can buy an ink pen. When the ink is used up, you can refill and use it.
2. While shopping with your parents, you can carry a cloth bag. In this way you can avoid buying plastic carry bags.
3. You can use your own vessels for purchasing snacks items.
4. You can reduce waste by buying things in bulk instead of in small quantities.





Activity

Using old water bottles, make different things such as Bird feeder, Flower vase, Pen holder and Wall hanging as shown below.



Reuse is using a thing repeatedly for the same or for another purpose. By reusing, we throw away less waste and do not dispose of it in a dump. Reuse saves money, energy and time. Here are some examples of how you can reuse materials at home.



1. You can reuse old clothes to clean your home.
2. You can reuse jam and pickle jars to store things.
3. You can donate old clothes which can be used.
4. You can reuse waste and make something new. E.g. You can reuse a plastic bottle as a pen stand or a bird feeder.



Recycle is to take materials from things you throw away and make new products by using them. Recycling takes energy and time but saves the amount of 'new' resources (for example water, minerals, wood) we need to make things.



Here are some examples of how certain materials are recycled.

1. Old newspapers, note books and magazines are kept separate and sold to a scrap dealer. They will be made into new paper.
2. PET bottles are recycled into plastic threads and then used to make sports T-shirts.
3. Old glass bottles and broken glass pieces are melted to make new glass.
4. Broken metal items are melted and made into new metal products like toys.



Activity

List out four things that you can reduce, reuse and recycle at home or school.

Reduce	Reuse	Recycle



Conservation of Environment

Rahul : What is meant by conservation of environment, Madam?

Teacher : Conservation of environment means to protect all things found in nature. It means that we have to use our Earth's natural resources (like water, soil, minerals, wildlife and forests) carefully.

Vimal : How can I conserve the environment?

Teacher : Everyone can help to conserve the environment by following good waste management habits.

What is the first 'R' in the 3Rs?

Kanimozhi : Reduce.

Teacher : Correct! We should first try to reduce the waste we make. Thus, we can easily conserve our environment.

Waste Separation



Household waste should be separated into biodegradable, recyclable and non-recyclable categories. Biodegradable waste such as left-over food and vegetable waste can be broken down naturally to create compost. Recyclable waste such as paper, glass and metal can be made into new useful products. Non-recyclable waste should be kept separate and will be sent to an open dump or landfill. This should be reduced as much as possible.



Glass containers for food and beverages are 100% recyclable and can be recycled endlessly without loss in quality or purity.



Activity

Study the images below and write down three items you have at home in each category of waste.

Biodegradable



Recyclable items



Paper &
Cardboard



Plastic



Metals



Glass

Non-recyclable items



Plastic bags &
food packaging



Sanitary &
medical waste



Multi-layer
Plastics



CFL Lights



Polystyrene



Other waste

1. Biodegradable: _____
2. Recyclable: _____
3. Non-recyclable: _____

Srithika : I have heard the news that plastic is harmful to our environment. Is it true Mam?

Teacher : Plastic itself is not bad but we are using too much of it. Over use of plastic causes pollution. Plastics that are used only one time causes pollution. It is good to avoid or reduce one-time use plastics. The best way to start is to ask yourself this question. Is this plastic item going to be used one time or many times? If you can use it only once, then try to avoid buying such plastic items.

Plastics in Tamil Nadu

Tamil Nadu is leading the way in India by banning some one-time use plastic items. List of items banned in Tamil Nadu are given below.



Animals eat **plastic bags** by accident when they contain left over food. A cow was found with over 50 kilos of plastic in its stomach.



Used **Plastic plates** will stay in the environment for over a 1,000 years.



Water pouches often get littered and are difficult to recycle.



Plastic straws are difficult to recycle and end up polluting the environment.



Chemicals from **plastic sheets** leak into food more when the food is hot.

Ekalaivan : What are the things that can be used instead of plastic, Madam?

Teacher : We can use things that are good for the environment. These are called environmentally friendly or eco-friendly materials, and can be either biodegradable or reusable.



Environment friendly materials

Things that can be decomposed or broken down by microorganisms are biodegradable. They can return back to the soil and become food for plants. These biodegradable items are environment friendly or eco-friendly materials.

Let us learn more about them.

Leaf plates are a tradition in Tamil Nadu and very eco-friendly. E.g. Banana leaf. They are fully biodegradable and do not contain chemicals like thermocol plastic or coated paper plates.



Bamboo is used to make many things such as bags, dustbins and even toothbrushes.



Eco-friendly Activities:

- Practice the 3Rs.
- Always put waste in a bin. Do not litter open areas.
- Reduce your paper use by writing on both sides of every sheet of paper.
- Use reusable bags and containers.
- Separate biodegradable, recyclable and non-recyclable waste.
- Avoid one-time use plastics.



The first fully synthetic plastic was invented by Leo Baekeland in 1907



Let Us Try

Form small groups and start collecting plastic litter from school grounds or from the local area around your house. And separate them according to 3Rs.



Teacher : Some environment friendly materials are not biodegradable but they are very strong and can be used for many years. By reusing, we can reduce waste and conserve the environment.

Rahul : Can you please give us some examples?

Teacher : Yes, sure.

Stainless steel water bottle and snack box are some examples of eco-friendly materials. Stainless steel does not leak chemicals into your food or water. So it is safer than plastic. These can be reused for a longer period of time.



Activity

Write any five non-recyclable items that you use or have seen in shop.

Litter Free Environment

Litter in our environment is ugly to look at and causes pollution. Wind and rain move litter into drains, rivers and lakes and often ends up polluting the ocean. It is also dangerous to animals as they may eat. Not littering is the best way to keep our community and environment clean.

National Green Corps (NGC)

It is a national programme initiated by the Government of India. NGCs motto is:

"Where there is Green, there is Prosperity"

NGC schools students protect and promote the conservation of natural resources through participating in activities such as the conservation of forests and managing waste.



Always throw litter in a dustbin and when you travel always carry a bag with you to store your litter.

If you see litter, pick it up and throw it away in a dustbin as this shows by example and encourages others to do the same.

Evaluation



I. Choose the correct answer.

- What is the first step in waste management?
(a) Waste disposal (b) Waste separation (c) Waste collection
- Which is an example for non-biodegradable waste?
(a) Paper cup (b) Plastic plate (c) Coconut shell
- Always put waste in a dust bin. It keeps the _____ clean.
(a) waste collection (b) environment (c) litter
- _____ is the first 'R' in the 3Rs.
(a) Reuse (b) Reduce (c) Recycle

II. Fill in the blanks.

- _____ is an example of reusing waste.
(Using old jars for pickle/Saying no to a plastic bag)
- _____ is used to make bags, dustbins and tooth brushes.
(Rose / Bamboo)
- _____ is a big threat to our environment.
(Plastic pollution / Light pollution)
- _____ is a non-recyclable item.
(Glass / Multilayer plastic)

III. Match the following.

- | | |
|------------------------------|--|
| 1. Plastic waste | - 3Rs |
| 2. Waste separation | - Eco-friendly material |
| 3. Reduce, Reuse and Recycle | - Threat to environment |
| 4. Stainless steel | - Biodegradable, recyclable and non-recyclable |



IV. Write true or false.

1. 3Rs method reduces the amount of waste that goes to landfills.
2. Eco-friendly material is harmful to the environment.
3. Plastic bag, thermocol and multilayer plastics are recyclable.
4. We should not separate our waste.

V. Answer in one or two sentences.

1. What are the 3Rs?
2. What is biodegradable waste?
3. Write the different steps in waste management.
4. Name any five items which are recyclable.

VI. Answer the following.

1. How will you manage waste at home?
2. What are the plastic items that have been banned in Tamil Nadu?
3. Write the benefits of recycling.
4. What is meant by eco-friendly material?



Life of Animals

Unit 2



Learning Objectives

- After the completion of this unit students will be able to
- ❖ understand group behaviour in animals.
 - ❖ know adaptation in animals.
 - ❖ explain the structure of insects.
 - ❖ list out special senses in some animals.
 - ❖ know about animals active at night.
 - ❖ understand parental care in animals.



Introduction

Have you ever wondered why a dog drools on seeing food? Why cuckoo sings only during summer? Why baby birds open their mouths when the mother returns to the nest?

Each animal has some unique behaviour. Animal behaviour includes the activities of an animal and its interaction with other organisms. E.g. Blinking, eating, walking and flying.

Group Behaviour in Animals

Animals gain a lot of benefits by living together with other members of the same species. This is called group behaviour. Animals like tiger, bear etc live in solitary (alone). Some animals live in small groups (E.g. Pride of a few lions) and some live as larger herd (E.g. Herd of thousands of wilde beest).



Some animals such as elephants, squirrels, rats and bats do dream while sleeping. But cats, dogs and monkeys have longer dream time.

Group behaviour is also called social behaviour. Members of the group work together to find food, defend themselves and look after the young ones. The main purpose of group behaviour is to help animals survive in nature. E.g. All the fish in a school move together, following their leader in the front. Staying in a group helps the small fish appear big.

Group behaviour in Bees

When insects live together, they often follow a hierarchy. E.g. Bees have one queen bee in every hive. There are a few male bees called drones. There are hundreds of female bees, which are the worker bees.



Nesting Behaviour in Birds

Birds are very different from each other. They live in different places, eat different foods and have different life styles. Some birds permanently live in groups while others come together only during the breeding season. Birds also live in groups.

Not all the bird species build nests. Some of them lay their eggs on the ground or in gap between rocks. Most of the birds build their own nests carefully like engineers. They build nests for their young ones. Some weave leaves, some use twigs, some build with thorns then pad it with soft materials.



Social weavers do not build individual nests. All males work together and build a common nest in which 400 birds can be housed.



Though green heron cannot swim, it still eats fish from the water. How? It drops colourful leaves and fruits into the water. When the fishes come out, the heron catches them.



Group behaviour in Elephants

Elephant group is called Herd or Parade. For each group there is a female head, which leads the group towards the availability of food, water and safety. The leader fights for their group. All animals in a group obey the command of their leader. Older animals teach manners and life skills to young ones. Like elephants deer, bison and monkeys also live in groups.



Animals and their Group Names					
Animal	Group name	Animal	Group name	Animal	Group name
Lion	Pride	Fish	School	Ant	Colony
Wolf	Pack	Sheep	Flock	Owl	Parliament



Let Us Try

Match the animals with their group behaviour



Lives alone

Lives as part of a group



Advantages of Group behaviour in animals.

S.No	Group behaviour	Example
1.	Procuring food	Hunting and sharing in lions.
2.	Taking care of young ones	Female elephant takes care of its calf.
3.	Protection from predators	Wildebeests make sounds to alert their group.
4.	Division of labour	Honey bees collect nectar, build comb and clean hive etc.
5.	Energy conservation	Birds fly in "V" shape to reduce wind resistance.



Sea otters hold hands while they are sleeping, so they do not drift apart.

Adaptations in Animals

Adaptation is the most essential factor of all living beings. The changes in an animal's behaviour to adjust with its habitat is called adaptation. If an organism fails to adapt to the particular environment, its survival is difficult.

All animals have special body parts to live in a particular place at a particular time. E.g. Giraffes have developed very long necks because of their environmental demands.



Let Us Try

Observe any animal in your surrounding and write a creative short story about it.



Some more examples of adaptations are given below.



Tigers and Zebras have lines so they can hide themselves.



Camels have broad feet to walk in the desert.



Fish have gills to breathe in the water and fins to swim.



Elephants have long and large trunk to get their food.

There are three basic types of adaptations seen in animals. They are,

1. Structural adaptations

Changes in the physical features of the animal are called structural adaptations.

E.g. **Polar bears** living in cold climate have physical adaptations, such as thick fur and short ears to reduce heat loss.

2. Physiological adaptations

Changes in the functions of the animal's body are called physiological adaptations.

E.g. **Dog** shivers to generate more heat when it is cold and pants when it is hot.

3. Behavioural adaptations

Changes in the behavioural activities of the animal are behavioural adaptations.

E.g. **Birds** migrate to avoid adverse conditions.

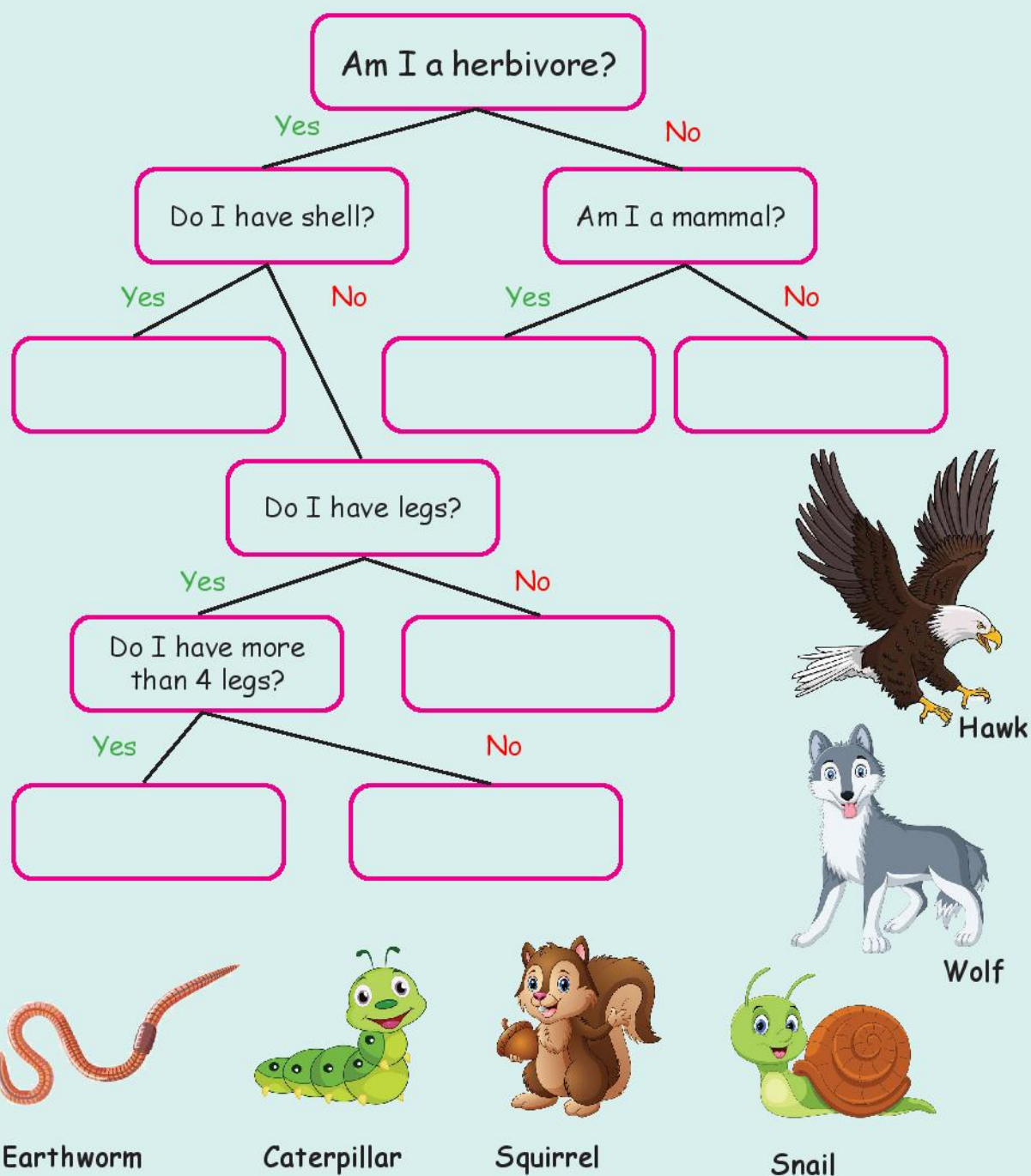


- Porcupines have thorns on their body to defend from their enemies.
- Alligators can feel even small vibrations in the water through their skin.



Activity

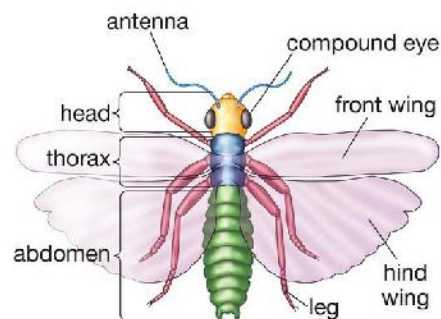
Who am I?



Structure of Insects

Insects have three main body regions. They are;
Head, thorax, and the abdomen. All parts of the insect are inside an exoskeleton.

- **Head** The main visible parts on the head are the large compound eyes, the antennae (feelers) and the mouth parts.
- **Thorax** The thorax is the middle region of the body. It bears three pairs of legs and two pairs of wings.
- **Abdomen** The abdomen is the last part of the insect's body. Abdomen of the insects has clear segmentation.



Insects have differences in structures like wings, legs, antennae and mouthparts. The legs are modified for walking, jumping, digging or swimming.

Most of the insects have wings which can be folded flat over their body. E.g. Bug. There are some insects which cannot fold their wings. E.g. Dragonfly. Some insects are wingless. E.g. Silverfish.



The compound eyes of insects are made up of small units called ommatidia.



Let Us Try

Fill in the missing words.

Butterfly has three body parts like all other insects the _____, the _____ (chest), and the _____ (bottom). The butterfly has four _____ and six legs, attached to the throax. Butterfly uses its two _____ to smell.

Special Senses in Ants and Bats

Some animals have well developed special senses. These special senses help the animals experience the world around them.

Ants

Ants have sense of sight, smell, taste and touch. Ants have organs of smell and taste in their antennae. They feel the vibrations in the ground through their feet. Ants have a good sense of smell.



Let Us Discuss

- Place a few sugar cubes in a plate. After sometime, you can see some ants visiting the plate.



- Adding sugar to your cat's food is of no use, because cats cannot taste sweetness.
- Most snakes have poor eyesight. Snakes use their tongue to smell their surrounding.

Bats

Bats have a good sense of hearing. They use sound navigation. They produce ultrasonic sound which helps the bats find their way at night and find out the objects on their path. This is called "Echolocation".



Vampire bat

Vampire bats feed on the blood of their prey. Vampire bats have heat-detecting noses which allow them to find their prey.

Animals Active at Night

When do you wake up? _____.

When do you sleep? _____.

When do you play? _____.

Some animals sleep in the day time and are very active at night. A good example is cat at your home. Not only small animals but also some birds are active at night. Such animals are called **Nocturnal animals**. E.g. Owl, Bat.



Animals that are active during day time are known as **Diurnal animals**.
E.g. Hen, horse, camel etc.

Lions are active both during day and night.

Nocturnal creatures generally have highly developed senses of hearing, smell, and specially adapted eyesight.

Some examples of nocturnal animals are given below.



Cat



Mouse



Firefly



Owl



Bat



Moth



Let Us Find

Word search puzzle - Nocturnal Animals

S	N	A	K	E	O	B
X	O	W	L	U	N	A
L	V	F	E	C	A	T
F	I	R	E	F	L	Y

Parental Care

Efforts taken by the adult to take care of their young ones is called **Parental care**. Parental care increases the survival rate and improves the quality of young one. It also increases the reproductive success of animals.

Kangaroo

Kangaroo is well known for parental care. Female kangaroo carries its baby in its pouch. The pouch provides a safe place for the young ones to stay until they grow large enough to survive outside on their own.



Cow

Cow gives milk and protects its calf from the enemies. Mother and calf communicate with each other through a sound. Calves respond to the calls from their own mother by calling back.



Human beings

Humans promote and support the physical, emotional, social and intellectual development of their child. The human infant is completely helpless at birth. Mother takes good care of the baby by feeding, helping to sleep and making comfortable with clothes etc. Through proper parenting the child is taught whatever needed to live successfully in the society.



Let Us Fill

Animal observation

Name of the animal	What is the adult doing?	What is the young one doing?

Evaluation



I. Who am I?

1. My group is called colony. -----
2. Our home is nest. -----
3. My feet are broad to help me walk in the sand. -----
4. I use ultrasonic sound to find the objects in my path. -----
5. I am active during day time as well as night time. -----

II. Fill in the blanks.

1. The animals which are active at night are called -----.
2. ----- is well known for parental care.
3. The group of owls are called -----.
4. ----- lives in hives.
5. ----- bites us and sucks our blood.

III. Match the following.

- | | | |
|--------------------|---|-------------|
| 1. Wingless insect | - | Smell |
| 2. Elephant | - | Gills |
| 3. Giraffe | - | Herd |
| 4. Ants | - | Long neck |
| 5. Fish | - | Silver fish |

IV. Answer the following questions in brief.

1. Why do birds build nests?
2. What is meant by structural adaptation?
3. Define echolocation.
4. How do ants feel the vibration ?
5. List out any three animals that live in groups.
6. Why do birds fly in 'V' shape?

V. Give short answers.

1. Why do animals live in groups?
2. Explain the three main body regions of insect.
3. What are nocturnal animals?

Air We Breathe

Unit 3



Learning Objectives

- After the completion of this unit students will be able to
- ❖ know that air is a mixture.
 - ❖ understand the composition and components of air.
 - ❖ explain air pollution and its effects.



Introduction

Our earth consists of land, water, and air. All these components are very much important for the survival of all living creatures. Air is present all around us. It is very important to cause rain and for the growth of crops. It is needed for the respiration of plants and animals.



Activity

Take a squeezable bottle. Make a hole on the lid and close the bottle tightly. Bring the bottle near your face and press the bottle. What do you feel?



Importance of Air in Our Daily Life

1. Oxygen present in air is needed for respiration.
2. We can hear the sound only when there is air around.
3. Air helps in the dispersal of seeds for plant reproduction.
4. Monsoon and rain occurs due to the wind action.
5. Air regulates the atmospheric temperature.



Let Us Do

Tick the objects which has air/gas in it.



Air is a Mixture

The air we breathe consists of a mixture of gases. It contains dust, water vapour and smoke. Air also contains gases like oxygen and nitrogen. Air shows the properties of all the gases present in it.

For example, air supports combustion because oxygen is present in it. While cooking using firewood, fanning air helps in burning of firewood.

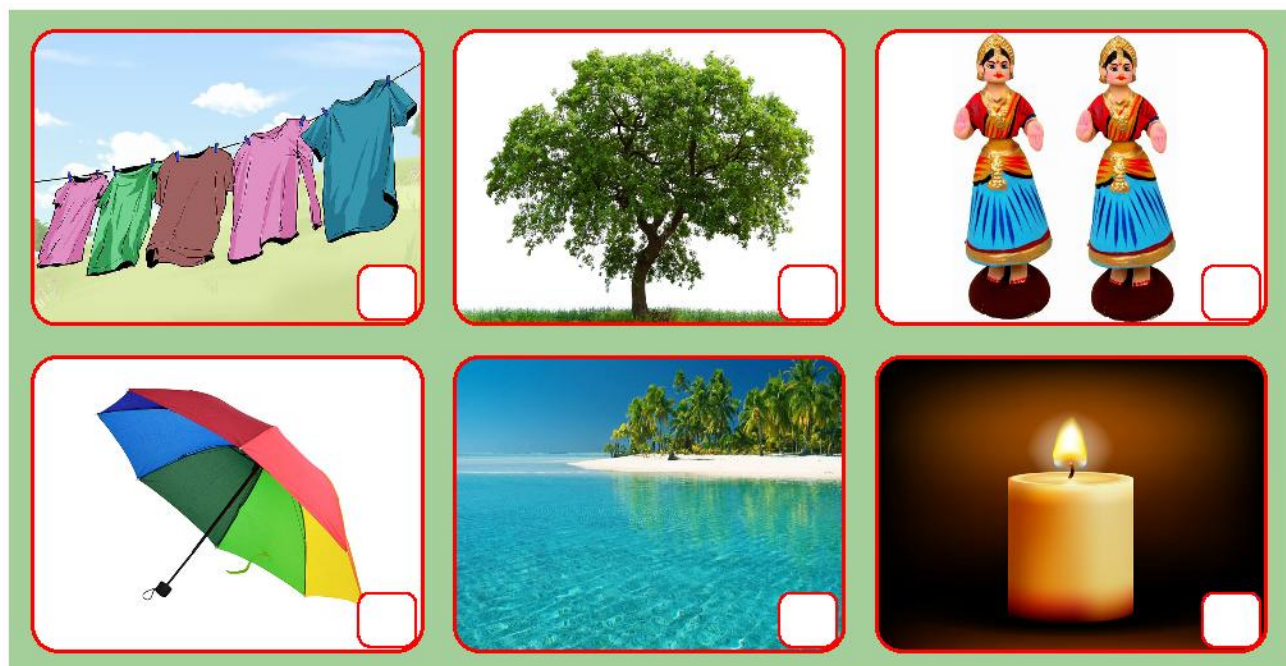


How do we get cool water from a clay water pot on hot sunny days?

Clay pot has thousands of tiny pores through which water seeps out. This causes cooling effect.

Let Us Do

Tick the objects from which water vapour comes out.

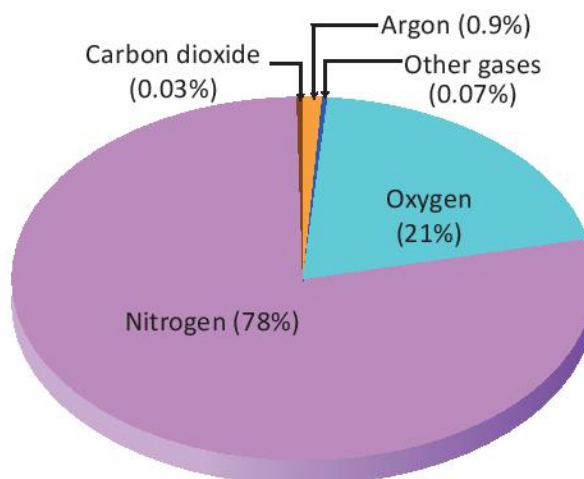


Nathaswaram and flute are some of the examples for wind instruments.



Composition and components of air

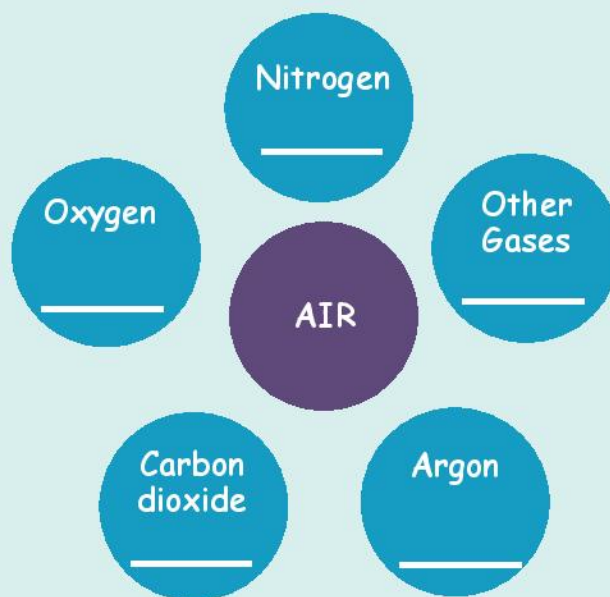
The composition of air is not constant. It varies from place to place and over time. Air is not a single element; it is made up of different substances.





Let Us Fill

Write the percentage of the gases present in air.



Nitrogen

The amount of nitrogen present in air is about 78%.

It is used to fill up food packages to extend their shelf life.

Liquid nitrogen is used to store living cells.

Plants need nitrogen for their growth. We can see root nodules containing nitrogen in some plants.

Nowadays people use nitrogen gas to fill the tyres of their vehicles. Some compounds of nitrogen are used as explosives also.



In 1772, the Scottish chemist, Daniel Rutherford, isolated "Nitrogen".



Activity

You might have seen some huge colourful balloons flying high in malls. Those balloons are filled with nitrogen gas. Write the reason for filling nitrogen gas in balloons.

Oxygen

It is one of the main components of air. The amount of oxygen present in air is about 21%. All the creatures cannot live without oxygen. The presence of oxygen can be tested with simple experiments.



Uses of oxygen

1. All living things use oxygen for breathing.
2. Oxygen is essential for burning.
3. Oxygen cylinders are used in hospitals to enable the patients to breathe when they cannot breathe normally.
4. Oxygen is used in gas welding.



Mountaineers and deep sea divers carry oxygen cylinders along with them.

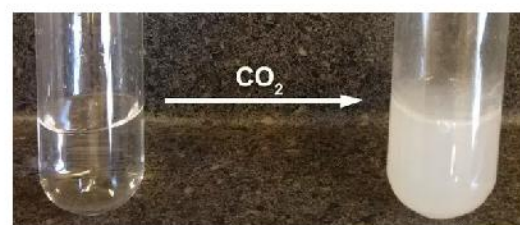


Carbon dioxide

The amount of carbon dioxide present in air is only 0.03%. Though it is less in percentage its uses are more and essential. It can be tested with lime water. The lime water changes from colourless to milky.

Uses of carbon dioxide:

1. Carbon dioxide helps plants in photosynthesis.
2. It is used in fire extinguishers.
3. It is used in refrigerators as dry ice for cooling purposes.
4. It is used to make plastics and polymers.



The Scottish chemist Joseph Black discovered that carbon dioxide is present in air.

Air has other gases like hydrogen, helium, argon etc. in small proportion. Air also contains water vapour which varies according to the environment. When we breathe, we take oxygen from air and release carbon dioxide and water vapour to air.



Let Us Try

Classify the following.

(Dog, cat, coconut tree, monkey, brinjal plant, papaya plant)

Things which give out oxygen	Things which give out carbon dioxide



A grown up tree intakes $\frac{1}{3}$ of carbon dioxide exhaled by one person and it gives out the same amount of oxygen required by a person. Hence, three trees are needed to fulfill the required oxygen for a man to survive.

Air pollution

The atmosphere of earth is disturbed by human activities. This leads to environmental problems like air contamination and global warming. The air carries soot, smoke, and other particles from car exhaust and power plants. These are the major contributors to air pollution.



Activity

Look at the path of light rays entering through window of your home/school. You can see a lot of tiny particles suspended and moving in the air. These are dust particles. You can also test the same with the help of a torch light in darkness.



Covering our mouth and nose while sneezing or coughing prevents spreading of germs through air to people around us.

Adverse effects of Air pollution

Global warming	This changes the climatic conditions of different regions of the world. It also causes disturbances in agriculture and food production. Melting of snow caps and increase in sea levels are the consequences of global warming.	
Formation of smog	When dust particles and smoke combine with fog in the presence of sunlight, smog is formed. It reduces the visibility. It also causes many respiratory disorders and allergies.	
Formation of acid rain	Sulphur dioxide and nitrogen oxides react with water in the atmosphere producing sulphuric acid and nitric acid. These acids come down along with the rain. This is called acid rain. Acid rain • causes respiratory and skin disorders • damages the leaves and affects the productivity of plants • enters the ground and river waters causing harm to the aquatic life • erodes marble and damages monuments like Taj Mahal.	 
Aerosol formation	When liquid or solid particles are dispersed in air, it is called aerosol. Aerosols are deposited on the leaves affecting photosynthesis.	
Depletion of Ozone	The hydrocarbons such as the Chlorofluorocarbons (CFCs) destroy the ozone layer. Ozone holes allow the UV rays to reach the earth's surface. UV radiation harms wildlife, damages plants and causes skin cancer in humans.	



Activity

Tick the causes of global warming



Effects of Air pollution on human beings

Air pollution has bad impact on human health. When the pollutants increase in air, they cause irritation in the eyes, nose and throat. Air pollution can also produce wheezing, coughing and breathing problems in humans.

Some of the major effects of air pollution on human beings are:

1. Respiratory diseases. E.g. Tuberculosis
2. Cardiovascular damage.
3. Fatigue, headaches and anxiety.
4. Nervous system damage.





Activity

- Go by walk or use a bicycle to nearby places.
- Plant more trees.



Steps to check air pollution

Air pollution can be reduced by the following steps.

1. Alternative source of energy (E.g. Solar energy) should be used.
2. Air filters should be used to prevent harmful gases mixing with air.
3. Smoke emission test and certification of motor vehicles must be enforced.
4. More trees should be planted to absorb carbon dioxide.



Alternative source of energy are Solar Power, Nuclear Power, Hydroelectric Energy, Geothermal Power, Wind Energy, Biomass Energy, Tidal Energy and Hydrogen Gas.



Activity

Write slogans on harmful effects of air pollution in a chart and stick it on the display board.

1. _____
2. _____
3. _____
4. _____



If you **pollute**
air **today**, it will
pollute your lungs
tomorrow

Evaluation



I. Choose the correct answer.

- Air is a _____.
(a) Mixture (b) Compound (c) Complex
- Percentage of Oxygen in air is about _____.
(a) 21 (b) 78 (c) 1
- Root nodules of some plants contain _____.
(a) Oxygen (b) Nitrogen (c) Neon
- The major cause of air pollution is _____.
(a) Waste (b) Smoke (c) Water vapour

II. Who am I? (Tree, Bicycle, Carbon dioxide, Air)

- I am a mixture of gases.
- I give you oxygen.
- I am not the supporter of burning.
- You can help me to decrease pollution by riding on me.

III. Write 'True' or 'False'.

- Plants need nitrogen for their growth.
- Air is made up of oxygen only.
- The gas used for burning things is Argon.
- Carbonated drinks are bad to health.

IV. Match the following.

- | | | |
|----------------|---|---------------|
| 1. Nitrogen | - | Air pollution |
| 2. Balloon | - | Smoke and fog |
| 3. Smog | - | 78% |
| 4. Lung cancer | - | Air |

V. Fill in the blanks.

- Air is a mixture of many _____.
- Amount of carbon dioxide in the air is _____%.
- We inhale _____ gas.
- _____ is used in fire extinguishers.



VI. Answer the following questions in brief.

1. What are the importance of air in our daily life?
2. What are the components of air?
3. What are the adverse effects of air pollution?
4. What are the uses of oxygen?

VII. Give short answers.

1. How can we reduce air pollution?
2. What are the diseases caused due to air pollution?
3. List out the uses of carbon dioxide.