

**EAST POINT SCHOOL  
CLASS-VII**

**STUDY MATERIAL**

**ENGLISH**

**Unit-4 Nature –Creator and Destroyer**

**Section-2 Flames in the Forest by Ruskin Bond**

**Video Link: - <https://www.youtube.com/watch?v=QjJWFuZOkm0>**

**Learning Objective:**

- To develop reading, analytical, and critical skills.
- To enhance vocabulary

**About the author:**

**Ruskin Bond** (born 19 May 1934) is an Indian author of British descent. The Indian Council for Child Education has recognised his role in the growth of children's literature in India. He was awarded the Sahitya Academy Award in 1992 for *Our Trees Still Grow in Dehra*, his novel in English.

**New Words:-**

1. Cautious-careful
2. Risk taker- one who takes risk:
3. Clattering-rattling sound:
4. Stretched-to extend:
5. Daring-boldness:
6. Soggy: moist
7. Billow out: bulge outwards

**SYNOPSIS**

Ruskin Bond is famous as a nature writer. Almost all his stories have the hilly terrain of India with its lush green forests as the back drop.

The novella Romi and the wildfire is an extraordinary account of a young boy of eleven years-Romi, raging through a forest fire. Romi had gone to the adjacent village to collect some medicines for his ailing father in his new bicycle. While returning home he confronts the devastating forest fire.

Being a loyal and responsible boy he risks his life to be able to reach home and deliver the medicines to his father. On the way he experiences the sorry plight of hundreds of wild animals who have been rendered homeless by the fire.

The panic stricken animals are running helter skelter in search of refuge.

Romi come across the little milk boy Teju who too is caught in the fire. Together they race past the fire in Romi's cycle only to face another disaster-the burning wooden bridge the only link with the village.

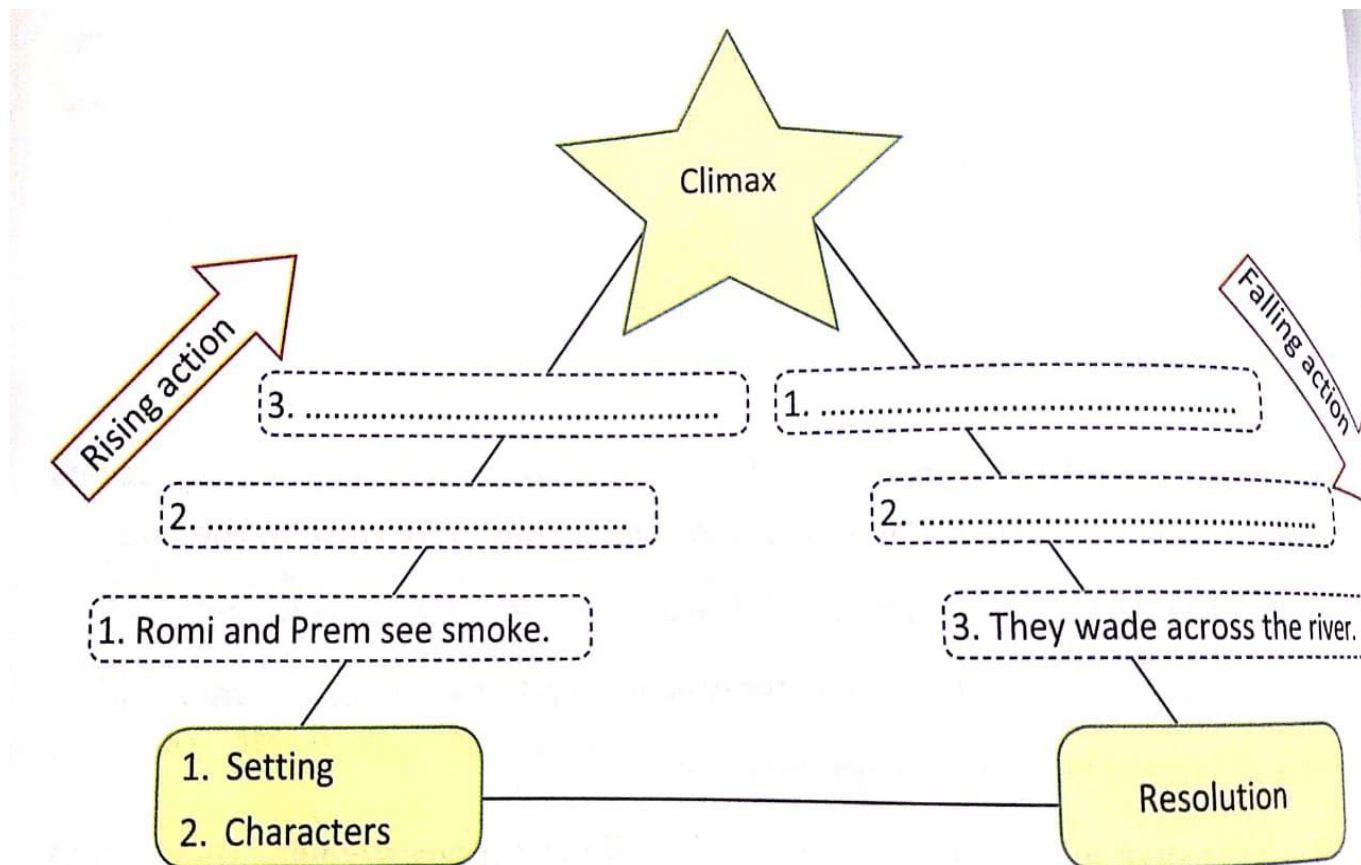
Helpless they plunge into the river with the cycle and swim to safety. Thus ends their adventure.

**Answer the following questions:-**

1. The \_\_\_\_\_ weather \_\_\_\_\_ worsen \_\_\_\_\_ the fire\_\_\_\_\_. (1 M)
2. Romi was in a hurry to get back home because\_\_\_\_\_. (1 M)
3. What was the effect of the forest fire on different animals? (2 M)
4. What kind of boy was Romi?(2 M)
5. Romi takes as a challenge the task of crossing the fiery forest though he has the chance to stay back at his friend's house. Do you think this was wise decision? Give reasons. (3 M)
6. What do you think started the forest fire? Why do you think so? (3M)
7. What brought Romi and Teju closer? (2M)

**Activity:**

Q-1) Fill in the Graphic Organizer to sum up the events in the story.



Q-2) Many natural disaster cannot be predicted. However you can reduce the loss. Make a poster on disaster-preparedness. You could pick any one natural disaster of your choice.

**हिंदी**

### पाठ 11- रहीम के दोहे

Note- please refer to the above given link to study the chapter

<https://www.youtube.com/watch?v=jclcWpVCwNU>

अधिगम बिंदु:-

रहीम जी के व्यक्तित्व से परिचित होंगे।

दोहा गायन सिखेंगे। प्रस्तुत दोहो द्वारा छात्रों में नैतिक मूल्यों का विकास होगा।

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रहीम दास जी मध्यकालीन के महान कवि थे, उनको अवधी, ब्रज, अरबी, फ़ारसी, तुर्की, और हिंदी भाषा का अच्छा ज्ञान था। रहीम दास जी का जन्म 17 दिसम्बर 1556 को पाकिस्तान के लाहौर में हुआ था। वह बहुमुखी प्रतिभा से संपन्न व्यक्तित्व के धनी थे।

उनका नाम आज पुरे विश्व में आदर के साथ लिया जाता है। उनके लिखे गए दोहे, कविता इत्यादि को आज स्कूलों में ज्ञान को बढ़ाने के लिए किया जाता है।



**1. कहि रहीम संपति सगे, बनत बहुत बहु रीत।  
बिपति कसौटी जे कसे, तेई साँचे मीत ॥ ॥**

**प्रसंग:-** रहीम दास जी के दोहे के माध्यम से सच्चे मित्र की परिभाषा को बताया है।

**व्याख्या:-** रहीम दास जी कहते हैं कि जब हमारे पास संपत्ति होती है तो लोग अपने आप हमारे सगे, रिश्तेदार और मित्र बनने की प्रयास करते हैं लेकिन सच्चे मित्र वो ही होते हैं, जो विपत्ति या विपदा आने पर भी हमारे साथ बने रहते हैं। वही हमारे सच्चे मित्र होते हैं उनका साथ हमें कभी नहीं छोड़ना चाहिए।

**शब्दार्थ:-** कहि – कहना, संपति – धन, सगे – रिश्तेदार (अपने), बनत – बनते हैं, रीत – तरीका, बिपति – संकट (कठिनाई), कसौटी जे कसे – बुरे समय में जो साथ में, तेई – वे ही, साँचे – सच्चे, मीत – मित्र (अपने)।

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**2. जाल परे जल जात बहि, तजि मीनन को मोह।  
रहिमन मछरी नीर को, तऊ न छाँड़ति छोह ।।2।।**

**प्रसंग:-** इस दोहे में रहीम दास जी ने जल के प्रति मछली के एक तरफा प्रेम को दर्शाया है।

**व्याख्या:-** रहीम दास जी कहते हैं कि जब मछली पकड़ने के लिए जल में जाल डाला जाता है तो जल बहकर बाहर निकल जाता है। वह मछली के प्रति अपना मोह त्याग देता है लेकिन मछली का प्रेम जल के प्रति इतना अधिक होता है कि वो जल से अलग होते ही अपने प्राण त्याग देती है, यही सच्चा प्रेम है।

**शब्दार्थ:-** परे- पड़ने, पर, जल- पानी, जात- जाता, बहि- बहना, तजि- छोड़ना, मीनन- मछलियाँ, मोह- लगाव, मछरी- मछली, नीर- जल, तऊ- तब भी, न- नहीं, छाँड़ति- छोड़ती, छोह- प्रेम (प्यार)।

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**3. तरुवर फल नहीं खात है, सरवर पियत न पान।  
कहि रहीम परकाज हित, संपति-सचहिं सुजान ।।3।।**

**प्रसंग:-** रहीम दास जी ने इस दोहे में मनुष्य में पाए जाने वाले परोपकार की भाव को प्रकट किया है अथार्थ दूसरों की भलाई करना।

**व्याख्या:-** रहीम दास जी कहते हैं कि जिस प्रकार वृक्ष अपने फल कभी नहीं खाता सरोवर अपने द्वारा संचित किया गया जल कभी नहीं पीता उसी प्रकार सज्जन और विद्वान लोग अपने द्वारा संग्रह किए गए धन का उपयोग अपने लिए नहीं बल्कि दूसरों की भलाई में करते हैं।

**शब्दार्थ:-** तरुवर- वृक्ष, नहीं- नहीं, खात- खाना, सरवर- सरोवर(तालाब), पियत- पीते, पान- पानी, कहि- कहते, परकाज- दूसरो के लिए काम, हित- भलाई, सम्पति- धन (दौलत), सचहिं- संग्रह (बचत), सुजान- सज्जन/ज्ञानी।

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**4. थोथे बादर कार के, ज्यों रहीम घहरात।  
धनी पुरुष निर्धन भए, करें पाछिली बात ।।4।।**

**प्रसंग:-** प्रेमदास जी इस दौर के माध्यम से बताना चाहते हैं कि मनुष्य निर्धन होने के बाद भी पुराने दिनों के ऐश्वर्य की बातें करते रहते हैं।

**व्याख्या:-** रहीम दास जी कहते हैं कि जिस प्रकार आश्विन के महीने में जो बादल आते हैं वो थोथे होते हैं। वे केवल गरजते हैं लेकिन बरसते नहीं हैं उसी प्रकार धनी पुरुष निर्धन होने पर अपने सुख में बिताए हुए दिनों की बातें करता रहता है जिसका वर्तमान में कोई मतलब नहीं होता है। वह अपने सुख में बिताए हुए पलों को याद करते रहते हैं लेकिन अपनी वर्तमान स्थिति में कोई सुधार नहीं करते हैं।

**शब्दार्थ:-** थोथे – खोखले. बादर – बादल, कार – आश्विन ( सितंबर-अक्टूबर का महीना), ज्यों- जैसे, घहरात – गर्जना, धनी – धनवान, निर्धन – गरीब, भए – हो जाते है, पाछिली – पिछली (पुरानी)।

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**5. धरती की-सी रीत है, सीत घाम औ मेह।  
जैसी परे सो सहि रहे, त्यों रहीम यह देह।।5।।**

**प्रसंग:-** इस दोहे में रहीम दास जी ने मनुष्य के शरीर की तुलना धरती से की है।

**व्याख्या:-** रहीम दास जी कहते हैं कि जिस प्रकार हमारी धरती सर्दी, गर्मी, बरसात के मौसम को एक समान भाव से जेल लेती है। उसी प्रकार हमारे शरीर में भी वैसे ही क्षमता होनी चाहिए हम जीवन में आने वाले परिवर्तन और सुख-दुख को सहज रूप से स्वीकार कर सकें।

**शब्दार्थ:-** रीत- ढंग, सीत- सर्दी (ठंड), घाम – धूप, औ- और, मेह- बारिश, परे – पड़ना, सो- सारा, सहि- सहना, त्यों – वैसे, देह- शरीर।

**निम्नलिखित प्रश्नो के उत्तर दीजिए।**

- (1) वृक्ष और सरोवर किस प्रकार दूसरों की भलाई करते हैं?
- (2) रहीम मनुष्य को धरती से क्या सीख देना चाहता है?
- (3) रहीम ने कार के बादलों की तुलना किससे और क्यों की है?
- (4) रहीम के दोहों से हमें क्या सीख मिलती है?
- (5) हमें वृक्ष और सरोवर से क्या शिक्षा ग्रहण करनी चाहिए? (मूल्यपरक प्रश्न)

**MATHS**

**Rational Numbers**

**Video for the reference:**

[https://youtu.be/PFYpn7QBh\\_8](https://youtu.be/PFYpn7QBh_8)

**GENERAL OBJECTIVES:**

1.Students will be able to identify between positive rational number and negative rational number.

2.Student will be able to find out different rational number between two rational number.

3.They will be able to represent the rational number on the number line.

4.They will be able to write down the equivalent rational number of the given rational number.

- A **rational number** is defined as a number that can be expressed in the form  $p / q$ , where  $p$  and  $q$  are integers and  $q \neq 0$ .

### Equivalent Rational Numbers

- By **multiplying or dividing the numerator and denominator** of a rational number by a **same non zero integer**, we obtain another rational number equivalent to the given rational number. These are called **equivalent fractions**.

### Rational Numbers in Standard Form

- A rational number is said to be in the **standard form** if its denominator is a positive integer and the **numerator and denominator have no common factor other than 1**.

### Rational Numbers between Two Rational Numbers

- There are unlimited number(infinite number) of rational numbers between any two rational numbers.
- **Addition of Rational Numbers**

- **Case 1:** Adding rational numbers with same denominators:

$$\begin{aligned} \text{Example : } & \frac{19}{5} + \frac{-7}{5} \\ & = \left( \frac{19-7}{5} \right) = \frac{12}{5} \end{aligned}$$

- **Case 2:** Adding rational numbers with different denominators:

$$\text{Example : } \frac{-3}{7} + \frac{2}{3}$$

LCM of 7 and 3 is 21

$$\text{So, } \frac{-3}{7} = \frac{-9}{21} \text{ and } \frac{2}{3} = \frac{14}{21}$$

$$\Rightarrow \frac{-9}{21} + \frac{14}{21} = \left( \frac{-9+14}{21} \right) = \frac{5}{21}$$

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## Subtraction of Rational Numbers

- To subtract two rational numbers, add the additive inverse of the rational number that is being subtracted, to the other rational number.
- Example: Subtract  $\frac{2}{5}$  from  $\frac{7}{9}$ .

$$\begin{aligned} & \frac{7}{9} + \text{Additive Inverse of } \left( \frac{2}{5} \right) \\ & = \frac{7}{9} + \left( \frac{-2}{5} \right) \\ & = \left( \frac{35-18}{45} \right) \quad \{ \because \text{LCM of 9 and 5 is 45} \} \\ & = \frac{17}{45} \end{aligned}$$



## Multiplication and Division of Rational Numbers

### Multiplication of Rational Numbers

#### Multiplication of Rational Numbers

- **Case 1:** To multiply a rational number by a positive integer, multiply the numerator by that integer, keeping the denominator unchanged.

$$\frac{-3}{5} \times (7) = \frac{-3 \times 7}{5} = \frac{-21}{5}$$

- **Case 2:** Steps to multiply one rational number by the other rational number:

**Step 1:** Multiply the numerators of the two rational numbers.

**Step 2:** Multiply the denominators of the two rational numbers.

**Step 3:** Write the product as

$$\frac{\text{Product of Numerators}}{\text{Product of Denominators}} \\ = \left(\frac{-5}{7}\right) \times \left(\frac{-9}{8}\right) = \frac{-5 \times (-9)}{7 \times 8} = \frac{45}{56}$$

#### Division of rational numbers

- To divide one rational number by the other rational numbers we multiply the rational number by the reciprocal of the other.

Example:  $\frac{-2}{3} \div \frac{1}{7}$

$$= \frac{-2}{3} \times \text{Reciprocal of } \frac{1}{7}$$

$$= \frac{-2}{3} \times 7 \quad \{ \because \text{Reciprocal of } \frac{1}{7} = 7 \}$$

$$= \frac{-14}{3}$$

To know more about Arithmetic Operations on Rational Numbers, [visit here](#).

## Negatives and Reciprocals

### Negatives and Reciprocals

- Rational numbers are classified as positive and negative rational numbers.  
(i) When both the numerator and denominator of a rational number are **positive integers or negative integers**, then it is a positive rational number.

Example:  $\frac{3}{5}$  is a positive rational number.  $\frac{-3}{-5} = \frac{3}{5}$  is also a positive rational number.

- (ii) When either numerator or denominator of a rational number is a **negative integer**, it is a negative rational number.

Example:  $\frac{-3}{5} = -\frac{3}{5}$  is a negative rational number.  $\frac{3}{-5} = -\frac{3}{5}$  is also a negative rational number.

- If the product of two rational numbers is 1 then they are called **reciprocals** of each other.  
Example :  $\frac{2}{3}$  is reciprocal of  $\frac{3}{2}$ , since  $\frac{2}{3} \times \frac{3}{2} = 1$

Note : The product of a rational number with its reciprocal is always 1.

### Additive Inverse of a Rational Number

- Additive Inverse of a rational number  $\frac{p}{q}$  is the number that, when added to  $\frac{p}{q}$ , yields zero.  
Example: Additive Inverse of a rational number  $\frac{3}{5}$  is  $\frac{-3}{5}$  and additive inverse of  $\frac{-3}{5}$  is  $\frac{3}{5}$ .  
Since  $\frac{3}{5} + \frac{-3}{5} = 0$

## Representing on a Number Line

### Rational Numbers on a Number Line

- In order to represent a given rational number  $\frac{a}{n}$ , where  $a$  and  $n$  are integers, on the number line :

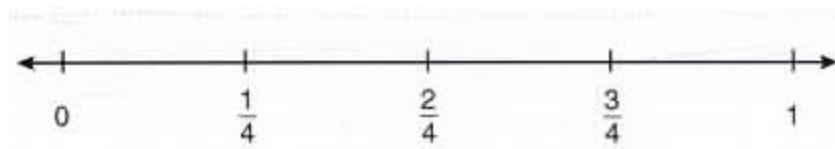
**Step 1:** Divide the distance between two consecutive integers into  $n$  parts.

For example : If we are given a rational number  $\frac{3}{4}$ , we divide the space between 0 and 1, 1 and 2 etc. into **four** parts

**Step 2:** Label the rational numbers till the range includes the number you need to mark

- The following figure shows how fractions  $\frac{1}{4}$ ,  $\frac{2}{4}$  and  $\frac{3}{4}$  are represented on a number line.
- Divide the portion from 0 to 1 on the number line into four parts.

Then each part represents  $\frac{1}{4}$ <sup>th</sup> portion of the whole.



To know more about Representation of a Rational Numbers on a Number Line, [visit here](#).

## Comparison of Rational Numbers

- **Case 1:** To compare two negative rational numbers, ignore their negative signs and reverse the order.

Example: Which is greater:  $-\frac{3}{8}$  or  $-\frac{2}{7}$  ?

Compare  $\frac{3}{8}$  and  $\frac{2}{7}$ :  $\frac{3}{8} > \frac{2}{7}$

$$\therefore -\frac{3}{8} < -\frac{2}{7}$$

- **Case 2:** To compare a negative and a positive rational number, we consider that a negative rational number is to the left of zero whereas a positive rational number is to the right of zero on a number line. So, a negative rational number will always be less than a positive rational number.

Example: (i)  $-\frac{3}{11} < \frac{2}{5}$

$$(ii) -\frac{3}{8} < -\frac{2}{7}$$

## WORKSHEET

Q1. Find three rational numbers equivalent to each of the following rational numbers.

(i)  $-2/5$

(ii)  $3/7$

Q2. Reduce the following rational numbers in standard form.

(i)  $35 / -15$

(ii)  $-36 / -216$

Q3. Represent  $3/2$  and  $-3/4$  on number lines.

Q4. Which of the following rational numbers is greater?

(i)  $3/4, 1/2$

(ii)  $-3/2, -3/4$

Q5. Find the sum of

(i)  $-4\frac{3}{4} + 2\frac{7}{12}$       (ii)  $\frac{9}{-12} + \frac{5}{8}$

Q6. Subtract:

(i)  $\frac{-5}{6}$  from  $\frac{-7}{8}$     (ii)  $2\frac{1}{5}$  from  $-3\frac{1}{6}$

Q7. Find the product:

(i)  $6\frac{2}{3} \times \left(-5\frac{1}{16}\right)$     (ii)  $\left(-3\frac{1}{4}\right) \times \left(-2\frac{3}{4}\right)$

Q8. If the product of two rational numbers is  $-916$  and one of them is  $-415$ , find the other number.

Q9. Arrange the following rational numbers in ascending order.

(i)  $-\frac{1}{3}, \frac{-4}{3}, \frac{-2}{9}$     (ii)  $-\frac{2}{3}, \frac{4}{5}, \frac{6}{7}, -\frac{1}{6}$

Q10. Insert five rational numbers between:

(i)  $\frac{-2}{3}$  and  $-1$     (ii)  $-\frac{1}{2}$  and  $\frac{-3}{2}$

Q11. Evaluate the following:

$$\frac{-12}{-5} + \frac{7}{-3} + \frac{-5}{14} + \frac{22}{7}$$

Q12. Subtract the sum of  $-5/6$  and  $-1\ 3/5$  from the sum  $2\ 2/3$  and  $-6\ 2/5$ .

Q13.

Simplify:  $\left(\frac{3}{7} \times \frac{-5}{8}\right) \div \left(\frac{1}{3} \times \frac{5}{6}\right) + \left|\frac{-1}{2} - \frac{1}{5}\right|$

Q14. Divide the sum of  $-2\ 15/17$  and  $3\ 5/34$  by their difference.

Q15. During a festival sale, the cost of an object is ₹ 870 on which 20% is off. The same object is available at other shops for ₹ 975 with a discount of 623%. Which is a better deal and by how much?

## Notes on Respiration in Organisms

### Why do we respire?

- All the living organisms are made up of small microscopic units called the cells.
- These cells have different functions to perform in these organisms such as digestion, respiration, transportation and excretion.
- The cells can perform this function only if they get the energy to do so.
- Hence, all living organisms need food which gives them the required energy.
- The energy present in the food gets released when the organisms respire or breathe.

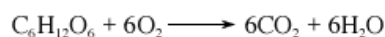
### How food helps us in gaining energy?

- As we breathe, we take in the air that contains oxygen in it and breathe out air which contains carbon dioxide. This oxygen when transported to our cells helps in breaking down the food and we get energy.

### What is cellular respiration?

- Cellular respiration can be defined as the process in which the food that we eat is broken down inside the cells which results in the release of energy. All the cells in living organisms undergo cellular respiration.
- The cellular respiration takes place in a cell organelle called mitochondria.
- The oxygen that an organism breathes in reacts with the carbohydrates (glucose) present in the food and results in the release of carbon dioxide, water and energy.

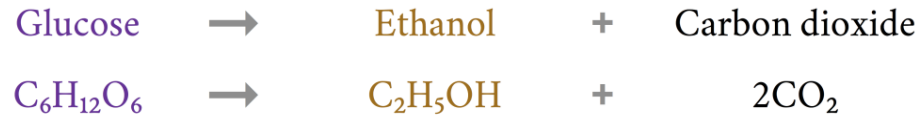
#### The release of energy during cellular respiration



### Types of respiration

Aerobic Respiration	Anaerobic Respiration
1. This kind of respiration takes place in the presence of oxygen.	1. This type of respiration happens in the cells in the absence of oxygen.
2. It leads to release of a high amount of energy in living organisms.	2. It results in a low amount of energy.

3. Human beings and many other animals undergo aerobic respiration.	3. Yeast and sometimes human beings undergo anaerobic respiration.
4. Carbon dioxide and water are also released in aerobic respiration.	4. Animal muscle cells release lactic acid and Yeasts release ethanol and carbon dioxide in anaerobic respiration.



(You might also see ethanol with the formula  $\text{C}_2\text{H}_6\text{O}$ . It's the same thing.)

**Figure 2 Aerobic Respiration in Animal**  
**Figure 3 Anaerobic Respiration in Yeast**

Anaerobes:

- Organisms that can exist in the absence of air are called anaerobes.
- They undergo anaerobic respiration hence can get energy even without oxygen.
- For example, Yeasts. These are unicellular organisms that exist in the absence of oxygen as well.
- As a by-product, they release ethanol and carbon dioxide. That is why they are used to make wine and beer. This is called as alcohol fermentation.

Anaerobic respiration in human beings

- Sometimes muscles of human beings can respire without oxygen.
- This generally happens when we undergo a heavy exercise such as running, weightlifting, cycling or walking for a longer duration.
- In such situations, the muscles require more energy and the supply of oxygen is not enough.

- Hence anaerobic respiration takes place in the muscles.
- As a result of muscles also produce lactic acid along with energy.
- This lactic acid accumulates in the muscles and causes cramps.
- That is why we often feel cramps while we do heavy exercises.
- In order to get relief from cramps, we can take a hot water bath or massage our muscles.
- This is so because hot water bath or massage improves the blood circulation in the muscles.
- As a result, the oxygen reaches the cells easily which breaks on the lactic acid into carbon dioxide and water.

glucose  $\longrightarrow$  lactic acid + energy

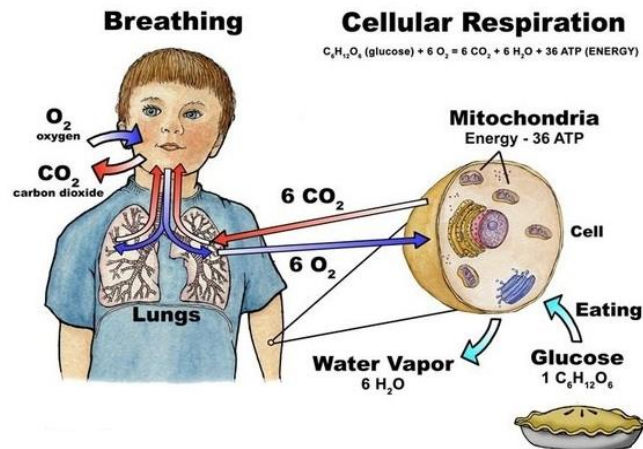
#### **Figure 4 Anaerobic Respiration in Muscle Releases Lactic Acid**

#### **Breathing:**

- **Breathing** can be defined as a process in which organisms, with the help of their respiratory organs, take in the oxygen-rich air present in the surroundings and release out air that contains high amount of carbon dioxide in it. Breathing occurs continuously in the organisms.
- **Inhalation** is the process of taking the air that contains oxygen inside the body.
- **Exhalation** is a process of releasing out air that contains carbon dioxide out of the body. Inhalation and exhalation take place alternatively in the breathing process.
- **Breathing rate** can be defined as the number of times a person breathes in a minute.
- A breath can be defined as an inhalation followed by an exhalation.
- The breathing rate is not always constant in human beings. We generally breathe faster when our body needs more energy for example while exercising.
- This is so because the body needs more oxygen that can break down the food and produce more energy.



- An average adult human being breathes 15 to 18 times in a minute. While exercising, this rate can change up to 25 times a minute.

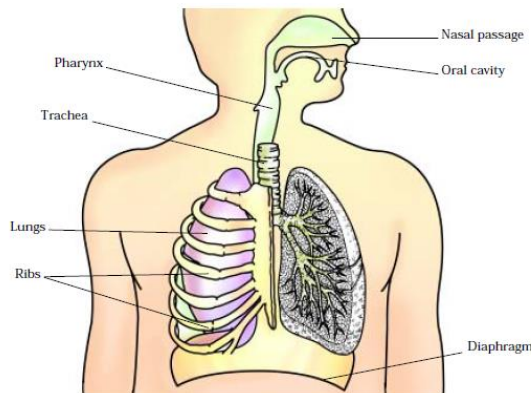


**Figure 5 Relation between Breathing and Cellular Respiration**

Why do we feel hungry after doing a physical activity like walking or running?

When we do a physical activity the food that is present in our body is converted into energy. Since all the food gets consumed in generating the energy we start feeling hungry. Hence in order to gain more energy we need to eat more food.

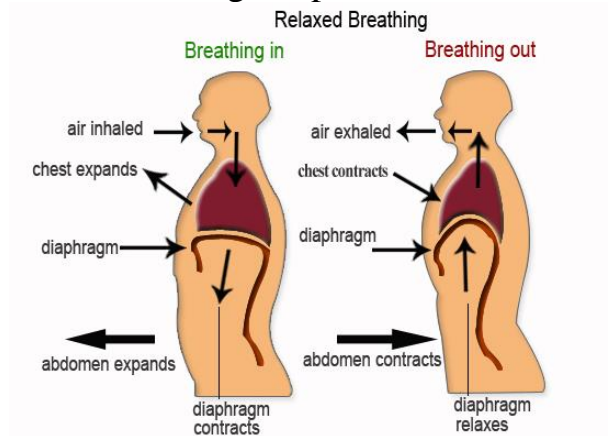
The mechanism of breathing in human beings



**Figure 6 The Respiratory System in Humans**

- We take in the air present in the environment through our nostrils which travels through the nasal cavity.
- Then it moves through the windpipe and reaches the lungs.
- The lungs are located in the chest cavity which is surrounded by the ribs.
- On the floor of the chest cavity lays a muscle sheet called diaphragm.

- During the breathing process, the movement of the ribs and diaphragm takes place. This is so because the lungs expand and contract during breathing.
- As we take in the air it fills up the lungs. This moves the diaphragm downwards and the ribs outwards.
- The lungs when releasing out air from the body which brings back the diaphragm and the ribs to their original positions.



**Figure 7 Breathing**

Why do we sneeze?

- As we inhale the air present in the surroundings sometimes various unwanted elements such as smoke and dust are also included in it.
- However, they get stuck in the hair in our nostrils but some of them can get through the nasal cavity.
- They thus cause irritation in the nasal cavity which makes us sneeze.
- This helps in getting rid of the unwanted particles out of the nasal cavity.

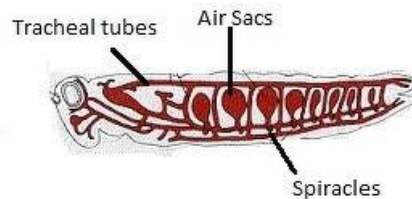
What do we breathe out?

	<b>Inhaled air</b>	<b>Exhaled air</b>
<b>Oxygen</b>	Contains 21% oxygen <b>(more oxygen than exhaled air)</b>	Contain 16% oxygen <b>(less oxygen than inhaled air)</b>
<b>Carbon Dioxide</b>	Contain 0.03% carbon dioxide <b>(less carbon dioxide than exhaled air)</b>	Contains about 4% carbon dioxide <b>(more carbon dioxide than inhaled air)</b>
<b>Water vapour</b>	Contain less water vapour	Contain more water vapour

## Figure 8 What do we Inhale and Exhale

### Breathing in other organisms

- Many animals have just cavities in their bodies just like human beings for example lions, elephants, goats, cows, snakes and birds.
- **Breathing in cockroach:**
  - Many insects like Cockroaches have small openings called spiracles present on the sides of the bodies.
  - Also, they have an air tube-like structure called the trachea that allows the exchange of gases in these insects.
  - The air enters the body through the spiracles and diffuses in the cells via the trachea.
  - Similarly, the air from the cells enters the trachea and moves out of the body through spiracles.

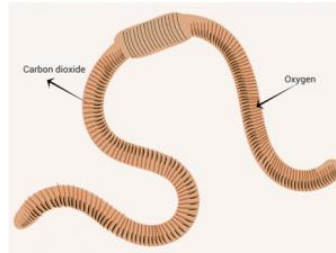


Respiratory system of cockroach

## Figure 9 Respiratory system of Cockroach

- **Breathing in earthworms:**
  - Earthworms have a soft, slimming and moist skin.
  - Hence the gases can easily pass in and out of the earthworm through its skin.

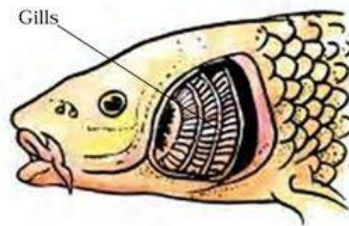
- Similarly, frogs also have a slippery and moist skin that can help in breathing. However, frogs contain lungs too.



**Figure 10 Respiration in Earthworms**

- **Breathing underwater**

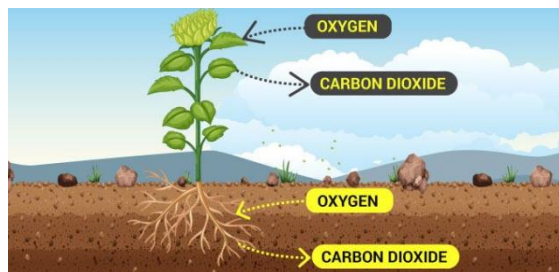
- Animals that live underwater have special respiratory organs called gills.
- They are a comb-like structure present on the skin of these animals.
- Gills allow the exchange of gases between animals and the water easily.
- Some animals called the amphibians can breathe on land by lungs and



through moist skin under water. For example frogs and toads.

**Figure 11 Respiration through Gills in Fishes**

**Respiration in plants**



**Figure 12 Respiration in plants**

1. We know that plants also respire. They take in the carbon dioxide present in the atmosphere and use it in the process of photosynthesis to produce food. As a result of photosynthesis in plants, they release out oxygen in the environment.

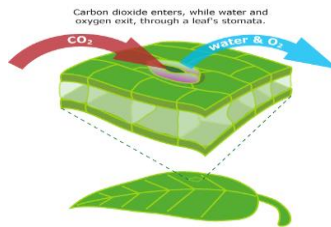
2. All the parts of the plants can independently respire that is they can take in the carbon dioxide and release oxygen on their own.
3. The leaves of the plants have stomata present upon them which are small pore-like structures. They allow gases exchange in leaves.
4. The woody stems of the plants also respire. This is because of the presence of special tissue called Lenticels. The cells of this tissue have large intercellular spaces. They exist as dead cells on woody plants and roots and allow the exchange of gases. The bark of trees although is impermeable to gases hence these tissues serve an



important purpose of respiration in the stems. As the name suggests, lenticels have a lens-like shape.

### **Lenticels in plants**

5. The roots of the plants have hair-like structures on them. Hence they can absorb the air present in the soil.

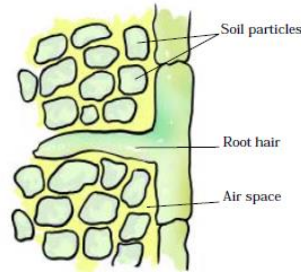


**Figure 13 Respiration in Leaves through Stomata**

Why plants can die if overwatered?

- We know that the roots get oxygen from the soil.
- We also understand that the air in the soil is present between the soil particles.
- Along with the air, soil also contains some water or moisture.
- If we over-water the plants the spaces between the soil particles get clogged.

- As a result, the roots will not be able to get enough air and the plant can die.



**Figure 14 Roots can absorb air from the soil**

**S. SCIENCE**

**GEOGRAPHY**

**CHAPTER-6 NATURAL VEGETATION AND WILD LIFE**

- ✓ The growth of vegetation depends on Temperature and Moisture.
- ✓ Natural vegetation is generally classified into three broad categories: Forests, Grasslands & Thorny Bushes.

1. Forests: A *forest* is a large area dominated by trees.

**Types of Forests:**

<b>Tropical Evergreen Forests</b>	<b>Tropical Deciduous Forests</b>	<b>Temperate Evergreen Forests</b>	<b>Temperate Deciduous Forests</b>	<b>Mediterranean Vegetation</b>	<b>Coniferous Forests</b>
➤ Also called Tropical Rainforests	➤ Also called Monsoon forests	➤ Located in the mid-latitude coastal region	➤ Found in North Eastern part of USA, China, New Zealand, Chile and coastal regions of	➤ Found in the areas around the Mediterranean sea in Europe, California in USA, South West Africa and South West Australia	➤ Also called Taiga (Taiga means pure or untouched in the Russian language)

			western Europe		
➤ Regions near the equator and close to the tropics	➤ Found in India, Australia, Central America	➤ Found in South East USA, South China and in South East Brazil	➤ They shed their leaves in the dry season	➤ Climate: Hot dry summers and mild rainy winters	➤ Found in higher latitudes (50°- 70°) of Northern Hemisphere
➤ Receive heavy rainfall throughout the year	➤ Trees shed their leaves in the dry season to conserve water	➤ They comprise both hard and soft wood trees	➤ Trees: Oak, Ash and Beech	➤ People have removed the natural vegetation in order to cultivate fruits	➤ Tall, Softwood evergreen trees
➤ No particular dry season, trees do not shed their leaves altogether	➤ Hardwood trees	➤ Trees: Oak, Pine and Eucalyptus	➤ Animals: Deer, Foxes, Wolves	➤ Citrus fruits such as Oranges, Figs, Olives and Grapes are commonly cultivated here	➤ The wood of these trees are very useful for making pulp, Match boxes and packing boxes
➤ Hardwood trees	➤ Trees: Sal, Teak, neem and Shisham		➤ Birds: Pheasants and Monals		➤ Trees: Chir, Pine, Cedar
➤ Trees: Rosewood, Ebony and Mahogany	➤ Animals: Tigers, lions, Elephants, Langoons and Monkeys				➤ Animals: Silver fox, Mink, Polar Bear

2. Grasslands: *Grasslands* are areas where the vegetation is dominated by grasses.

### Types of Grasslands:

Tropical Grasslands	Temperate Grasslands
➤ Located on either side of the equator and extend till the tropics	➤ Found in the mid- latitudinal zones and in the interior part of the continents
➤ Grows in the areas of moderate to low amount of rainfall	➤ Grass here is short and nutritious
➤ Very tall grass (3 to 4 metres in height)	➤ Animals: Wild Buffaloes, Bisons, Antilopes
➤ Animals: Elephants, Zebras, Giraffes, Deer, Leopards	➤ Examples: Pampas of Argentina, Prairie of North America, Veld of South Africa, Steppe of Central Asia and Down of Australia
➤ Examples: Savannah grasslands of Africa, Campos of Brazil and Llanos of Venezuela	

3. Thorny Bushes: These are found in the dry desert like regions. Tropical deserts are located on the Western margins of the continents. The vegetation cover is scarce here because of scanty rain and scorching heat.

## संस्कृत

### प्रश्न 1 निम्नलिखित अपठित गद्यांश का अभ्यास -

1. भारतस्य उत्तरस्यां दिशि हिमालयः पर्वतः अस्ति। सः भारतस्य मुकुटमणिः इव शोभते। सः शत्रुभ्यः अस्मान् रक्षति। अस्य दक्षिणपूर्व-दिशयोः समुद्रौ स्तः। सागरः भारतमातुः चरणौ प्रक्षालयति इव। अस्माकं देशे अनेके पर्वताः सन्ति। अत्र अनेकाः नद्यः प्रवहन्ति। नद्यः पानाय जलं यच्छन्ति। ताः नद्यः देशे शस्यम् अपि सिञ्चन्ति। एवं ताः अस्माकम् उदरपूरणीय अन्नं जलं च यच्छन्ति।

(क) उपर्युक्त गद्यांशस्य उचितं शीर्षकं लिखत?

(ख) हिमालयः केभ्यः अस्मान् रक्षति?



(ग) देशे शस्य काः सिञ्चन्ति?

(घ) हिमालयः भारतस्य कस्यां दिशि वर्तते?

(ङ) भारतस्य मुकुटमणिः इव कः शोभते?

2. विवेकानन्दस्य जन्म कोलकाता (कलकत्ता) महानगरे अभवत्। बाल्यकाले अस्य नाम नरेन्द्र' इति आसीत्। नरेन्द्रस्य पितुः नाम विश्वनाथदत्तः मातुः नाम च भुवनेश्वरी आसीत्। सः रामकृष्ण परमहंसस्य शिष्यः आसीत्। विवेक प्राप्य एषः। एव नरेन्द्रः विवेकानन्दस्य नाम्ना प्रसिद्धः अभवत्। सः समाज सुधारकः, भारतीयसंस्कृतेः रक्षकः जनप्रेरकः च आसीत्।

(क) उपर्युक्त गद्यांशस्य उचितं शीर्षकं लिखते?

(ख) विवेकानन्दस्य जन्म कस्मिन् महानगरे अभवत्?

(ग) बाल्यकाले विवेकानन्दस्य किं नाम आसीत्?

(घ) रामकृष्ण परमहंसस्य शिष्यः कः आसीत्।

(ङ) नरेन्द्रस्य पितुः नाम किम् आसीत्?

प्रश्न 2 (1 -30) संस्कृत सङ्ख्या अभ्यासः तीनों लिङ्गों में -

