

Consider the same situation. In $\frac{2}{8}$, the number above the line represents the numerator that is '2' and the number below the line represents the denominator, that is '8'. The small line that is inbetween the top number and bottom number is the division bar.





۲

Which is smaller in the following fraction?

۲

(i) $\frac{10}{42}$ and $\frac{21}{42}$ (ii) $\frac{31}{37}$ and $\frac{15}{37}$

Types of fractions:

Represent the following figure in fraction.

It is $\frac{3}{8}$. In this, 3 is the numerator which is smaller than the denominator, that is, 3 < 8.



This type of fraction is called as proper fraction.

Proper fraction: In a fraction, if the numerator is smaller than the denominator, then it is called as a proper fraction

Examples: $\frac{3}{5}, \frac{4}{15}, \frac{9}{21}$.

Improper fraction: In a fraction, if the numerator is greater than the denominator, then it is called as an improper fraction. Examples: $\frac{9}{5}$, $\frac{11}{3}$, $\frac{21}{17}$.

Mixed fraction:

Kavitha had five dosas. She wanted to share the dosas among herself and her 3 friends equally. Each one got a dosa. She didn't know how to divide the remaining one dosa equally.

So, she requested her teacher to help. The teacher asked her to divide the remaining 1 dosa into 4 parts, so that each one would get 1 out of 4 parts. Teacher explained her how much did each one of them get out of 5 dosas. That is, each one got 1 and $\frac{1}{4}$ dosas.



Also, she told her that these type of fractions are called mixed fractions.

۲

A fraction which contains a whole number and a proper fraction is called as a mixed fraction. In the above situation, 1 is the whole number and $\frac{1}{4}$ is the proper fraction.

6.2 Equivalent fractions

If one chappathi is divided equally between two people then, each one will get half a chappathi. The fraction half, is written as $\frac{1}{2}$. Here, 1 is the numerator and 2 is the denominator.





The same chappathi is divided into four equal parts. Two parts were given to each person. This is shown as $\frac{2}{4}$. Here 2 is the numerator and 4 is the denominator.

It means that the value of two fractions is the same. That is, $\frac{1}{2} = \frac{2}{4}$.

Such fractions of equal value are called equivalent fractions.

Obtaining equivalent fractions





Two of the five equal parts in the figure are coloured. The coloured part is $\frac{2}{5}$ of the whole figure.

۲

When two lines are drawn horizontally in the same figure, the figure gets divided into 15 equal parts. So, the fraction that shows the coloured part now has changed. Now, the fraction of the coloured part is $\frac{6}{15}$ but coloured size is the same.

Two figures that have the same size are called equivalent fractions.

Therefore, we see that $\frac{2}{5} = \frac{6}{15}$

When the numerator and denominator of a fraction are multiplied by the same non-zero number, we get a fraction that is equivalent to the given fraction.

Example 6.4

Find a fraction with denominator 20 which is equivalent to $\frac{2}{5}$.

Solution

 $\frac{2}{5} = \frac{1}{20}$. We must find the right number for the box.

Here, 4 times the denominator 5 is 20. So, multiply the numerator also by 4

Therefore,

 $\frac{2}{5} = \frac{2 \times 4}{5 \times 4} = \frac{8}{20}$ Hence, the fraction $\frac{8}{20}$ is equivalent to $\frac{2}{5}$.

5th_Unit_06_Fractions_Term 3_01.indd 52

Example 6.5

Find a fraction equivalent to $\frac{8}{20}$ with denominator 5.

Solution

 $\frac{8}{20} = \frac{1}{5}$. We must find the number for the box.

In both the fractions denominator is given, that is 20 and 5.

Here, we get 5 in one of the fractions if we divide 20 (denominator of the other fraction) by 4.

۲

So, we can get the required number (in box), if we divide 8 by 4.

That is 8 ÷ 4 = 2. Therefore $\frac{8}{20} = \frac{8 \div 4}{20 \div 4} = \frac{2}{5}$

Thus, the fraction $\frac{2}{5}$ is equivalent to the fraction $\frac{8}{20}$.

Exercise 6.2

Write the suitable number in the box.

(i)
$$\frac{1}{2} = \frac{\Box}{8}$$
 (ii) $\frac{1}{3} = \frac{7}{\Box}$ (iii) $\frac{9}{11} = \frac{18}{\Box}$
(iv) $\frac{5}{15} = \frac{\Box}{3}$ (v) $\frac{14}{26} = \frac{\Box}{13}$ (vi) $\frac{\Box}{4} = \frac{8}{16}$
(vii) $\frac{1}{\Box} = \frac{7}{28}$ (viii) $\frac{\Box}{5} = \frac{15}{25}$

Find an equivalent fraction with denominator 18 for each of the following fractions.

 $\frac{1}{2}, \frac{2}{3}, \frac{4}{6}, \frac{2}{9}, \frac{7}{9}, \frac{5}{3}$

Find an equivalent fraction with denominator 5 for each of the following fractions.

$$\frac{6}{15}$$
, $\frac{10}{25}$, $\frac{12}{30}$, $\frac{6}{10}$, $\frac{21}{35}$

5th_Unit_06_Fractions_Term 3_01.indd 53

 (\bullet)



In $\frac{2}{6}$, $\frac{3}{6}$ and $\frac{4}{6}$, the denominators are the same. Such fractions are called as like fractions.

Like fractions

Fractions with same denominators are called like fractions.

Examples: $\frac{1}{5}, \frac{4}{5}, \frac{3}{5}$

Unlike fractions

Fractions with different denominators are called unlike fractions.

Examples: $\frac{1}{7}, \frac{2}{9}, \frac{9}{11}$

Converting unlike fractions into like fractions

To convert unlike fractions into like fractions, we change the denominators of the given fractions into a common denominator. This can be done by finding the common multiples of the denominator.

Example 6.6

Convert $\frac{5}{6}$ and $\frac{7}{9}$ into like fractions. Solution Find common multiples for the numbers 6 and 9 Multiples of 6 : 6,12,18,24,30,36,... Multiples of 9 : 9,18,27,36,45,....









(iv)
$$\frac{3}{9} + \frac{7}{9}$$
 (v) $\frac{2}{15} + \frac{3}{15}$ (v) $\frac{2}{7} + \frac{1}{7} + \frac{3}{7}$
(vii) $\frac{3}{10} + \frac{5}{10} + \frac{2}{10}$ (viii) $\frac{2}{9} + \frac{1}{9}$ (ix) $\frac{3}{8} + \frac{2}{8}$
(viii) $\frac{3}{10} + \frac{5}{10} + \frac{2}{10}$ (viii) $\frac{2}{9} + \frac{1}{9}$ (ix) $\frac{3}{8} + \frac{2}{8}$
(viii) $\frac{3}{10} + \frac{5}{10} + \frac{2}{10}$ (viii) $\frac{2}{9} + \frac{1}{9}$ (ix) $\frac{3}{8} + \frac{2}{8}$
(viii) $\frac{3}{10} + \frac{5}{10} + \frac{2}{10}$ (viii) $\frac{2}{9} + \frac{1}{9}$ (ix) $\frac{3}{8} + \frac{2}{8}$
(viii) $\frac{3}{10} + \frac{5}{10} + \frac{2}{10}$ (viii) $\frac{2}{9} + \frac{1}{9}$ (ix) $\frac{3}{8} + \frac{2}{8}$
(viii) $\frac{3}{10} + \frac{5}{10} + \frac{2}{10}$ (viii) $\frac{2}{9} + \frac{1}{9}$ (ix) $\frac{3}{8} + \frac{2}{8}$
(viii) $\frac{3}{10} + \frac{5}{10} + \frac{2}{10}$ (viii) $\frac{2}{9} + \frac{1}{9}$ (ix) $\frac{3}{8} + \frac{2}{8}$
(viii) $\frac{3}{10} + \frac{5}{10} + \frac{2}{10}$ (viii) $\frac{2}{9} + \frac{1}{9}$ (ix) $\frac{3}{8} + \frac{2}{8}$
(viii) $\frac{3}{10} + \frac{5}{10} + \frac{2}{10}$ (viii) $\frac{2}{9} + \frac{1}{9}$ (ix) $\frac{3}{8} + \frac{2}{8}$
(viii) $\frac{3}{10} + \frac{5}{10} + \frac{2}{10}$ (viii) $\frac{2}{9} + \frac{1}{9}$ (ix) $\frac{3}{8} + \frac{2}{8}$
(viii) $\frac{3}{10} + \frac{5}{10} + \frac{2}{10}$ (viii) $\frac{2}{9} + \frac{1}{9}$ (ix) $\frac{3}{8} + \frac{2}{8}$
(viii) $\frac{3}{10} + \frac{5}{10} + \frac{2}{10}$ (viii) $\frac{2}{9} + \frac{1}{9}$ (viii) $\frac{1}{2} + \frac{1}{9}$ (viii) $\frac{1}{10} + \frac{1}{10}$ (viii) $\frac{1}{10} + \frac{1$

______ 5th_Unit_06_Fractions_Term 3_01.indd 59



5th_Unit_06_Fractions_Term 3_01.indd 60

()



()





Able to split bigger task into smaller known task Situation 1

Karkuyil and Kayalvizhi are sisters. Their mother asked them to arrange their cupboards. Karkuyil arranged her cupboard within 10 minutes while Kayalvizhi

could not arrange them. When Kayalvizhi asked Karkuyil about this, she told her that she had split the task of arranging the cupboards in two smaller tasks namely,

- 1. Sorting the things and
- 2. Keeping the things in shelves

Karkuyuil could complete the work in less time and easily also.

Situation 2



Mugilan is the secretary of the Math club in his school. The

principal of the school has announced for a quiz competition and Mugilan is given the incharge of arranging for the competition.

Write the tasks to be done by Mugilan.





Activity

Consider the situation

Vizhyan's birthday is on Wednesday. His father asked his sister Poovizhi to arrange for the party. She is happy to do it but does not know how to arrange for the party. Her father suggested her to first break the event into smaller tasks and complete those tasks one by one. Poovizhi thought that this way she could easily arrange for the party. If you are Poovizhi what would be tasks you will plan for. Write the smaller tasks which you will arrange.

۲

Solving a multiplication problem involving 2 three digit numbers.

Let us split the task of multiplying 2 three digit numbers into the following steps.

Multiplying 2 three digit numbers can be done easily if we do it step by step.

Step 1 – Multiplying the ones digit with the first number

Step 2 - Multiplying the tens digit with the number

Step 3 – Multiplying the hundreds digit with the first number

Step 4 – Add all the results of step 1, step 2 and step 3 to find the multiplication of

567	×	253
1701		
2835		
1134		
143451		

Exercise 7.1

۲

• Find the product of the following numbers:

(i) 234 x 765 (ii) 908 x 512 (iii) 481 x 503

To enable how to find out easy and difficult ways to solve tasks and justify with reason. Situation

Kavitha and Bavitha were planning for a picnic with their family. Kavitha said it would be better to pre book a taxi for sightseeing before reaching the spot while Bavitha preferred to hire a taxi after reaching the spot.



Whose idea is better?

Suggest other ways also for planning the picnic.

Activity

Arranging 50 books orderly by number on them in 5 hours

Ezhilan and Iniyan has been asked to arrange two sets of fifty books each in two book shelves of a library. The books were numbered from 1 to 50 and there are 5 shelves in each cupboard

Ezhilan arranged 10 books in each shelf atonce while Iniyan placed 1 book at a time in each of the 5 shelves.

Which is the easy way to complete the work and who will arrange the books quickly?





5th_Unit_07_Information Processing_Term 3.indd 65

Factor Bingo

Here is a Board of numbers

2	28	36	4
12	16	5	10
9	14	6	8
3	20	7	40

The teacher gave a number board to Imayan and Varman. Then, he asked them to pick out the factors of the numbers 36, 28 and 40 from the number board.

۲

Imayan used different notations for each number. He circled the factors of 36, drew triangles for the factors of 28 and drew squares for the factors of 40. But, Varman circled the factors of all the three numbers. Whom do you think will complete the task of picking out the factors of each number easily? Justify your answer.

Activity 3

Sort the factors of 40,72 and 75 from the number board given below.

1	40	20	12
2	15	18	6
5	7	10	3
24	4	8	9

Answers 1. Geometry Exercise 1.1 1. 18 cm 2. 4.8 cm 3. 2.8 cm 4.1 km 5.4400 m Exercise 1.2 1. (i) 100 sq.m (ii) 2.5 sq.m (iii) 40 sq.cm (iv) 54 sq.m (iv) 54 sq.m 2. (i) 18 sq.cm (ii) 28 sq.m (iii) 40 sq.cm **3**. 1,20,000 **4**. 24cm; 36 sq.cm; 28cm; 140 sq.cm 5.8,4000 2. Numbers Exercise 2.1 1. (i) 30 (ii) 70 (iii) 90 (iv) 80 2. 70 3. 90; 1 4. 50; 1 5. 160 6. 100 7.190 8. 11;10 3. Measurements Exercise 3.1 (i) 90 cu.cm 1. (ii) 3600 cu.cm (iii) 3, 75, 000 cu.cm (iv) 1000cu.cm (v) 1 cu.cm. (iii) 3cm (iv) 20 cm (vi) 3m (i) 480 cu.cm (ii) 4cm 2. 3. 1200 bricks 4. 8000 sacks 4. Algebra Exercise 4.1 **1**. (6+6) = (8+4) = (9+3) **2**. $(8+8) = (18-2) = (8 \times 2) = (32 \div 2)$ Exercise 4.2 (i) True (iii) False (iv) False (v) False (vi) True 1 (ii) True (vii) True (viii) False (ix) True (X) True (iii) < 2. (i) > (ii) = 3. (i) 9 (iii) 1 (iv) 0 (v) 2 (ii) 2 (vi) 4 5. Money Exercise 5.1 1. (i) ₹ 40 (ii) ₹ 10,500 (iii) ₹ 770 (iv) ₹ 45.25 2. (i) -c (ii) -d; (iii) -b (iv) -a 3. (i) ₹ 26,246.75 (ii) ₹ 1,30,412.50 (iii) ₹ 18,309.25 **4**. (i) ₹ 1,186.75 (ii)₹473 (iii) ₹ 16,226.50 6. ₹ 41,500 7. ₹ 3,85,838 8. ₹ 8,355 5. ₹49,553.25 Exercise 5.2 1. (i) ₹ 375 (ii) ₹ 8.01 (iii)₹7 (iv) ₹ 1,550 **2**. (i) ₹ 4,93,625 (ii) ₹ 4, 757.76 (iii) ₹ 4,348.44 (iv) ₹ 11.59 (v)₹997.5 (vi) ₹ 36.1 3. ₹75 4.₹90 5. ₹ 4,608 6. ₹ 250 7. ₹ 140

۲

6. Fractions
Exercise 6.1
1. (i)
$$\frac{5}{12}$$
 (ii) $\frac{2}{6}$ (iii) $\frac{3}{9}$ 3. (i) $\frac{7}{12}$ (ii) $\frac{22}{48}$ (iii) $\frac{27}{56}$
2. (i) $\frac{12}{20}$ (ii) $\frac{34}{40}$ (iii) $\frac{17}{50}$ 4. (i) $\frac{10}{42}$ (ii) $\frac{15}{37}$
Exercise 6.2
1. (i) 4 (ii) 21 (iii) 22 (iv) 1
(v) 7 (vi) 2 (vii) 4 (viii) 3
2. $\frac{9}{18} \cdot \frac{12}{18} \cdot \frac{4}{18} \cdot \frac{14}{18} \cdot \frac{30}{18}$ 4. $\frac{14}{18} \cdot \frac{28}{36} \cdot \frac{8}{10} \cdot \frac{12}{15} \cdot \frac{6}{52} \cdot \frac{9}{33}$
Exercise 6.3
1. (i) $\frac{8}{32} \cdot \frac{12}{32}$ (ii) $\frac{14}{35} \cdot \frac{5}{35}$ (iii) $\frac{20}{50} \cdot \frac{15}{50}$ (iv) $\frac{12}{42} \cdot \frac{7}{42}$
(v) $\frac{4}{12} \cdot \frac{9}{12}$ (vi) $\frac{25}{30} \cdot \frac{24}{30}$ (vii) $\frac{7}{56} \cdot \frac{24}{56}$ (viii) $\frac{9}{54} \cdot \frac{24}{54}$
Exercise 6.4
1. (i) > (ii) > (iii) < (iv) < (iv) < (vi) > (vi) > (vii) > (viii) = (ix) < (x) >
Exercise 6.5
1. (i) $\frac{4}{5}$ (ii) $\frac{4}{7}$ (iii) $\frac{7}{12}$ (iv) $\frac{10}{9}$ (v) $\frac{5}{15}$
(vi) $\frac{6}{7}$ (vii) $\frac{10}{10}$ (viii) $\frac{3}{9}$ (ix) $\frac{5}{8}$ 2. $\frac{5}{8}$ 3. $\frac{4}{5}$
Exercise 6.6
1. (i) $\frac{3}{7}$ (ii) $\frac{1}{8}$ (iii) $\frac{4}{11}$ (iv) $\frac{42}{11}$ (v) $\frac{45}{32}$ 2. 200 ml
Exercise 6.7
1. (i) $\frac{4}{7}$ (ii) $\frac{15}{8}$ (iii) $\frac{42}{11}$ (iv) $\frac{42}{50}$ (v) $\frac{45}{32}$ 2. 200 ml
Exercise 6.8
1. (i) Zero point five (ii) Zero point eight (iii) Three point five
(iv) Six point nine 2. (i) 0.4 (ii) 1.2 (iii) 2.3 (iv) 14.6
3. (i) $\frac{389}{10}$ (ii) $\frac{98}{10}$ (iii) $\frac{104}{10}$ (iv) $\frac{8}{10}$
7. Information processing - Exercise 7.1
1. (i) 1,79,010 (ii) 4,64,896 (iii) 2,41,943

Science

۲

۲



CONTENTS

Unit	Topic	Page No	Month
1	Our Environment	71	January
2	Animals	82	February
3	Air	95	March-April

۲



۲





۲

Digi Link



ENVIRONMENT

۲

Learning Objectives

After the completion of this lesson, students will be able to:

- Know about different types of farms.
- List out the economic importance of dairy farms and poultry farms.
- Know about Apiculture and the uses of honey.
- Understand the different types of manures and their uses.
- Know about vermiculture and vermicompost.

Introduction

Environment is everything that is around us. There are two types of environment. They are physical environment and biological environment. Physical environment includes all non-living things like land, water and air. Biological environment includes the living things such as plants and animals. Natural environment has lot of economic values. Plants and animals in our environment are useful to us in a number of ways. Animals like cow, buffalo and goat give us milk. Some animals are used for transportation. These animals are raised in farms. In this lesson we will learn about dairy farms, poultry farms, apiculture, manures and vermicompost.

I. Farms

Farming is the activity of growing crops and raising livestock. It is a part of agriculture. Agriculture is the cultivation of land and breeding of animals and plants to provide food, fiber, woods and medicinal plants to sustain and enhance life. But, farming is more profitable than agriculture. So it is done on a commercial scale. An area of land with fields and buildings that is devoted primarily to growing crops or raising domestic animals or both as a business is called farm. Large scale farms grow one or two major crops or animals. Middle sized and small sized farms grow different types of crops and animals.



1 Dairy Farm

Dairy farming is a type of agriculture that focuses on extraction of milk and preparation of various milk products like cheese, butter, curd etc. High milk producing cows along with bulls and oxen are raised in commercial dairy farms. Other animals found in these farms include goats, sheep and camels.





'District Livestock Farm' in Hosur, Krishnagiri district of Tamil Nadu, is the biggest cattle farm in Asia. Total area of this farm is 1641 acres.



Visit an animal farm in your area and prepare a list of animals domesticated there. Also find out the products you can get from there.

Cattle breeds

In India there are 26 cattle breeds. They are domesticated for milk, agricultural work, transportation and many other needs. Gir, Sahiwal, Red Sindhi, Kangayam and Ongole are some of the cattle breeds found in India. Cattle breeds found in different states of India are given in the table.

۲



۲

Cattle Breed	States
Gir	Gujarat, Rajasthan
Sahiwal	Punjab, Haryana, Uttar Pradesh
Red Sindhi	Andhra Pradesh
Malvi	Rajasthan, Madhya Pradesh
Nagari	Haryana, Uttar Pradesh, Rajasthan
Kangayam	Tamil Nadu
Ongole	Andhra Pradesh



India has the largest number of livestock in the world, holding 281 million. In 2008, our country housed the second largest number of cattle in the world with 175 million. (One million = Ten lakh)



Some of the cattle breeds found in Tamil Nadu are given below.



- Maria

Kangayam

Bargur





Umblachey

Pulikulam

With the help of your teacher find out the districts where they are found.

Apart from these animals, buffaloes are also domesticated in India. There are 7 buffalo breeds in India. Buffaloes produce more amount of milk than cows. Also, buffalo milk has more nutrients than cow's milk. Murrah, Jaffrabadi, Bhadawari and Surti are the buffalo breeds that are found in India. India is the biggest buffalo milk producer in the world. Some of the buffalo breeds found in our country are given in the table.

۲



۲



White Revolution in India was launched in 1970s to make India self dependent in milk production. Dr. Verghese Kurien is called the Father of White Revolution.

Buffalo Breeds	States
Murrah	Punjab, Haryana, Uttar Pradesh
Bhadavari	Uttar Pradesh, Madhya Pradesh
Jaffrabadi	Gujarat
Surti	Rajasthan, Gujarat
Mehsana	Gujarat
Nagpuri	Central and South India
Nili Ravi	Punjab, Haryana

* Feeding

Cattle need nutritious feed in order to be healthy and to produce high milk yield. The cattle feed includes roughage and concentrates. The roughage contains high amount of fiber and it includes fodder, hay, straw and silage. Concentrates include broken grams, cereals, millets, rice polish, cotton seeds and oil cakes. Apart from these feed, cattle need an adequate amount of fresh water.

۲

Diseases

Foot and mouth disease and anthrax are some of the common diseases found among cattle. Maintaining proper sanitation is necessary to stop the spread of these diseases. Timely vaccination can prevent most of the diseases. Veterinary medicine deals with the prevention, diagnosis and treatment of disease, disorder and injury for domestic and non-domestic animals.



Visit a veterinary hospital in your area and find out the common diseases found among the cattle in your area. Try to know how such diseases can be prevented.

* Uses

Cattle are useful to us in a number of ways. Some of them are listed below.

- → We get milk from cows. Cow's milk contains essential minerals needed for us.
- → Bullocks are used to plough land, harvest and thrash crops.
- Cattle are employed in transportation.
- Cattle dung is used as manure. It is also used as fuel and for generation of biogas.
- Panchagavya is an ayurvedic medicine used in agriculture to control pest and fungi. It is a mixer of dung and urine of cows, fresh milk, curd, jaggary and ghee.
- → Leather goods are manufactured from cattle hides.



2 Poultry Farms

In poultry farms avian species are reared and bred for the purpose of egg, meat or both. Fowls, ducks, geese, turkeys and some verities of pigeon are the most commonly reared species. Chicken occupy 90% of the total poultry. Poultry birds grown for meat are called broilers. Layers are the female fowls



grown for egg production. The poultry industry is important in providing a balanced diet for human population. Proper management of poultry includes methods of hatching, rearing, housing, sanitation, prevention of diseases and a sound marketing system. In Tamil Nadu famous poultry farms are found in places like Namakal, Palladam and Chennai.

* Breeds

There are more than hundred breeds of fouls. Fowls are classified on the basis of their utility to man. They are: meat type (broiler), egg type (egg layer) and dual type. Assel, Chittagong, Ghagus, Busra, Brahma and Cochin are some of the breeds found in our country. Local and indigenous birds are reared in rural places. Traditionally these birds have a poor meat production capacity compared to commercial broiler and layers. But meat and



egg from this type of poultry is better than other commercial poultry.



* Feeding

Poultry birds need proteins, carbohydrates, fats, minerals and vitamins for egg and meat production. Bajra, barley, maize, wheat, rice bran, jowar, oil cake, fish meal, bread and green residues of vegetables are the feed given to the poultry birds.

Poultry products

Poultry birds benefit us in many ways. Egg, meat and manure are the three main benefits we get from them.

- → Poultry birds are good source of nutritive food.
- \rightarrow Eggs laid by them are rich source of protien. These are easily digestable. They contain minerals like calcium, potassium and iron, vitamins and moderate amount of fat.
- → Their feathers are used for making pillows and guilts.
- > Dropping of the poultry birds is used as manure. It is highly valuable for crops.

🛛 Do you know?

Egg contains minerals like calcium, phosphorus and sodium and vitamins like B1, B2 and D. Nutritious content of egg is: Water 66%, Protein 21%, Fat 9% and Minerals 3.5%.



۲

Poultry Diseases

If poultry animals are not cared or fed properly, they suffer from a number of diseases.

- → Poultry birds affected by virus suffer from fever and diarrhea.
- → Foul cholera is caused in them by bacteria.
- Over exposure to wet and cold conditions causes cramps in poultry birds.
- → Poultry birds are affected by internal parasites like round worm and tap worm. They are also affected by external parasites like flees, lice, ticks etc.



Fill in the blanks using the words given below.

(Oilseeds, Egg, Honey, Food grains, Fish)

GreenRevolution:

Blue Revolution: _____

Silver Revolution:

Gold Revolution:

YellowRevolution:

Poultry management

Poultry birds need a clean environment. The following measures should be taken in order to avoid disases.

۲

- → Poultry houses should be clean and disinfected.
- It should have windows for ventilation.
- → Light is essential for high egg production.
- Poultry birds need clean and fresh water.
- Timely vaccination is necessary to prevent diseases.

II. Apiculture

Rearing of honey bee for honey is known as apiculture. It is also called bee keeping. In this technique honey bees are reared in a specially designed wooden box. Honey bees have been very closely associated with humans since ancient times. Various products like honey and wax are obtained from honey bees. Earlier honey is extracted from the hives in the forests. Nowadays they are domesticated by farmers to produce honey. Bee keeping is a profitable rural based industry. Honey bees are social insects. The nest of honey bee is known as the bee hive. They live in colonies and show division of labour

1 Types of Honey Bee

Three types of honey bee are found in a colony. They are Queen bee, the Drones and the Worker bees.

Queen Bee

The queen is the largest member of the bee colony. There is only one queen and it is the fertile female of the colony. They are formed from fertile eggs. The queen is responsible for laying eggs in a colony. It lays about two thousand eggs per day. The life span of the queen bee is 3-4 years.



* Drones

Drones are the fertile males. They develop from unfertilized eggs. They are larger than the workers and smaller than the queens. Their main function is to fertilize the eggs produced by the queen. They also help in maintenance of hive temperature. The number of drones in a colony amounts to hundreds and sometimes to thousands. The normal life-span of a drone is 57 days.



()

* Worker Bees

These are sterile female bees and the smallest members of the colony. These bees are very active. Their function is to collect honey, look after the young ones, clean the comb, defend the hive and maintain the temperature of the bee hive. Life span of worker bee is six weeks.



 Honey bee can fly up to six miles and as fast as 15 miles per hour.

2 Useful products from Honey Bees

Honey and bee wax are obtained from honey bees. Other products which are obtained from bees are bee venom, propolis and royal jelly.

 (\bullet)

* Honey

Honey is a sweet, viscous, edible natural food product. It contains proteins, free amino acids, vitamins and minerals like calcium, iron, phosphorus and manganese. The following are the uses of honey bees.

- Honey has an antiseptic and antibacterial property. It is an antibiotic.
- ✤ It helps in building up haemoglobin content in the blood.
- It is used in Ayurvedic and Unani system of medicines.
- It prevents cough, cold, fever and relieves sore throat.
- It enhances digestion and appetite.
- It provides essential aminoacids required for the growth of the body.

* Bee wax

Bee wax is secreted by the wax glands of worker bee to construct the combs of bee hive. Some of the uses of bee wax are given below.

It is widely used in cosmetic industry.

The wax is used in the preparation of shoe polish and manufacture of cold creams, lipsticks, candles and lubricants.

It is also used in the preparation of ointments and in pharmaceutical industry.

Do you know?

Honey is the exciting source of natural sweet. It is also called as 'Liquid Gold'.





()

III. Manure

Manure is an organic matter used as fertiliser. It is mostly derived from animal and plant residues. It increases the fertility of the soil by adding nutrients such as nitrogen, phosphorus and potassium. It is a natural form of fertiliser and it is cheaper.

1) Types of manure

Animal manure, green manure and compost manure are the different types of manures.

* Animal manure

Common form of animal manure is the farmyard manure. It contains the feces and urine of different livestock like horses, cattle, pigs, sheep, chickens, turkey and rabbits. It contains nutrients like nitrogen, phosphorus and potassium. It increases the capacity of soil to hold more water and nutrients.

* Green manure

This is a manure obtained by decomposition of green leaves, twigs of trees, shrubs and herbs. Leguminous plants like clover are used for this purpose. These

plants are ploughed in the soil. They fix nitrogen in the root of the plants. They also help in suppression of weeds and prevention of soil erosion.

* Compost

Compost is obtained by decomposition of organic matter like crop residues, animal wastes and food wastes by various microorganisms like bacteria and fungi under controlled conditions. These microorganisms break down organic matter into simpler substances.



With the help of your teacher set up a compost pit within your school compound. Put all the organic wastes like food waste and cover it with soil. Wait for three weeks and then you can use this as manure for the plants in your school.



Animal manure

Green manure





IV. Vermiculture



Vermiculture or Vermicomposting is a method of transforming organic wastes such as waste papers, leaves, pieces of woods etc., into

a nutrient rich fertilizer using earth worms. It is a healthy and clean way to eliminate wastes going into our landfills. It keeps the environment clean. Earthworms eat the organic wastes and excrete it in the form of castings. This is known as vermicompost. It is used as fertilizer for the soil and it improves the properties of the soil.

1 Materials used for Vermicomposting

Organic matters which are biologically degradable are used in vermicomposting. Some of them are given below.

- Crop residues like rice straw, rice husk, tea wastes and tobacco wastes.
- Fruit and vegetable wastes.
- Animal wastes like cattle dung, poultry droppings and droppings of goat and sheep.

2 Advantages of Vermicompost

- Vermicompost provides the essential nutrients such as nitrogen, potassium and phosphorus. for the plant growth.
- It improves the water holding capacity of the soil and prevents soil erosion.
- It enhances plant growth, suppresses diseases in plants, increases porosity and improves water retention and aeration.
- It reduces the need for chemical fertilizers.



Do you know?

Common earth worms are not used for vermicomposting. Specialized breeds that multiple while living in colonies are used for this. The most common are Red wigglers, European night crawlers, and African night crawlers.



- 3. _____ is the best fertilizer.
- a) Vermicompost b) Fruits c) Synthetic fertilizer d) Urea
- 4. _____ is more profitable than agriculture.
- a) Dairy farm b) Farming c) Cultivation d) Poultry

5. Poultry farm is famous in ______ district in Tamil Nadu.a) Ariyalurb) Salemc) Namakkald) Thanjavur

II Fill in the blanks.

- 1. There are _____ breeds of cattle in India.
- 2. The milk of _____ has more nutrients than cow's milk.
- 3. _____ contains high amount of fiber.

4. Droppings of poultry birds are used as _____.

5. Vermicomposting transforms ______ into a nutrient rich fertilizer.

III. Match the following.

-	Egg
-	Transportation
-	Leguminous plants
-	Buffalo
-	Milk
	- - - -

IV. Say True or False. If false, correct the statement.

- 1. Farming is done on a commercial scale.
- 2. Vermicompost can be used to clean sewage.
- 3. Leguminous plants fix nitrogen in the leaves of the plants.
- 4. Namakkal district is famous for dairy farm.
- 5. Murrah is a buffalo breed.

V. Answer briefly.

- 1. What is farming?
- 2. Mention the types of farming.
- 3. Write a note on poultry farm.
- 4. What is farmyard manure?
- 5. Define Vermicompost.

VI. Answer in detail.

- 1. What are the uses of animal products?
- 2. How will you manage a poultry farm?

 $\sim * \sim * \sim * \sim$





Learning Objectives

After the completion of this lesson, students will be able to:

- Understand reproduction in animals.
- Differenitiate oviparous and viviparous animals.
- Know about endangered animals and the importance to save them.
- List out the importance of wildlife sanctuaries and national parks.
- Understand the need for the prevention of cruelty to animals.

Introduction

Our planet earth has countless number of organisms including plants and animals. Among them, animals are the most advanced organisms. Animals are a gift of nature to human beings. They are very closely associated with us in our daily life and contribute a lot to us. Man is exploiting nature nowadays more than ever before. Hence animals are affected and many of the plant and animal species are disappearing from the surface of the earth. We are going to study about this in this lesson. This lesson will deal with reproduction in animals, extinction of animals and the ways to preserve them.

I. Reproduction in Animals



Reproduction is the biological process by which an organism gives rise to a new organism. This process is seen in all living organisms - both plants and animals. Percoduction is essential for the continuation of si

plants and animals. Reproduction is essential for the continuation of similar kinds of species, generation after generation. In animals two types of reproduction are seen. They are: sexual reproduction and asexual reproduction.



1 Sexual Reproduction

Sexual reproduction is a natural way of reproduction in humans, animals and also in most of the plants. This type of reproduction is more complex and lengthy as compared to asexual reproduction. Different and unique offspring are produced by sexual reproduction. Sexual reproduction consists of the following stages.

6

a. Pre-fertilization b. Fertilization c. Post-fertilization.

a. Pre-fertilisation

This is the first stage of sexual reproduction. In this stage gamete (sex cells) formation and transfer of gametes take place. In animals, males and females have different reproductive organs. The male reproductive organ is called testes and the female reproductive organ is called ovary. The testes produce the male gametes known as sperms and the ovaries produce the female gametes known as ova or eggs. The male gametes reach the female gamete during this stage.

b. Fertilisation

When the male gamete reaches the female gametes they begin to fuse together. The fusion of gametes is known as fertilization. During fertilization, the nuclei of the sperm and the egg form a single nucleus together, resulting in the formation of a fertilized egg, known as zygote.







Fertilisation in animals takes place in two ways. They are: External fertilization and Internal fertilization

External fertilization takes place outside the animal's body. It usually takes place in aquatic environments where both eggs and sperm are released into the water. Fertilization in frogs and fish takes place by this method. When the fertilization takes place inside the animal's body, it is called



internal fertilization. Internal fertilization takes place in animals like cat, dog, cow etc.

c. Embryo formation

The zygote (fertilized egg) further divides repeatedly into group of cells. These cells develop into different tissues and organs constituting a full body. This structure is known as embryo.



()

The embryo continues to develop in the uterus and it is developed into body parts such as head, face, hands, legs, etc. Based on whether the embryo develops outside or inside the body, animals are classified into oviparous and viviparous respectively.

Oviparous animals

Animals in which embryo develops outside the body are called oviparous animals. They produce their offspring by laying eggs. In the case of birds new ones are produced from the eggs. The egg shell protects the embryo from outer environment and the embryo receives its nutrients from the egg yolk. In these animals the new born one will have different developmental stages.

For example, in butterfly, there are different developmental stages like egg, larva, pupa and adult. Each stage is different. The process in which a butterfly becomes an adult is called metamorphosis. The life cycle process can take a month to year.

Stage 1: Eggs

In the first stage a butterfly lays eggs on a leaf. These eggs are very small and round. About five days after the eggs are laid, a tiny worm-like creature will hatch from the egg.

Stage 2: Caterpillar (Larva)

The second stage is the caterpillar. It is also called larva. It looks like a worm. The caterpillar starts to eat leaves and flowers once it has hatched. It grows very fast because it eats a lot. As it grows fast it sheds its old skin and gets new skin. A caterpillar shedding its outgrown skin is called molting.

Stage 3: Chrysalis (Pupa)

The third stage is the pupa. It is mostly brown or green. This is the resting stage as well as the changing stage. The caterpillar turns into a butterfly.

84

13-11-2019 20:11:55









Do you know?

Amphibians are animals which have double life. The early part of an amphibian's life is spent in the water. As they get older, they spend time on land. Amphibians like frog lay thousands and sometimes



Stage 4: Butterly (Adult)

In the fourth stage the pupa opens and a butterfly comes out. A butterfly is sometimes called an imago. It is also called as adult. Butterflies are very colorful. When the butterfly first comes out it is very tired and so it rests. Then the butterfly will lay eggs and the lifecycle will start all over again.

۲

Viviparous animals

Animals in which the embryo develops inside the body are called viviparous animals. These animals give birth to the young ones. The developing embryo gets its nutrients from the mother. Humans, cows, deer and dogs are examples for viviparous animals.



Oviparous animals	Viviparous animals
The development of	The development of
the embryo takes place	the embryo takes
outside the animal.	place inside the animal.
They produce their	They directly give
young ones by laying	birth to the young
eggs.	ones.
The embryo receives	The embryo receives
the nutrients from	the nutrients from
the egg yolk.	the mother.
Examples for	Examples for
oviparous animals are	viviparous animals are
insects, fish, reptiles	cats, dogs,
and birds.	humans and lions.



Write down the names of any three oviparous and viviparous animals in the table given below.

Oviparous animals	Viviparous animals

2 Asexual Reproduction

The type of reproduction in which only a single parent, gets divided into two new offspring, is known as asexual reproduction. This type of reproduction takes place in micro organisms like hydra and amoeba. Asexual reproduction produces offspring that are identical to the parent. There are several ways by which animals reproduce asexually. Some of them are explained below.

Fission

Fission, occurs in some invertebrate (organisams without back bone), multi-celled organisms. In this method, an organism splits itself into two parts. For example, flatworms, sea anemones and sea cucumbers divide into two halves and regenerate the other half in each of the resulting individuals.



()

Sudding

Budding is a form of asexual reproduction that results from the outgrowth of a part of the body. Then the bud is separated from the original organism forming two individuals. Budding occurs commonly in some invertebrate animals such as hydras and corals.

Fragmentation

Fragmentation is the breaking of an individual into parts followed by regeneration. Reproduction through fragmentation is observed in sponges and sea stars. Fragmentation may occur through accidental damage, damage from predators, or as a natural form of reproduction.



Sea Anemone

Hydra

Star Fish

* Spores

Some protozoan, bacteria, plants and fungi reproduce via spores. Spores are the structures naturally grown as part of an organism's life cycle. They are separated from the organism and dispersed through a medium such as air or water. In a suitable environment, the spores will develop into a fully grown organism.

Activity 2

Visit a nearby museum or a higher secondary school lab in your area. Find the specimens of starfish, cucumber and hydra there. Collect the pictures of these species and prepare an album.

II. Endangered Species

An endangered species is an animal or a plant that is at the risk of extinction. It means that they might extinct from the earth soon. It is reported that nearly 132 species of plants and animals are critically endangered in India. Snow Leopard, Bengal Tiger, Asiatic Lion, Purple Frog and Indian Giant Squirrel are some of the endangered animals in India. Similarly, plants like Umbrella Tree, Malabar Lily, Rafflesia Flower, Indian Mallo and Musli Plant are endangered.





Lion tailed Macaque

Asiatic Lion

The Niligiri Tahr

Snow Leopard





Collect the pictures of different plants and animals. Prepare a poster showing the endangered animals and plants in India. Also find out where they are found.

🕖 Do you know? An animal is said to be endangered if its population is currently less than 50 or less than 250 for the past three years.



Indian Mallo

Malabar Glory Lily Umberlla Tree

Rafflesia Flower

Causes for Endangerment

The following are the reasons why an animal or a plant is endangered or extinct.

- → Forests which provide food and shelter to animals are destroyed for human needs.
- → Large number of animals is hunted for their horns, skin, teeth and many other valuable products.



Activity 4

Write few slogans for conservation of forest and animals. Observe some important days related to nature like World Wildlife Day and organise a rally on those days.



87

- → Pollutions like air pollution and water pollution affect the animals.
- → Sometimes animals are taken to new habitat by people. They cannot survive there.
- Pesticides and chemicals which are used to get rid of insects, pests or weeds, poison the plants and animals.
- Natural disasters like flood, cyclones and fire also destroy animals.



2 Saving Endangered Species

Nature is beautiful and it is filled with varieties plants and animals. But they are endangered mainly due to human activitys we need to take some measures to protect them.

- Hunting and poaching animals should be prohibited.
- → We should not pollute the environment.
- → Limiting the usage of plastic and recycling it can save the endangered animals.
- → Pesticides and chemicals which pollute the environment should be avoided.
- → Planting native trees will provide food to the animals.
- → We should buy eco friendly products only.

Activity 5

Plant native trees like Banyan Tree, Neem Tree, Umbrella Tree and Java Plum Tree in your school area. These trees can benefit birds. Do you know?

Project Tiger was initiated in India in 1972 to protect the Bengal Tiger. It was launched on 1st April 1973. Due to this project the population of Tiger has increased in India from 1400 in 2006 to 2967 in 2018.

3 Red Data Book

The Red Data Book is a book maintained for recording rare and endangered species of animals and plants. This book is created to identify and protect the species which are about to extinct.



Black - Confirmed to exti species	nct Red Data Book
Red 🛛 🛑 - Endangered speci	Mew. rore and endangered unimal species
White 🔵 - Rare species	
Green 🛑 - Formerly endange species but starte to recover.	ered ed

()

It is maintained by the International Union for Conservation of Nature (IUCN), an international organization working in the field of nature conservation. The Red Data Book contains colour-coded information sheets.

Advantages of the Red Data Book

- It helps to evaluate the population of a particular species.
- The data given in this book can be used at the global level.
- The risk of a species becoming globally extinct can be estimated with the help of this book.
- → It provides the necessary guidelines for implementing protective measures.

Do you know?

Red Data Book of India contains the conservation status of animals and plants which are found in the Indian subcontinent. Surveys conducted by the Zoological Survey of India and the Botanical Survey of India provide the data for this book.

III. Conservation of Animals

Biodiversity is the term used to describe different plants, animals, microorganisms, and insects etc. that are found on the earth. Conservation of biodiversity helps us to protect, maintain and recover the endangered animals and plant species. Conservation is the protection, preservation, management of wildlife and natural resources. Endangered species are maintained in certain protected areas such as national parks and wild life sanctuaries. In India, there are about 73 national parks and 416 wild life sanctuaries.

1 National Parks

A National park is an area which is strictly reserved for the betterment of the wild life. In these areas, activities like forestry, grazing or cultivation are not permitted. Even private ownership rights are not allowed in these areas. The national parks cover an area of 100 - 500 square kilometers.



* Jim Corbett National Park

Jim Corbett National Park is located close to Nainital, in Uttarakhand. Tigers are found in this park. Other animals found here include several species of deer, leopards, jackals, red foxes, black bear, sloth bear, and monkeys.

 (\bullet)

Gir Forest National Park

It is located in Gujarat. Asiatic lions in their natural habitat can be seen here. Other animals that are found here include sambar, chinkara, chital, porcupine, wild boar and black buck.

* Kaziranga National Park

Wild animals such as Rhinoceros, Tiger, Elephant, Wild Buffalo and Swamp Deer are seen here. This park also has bears, leopards, and several species of local and migratory birds. This park is famous for one horned Rhino.



UNESCO (United Nations Educational, Scientific and Cultural Organisation) has declared Kaziranga National Park as a World Heritage Site.



Sundarban National Park

Located in West Bengal, the Sundarban National Park is a Tiger and Biosphere Reserve on the Ganges Delta. Bengal tiger, saltwater crocodile, wild boars, foxes, leopard cats, huge turtles, Ganges river dolphins and several other varieties of mammals and reptiles, along with a huge variety of local and migratory birds can be seen here.

* Kanha National Park

Kanha National Park located in Madhya pradesh was established as a part of Project Tiger. Apart from tiger, animals such as elephants, jackals, leopards, striped hyenas, monkeys, and several varieties of deer including black buck, swamp deer, chital, and sambhar are seen here.

90

Periyar National Park

Periyar National Park is in Thekkady, Kerala. Various species including the majestic elephants, royal tigers, and fishes, reptiles and birds can be seen here.

Name of the Park	District
Gulf of Munnar National Park	Ramanathapuram
Indira Gandhi National Park	Coimbatore
Mudumalai National Park	The Nilgiris
Mukurthi National Park	The Nilgiris

Guindy National Park

This park is located at the heart of the Chennai city. It is a home to spotted deer, black bucks, white bucks, river otter, hyena, bonnet monkey, civet cat, jackals, pangolin, hedgehog and common mongoose etc.

2 Wildlife Sanctuaries

A sanctuary is a protected area which is reserved for the conservation of animals only. Harvesting of timber, collection of forest products and private ownership rights are allowed here. Tourist visit is also allowed in these places.

* Kalakkad Wildlife Sanctuary

The Kalakkad wildlife sanctuary is famous for Tigers. Lion tailed macaque, Nilgiri langur, bonnet macaque, langur, Nilgiri tahr, sambar, sloth bear, gaur, elephant, flying squirrel, panther, wild dog and pangolin are some of the animals found here.

Activity 6

List out the national parks and wild life santuaries in Tamil Nadu. Visit such places that are close to you and collect more information about the animlas found there.

Mudumalai Wildlife Sanctuary

It is located in **Ooty**. Bengal Tiger, Giant Elephant and Leopard are found here. Elephant safari is famous in this sanctuary.

Mundanthrai Wildlife Sanctuary

It is located in Thirunelveli District. Major wild life animal found here is Tiger.







91

Anaimalai Wildlife Sanctuary

It is also called as Indira Gandhi Wildlife Sanctuary. It is situated in Coimbatore District. Dhole, Wild dog and Giant Squirrel are seen here.

Name of the Santuary	District
Meghamalai Wildlife Sanctuary	Theni
Vandaloor Wildlife Sanctuary	Chennai
Kalakkad Wildlife Sanctuary	Thirunelveli
Grizzled Squirrel Wildlife Sanctuary	Virudhunagar

Vedanthangal Bird Sanctuary

It is a very old sanctuary in Tamil Nadu. It is located in Kancheepuram District. It has many migratory birds like Spoon bills, Open billed storks, Pelicans etc.

۲

3 Advantages of Conservation

- Species can be adapted to their habitat.
- Species can interact with each other.
- Natural habitat of the animals is maintained.
- It is less expensive and easy to manage.

Point Calimere Sancturary – Karaivetti Bird Sanctuary – Vaduvur Bird Sanctuary – Vallanadu Black Buck Sancturary – Viralimalai Bird Sanctury – Grizzled Squirred Sancturary –

Do you know?

- Nagappattinam

- Ariyalur
- Tiruvarur.
- Tuticorin
- Trichi
- Virudhunagar

IV. Prevention of Cruelty to Animals

Cruelty to animals includes capturing, trapping, poisoning of any wild animal collectively. There are many animal welfare organizations concerned with the health, safety and psychological wellness of animals. They include animal rescue groups which help animals in distress, and others which help animals suffering from some epidemic. Animal Welfare Board of India and National Institute of Animal Welfare are the government organizations which work for the welfare of animals. There are some private welfare organizations also.

1 Blue Cross

Blue Cross is a registered animal welfare charity in the United Kingdom. It was established in 1897 with the vision that every pet will enjoy a healthy life in a happy home. The charity provides support for pet owners who cannot afford private veterinary treatment, helps to find homes for unwanted animals, and educates the public in the responsibilities of animal ownership.

92

()

Blue Cross of India was established at Chennai in the year 1959. Now, Blue Cross of India is one of the largest animal welfare organizations in India. The main office is located at Guindy, Chennai, with all amenities like hospitals, shelters, ambulance services and animal birth controls, etc. Activities of the organization include, providing shelters, adoption, maintaining hospitals and mobile dispensary and providing ambulance services.



Do you know?



Make a visit to a veterinary clinic near your area. Find how animals are affected by people. Discuss how you can prevent cruelty to animals. Blue Cross of India was founded by Captain V. Sundaram of Chennai. He was an Indian pilot and animal welfare activist.

Evaluation





II Fill in the blanks.

1. Animals which give birth to young ones directly are named as _____

۲

2. _____ of animals leads to endangered condition.

3. Gir National Park is famous for _____.

- 4. Blue Cross is an _____ welfare organization.
- 5. Nilgiri Tahr is an _____ species.

III. Match the following.

1. Zycote	-	Asexual Reproduction
2. Viviparous	-	Elephant
3. Endangered animal	-	Cat
4. Mudhumalai	-	Fertilised Egg
5. Fragmentation	-	Rhinoceros

IV. Answer in brief.

1. What is fertilization?

- 2. What are the different stages of sexual reproduction?
- 3. Mention the different types of asexual reproduction.
- 4. Differentiate between oviparous and viviparous animals.
- 5. Write a note on Blue Cross.

V. Answer in detail.

- 1. Explain the methods of asexual reproduction.
- 2. What are the causes for the extinction of animals?
- 3. Write an essay about national parks and wildlife sanctuaries.

 $\bigcirc * \bigcirc * \bigcirc * \bigcirc$





Learning Objectives

After the completion of this lesson, students will be able to:

- Know about different layers of atmosphere.
- Understand the causes of air pollution.
- List out the ways of reducing air pollution.
- Know about the airborne diseases.
- Understand the importance of air in daily life.

Introduction

Air is present everywhere around us. Though we cannot see it we can feel it. Air is a mixture of gases like oxygen, nitrogen, carbon dioxide and hydrogen. These gases act as an envelope around the earth and form the atmosphere. It is the presence of atmosphere that makes the earth a suitable place for living. In the recent years more number of industries has been established and they release excess of harmful gases like carbon dioxide into the atmosphere. Because of this air is polluted more than ever before. In this lesson we are going to study about different layers of atmosphere, air pollution, air borne diseases and the measures to control air pollution.

I. Atmosphere

The earth is surrounded by a layer of gases which is called the atmosphere. It is composed mainly of nitrogen (78%) and oxygen (21%). Other gases like carbon dioxide and argon comprise 1% of the atmosphere by volume. The atmosphere is like a blanket that surrounds the earth. It protects the Earth from getting too cold or too hot.



Atmosphere is divided into five different layers. The layers from the bottom upwards are called Troposphere, Stratosphere, Mesosphere, Thermosphere and Exosphere.

۲

* Troposphere

The troposphere is the lowest layer of the atmosphere. From the sea level it extends upto about 10 km. It is the densest layer and almost 75% of the air in the atmosphere is found in this layer. This layer also has water vapour. We live in the troposphere and most of the weather - clouds, rain, snow - is found in this layer. All weather changes also occur in this layer.



Read the weather news in a daily news paper and note down the changes in the weather over a week. In which layer these changes take place? Discuss in the classroom about these changes and record your points.

* Stratosphere

It extends from the top of the troposphere to about 50 km above the ground. Ozone layer found in this layer absorbs harmful ultraviolet rays which can cause damage to our skin and eyes. There is no water vapor in this layer. The temperature in this layer is around -550 C.

