

## Lesson 8

# Women in Space



Who are these women? Can you guess what is common among them?  
Rearrange the letters in the box **a t s r n o t u s a** to get the answer.  
Write down the word in the oval below:



**Valentina Tereshkova**



**Sunita Williams**



**Sally Ride**



**Kalpana Chawla**



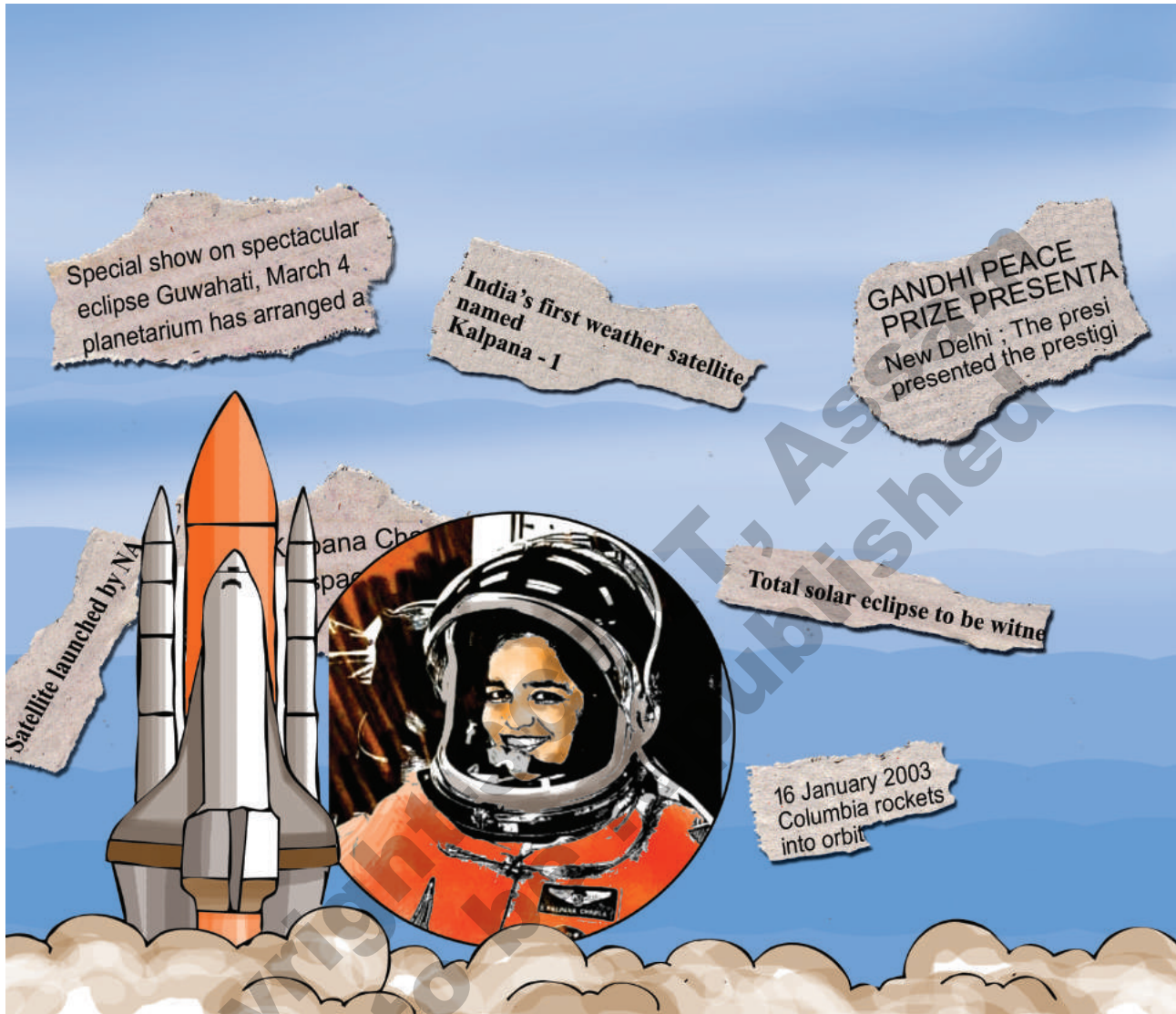
Did you guess the word? All these women are famous astronauts.

Can you recall the name of any other astronaut?

In pairs, make a list of the things astronauts do.

Then read the lesson about an astronaut who was born in India.





Mayuri and Manas are classmates. On their way to school, they discuss the project to be submitted on Science Day.

Manas : Hello, Mayuri! Have you completed the project on Women in Space?

Mayuri : Yes, it's almost complete. I wrote about Kalpana Chawla, the astronaut. Have you read anything about her?

Manas : Oh, yes. India's first satellite built to study weather conditions was named Kalpana-1 after her.

Mayuri : Yes, I read about it on the internet.

- Manas : It was an important piece of news at that time. I read about Kalpana Chawla's death in a space shuttle accident. But I don't know anything else about her. Can you tell me something about her? I'm so curious to know.
- Mayuri : Well, as far as I know, Kalpana Chawla was born in 1961 at Karnal in Haryana. She studied at Tagore Bal Niketan at Karnal and later at Punjab Engineering College in Chandigarh.
- Manas : I'm sure she loved flying in space.
- Mayuri : Oh, yes. Flying in space was her dream. She went to the United States of America with this dream. Do you know what NASA is?
- Manas : No. What is it?
- Mayuri : It's National Aeronautics and Space Administration.
- Manas : I see.
- Mayuri : Kalpana Chawla went into space the first time by the Columbia Space Shuttle STS-87. She was the only woman in the team of six astronauts. Kalpana Chawla went into space again in 2003 along with six other astronauts.
- Manas : Very interesting!
- Mayuri : A team of seven astronauts managed to collect a lot of important data while aboard Columbia in its mission STS-107. But the space shuttle broke up in flames on its way back to Earth.
- Manas : It's unbelievable!
- Mayuri : All the astronauts including Kalpana Chawla were killed.
- Manas : What a great loss! But we are very proud of her. Our country will always remember her.



## ACTIVITIES



**1. Let's see how much we have understood:**

- (a) Where was Kalpana Chawla born?
- (b) Where did Kalpana Chawla study?
- (c) What was Kalpana Chawla's dream?
- (d) Why did she go to the United States of America?
- (e) What does NASA stand for?
- (f) How many times did Kalpana Chawla go into space?
- (g) How did Kalpana Chawla die?

**2. In the lesson you read about some important dates and numbers. See whether you remember what each number stands for:**

1961 : \_\_\_\_\_

2003 : \_\_\_\_\_

STS-87 : \_\_\_\_\_

STS-107 : \_\_\_\_\_

**3. Make a poster of Kalpana Chawla for your science exhibition in the box below. Include her childhood information and her work details in your poster.**





4. (a) Let's learn some grammar.

Read the following sentences about Manas and Mayuri:

- (i) Manas said to Mayuri, "Hello, Mayuri! Have you completed the project on women in space?"
- (ii) Manas greeted Mayuri and asked her whether she had completed the project on women in space.

The words spoken by a person/persons can be reported in two ways: **Direct** and **Indirect**.

When we quote the exact words spoken by a person, we call it **Direct Speech**. Note that the exact words spoken by the speaker Manas are put within inverted commas.

There are some rules for changing **Direct Speech** to **Indirect Speech**.

- In indirect speech no inverted commas are used.
- The part used before the inverted commas (for example: *Manas said to Mayuri*) is called reporting clause. The verb (for example: *said*) in a reporting clause is called a **reporting verb**.
- We can also make the speaker's words a part of our own sentence. When we do so, the words are in *Indirect Speech* or *Reported Speech*. While reporting a speech, we make changes to some of the words in *Direct Speech*. We also often use the conjunction *that* in *Reported Speech*.

Here is a sentence in *Indirect Speech*. Write the sentence in *Direct Speech* in the space below. Remember to use inverted commas:

Mayuri said that she had read about it on the internet.

(b) In Column A below are two sentences in Direct Speech. In Column B there are the matching sentences in Indirect Speech. Are the sentences in Column B correct? If not, rewrite them correctly in Column C:

Column A	Column B	Column C
Mayuri said to Manas, "Do you know what NASA is?"	Mayuri said to Manas that does he know what NASA is?	
Manas said, "Our country will always remember her."	Manas said that "our country would always remember her."	



**Now fill in the blanks with suitable forms of verbs:**

- (i) Mayuri \_\_\_\_\_ Manas on her way to school. (s form of meet)
- (ii) I'm sure she \_\_\_\_\_ flying in space. (past form of love)
- (iii) It has \_\_\_\_\_ to the sky. (past participle of fly)
- (iv) \_\_\_\_\_ to space was Kalpana's dream. (an ing form of fly)

**5. Let's revise verb forms:**

Forms	Examples with use
1. base form	look- Look at the moon.
2. s form	looks- He looks at the moon.
3. past form	looked- He looked at the moon.
4. ing form	looking- He is looking at the moon.
5. past/passive participle	looked- He was looked after by a nurse.

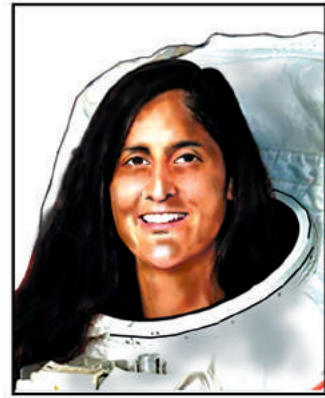
**6. Here are some interesting facts about famous astronauts who were women.**



Sally Ride was the first American woman to go into space.



Valentina Tereshkova was the first woman in space and also one of the youngest female astronauts in history.



Sunita Williams is an astronaut and a United States Navy officer of Indo-Slovenian descent.

**Now collect a picture of an astronaut and paste it in your notebook. Write a few sentences about him or her just below the picture.**

7. Let's practise speaking in English. Using the phrase 'Have you heard', ask your partner a few questions about space. One is done for you. (You can take help from your text.)

Have you heard that 'Aryabhata' was India's first satellite?

No, I haven't.

Have you heard that  
Kalpana-I .....  
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Yes, I have.

Have .....  
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8. The box below has certain words used to ask questions. Find and write them in the space given.

A	W	H	E	R	E
W	H	O	W	E	R
H	E	W	H	A	O
A	N	H	Y	R	T
T	O	A	E	H	W

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9. Fun with words:

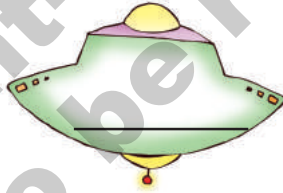
Do you know what is interesting about these words?

If you remove the first letter from each of the given words, you will find a new word. Write the new words in the spacecrafts under each word:

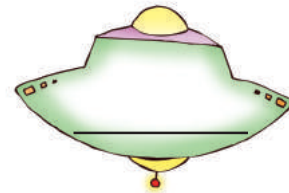
flight



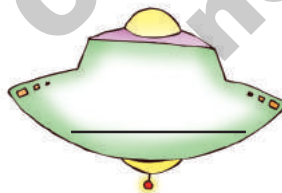
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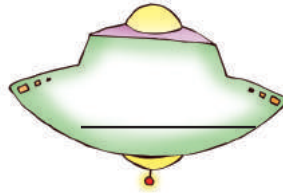
space



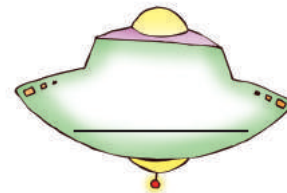
craft



know



there

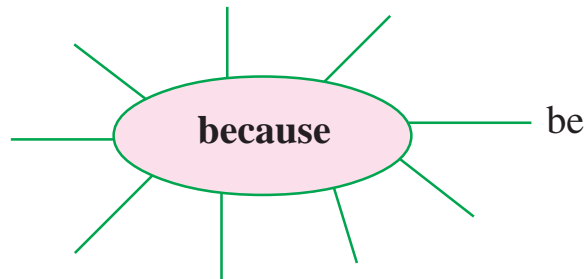


Now think of three more words like the above, and write them here:

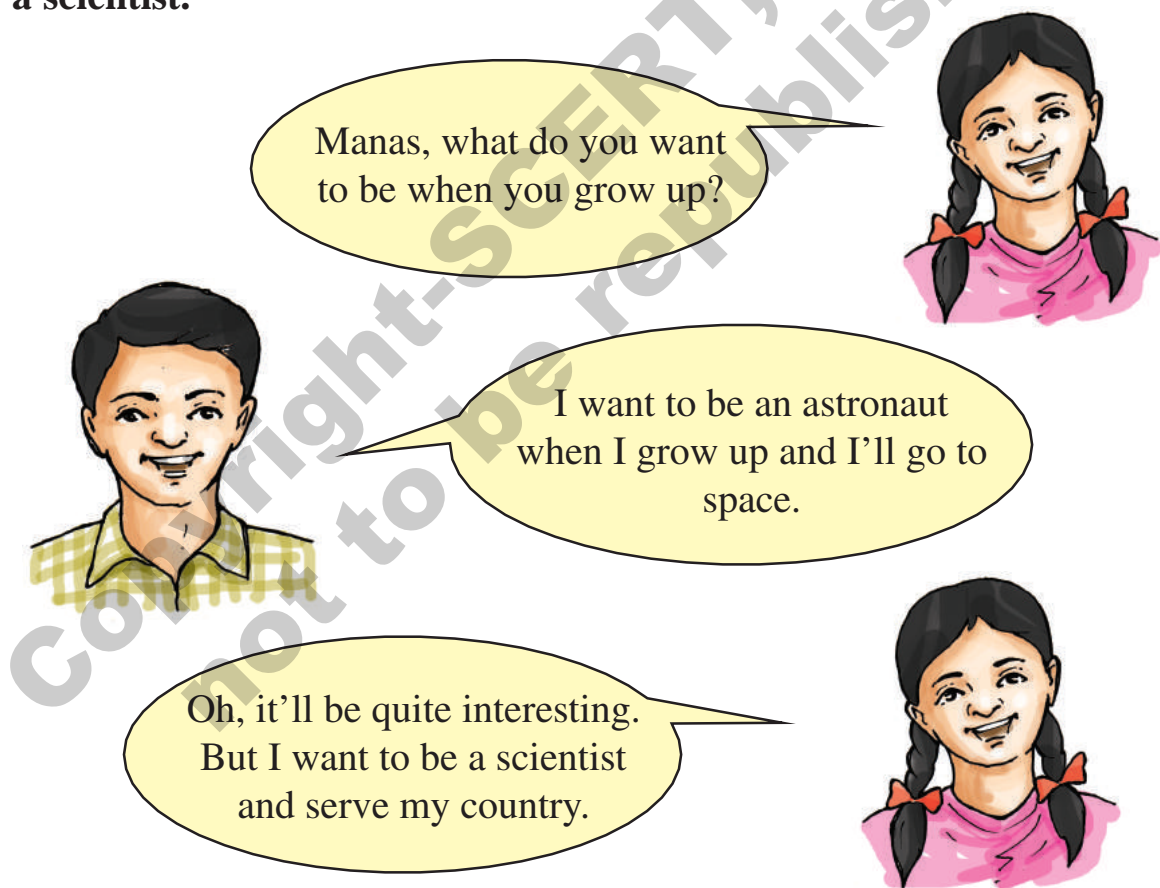
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10. See how many new words you can form with the letters used in the word 'because' below. One is done for you.



11. Manas wants to be an astronaut when he grows up. Mayuri wants to be a scientist.



Sit in pairs and tell each other what you want to be when you grow up and why.

## 12. Project Work:

The teacher will divide the students into groups. The groups will prepare a questionnaire (a list of questions) to be answered by the students of other classes in the school.

The objective/ purpose of the questionnaire is to find out how many students in the school know about Kalpana Chawla, what they think about women taking up Space Science as a profession and how many girls would like to become astronauts.

Students will prepare the questionnaire with the help of information from the lesson and from other sources [like books on general knowledge, the internet (if available) and so on].

Each group will prepare at least ten questions, using *wh-words* (*What, Where, Why, When, Where, Who, Whom and How*).

The group members will discuss among themselves what questions to ask and finalise the list of questions.

Every group member will prepare ten copies of the questionnaire. Then, he/ she will go around the school at break time to get the questionnaires answered by students of other classes. (If there are five members per group, they will have  $5 \times 10 = 50$  questionnaires answered by 50 students.)

After the questionnaires have been answered, the group members will count and note down the following points:

- how many students know about Kalpana Chawla and how many do not
- how many have responded with a 'yes' to the question on suitability of girls taking up Space Science as a profession
- how many girls would like to become astronauts

Each group will then share their findings with the rest of the class.

## For the Teacher

The theme of this lesson is ‘Women Empowerment’. Although women of modern societies have broken out of their traditional moulds, much remains to be done in the field of empowering the girl child. ‘Women in Space’ seeks to open up the mind of the girl child towards dreaming big dreams to venture into areas beyond the scope of conventional professions. It also sensitizes boys towards the fact that women can stand shoulder to shoulder with them in any area if they have the will to do so. It seeks to ignite the minds of the learners beyond traditional gender roles and biases.

This short text, in the form of a dialogue provides interesting information about Kalpana Chawla as well as other famous women astronauts.

Similar to all other lessons in the textbook, the comprehension questions that have been designed in Activities 1, 2 and 3 can be handled orally before learners write them in their notebooks. Help students to make a poster of Kalpana Chawla and write the important events of her life. Ask them to include her childhood information and her work details too.

A detailed explanation about reported speech, both Direct and Indirect are provided in Activity 4 under ‘Let’s learn some grammar’. A list of verb forms has been given for ready reference with which learners will fill in the blanks in the exercise that follows.

In Activity 6, ask learners to do a similar activity like Activity 3 in their notebooks.

Activity 7 is a speaking activity. Encourage learners to speak on different questions that have been designed and also frame more questions to ask their partners.

Activity 10 is in the form of a word web which is a good way to help a learner expand his or her vocabulary. You may also use web based tools to conduct activities in the classroom to keep them engaged. The learners can be partners with you to carry such activities forward.

In Activity 11, ask learners to sit in pairs and tell each other what they want to be when they grow up.

Divide the class into groups. Help learners with the project work in Activity 12. Follow the instructions that are provided in the activity and guide the learners accordingly in preparing the questionnaire. Your help will be necessary while the group members count and share their findings with the rest of the class.

### **Learning Outcomes:**

#### **The learner:**

- answers questions orally and in writing on a variety of texts
- engages in conversations in English with family, friends, and people from different professions such as shopkeeper, sales person, etc. using appropriate vocabulary
- asks and responds to questions based on texts (from books or other resources) and out of curiosity
- reads textual/non-textual materials in English/Braille with comprehension
- identifies details, characters, main idea and sequence of ideas and events in textual/non-textual material
- thinks critically, compares and contrasts characters, events, ideas, themes and relates them to life
- reads to seek information in print/online, notice board, sign boards in public places, newspaper, hoardings, etc.
- uses appropriate grammatical forms in communication (e.g. noun, pronoun, verb, determiner, time and tense, passivisation, adjective, adverb, etc.)
- organises sentences coherently in English/in Braille with the help of verbal and visual clues and with a sense of audience
- writes descriptions/narratives showing sensitivity to gender, environment and appreciation of cultural diversity
- writes dialogues from a story and story from dialogues



## Passages for Listening

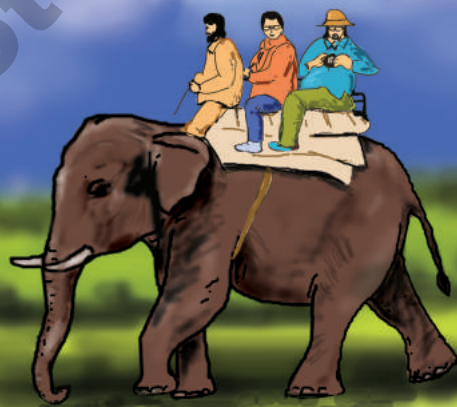
### Lesson 4, Activity 5: Travel guide for Assam

Assam is one of the most beautiful tourist destinations in North East India. It has a long history. The famous Kamakhya temple at Guwahati is visited by a number of tourists every year.

You must visit Assam to see many different things. You must visit Kaziranga to see the one horned rhinoceros. On the way, you will see the lovely tea gardens. If you are lucky, you will also see many Asian elephants.

If you like history, you must visit Sivasagar, where the Ahom kings had their capital Gargaon. Don't miss visiting the Rang ghar when you go to Sivasagar. It is a two-storeyed structure with wide doors and windows from which the royal family watched buffalo fights and other sports. You should also visit the royal palace Karengghar, which had seven storeys, three below, and four storeys above the ground.

Do visit Assam for other exciting things!





## Lesson 4, Activity 10

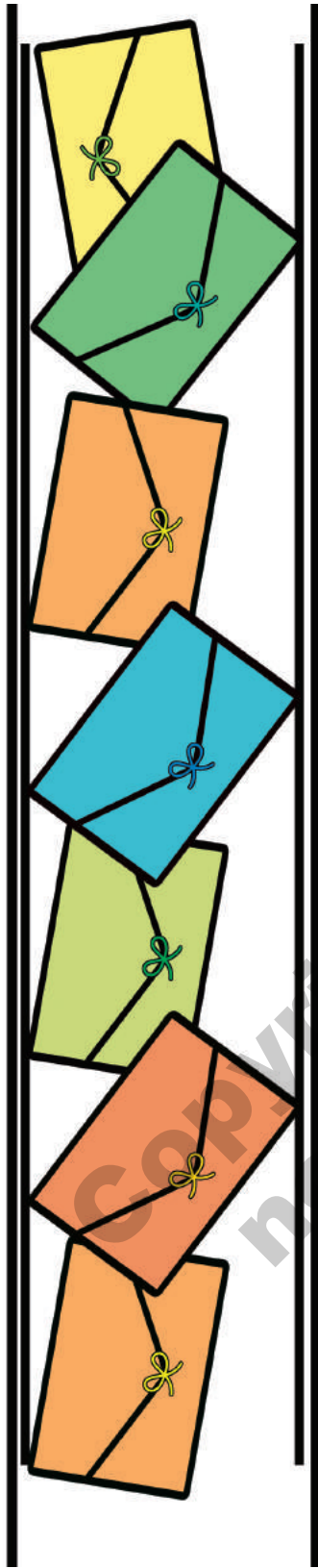
India is famous for its large variety of festivals, languages and cultures. One of its most interesting aspects is the variety of clothes worn in different states, from Kashmir in the north, Punjab in the central-west, Bengal in the east and Kerala in the south.

The traditional dress worn by Bengali women is the saree. Bengal is well known for its saree fabrics and designs on jute, silk, tussor, jamdani and tangail, etc. But more famous is the white Bengali cotton saree with a red border. Bengali women wear this saree on special occasions, such as weddings and festivals.

In Kerala, men and women wear a special type of garment around the waist, closely related to the *dhoti* and the *lungi*. This is called the *mundu*, and is normally made of cotton. The *mundu* is usually white or cream in colour. Kashmir is one of the coldest places of India, especially in winter. So Kashmiri men and women wear a warm woollen cloak over their clothes. Embroidered with beautiful flowers and bird motifs, this cloak is known as the *phiran*. The *phiran* looks like a *kurta*, and is worn over pyjamas, a *salwar* or a *churidar*.

In the state of Punjab, the traditional dress of men is a kind of *lungi* known as the *tamba* or *tehmat*. The *tehmat* is worn by Punjabi men when they dance the *bhangra*. They also wear colourful *kurtas* and *turbans* with the *tehmat*.





## READ FOR PLEASURE

This section in the textbook titled **Read For Pleasure** aims at providing students with stories, poems, biographies, etc. which they will read for information and pleasure. It is hoped that such efforts towards reading for pleasure will encourage students to read similar passages on their own which will contribute towards the development of their reading skills.



## 1

## Lord Rama and the Little Squirrel

The fourteen year *Banawas* – exile in the forest – had ended, and Queen Sita had been kidnapped by the powerful *Asura* King Ravana. Lord Rama and his army of *Vanar* – monkeys – had reached the southern tip of *Bharat*, and were building a bridge to Lanka to rescue Queen Sita. The army had camped on the sea shore, and every member of the *Vanar Sena* – the monkey army – was busy transporting large boulders from the mountains and laying them on the ocean floor. They worked day and night, digging out heavy rocks from the mountains, and passing them down by hand to the soldiers who were on the sea shore. Some of the huge rocks had to be cut into shape, so that a strong bridge could be built. The bridge would transport the entire army across the ocean – foot soldiers, horses, chariots, food carts, elephants and all.



In the middle of all that frenzied activity, a tiny brown squirrel ran up and down the mountain and the shore, carrying small pebbles in its mouth and dropping them between the rocks. He managed to carry only one pebble at a time, but that did not stop him. He was as busy as the monkeys, hurrying to help build the bridge with his pebbles.

On one of his trips, the little squirrel came in a big monkey's way. "Hey, you!" shouted the monkey, "Get out of my way or you'll be squashed!" "I'm sorry, friend," the squirrel replied. "I'm just trying to help Lord Rama build the bridge!"

The tiny creature's words made the monkeys burst out in laughter. "Build a bridge of pebbles? Are you really foolish enough to believe this?" The squirrel did not reply, and carried on transporting his pebbles. One of the big monkeys felt offended, and holding the squirrel up by his tail, flung the poor creature into the distance.

In panic, the squirrel screamed out Lord Rama's name, and lo and behold! He fell right into Lord Rama's palm! With utmost gentleness, Lord Rama stroked the squirrel's back, and spoke to his monkey army. "Never make fun of someone because he or she is not as big or powerful as you. When we work with love, our smallest contribution makes our work successful. You are building the bridge out of big boulders; but have you considered how to plug the spaces between them? It's the squirrel's pebbles that will strengthen the bridge and plug every gap." Hearing this, the *Vanar Sena* bowed their heads in shame. Lord Rama gently laid the squirrel on the ground, and said, "Thank you for your invaluable work, my friend. Together, we will build the bridge that will help us rescue our Queen Sita."



## The Duck and the Kangaroo



Said the Duck to the Kangaroo,  
'Good gracious! how you hop!  
Over the fields and the water too,  
As if you never would stop!  
My life is a bore in this nasty pond,  
And I long to go out in the world beyond!  
I wish I could hop like you!'  
Said the Duck to the Kangaroo.

'Please give me a ride on your back!'  
Said the Duck to the Kangaroo.  
'I would sit quite still, and say nothing but "Quack,"  
The whole of the long day through!  
And we'd go to the Dee, and the Jelly Bo Lee,  
Over the land, and over the sea;-  
Please take me on a ride! O do!'  
Said the Duck to the Kangaroo.

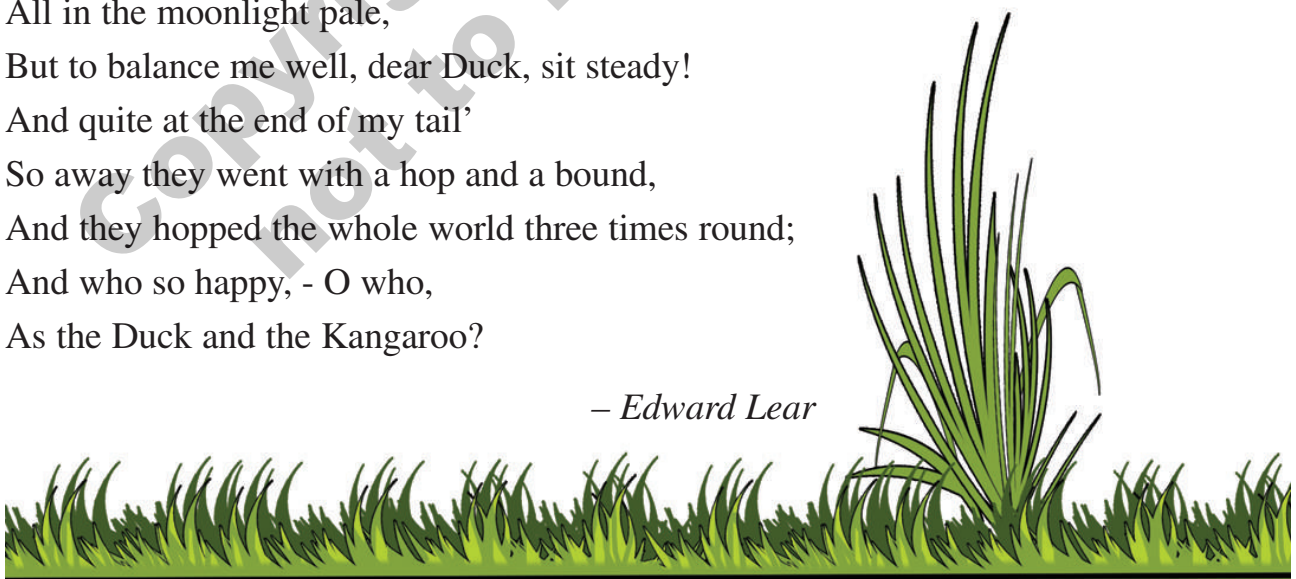


Said the Kangaroo to the Duck,  
‘This requires a little reflection;  
Perhaps on the whole it might bring me luck,  
And there seems but one objection,  
Which is, if you’ll let me speak so bold,  
Your feet are unpleasantly wet and cold,  
And would probably give me the roo-  
Matiz!’ said the Kangaroo.

Said the Duck, ‘As I sat on the rocks,  
I have thought over that completely,  
And I bought four pairs of worsted socks  
Which fit my web-feet neatly.  
And to keep out the cold I’ve bought a cloak,  
And every day a cigar I’ll smoke,  
All to follow my own dear true  
Love of a Kangaroo!’

Said the Kangaroo, ‘I’m ready!  
All in the moonlight pale,  
But to balance me well, dear Duck, sit steady!  
And quite at the end of my tail’  
So away they went with a hop and a bound,  
And they hopped the whole world three times round;  
And who so happy, - O who,  
As the Duck and the Kangaroo?

– *Edward Lear*





## Letter To A Pen Pal From Kerela

Na-Ali, Jorhat  
25<sup>th</sup> March 2019

*Dear Raghav,*

I received your letter yesterday. It was so informative! I learnt many things about your state from what you wrote. I was delighted to discover that Kerala, a state tucked away in the southern – most tip of our country, shares so many socio-cultural similarities with Assam, a state in the distant north-east. Do you know that we have similar food habits? The Assamese too take rice as their staple food and non-vegetarian food is quite popular. So, when you come to visit us during your summer vacations, you will feel quite at home regarding the food. Like in Kerela, traditionally we too serve food in plantain leaves. I really enjoy this traditional manner of serving food and would love to serve you in that way when you visit us.

Thank you for sending a photograph of your family. Interestingly, the traditional dress worn by your mother and sister is quite similar to the two-piece dress called ‘mekhela-chador’ worn by the Assamese ladies here. It was also interesting to read about the different dance forms of Kerala that you wrote about. I did not know that the traditional dance forms – Kathakali and Mohiniattam originated in the temple theatres. Our classical dance form, the ‘Sattriya’ dance also originated in the Vaishnavite ‘Satras’ (monasteries) of Assam.

We too celebrate a harvest festival in our state. It is called *Bhogali Bihu*. However, it is celebrated in January unlike your harvest festival, Onam, in Kerela, which is celebrated in August-September for a period of ten days. I did not know that Onam also commemorates the homecoming of King Mahabali. The information about our ancient heritage is most welcome. I guess the difference in the timing of the harvest festivals in our states is due to the diversity of climate in different parts of India.

What I find most interesting about Kerela is ‘Vallam Kali’ – the annual boat race held during Onam. I watched its live telecast last year. How fast the several teams of paddlers in each boat row their boats! I was amazed at their speed!

I am really looking forward to your trip to Assam in May this year. It will be great to meet you in person for the first time! We will exchange notes on our lives and our respective states and get to know each other much better. My parents have already planned a trip around our beautiful state with you. What fun we will have!

I will wind up this letter now. I need to complete my home assignments for tomorrow. Please convey my regards to your parents and best wishes to your sister.

*Yours affectionately,*  
*Rishika.*

## The King of Kalipur

The King of Kalipur was a proud and stern man, feared by all his subjects.

One day while sitting in his palace, surrounded by flattering courtiers and watched by a multitude of people who had come to see him, he was suddenly overcome by a sense of grandeur and loudly declared that he was master of the world and that all men were his servants.

“You are mistaken,” said a frail voice. “All men are servants of one another.”

A deathly silence followed the remark. The blood froze in the veins of the people assembled there. Then the king exploded in anger.

“Who said that!” he demanded, rising from the royal throne. “Who dares suggest that I am a servant!?”

“I do,” said a voice in the crowd, and the people parted to reveal a white-haired old man, leaning heavily on a stout stick.

“Who are you?” asked the king.

“I am Baneswar from Bokila village,” said the man. “We have no water in our village. I have come to ask for a well to be dug there.”

“So you are a beggar!” roared the king, striding down to where the man stood. “Yet you have the audacity to call me a servant!”

“We all serve one another,” said Baneswar, showing no fear, “and I will prove it to you before nightfall.”

“Do that,” said the monarch. “Force me to wait on you. If you can do that, I will have not one but three wells dug in your village. But if you fail, you’ll lose your head!”

“In our village,” said the old man, “when we accept a challenge, we touch the person’s feet. Let me touch your feet. Hold my stick.”

The king took the stick and the old man bent down and touched the monarch’s feet.

“Now you may give it back to me,” he said, straightening up. The king gave him back his stick.

“Do you want any more proof?” asked Baneswar.

“Proof?” asked the king, bewildered.

“You held my stick when I asked you to and gave it back to me when I asked you for it,” said the old man. “As I said, all good men are servants of one another.”

The king was so pleased with old Baneswar’s wit and fearlessness that he not only had wells dug in his village but also retained him as an adviser.



## How Tom Whitewashes A Fence

*Here is a story by Mark Twain. It is about Tom Sawyer, a boy who lived with his aunt. Read this story to find out how clever Tom was.*

This is the story of a naughty boy named Tom Sawyer. He lived with Aunt Polly who loved Tom very much. One day she caught Tom stealing jam. She was very angry with him and said, "Once again you are making mischief." Tom said, "I'm very sorry, aunt, but I didn't mean to steal anything. I promise, I'll try never to do anything like this in future." Next day was Saturday and it was a holiday. Aunt Polly decided to teach Tom a lesson by making him whitewash a long fence on that day.

It was a beautiful Saturday morning of a summer day. Tom jumped out of his bed happily. The sun was shining. Birds were singing, perched on twigs and branches of trees. Flowers were blooming everywhere.

The air was so fresh and vibrant. Tom's friends had come out of their homes merrily even before Tom was out of bed. Tom was not aware that his aunt had work for him. He was very sad as he had to whitewash the nine feet high and ninety feet long fence. It was hard task indeed. He was at a loss where to begin. He dipped his brush



in the whitewash and painted three long vertical strokes. But it was nothing. He felt miserable and wanted to run away. He thought that Aunt Polly was rude and didn't love him. But he had no way out as Aunt Polly would not spare him if he didn't do the work. He thought of plan. He took out the things he had in his pocket. He had some marbles,



some pieces of strings, and two or three broken toys. But nobody would like to work for him for these things.

Just then Jim came skipping out of the gate with a pail for fetching water. Tom thought Jim's work was more enjoyable. He would meet lots of friends at the place where the tube well was located. "I'm sorry to say, but you are disturbing me skipping to and fro, Jim," Tom said. Tom actually wanted to exchange his work. He tempted Jim with a white marble. But Jim refused to accept Tom's offer, for he too was afraid of Aunt Polly.

Tom took up his brush again and began his work with a heavy heart. Then he saw Ben Rogers, his friend, walking down the street, singing merrily. He was eating an apple. He came to Tom and said, "Hi! Tom, are you working?" Tom pretended not to see him and didn't answer. Ben asked once again, "Hello, Tom. I'm just going for a swim. Won't you join me? Will you spoil this beautiful holiday doing this dull work?" "Oh! I didn't see you. But it is not a work," said Tom and went on painting, "What a surprise! Don't you call it a work?" Ben asked, "Not at all. I like it. It is so interesting. Not many boys are given such a responsible work," Tom answered.

Now everything seemed to be different. Tom seemed deeply absorbed in his work. Ben requested him to let him whitewash a little. But Tom said, "I'm sorry, I refuse. Aunt Polly is very particular about this work. It should be done in the best way." Ben said again, "Let me try. I'll be very careful. I'll do it nicely, and give you my apple." Tom pretended to be unwilling. He said, "I'm sorry to have to say this, but aren't you forcing me to do what you like?" But slowly he gave the brush to Ben and sat down under the shade of a tree. While Ben was whitewashing the fence under the hot sun, Tom relished eating the apple. One after another most of his friends came there and offered to share the work, but Tom was cleverer than his friends. He refused to let his friends take part in whitewashing without taking some gifts. Soon he became rich with dozens of marbles, six firecrackers, a tin soldier, a one-eyed toy kitten, a collar for a dog and many other things.

Tom managed to have a nice day with his friends. The fence had three coats of whitewash and Aunt Polly was very happy with his work. But how Tom managed to complete the whitewashing remained a mystery to her.



## My Great Grandmother

My great grandmother is a grand old dame  
 With snowy white hair, twinkling eyes all aflame  
 With the light of love and the wisdom of age.  
 For her, all her family agree, 'old is gold' is the fit adage.

All our cousins of various degrees  
 Crowd around the yard for oranges and cookies  
 That our aunts bring out at the breaktime of play  
 Under grandma's hawk's eye from her verandah chair.

The neighbouring children peep around the hedge  
 Longing for a share in the sweet, savoury largesse.  
 They are warmly called in by the grand matriarch  
 And lovingly plied with teatime snacks.

Our great grandmother-the grand old lady  
 The head of several generations of our family-  
 We adore, respect and always expect  
 To advise, arbitrate and our worries negate.

She offers the shade of a huge banyan tree  
 With wisdom, nurture, enlightenment and humour.  
 An imposing figure in *riha-mekhela*,  
 In emotional storms she provides an umbrella.

What fun we have in our home of ancestry  
 Where grandma weaves into a silken tapestry  
 The colourful strands of love, sharing and kinship  
 Of several generations of friends and family.





## Sir Ronald Ross

We observe the 28th February as the National Science Day. On this day, more than any other day, we like to recall the life and achievements of eminent scientists who had improved the quality of our lives by their outstanding discoveries and inventions. One such eminent scientist is Sir Ronald Ross whose name is associated with the cure for malaria, the dreaded tropical disease caused by the bite of a certain type of mosquito. The bite of the mosquito releases the malaria germ into the body of the victim which proves to be fatal to the victim. Yet, prior to the works of Ross, people thought that malaria was caused by bad air. The word malaria, literally means bad air. There was no known prevention of the disease and the cause seemed doubtful. It was Sir Ronald Ross who could find out the cause of the disease and suggested ways for its prevention.



Born on the 13th May, 1857, at Almora, Ronald was the eldest of six brothers and three sisters. When he was nine years old, he was sent to England to his uncle and aunt for his schooling. They lived in the Isle of Wight, a small island near the south coast of England. He had a happy childhood, showing a great deal of interest in natural history – the study of plants and animals-and he was particularly interested in tropical animals. In 1869, he went to a boarding school named Springhill, near the town of Southampton. He was happy there, and spent his holidays in his uncle's house.

After his school education, in October, 1874, the young Ross was admitted to the St Bartholomew's Hospital in London to study as a medical student. When he had been in the hospital for two years, he had his first experience with a malaria patient. Ross was deeply interested in his patient and he asked her so many questions and examined her so carefully that she was thoroughly frightened. She began to think that she was suffering from some dreaded disease which the young doctor was unable to cure and she hastily left the hospital. He passed the examination at St Bartholomew's and a year later, he qualified the entrance examination for the Indian Medical Service as hoped by his father. He sailed for India on 22nd September, 1881 and arrived in Bombay, the present-day Mumbai.

He was sent to Madras, the present-day Chennai and was attached to the Station Hospital which was situated just outside Fort St George. After passing his obligatory Hindi examination, he was sent as an army doctor shunting between Mysore and Bangalore, both places being highly malaria prone in those days. He even visited Vizianagaram and later Quetta and Karachi in present-day Pakistan and also Burma and Moulmein and the Andamans. Altogether, he spent six years in these regions, often wondering whether the work he was doing was of any use to the world. Finally, he applied for home leave and left for England for two years, to study two subjects in which he was beginning to feel deeply interested. The first was the study of sanitation and the other was tracing of illness through the study of germs, or bacteria. While he was in England, he also found time to get married, and returned to India in 1890 with his young wife.



During the next four years, he began to develop his interest in malaria and its causes. He spent three years as a Staff Surgeon in Bangalore, where he had much experience of fevers, particularly dysentery and typhoid. In 1891, he went with a friend to the Nilgiri for a fishing trip. That night he slept under a mosquito net though his friend didn't. His friend later developed malaria. This had led Ross to suspect that mosquito bite could be the cause of malaria. Later, in France, Ross was to meet a famous scientist named Sir Patrick Manson, who was greatly interested in malaria and they had many useful discussions together. In fact, it was Manson who first suggested to Ross that mosquitoes might be the carriers of the malaria germs and Ross determined to test this idea when he returned to India. He was now a recognized authority on the subject.

Back in India, his plan was firstly, to discover which type of mosquito carried the malaria parasite. Secondly, he wanted to find out how the parasite developed in the insect and whether a mosquito was always dangerous or whether it was infected only at a certain time. He had many difficulties to face. His malaria research had to be carried on entirely at his own expense and during his spare time when he was not on duty as a regimental doctor. He usually spent about eight hours a day at his microscope working early in the morning, in the heat of the afternoon and late at night. He found that there were two kinds of mosquito which were common in Secunderabad where he worked. One was grey in colour and the other was striped. He used to keep a supply of these mosquitoes in glass bottles and allowed them to feed on the blood of a malaria infected person and dissect them at intervals and examine them under a microscope.

Ross discovered that mosquitoes that bit a malaria patient developed the malaria parasite in their stomach. But even at that stage, he was not sure which type of mosquito actually carried the malaria germ. Then one morning at Secunderbad, he saw a mosquito on the wall with its tail sticking outwards. With great care he caught it in a glass. Meanwhile, he obtained the larvae of this type of mosquito and started his experiments on the new mosquitoes that were hatched from these larvae. From his experiments, he could prove that the dappled mosquitoes named the anopheles, was the type that carried the deadly germ of malaria. He was also certain that the malaria infection in a person was caused, neither by bad air or dirty water but by the mosquito's bite. He had achieved a most wonderful discovery which was of the greatest use and help to mankind.

Next, Ross aimed to develop a scheme for the killing and prevention of mosquitoes. He proposed that the first step in this process would be to destroy the larvae which were laid in water and developed there. One possible solution was to rear fish in ponds; the fish would eat up the larvae. Secondly, the frequent cleaning of tanks and water pots would help in destroying the larvae before they had time to develop into mosquitoes. Thirdly, the use of mosquito-net was another possible solution. Fourthly, there was the need to disinfect wells.

Sir Ronald Ross left India for good in the year 1899. India and other tropical countries, too owe him a great deal of gratitude, and will never forget him. The National Malaria Eradication Programme is indeed the result of the researches and the recommendations of Ross towards the war against malaria. Proper implementation of the recommendations will certainly help to free the world from the fatal anopheles mosquito.



## Stopping by Woods on a Snowy Evening

Whose woods these are I think I know.  
His house is in the village though;  
He will not see me stopping here  
To watch his woods fill up with snow.

My little horse must think it queer  
To stop without a farmhouse near  
Between the woods and frozen lake  
The darkest evening of the year.

He gives his harness bells a shake  
To ask if there is some mistake.  
The only other sound's the sweep  
Of easy wind and downy flake.

The woods are lovely, dark and deep,  
But I have promises to keep,  
And miles to go before I sleep,  
And miles to go before I sleep.

— Robert Frost







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