

## UNIT 6

## FROM ZERO TO INFINITY

-Biography of Srinivasa Ramanujan

## PROSE

## Warm Up

Page 152

3	2	4	1
1	4	2	3
4	3	1	2
2	1	3	4

1. Did you enjoy solving this?

Yes, I enjoyed solving this.

2. Was it easy or hard to solve?

It was neither very easy nor very hard.

3. Do you like Mathematics? Give reasons.

Yes, I like Mathematics. I like this because it deals with logical reasoning. It increases our concentration power.

## Summary

'From Zero to Infinity' is a biography of the mathematics genius Ramanujan. He was a genius in Maths even in his school days. His teacher was surprised to know that Ramanujan talked about the 'infinite'. The teacher complimented the boy for asking intelligent questions in maths. But for other boys his question was absurd. The question about infinity was answered by great mathematicians after many centuries. Some claimed it as zero and others claimed it as unity. Finally it was proved as infinity by Indian mathematician Bhaskara.

Ramanujan was born in Erode on December 22, 1887. His father was a petty clerk in a cloth shop. He used to help his seniors in maths. At the age of 13 he got Loney's Trigonometry and studied that. Based on that, he created mathematical theorems and formulae. One of his seniors showed him 'Synopsis of Elementary Results in Pure Applied Mathematics' by George Shoobridge Carr. This book activated his mathematical genius in him.

He used to solve problems in loose sheets of papers or slate or note books. He filled in three notebooks before he had gone abroad. These notebooks were called Ramanujan's 'Frayed Notebook'. After his college days, he had to find a job for him to buy papers to do his sums and for his food. He got a clerical job in Port Trust of India.

Ramanujan sent a letter to the great mathematician G. H. Hardy of Cambridge University. He included 120 theorems and formulae. Hardy and J.E. Littlewood realised a rare mathematical genius. They made arrangements for Ramanujan to go to Cambridge

University in 1914. He was not very comfortable at Cambridge. It was difficult to bear the cold and being a vegetarian he had to cook his own food. Hardy found in him an unsystematic mathematician for the lack of formal education. It was sheer genius that led him to mathematical truths. Ramanujan was elected as Fellow of Royal Society and Fellow of Trinity College, Cambridge. He published many works in Cambridge.

Ramanujan was affected by tuberculosis. He was sent back to India and he continued to play with number even on his death bed. Besides being a mathematician, he was an astrologer and good speaker.

### Glossary and Meanings Textual

Page 155

absurd (adj.)	– stupid and unreasonable, silly in a humorous way
infinity (n)	– unlimited space, time, amount, a number large beyond any limit
intriguing (adj.)	– very interesting because of being unusual or mysterious
prodigy (n)	– a child who shows a great ability at a young age
dingy (adj.)	– a dark and dirty place
Physiology (n)	– the branch of biology that deal with the normal functions of living organisms and their parts
unkempt (adj.)	– not neat or cared for
uncouth (adj.)	– behaving in an unpleasant way
conjecture (n)	– an opinion or conclusion formed on the basis of incomplete information.
discrepancy (n)	– an illogical or surprising lack of compatibility or similarity between two or more facts
distinguished (adj.)	– used to describe a person, respected and admired for excellence
devouring (adj.)	– destructively consuming
disembark (v)	– to leave a ship, aircraft, etc. after a journey
emaciated (adj.)	– very thin and weak, usually because of illness or extreme hunger
agonising (adj.)	– causing extreme physical or mental pain

### Glossary and Meanings Additional

smart	– shrewd or clever	frayed	– worn out
thumped	– struck	endure	– bear or tolerate
claimed	– demanded	sheer	– absolute
evident	– clear		
significant	– important	exhausted	– tired
		repute	– fame
triggered	– activated	conjecture	– guesswork
secured	– received		

### Opposites

progress	× halt	infinite	× measurable
distributed	× gathered	complimented	× cursed
raised	× lowered		

claimed	× unclaimed	delighted	× sad
proved	× disproved	neglected	× accepted, interested
intriguing	× ordinary/ uninteresting	initiated	× concluded
ahead of	× behind	ignorant	× knowledgeable
evident	× doubtful	included	× excluded
dingy	× posh	conjecture	× fact
significant	× unimportant/ insignificant	rare	× common
		similar	× different
		formal	× informal

### Answer the questions.

#### 1. What was the reaction of the classmates to Ramanujan's question?

Page 153

The classmates laughed thinking it was an absurd question. They thought it was a silly question to ask.

#### 2. What did the Indian mathematician Bhaskara prove?

Bhaskara proved that zero divided by zero was infinity.

#### 3. Where did Ramanujan get S.L. Loney's book on 'Trigonometry'?

He got Loney's 'Trigonometry' from his college library.

#### 4. Where did Ramanujan do his mathematical problems?

He did his problems on loose sheets of papers, a slate and notebooks.

#### 5. What were the subjects neglected by Ramanujan in College?

Page 154

He neglected History, English and Physiology.

#### 6. Which University granted him a fellowship of ₹ 75 a month?

The University of Madras granted him a fellowship of ₹ 75 a month.

#### 7. What did Ramanujan send to G.H. Hardy?

Ramanujan sent a letter with 120 theorems and formulae to G. H. Hardy.

#### 8. Who discovered a rare mathematical genius in Ramanujan?

G.H. Hardy and J.E. Littlewood discovered a rare mathematical genius in Ramanujan.

#### A. Answer the following questions in a sentence or two.

Page 156

#### 1. Why did the students laugh at Ramanujan?

Ramanujan asked the teacher if no banana is distributed among no one, whether everyone would get one banana. Other students could not understand the logic behind the question. So they laughed at Ramanujan.

#### 2. Why did the teacher compliment Ramanujan?

Ramanujan's question led to the answer zero or infinity which was being proved by great mathematicians. So the teacher complimented Ramanujan.

#### 3. What did Ramanujan do after reading the book on Trigonometry?

After reading the book on Trigonometry Ramanujan began his own research. He came forth with many mathematical theorems and formulae.

**4. What disappointed Ramanujan's father?**

Though Ramanujan secured first class in Mathematics, he failed twice in first year arts exam. He neglected History, English and Physiology. This disappointed Ramanujan's father.

**5. How did Ramanujan manage his paper crisis?**

Ramanujan wrote his problems in loose papers, slate and notebooks. Those were not enough for him. So he used any scraps of paper lying on the street. Sometimes he used red ink to write above the blue ink.

**6. Why were Ramanujan's applications for jobs rejected?**

When he visited the offices he was unkempt and uncouth. He showed his frayed notebooks and asked for job. Nobody understood what was written. So his applications for jobs were rejected.

**7. Why was Ramanujan sent back to India?**

Ramanujan was affected by tuberculosis which was incurable then. So he was sent back to India.

**B. Answer the following questions in about 80 – 100 words.**

Page 156

**1. Describe the life of Srinivasa Ramanujan in India.**

Ramanujan was born in Erode on December 22, 1887. His father was a petty clerk in a cloth shop. He used to help his seniors in maths. At the age of 13, he got Loney's Trigonometry and studied that. Based on that he created mathematical theorems and formulae. One of his seniors showed him 'Synopsis of Elementary Results in Pure Applied Mathematics by George Shoobridge Carr. This book triggered his mathematical genius in him. He used to do problems in loose sheets of papers or slate or note books. He filled in three notebooks before he had gone abroad. These notebooks were called Ramanujan's 'Frayed Notebook'. After his college days he had to find a job for him to buy papers to do his sums and for his food. He got a clerical job in Port Trust of India.

**2. Narrate the association of Ramanujan with G. H. Hardy.**

Ramanujan sent a letter to the great mathematician G. H. Hardy of Cambridge University. He included 120 theorems and formulae. Hardy and J.E. Littlewood realised that he was a rare mathematical genius. They made arrangements for Ramanujan to go to Cambridge University in 1914. He was not very comfortable at Cambridge. It was difficult to bear the cold, and being a vegetarian he had to cook his own food. Hardy found in him an unsystematic mathematician for the lack of formal education. It was sheer genius that led him to mathematical truths. Ramanujan was elected The Fellow of Royal Society and Fellow of Trinity College, Cambridge. He published many works in Cambridge. Ramanujan was affected by tuberculosis. He was sent back to India and he continued to play with numbers even on his death bed.

**C. Match the words with correct Synonym and Antonym from the table.**

S.No.	Words	Synonym	Antonym
1	distribute	circulate	collect
2	infinite	boundless	measurable
3	significant	important	trivial
4	delight	joy	sorrow
5	unkempt	messy	clean
6	initiate	commence	conclude
7	conjecture	guess	fact

## Listening

Page 156

### D. \*Listen to the anecdote "Two Geniuses" and narrate it in your own words.

Albert Einstein was a great scientist. He used to travel to different universities to give lectures. In all his trips his car was driven by the same chauffeur, Hans. Once he had to travel to a remote university. Einstein said that he was very tired and it would be difficult for him to give the lecture. His chauffeur Hans told him that since he heard his lectures many times he knew it very well and he was ready to give the lecture that day. No one from the university had seen him. So it was not difficult to exchange their places – Einstein became Hans and Hans became Einstein. Einstein asked him not to answer any question. As planned Hans gave the lecture and got applause at the end. By the time one professor got up and asked one difficult question. Hans said, "It is a simple question, my chauffeur will answer this." Then Einstein got up and answered the question.

## Speaking

### E. Divide the students into groups of five and conduct a group discussion on the topic "Importance of Mathematics in Our Everyday Life". The teacher will act as a moderator.

#### Importance of Mathematics in our everyday life

A knowledge of maths is essential as we buy fast moving consumer items and pay the due amount of money after calculation. We tender change to the vendors, booking clerks, conductors and so on. Unless we have a knowledge of maths, we will be likely to be taken for a ride.

We need a knowledge of maths in daily life for example, working out the dose of medicine, paying rent and school fees etc involve mathematical knowledge. Family budgeting is a very important task. Without a knowledge of maths, income and expenditure can't match.

## Reading

F. Answer the following questions based on the given passage.

Page 157

1. What made John Shepherd-Barron to come up with the idea of ATM?

One day when he usual went to the bank on a Saturday to withdraw money, unfortunately he was late by minutes. So he couldn't withdraw money. This made him come up with the idea of ATM.

2. When and where was the first ATM installed?

The first ATM was installed on June 27, 1967 at Barclays Bank branch in the North London, Suburb of Enfield.

3. Who was the first person to withdraw cash from ATM?

The first person to withdraw cash was actor Reg Varney.

4. Why did Shepherd-Barron reduce the PIN number from six digits to four?

His wife said that she could not remember six digit number so he reduced the PIN number to four digits.

5. Which Theory of Ramanujan helps the ATMs to dispense cash?

Ramanujan's 'Partition Theory' helps the ATMs to dispense cash.

## Writing

G. 1. Write a paragraph of 100 – 120 words about a memorable anecdote/ incident of your life.

Page 159

### Memorable incident of my life

During my school days, I somehow managed to avoid public speaking. Now, I love public speaking. I owe this love to an embarrassing incident. When I was 15, probably, in 9th standard, I was the office bearer in the school. The seniors used to conduct the morning assembly prayer wherein they had to hit the drum with a stick to make booming sound and command on the mic "stand at ease" or "attention" to the 3000 students in the ground. One fine morning, the seniors were absent and the managing teacher pulled me to hand over the drumstick to command the 3000 students. There was no substitute. Everyone gathered. I hit the drum \*bang\* and started choking and sweating before I could say "attention". For some unknown reason I kept hitting the drum \*bang bang bang\*. I wanted the ground to swallow me up. I made a mess of the situation. But this incident made me a public speaker in the school. Today, whenever I make a public speech, that particular 2.5 minutes boost my confidence. I repeatedly ask myself "what could be worse than those 2.5 minutes". Now, I deliver fiery speeches.

2. Write a paragraph of 100 – 120 words about your favourite personality.

My favourite leader is Mahatma Gandhi. He was born in Porbandar of Gujarat, India on 2 October 1869. After passing the Matric Examination, he went to England for higher studies. Gandhiji completed his law in England and came back to India in 1893.

He started his career as a lawyer. The social life of Gandhiji started in South Africa. He discovered that the white men were ill-treating the dark Indians there. He himself was tortured and insulted by the white often. Gandhiji fought against this unjust and cruel treatment. He observed Satyagraha there and became successful. Gandhiji returned to India and took part in freedom fight. He was sent to jail many times. He became famous as the 'Father of Nation'. Lastly India won freedom on 15th August 1947. Gandhi's style of living was very simple. He was a follower of 'Simple living, high thinking'. He taught us the lesson of 'Ahimsa'. He removed the caste barrier in India. He was a reformer. He was shot dead by an Indian on his way to attend a prayer on 30 January, 1948. Mahatma Gandhi is remembered for the two principles, Truth and Non-Violence.

## Grammar

### Connectors

- We could go to the library **or** the park.
- He **neither** finished his homework **nor** studied for the test.
- I did not go out **because** the weather was hot.

In each of the above sentences, two different ideas are expressed in one sentence. To connect the ideas, some words like or, neither...nor, because are used. These words and phrases are called Connectors.

**A connector may be used to indicate the relationship between the ideas expressed in a clause or a sentence.**

**The following connectors can be used for different purposes.**

**Look at the following sentences, how connectors are used.**

Adding	and, also, as well as, moreover, too, furthermore, additionally
Sequencing	first, second, third, finally, next, meanwhile, after, then, subsequently
Illustrating	for example, such as, for instance, in the case of, as revealed by, illustrated by
Cause and effect	because, so, therefore, thus, consequently, hence
Comparing	similarly, likewise, as with, like, equally, in the same way
Qualifying	but, however, although, unless, except, apart from, as long as if
Contrasting	whereas, instead of, alternatively, otherwise, unlike, on the other hand, conversely
Emphasising	above all, in particular, especially, significantly, indeed, notably

- The man has much money **However**, he isn't happy at all.
- I like playing football **On the other hand**, my brother likes playing basketball.
- His family made a lot of effort to make their son's lessons better, **conversely**, he never made any effort.
- She spent four years studying for her law degree. **Meanwhile**, she continued to work at the bank.

- You are not allowed to use your phone here. **Similarly**, you have to switch it off when you are in the library.

**A. Complete the following sentences using appropriate connectors from the box.**

Page 160

moreover	although	meanwhile	therefore	because
as long as	thus	above all	for instance	except

- Irine felt cold although she was wearing a winter coat.
- This restaurant has some of the best chefs in the town. Moreover their service is excellent.
- I'm not going to the party tonight because I didn't get an invitation.
- You can set the table. Meanwhile, I will start making dinner.
- I can play quite a few instruments, for instance the flute, the guitar and the piano.
- The store was out of chocolate chips; thus they would need to make a different type of cookies.
- The stores are open daily except Sundays.
- I'll stay as long as you need me.
- This detergent is highly concentrated and therefore you will need to dilute it.
- It was the thing he prized above all.

**Active Voice and Passive Voice**

Read the following sentences and analyse the difference.

*The team leader presented the report.*

*The report was presented by the team leader.*

- In the first sentence, the verb shows that the subject is the doer of the action. Therefore, the sentence is in active voice.
- In the second sentence, the verb shows that the subject is not the doer of the action. Therefore, the sentence is in passive voice.

**We use the Passive voice when -**

Page 161

- the focus is on the action rather than the doer of the action.  
**Eg:** About 50 per cent of the graduates are employed in IT related sectors.
- we do not know who the doer is.  
**Eg:** My bike was stolen yesterday.
- we talk of a system or a process.  
**Eg:** The vegetables are washed well. Then, they are cut into cubes.
- we write newspaper headlines and notices at public places. ('be' verb is omitted as the language has to be concise)  
**Eg:** 20 sportsmen felicitated by PM.
- we describe changes that have taken place.  
**Eg:** Our school looks completely different. The whole place has been painted.

Look at the below table. It shows the changes in tense while changing sentences from active voice into passive voice.

Page 161

Tense	Active Voice	Passive Voice
Simple Present	He makes coffee.	Coffee is made by him.
Present Continuous	He is making coffee.	Coffee is being made by him.
Present Perfect	He has made coffee.	Coffee has been made by him.
Simple Past	He made coffee.	Coffee was made by him.
Past Continuous	He was making coffee.	Coffee was being made by him.
Past Perfect	He had made coffee.	Coffee had been made by him.
Simple Future	He will make coffee.	Coffee will be made by him.
Future Perfect	He will have made coffee.	Coffee will have been made by him.

**B. Convert the following active sentences into passive sentences by supplying an appropriate passive form.**

- She will not recognize us. / We \_\_\_\_\_ by her.  
 a) will not recognize      b) will not being recognized      c) will not be recognized
- They didn't invite me, but I went anyway. / I \_\_\_\_\_ but I went anyway.  
 a) wasn't invited      b) wasn't being invited      c) wasn't inviting
- They broke up the table for firewood. / The table \_\_\_\_\_ up for firewood.  
 a) broke      b) had broken      c) was broken
- She has won the first prize. / The first prize \_\_\_\_\_ by her.  
 a) has won      b) has been won      c) had been won
- A friend of mine is repairing the car. / The car \_\_\_\_\_ by a friend of mine.  
 a) is repairing      b) is repaired      c) is being repaired
- Begin the work tomorrow. / Let the work \_\_\_\_\_ tomorrow.  
 a) be begun      b) begin      c) is beginning
- They speak English in New Zealand. / English \_\_\_\_\_ in New Zealand.  
 a) is speaking      b) is spoken      c) is being spoken
- His attitude shocked me. / I \_\_\_\_\_ by his attitude.  
 a) had shocked      b) had been shocked      c) was shocked
- She had already sent the parcel. / The parcel \_\_\_\_\_ by her.  
 a) has already been sent      b) had already been sent      c) was already sent
- Her silence worries me. / I \_\_\_\_\_ her silence.  
 a) am worrying by      b) am worried by      c) have worried by

Page 162

**Answers**

1. c	2. a	3. c	4. b	5. c	6. a	7. b	8. c	9. b	10. b
------	------	------	------	------	------	------	------	------	-------

**C. Match the following Active voice sentence with Passive voice.**

Page 162

	Active Voice	Passive Voice
1	I will never forget this experience.	This experience will never be forgotten by me.
2	Mother made a cake yesterday.	A cake was made by mother yesterday.
3	Have you finished the report?	Has the report been finished by you?
4	The tiger was chasing the deer.	The deer was being chased by the tiger.
5	She has written a novel.	A novel has been written by her.

**D. Change the following into passive voice.**

Page 163

- Stanley will inform you later. You will be informed by Stanley later.
- People speak Portuguese in Brazil. Portuguese is spoken in Brazil.
- My grandfather built this house in 1943. This house was built by my grandfather in 1943.
- Do not hurt the animals. Let the animals not be hurt.
- You must not drop litter in the streets. Litter must not be dropped in the streets.
- Carry it home. Let it be carried home.
- They are decorating the wall. The wall is being decorated by them.
- He has already mended the TV set. The TV set has already been mended by him.

**Project**

- E. Make a scrapbook of 'Famous Biographies' by collecting at least five biographies of famous scientists, mathematicians, inventors, artists etc., of your choice. You may also collect the pictures related to their achievements, inventions etc.**



**Marie Skłodowska Curie** was born on 7 November, 1867 and she was a Polish and naturalized-French physicist and chemist who conducted pioneering research on radioactivity. She was the first woman to win a Nobel Prize, the first person and only woman to win twice, and the only person to win a Nobel Prize in two different sciences. She was part of the Curie family legacy of five Nobel Prizes.

Her achievements included the development of the theory of radioactivity (a term that she coined), techniques for isolating radioactive isotopes, and the discovery of two elements, polonium and radium.



**Jonas Edward Salk** was born on October 28, 1914. He was an American medical researcher and virologist. He discovered and developed one of the first successful polio vaccines. Born in New York City, he attended New York University School of Medicine, later choosing to do medical research instead of becoming a practicing physician.

Two years later he was granted a fellowship at the University of Michigan, where he would study flu viruses with his mentor Thomas Francis, Jr. Until 1955, when the Salk vaccine was introduced, polio was considered one of the most frightening public health problems in the world.

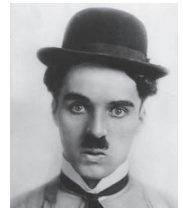
**Madurai Shanmukhavadiyu Subbulakshmi** was born on 16 September 1916. She was an Indian Carnatic singer from Madurai, Tamil Nadu. She was the first musician ever to be awarded the Bharat Ratna, India's highest civilian honour. She is the first Indian musician to receive the Ramon Magsaysay award, often considered Asia's Nobel Prize, in 1974 with the citation reading "Exacting purists acknowledge Srimati M.S. Subbulakshmi as the leading exponent of classical and semi-classical songs in the carnatic tradition of South India." Subbulakshmi gave her first public performance, at the age of eleven, in the year 1927, in the 100 pillar hall inside the Rockfort Temple, Tiruchirappalli.



**Stephen William Hawking** was born on (8 January 1942. He was an English theoretical physicist, cosmologist, and author, who was director of research at the Centre for Theoretical Cosmology at the University of Cambridge at the time of his death. His scientific works included a collaboration with Roger Penrose on gravitational singularity theorems in the framework of general relativity and the theoretical prediction that black holes emit radiation, often called

Hawking radiation. Hawking was the first to set out a theory of cosmology explained by a union of the general theory of relativity and quantum mechanics. His book A Brief History of Time appeared on the British Sunday Times best-seller list for a record-breaking 237 weeks.

**Sir Charles Spencer Chaplin** was born on 16 April 1889. He was an English comic actor, filmmaker, and composer who rose to fame in the era of silent film. He became a worldwide icon through his screen persona, "the Tramp", and is considered one of the most important figures in the history of the film industry. Chaplin wrote, directed, produced, edited, starred in, and composed the music for most of his films. His films are characterized by slapstick combined with pathos, typified in the Tramp's struggles against adversity. Many contain social and political themes, as well as autobiographical elements. He continues to be held in high regard, with The Gold Rush, City Lights, Modern Times, and The Great Dictator often ranked on lists of the greatest films of all time.



## UNIT 6

## THE COMET

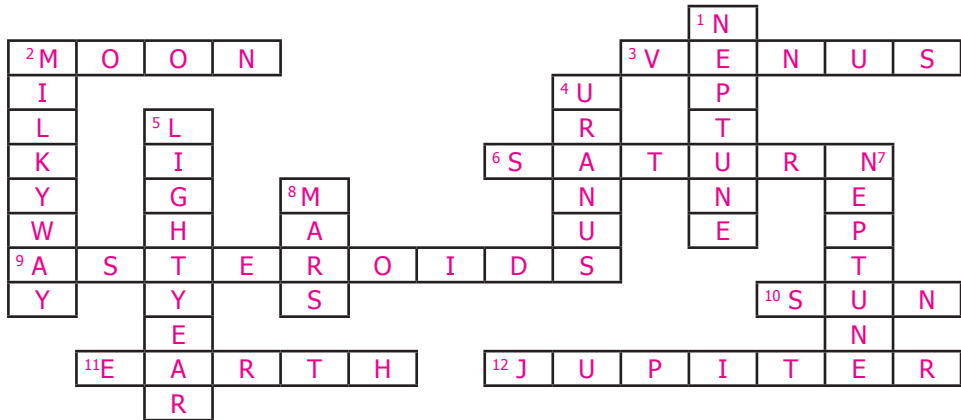
- Norman Littleford

## POEM

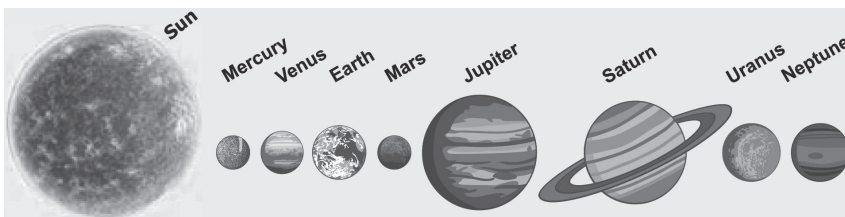
## Warm Up

Page 164

Fill in the crossword puzzle using the clues given below.



ACROSS	DOWN
2. Earth's only natural satellite.	1. Smallest planet in the Solar system.
3. Morning star.	2. Our Galaxy.
6. Titan is the largest moon of ____	4. Seventh planet from the Sun.
9. Smaller bodies in orbit around the Sun.	5. Distance travelled by light in a vacuum in one tropical year.
10. The star at the centre of solar system.	7. Farthest planet in the Solar system.
11. The Blue planet.	8. The Red planet.
12. Largest planet in the solar system.	



## Summary

Norman Littleford wrote the poem 'Comet' describing the movement of the Comet. It goes through the sky making a lot of noise and causing damages. It never stops by day or night. When it comes in full flight it is a wonderful spectacle. It moves faster than the cheetah with its long tail. It is bigger than a mountain and it is very powerful and strong. The outer ice melts and it causes vapor from the force and it leaves a trail behind it, as it travels on its course. If it comes very close to the earth, the atmosphere will shake causing earthquake. Some scientists say that the chemicals left behind them are responsible for the life on the earth. The poet is not sure of this, but he knows that comet is a wonderful sight.

**"Nature - a beautiful mystery"**

## Glossary and Meanings Textual

Page 166

rampaging (v)	- going through an area making a lot of noise and causing damage
spectacle (n)	- an unusual or unexpected event or situation that attracts attention, interest
comet (n)	- an icy small Solar body, which when passing close to the Sun, warms and begins to release gases that are seen on rare occasions from the earth as a bright line in the sky
trail (n)	- a path often made or used for a particular purpose
quake (v)	- a sudden violent movement of the earth's surface, some times causing great damage (short form of earthquake).

**A. \*Memorise the first three stanzas of the poem.**

**B. Read the following lines and answer the questions.**

1. *Rampaging through the heavens*  
*Never stopping day or night*

**a. How does the comet travel?**

It travels through an area making lot of noise and causing damages.

**b. Which word could you replace 'rampaging' with?**

- a) charging    b) rolling    c) speeding    d) flying

**Ans: charging**

2. *Faster than a cheetah*  
*With a tail that's miles long*

**a. Why is the comet compared to a cheetah?**

The comet travels very fast so it is compared to a cheetah.

**b. Whose tail is compared here?**

The comet's tail is compared here.

3. *With shockwave reaching to the ground  
Causing the land to quake*

a. **What is reaching to the ground?**

The comet is reaching the ground.

b. **What is causing the land to quake?**

Shockwave of comet is causing the land to quake.

4. *In the dust they leave behind,  
Could have started life on the earth  
Which resulted in mankind.*

Page 167

a. **What does the word 'they' refer to?**

The word 'they' refers to the chemicals.

b. **According to scientists, how did life start on earth?**

The chemicals in the dust left behind by the comet started life on earth.

5. *But I know no better spectacle  
Than a comet in full flight*

a. **Who does 'I' refer to?**

'I' refers to the poet.

b. **What is the best spectacle mentioned in the above lines?**

Comet is the best spectacle mentioned in the above lines.

C. **Complete the summary by filling in the given spaces with suitable words/phrases given below.**

Page 167

a trail	spectacular	spectacular scene	outer ice	a cheetah
day or night	emerging of life	powerful and strong	shock wave	scientists

The poet describes a moving comet which speeds through the heavens and never takes a break by day or night. When a comet is in full flight, it gives a spectacular scene which can never be compared to anything else for a life time. The comet is compared to a cheetah for its speed and a mountain as it is powerful and strong. The outer ice melts which causes a vapour from the force and leaves behind a trail as it travels on its way. If it comes very close to the atmosphere, it causes a shake which in turns produces a shock wave that reaches the Earth's surface. According to the scientists the comets leave behind chemicals in the form of dust which resulted in the emerging of life on earth and mankind came into existence. But the poet is not sure whether this principle is true or not but he knows for sure that whatever the truth may be, the sight of the comet in full flight is the spectacular.

**D. Poem appreciation**

*If one should come too close to earth  
The atmosphere will shake  
With shock wave reaching to the ground  
Causing the land to quake*

1. Pick out the rhyming words.  
shake – quake
2. Mention the rhyme scheme of the stanza.  
a b c b
3. When you read the poem aloud, you can feel/hear a rhythm. What according to you gives rhythm to the poem – the rhyme or the words in a line? Support your answer with examples from the poem.

In my opinion, the words in a line give the rhythm. For example, we can quote the second stanza of the poem.

*Faster than a cheetah  
With a tail that's miles long  
Bigger than a mountain  
So powerful and strong.*

**E. Answer the following questions in about 80 – 100 words.**

Page 168

**1. Narrate how the poet describes the comet.**

Norman Littleford wrote the poem 'Comet' describing the movement of the Comet. It goes through the sky making a lot of noise and causing damages. It never stops by day or night. When it comes in full flight, it is a wonderful spectacle. It moves faster than the cheetah with its long tail. It is bigger than a mountain and it is very powerful and strong. The outer ice melts which causes a vapour from the force and leaves behind a trail as it travels on its way.

**2. Give a detailed account of the various effects caused by the comet to the earth.**

Norman Littleford wrote the poem 'Comet' describing the movement and the various effects of the Comet. The outer ice melts and it causes vapor from the force and it leaves a trail behind it as it travels on its course. If it comes very close to the earth, the atmosphere will shake causing earthquake. Some scientists say that the chemicals left behind them were responsible for the life on the earth. The poet is not sure of this, but he knows that comet is a wonderful sight.

**Listening**

Page 168

**F. Listen to the passage on 'Comet' and fill in the blanks by choosing the correct answer.**

- Comets are believed to be remnants of the materials created by the \_\_\_\_\_.  
a) Moon                      b) Sun                      c) star                      d) asteroids                      **Ans: b) Sun**
- Comets are mostly made of \_\_\_\_\_.  
a) dust                      b) ice                      c) sand                      d) snow                      **Ans: b) ice**
- The \_\_\_\_\_ can be seen in the night sky as a bright, quickly-moving light.  
a) head                      b) star                      c) tail                      d) wings                      **Ans: b) star**
- Comet's orbit at the very edge of the galaxy, past the \_\_\_\_\_.  
a) Earth                      b) Neptune                      c) Pluto                      d) Saturn                      **Ans: c) Pluto**
- State whether the statement is true or false.  
The melting process causes bits of dust and debris to trail behind the comet.  
**Ans: True**

**Speaking****G. Imagine you are interviewing an astronaut about his/her experiences in space. Select a partner to be an astronaut and present the interview as a role-play in front of the class.**

- Student** : Good morning, ma'm. I am proud of interviewing you.
- Sunitha Williams** : Thank you. I am Sunitha Williams, an American astronaut. May I have the pleasure of sharing my experiences in space?
- Student** : We are all proud that you have created an amazing record. Could you please tell us about it?
- Sunitha Williams** : Yes, I hold the records for total space walks by a woman and most space walk time for a woman.
- Student** : How did the earth appear from the outer space?
- Sunitha Williams** : It's spectacular. I was thrilled to see the outlines of rivers and mountains, especially the Great wall of China.
- Student** : How did you feel when you had your space walk?
- Sunitha Williams** : Just incredible. I felt as if stars were twinkling and sparkling. I felt as if I were the centre of the universe with everything spinning around me in slow motion. Fantastic experience!

**Student** : Thank you, ma'm for sharing your experiences in space with us.

**Sunitha Williams** : Thank you!

## Writing

- H. Imagine that you and your friend get a chance to visit another planet. There, you befriend an alien who takes you around the planet. After reaching the earth, write a letter thanking him for all the help he did.**

74, North Street,  
Nagercoil,  
Kanyakumari District.  
The Earth.

December 17, 2021.

Dear Susoonaa,

Do you remember me? I am Raja from Earth and we met one month back in your planet. I remember you with gratitude all the time for the timely help you rendered to me. Without your help I would not have enjoyed my stay in your planet. Moreover, you took me to different places in your planet and you explained many things to me. I thank you so much for your help.

Please visit our planet as you pass by the Milky Way.

Yours lovingly,  
Raja.



## UNIT 6

## MOTHER'S VOICE

- Vasil Berezhnoy

## Supplementary

## Warm Up

Page 170

If you are given an opportunity to go on a one-way trip to Mars, will you accept it? Discuss.



Yes, I will accept the opportunity to go on a one - way trip to Mars. I will enjoy the space travel watching the planets, the stars and the asteroids. I will enjoy going around the Mars and get settled down there. I will search for comfortable places to live there. I will call my friends and family to join me. I will tell them the advantages of living on the Mars. Pure air, fresh drinking water, spacious ground for playing cricket and football, meeting people of different galaxies etc will be the advantages for which I would like to go to the Mars.

## Summary

'Mother's Voice' by Vasil Berezhnoy is a science fiction about travel to the Moon and to some unknown planet. The astronaut was looking at a video which had been taken when his mother had visited the Moon. She admired the moonscape. He took her along tunnels of Selenopolis. He showed her some tall structures. The mother felt that it was easy to walk there.

His mother was a good singer so her voice was very sweet. She was excited because it was her first visit to the Moon. She was thinking about the orchards she had at home. She asked her son whether he would come home for summer. He was about to tell her about his expedition, but he controlled himself because she would be upset. This might be their last meeting.

A moving pavement rushed them through tunnels and caves. The elevator brought them to the surface. She looked in silence at the big tent over the crater. He informed her

that it was 'The community of Nations Squire'. People of different nationalities who work in Selenopolis used to come there after work. He said that it was a good experience to swim in the Moon, but she said it was better to swim in the river Dnieper in the Earth.

When she saw two huge spaceships at the astrodome, she asked him what they were. He told her that they were long-range spaceships. Some astronauts were planning an expedition to a neighbouring galaxy. She was unhappy to know about the expedition. She asked why they should go to other galaxy before settling down properly on the Moon. He was anxious to say that he was also interested in taking part in the expedition. But he did not, because she would be upset.

She said that people wanted to settle down on the Moon, because they were in the gravitation field of their native Earth, under their Sun. It was a miracle that the Earth floated through space all by itself. He too felt an attachment to the Earth. He knew that he would not meet her in future. She asked him to come to the Earth in the Autumn. As they were talking about the Earth he heard from the loudspeaker, an order, "Operator on duty ..... report to office". Immediately he put off the video and said, "coming". Their group had already gone off to another galaxy and they had left their native Sun.

### Glossary and Meanings Textual

Page 173

chore (n)	- a routine task, especially a household one
orchard (n)	- a piece of enclosed land planted with fruit trees
expedition (n)	- a journey undertaken by a group of people with a particular purpose, especially that of exploration, research, or war
quartz (n)	- a hard, transparent mineral substance, used in making electronic equipment
exotic (adj.)	- unusual and exciting
void (n)	- a completely empty space
confronted (v)	- to face, meet, or deal with a difficult situation or person
departure (n)	- the action of leaving, especially to start a journey
pears (n)	- a sweet, juicy, yellow or green fruit with a round base and slightly pointed top
galaxy (n)	- one of the large, independent groups of stars in the universe

### A. Choose the correct answer.

Page 174

- Mother was excited because \_\_\_\_\_.  
 a) her son would be home in the spring  
 b) her son was coming back to earth  
 c) it was her first visit to the moon  
 d) her son was going to another galaxy
- On weekdays, as Mother went about the chores \_\_\_\_\_.  
 a) she constantly thought of her son  
 b) she was always tired

Ans: c

- c) her singing would be soft and almost inaudible  
d) her singing was muted and a little sad

Ans: c

3. \_\_\_\_\_ occupies more than a hundred square kilometres on the moon.

- a) Selenopolis                      b) Metropolis  
c) Astrodrome                    d) Orchards

Ans: a

4. The community of Nations Square is where people \_\_\_\_\_.

- a) live on the moon                      b) work on the moon  
c) walk on the moon                    d) of different nationalities come after work

Ans: d

5. They are planning an expedition to a neighbouring \_\_\_\_\_.

- a) galaxy                                  b) country  
c) planet                                  d) star

Ans: a

6. The mother was not able to understand why people wanted to leave the moon because \_\_\_\_\_.

- a) it was better to remain as a part of solar system  
b) it was better to remain on the earth  
c) it was not possible to come back  
d) it was a place to enjoy life

Ans: a

**B. Identify the character or speaker of the following lines.**

1. It's so easy to walk here, son!                      – the mother
2. They're planning an expedition to a neighbouring galaxy.                      – the astronaut or the speaker
3. Why should people go off into the unknown?                      – the mother
4. I don't know when we'll see each other again.                      – the astronaut or the speaker
5. Operator on duty, ..... report to office.                      – voice from the loud speaker

**C. Answer the following question in about 100 – 120 words.**

Page 175

**1. Write a paragraph listing all the sentimental and scientific reasons given by the mother against the expedition to neighbouring galaxy.**

'Mother's Voice' by Vasil Berezhony is a science fiction about travel to the Moon and to some unknown planet. The mother went to the Moon and was taken around the moon by her son who was an astronaut. When the mother saw two huge spaceships at the astrodome, she asked her son what they were. He told her that they were long-range spaceships. Some astronauts were planning an expedition to a neighbouring galaxy. She was unhappy to know about the expedition. She asked why they should go to other galaxy before settling down properly on the Moon. She said that people wanted to settle down on the Moon because they were in the gravitation field of their native Earth, under their Sun. It was the space allotted to human beings by nature. It was a miracle that the Earth floated through space all by itself.

**D. Think and answer.**

**"The explorer in this story is travelling to another galaxy. The final destination is an unknown planet in another galaxy. The travel will take many years." What qualities and lifeskills do you think an explorer like him must possess? Why? Do you have any of these skills and qualities? Explain.**

Travelling to another galaxy is time consuming. It may take even years. So the explorer should have some strong qualities. He should have physical health and withstand any eventualities on the way. As he travels in tube-like things, he may not get any comfortable seat to enjoy his travel. He should have only one thing in mind, that's to reach his destination. He needs a lot of concentration. He needs patience and should be ready to wait forgetting duration of time. He should have team spirit to work with the team members. These qualities will be only with those who have the willingness and passion for reaching other galaxies.

Yes, I have team spirit and patience.

**E. Based on the understanding of the story, discuss in groups and make a note of the following.****Setting**

The setting is on the Moon.  
Travelling through the tunnels  
and craters.

**Plot**

Travelling all along the Moon. Visiting  
Selenopolis. Travelling to another  
galaxy.

**Characters**

The mother  
Astronaut  
Son  
The moon

**Conclusion**

The mother enjoyed her visit to the  
moon, her son avoided telling her that  
he was part of the expedition to other  
galaxy. He joined the expedition.

