



UNIT 5

SCIENCE AND CURIOSITY

FEATHERED FRIEND

Let us do these activities before we read.

I Work in pairs and discuss the questions given below. Share your answers with your classmates and teacher.

1. Who can a 'feathered' friend be?
2. Which 'feathered' friend do you like? Why?
3. If you have a choice between a 'feathered' and a 'furry' friend, who would you choose? Why?
4. Do you think a 'feathered' or a 'furry' friend can accompany astronauts to space? If yes, why? If no, why not?



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II Complete the words given below by inserting vowels. Refer to their meanings given alongside. Share your answers with your classmates and teacher.

1. official rule that controls how something is done: R _ G _ L _ T _ _ N

2. to not allow something: F _ R B _ D

3. join or blend to form a single entity: F _ S _

4. suddenly: _ B R _ P T L Y

5. admit one's mistake: C _ N F _ S S

6. a person who advises what to eat to keep healthy: D _ _ T _ T _ _ N



Let us read



I

To the best of my knowledge, there's never been a regulation that forbids one to keep pets in a space station. No one ever thought it was necessary—and even had such a rule existed, I am quite certain that Sven Olsen would have ignored it.

Actually he was a **wiry** little fellow, like most of the early spacers, and managed to qualify easily for the 150-pound bonus that kept so many of us on a reducing diet. Had he been built otherwise, his chances of getting a job in space would have been very slim.

Sven was one of our best construction men, and excelled at the tricky and specialised work of collecting **assorted girders** as they floated around in free fall, making them do the slow-motion, three-dimensional ballet that would get them into their right positions, and fusing the pieces together when they were **precisely dovetailed** into the intended pattern: it was a skilled and difficult job, for a space suit is not the most convenient of **garbs** in which to work. However, Sven's team had one great advantage over the construction groups you see putting up skyscrapers down on Earth. They could step back and admire their **handiwork** without being **abruptly** parted from it by gravity.

Don't ask me why Sven wanted a pet, or why he chose the one he did. I'm not a psychologist, but I must admit that his

wiry: thin but strong

assorted: consisting of various types mixed together

girders: long, thick piece of steel or concrete that supports a large structure

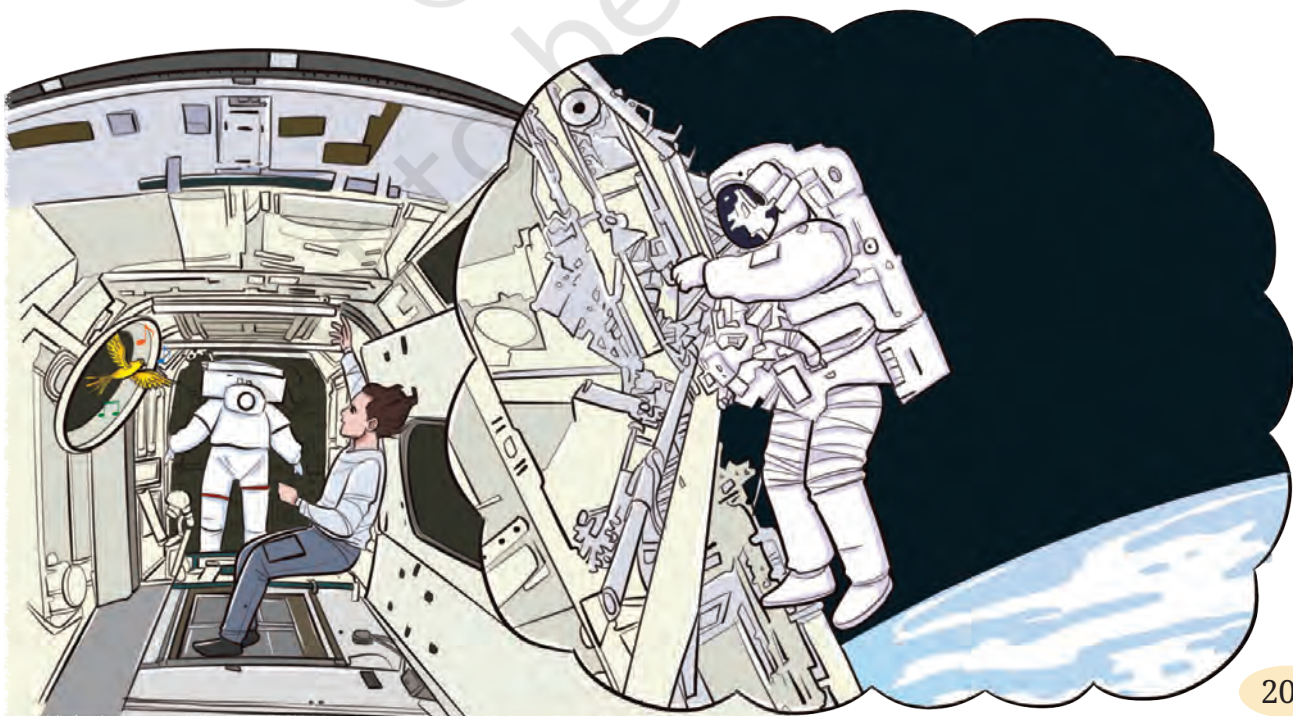
precisely: exactly

dovetailed: fitted together

garbs: clothing of a special kind

handiwork: creation

abruptly: unexpectedly/ suddenly



aboard: on an aircraft

cubbyhole: a small enclosed space or room

ceased: stopped

canary: a popular bird which people love to keep as pets; found in open areas with small trees and shrubs

wits: ability to think quickly

flicks: sudden, quick movements

concealing: hiding

ventilating shafts: passageways or ducts that allow fresh air in a closed space

bulkheads: dividing walls or barriers between separate compartments in an aircraft

selection was very sensible. Claribel weighed practically nothing, her food requirements were tiny—and she was not worried, as most animals would have been, by the absence of gravity.

I first became aware that Claribel was **aboard** when I was sitting in the little **cubbyhole** laughingly called my office, checking through my lists of technical stores to decide what items we'd be running out of next. When I heard the musical whistle beside my ear, I assumed that it had come over the station intercom, and waited for an announcement to follow. It didn't; instead, there was a long and involved pattern of melody that made me look up with such a start that I forgot all about the angle beam just behind my head. When the stars had **ceased** to explode before my eyes, I had my first view of Claribel.

She was a small yellow **canary**, hanging in the air as motionless as a hummingbird—and with much less effort, for her wings were quietly folded along her sides. We stared at each other for a minute; then, before I had quite recovered my **wits**, she did a curious kind of backward loop I'm sure no earthbound canary had ever managed, and departed with a few leisurely **flicks**. It was quite obvious that she'd already learned how to operate in the absence of gravity, and did not believe in doing unnecessary work.

Sven didn't confess to her ownership for several days, and by that time it no longer mattered, because Claribel was a general pet. He had smuggled her up on the last ferry from Earth, when he came back from leave—partly, he claimed, out of sheer scientific curiosity. He wanted to see just how a bird would operate when it had no weight but could still use its wings.

Claribel thrived and grew fat. On the whole, we had little trouble **concealing** our guest when VIPs from Earth came visiting. A space station has more hiding places than you can count; the only problem was that Claribel got rather noisy when she was upset, and we sometimes had to think fast to explain the curious peeps and whistles that came from **ventilating shafts** and storage **bulkheads**.

There were a couple of narrow escapes—but then who would dream of looking for a canary in a space station?

Let us discuss

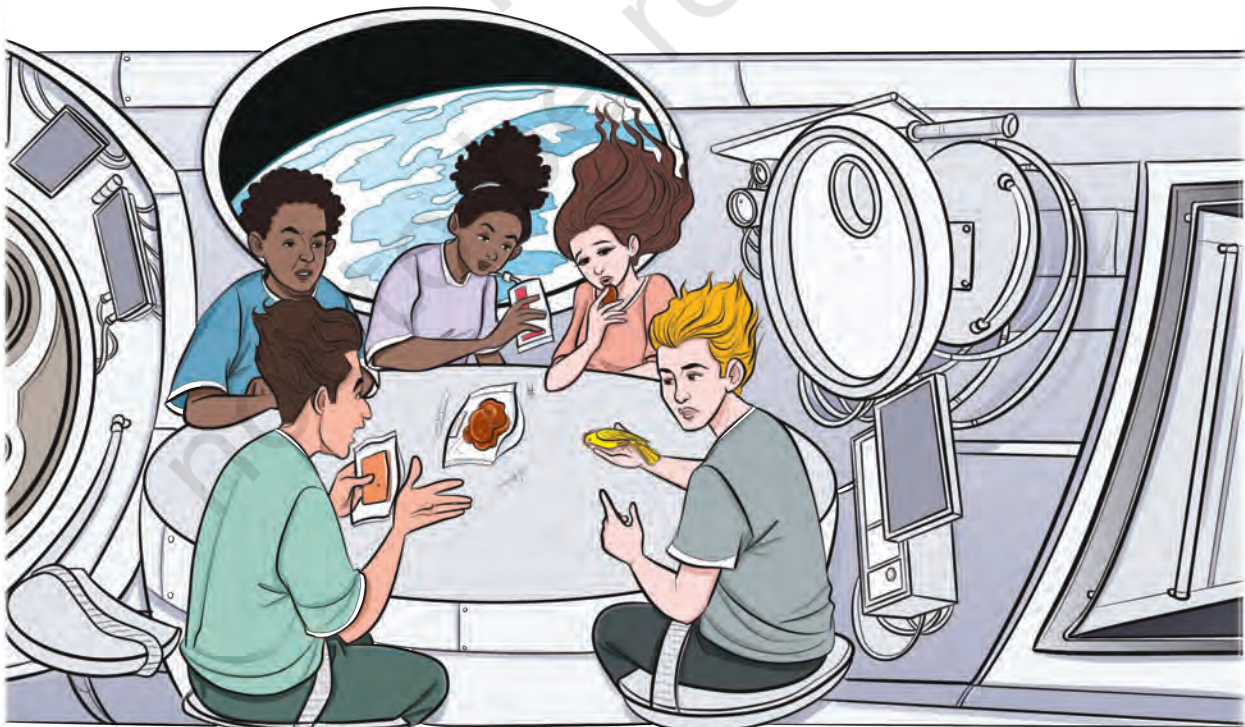
I Answer the following questions briefly.

1. Why did the narrator think Sven had sneaked a bird aboard? What was Sven's scientific reason?
2. How did Claribel adjust to the new surroundings?
3. What made the narrator mistake the musical whistle for a sound from the intercom?
4. Do you think the presence of the canary would lead the spacers into trouble? If yes, why? If no, why not?

II

We were now on twelve-hour watches, which was not as bad as it sounds, since you need little sleep in space. Though of course there is no 'day' and 'night' when you are floating in permanent sunlight, it was still convenient to stick to the terms. Certainly when I woke that 'morning' it felt like 6:00 a.m. on Earth. I had a **nagging** headache, and vague memories of fitful, disturbed dreams. It took me ages to undo my bunk straps, and I was still only half awake when I joined the remainder of the duty crew in the mess. Breakfast was unusually quiet, and there was one seat vacant.

nagging:
persistently
painful





retort: answer/
respond

clenched:
pressed together
tightly

hushed: quiet



snugly: cosily

keeled:
collapsed/
fainted

tugging at:
causing to
remember
something

sluggish:
inactive



“Where’s Sven?” I asked, not very much caring.

“He’s looking for Claribel,” someone answered. “Says he can’t find her anywhere. She usually wakes him up.”

Before I could **retort** that she usually woke me up, too, Sven came in through the doorway, and we could see at once that something was wrong. He slowly opened his hand, and there lay a tiny bundle of yellow feathers, with two **clenched** claws sticking pathetically up into the air.

“What happened?” we asked, all equally distressed.

“I don’t know,” said Sven mournfully. “I just found her like this.”

“Let’s have a look at her,” said Jock Duncan, our cook-doctor-dietitian. We all waited in **hushed** silence while he held Claribel against his ear in an attempt to detect any heartbeat.

Presently he shook his head. “I can’t hear anything, but that doesn’t prove she’s dead. I’ve never listened to a canary’s heart,” he added rather apologetically.

“Give her a shot of oxygen,” suggested somebody, pointing to the green-banded emergency cylinder in its recess beside the door. Everyone agreed that this was an excellent idea, and Claribel was tucked **snugly** into a face mask that was large enough to serve as a complete oxygen tent for her.

To our delighted surprise, she revived at once. Beaming broadly, Sven removed the mask, and she hopped onto his finger. She gave her series of “Come to the cookhouse, boys” trills—then promptly **keeled** over again.

“I don’t get it,” lamented Sven. “What’s wrong with her? She’s never done this before.”

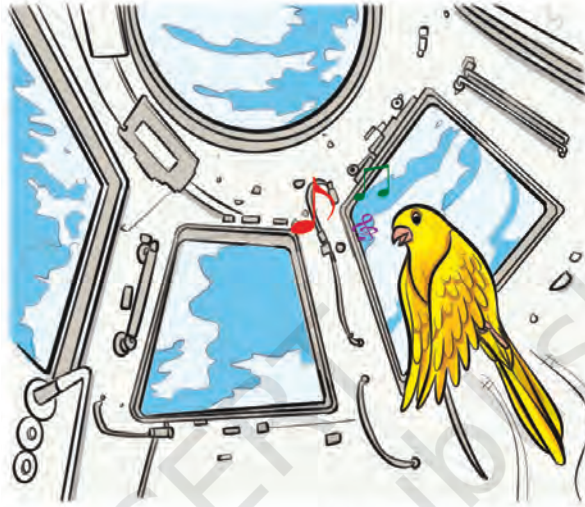
For the last few minutes, something had been **tugging at** my memory. My mind seemed to be very **sluggish** that morning, as if I was still unable to cast off the burden of sleep. I felt that I could do with some of that oxygen—but before I could reach the mask, understanding exploded in my brain. I whirled on the duty engineer and said urgently: “Jim!” There’s something wrong with the air! That’s why Claribel’s passed out. I’ve just remembered that miners used to carry canaries down to warn them of gas.”



“Nonsense!” said Jim. “The alarms would have gone off. We’ve got duplicate circuits, operating independently.”

“Er—the second alarm circuit isn’t connected up yet,” his assistant reminded him. That shook Jim; he left without a word, while we stood arguing and passing the oxygen bottle around like a pipe of peace.

He came back ten minutes later with a **sheepish** expression. It was one of those accidents that couldn’t possibly happen; we’d had one of our rare eclipses by Earth’s shadow that night; part of the air purifier had frozen up, and the single alarm in the circuit had failed to go



sheepish:
embarrassed

off. Half a million dollars’ worth of chemical and electronic engineering had let us down completely. Without Claribel, we should soon have been slightly dead.

So now, if you visit any space station, don’t be surprised if you hear an **inexplicable** snatch of birdsong. There’s no need to be alarmed; on the contrary, in fact. It will mean that you’re being doubly **safeguarded**, at practically no extra expense.

ARTHUR C. CLARKE

inexplicable:
unexplainable
safeguarded:
protected

Let us discuss

I Identify whether the following statements from parts I and II are true or false. Share your answers with your classmates and teacher.

1. The alarm at the space station failed to work properly because they were not connected.
2. Claribel was brought to the space station for an official experiment on animal behaviour in space.





3. The canary's suffering helped the crew discover a problem with the air purifier.
4. The air purifier froze because there was a rare eclipse.
5. Claribel could fly gracefully in the space station, performing loops in the air.
6. The space station crew was uninterested in Claribel and hardly noticed her presence after she was discovered.
7. Claribel had fainted and had to be revived with oxygen supply.



Let us think and reflect

I Read the given extracts and answer the questions that follow.

1. *Sven was one of our best construction men, and excelled at the tricky and specialised work of collecting assorted girders as they floated around in free fall, making them do the slow-motion, three-dimensional ballet that would get them into their right positions, and fusing the pieces together when they were precisely dovetailed into the intended pattern: it was a skilled and difficult job, for a space suit is not the most convenient of garbs in which to work.*

- (i) What can be inferred about Sven's abilities from his job description?
 - A. He is good at following instructions but lacks creativity.
 - B. He possesses a strong understanding of working in space.
 - C. He struggles with the complexities of construction in space.
 - D. He prefers working on simpler tasks rather than complex jobs.

(ii) How can we conclude that Sven was working in zero gravity?

(iii) Select the option that is correct for both Assertion (A) and Reason (R).

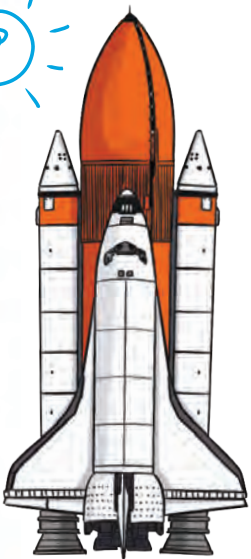
(A): Sven's job required him to make girders perform a 'three-dimensional ballet' in space.

(R): Working in zero gravity allows objects to float, making precise positioning more challenging.

- A. Both (A) and (R) are true, and (R) is the correct explanation of (A).
- B. Both (A) and (R) are true, but (R) is not the correct explanation of (A).
- C. (A) is true, but (R) is false.
- D. (A) is false, but (R) is true.

(iv) Replace the underlined word with a word similar in meaning from the extract.

During the festival, people wore colourful outfits that represented their culture.



2. “Jim!” *There’s something wrong with the air! That’s why Claribel’s passed out. I’ve just remembered that miners used to carry canaries down to warn them of gas.*”

“Nonsense!” said Jim. “The alarms would have gone off. We’ve got duplicate circuits, operating independently.”

“Er—the second alarm circuit isn’t connected up yet,” his assistant reminded him. That shook Jim; he left without a word, while we stood arguing and passing the oxygen bottle around like a pipe of peace.

- (i) Fill in the blank by selecting the correct option from those given in the brackets.

The narrator references canaries and miners in order to _____.
(highlight the historical use of canaries as warning systems/explain the reason that caused Claribel to faint suddenly)

- (ii) Complete the following sentence with a suitable reason.
Jim initially dismisses the warning about the air because _____.

- (iii) What does the phrase ‘shook Jim’ mean in the context of the information in the extract?

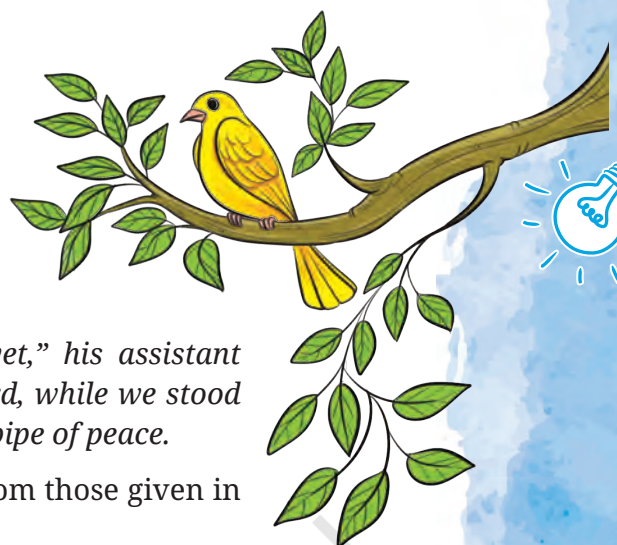
Jim was _____.

- A. physically pushed by someone
- B. startled by unexpected information
- C. cold and needed to warm up
- D. trying to shake off sleepiness

- (iv) What does the crew’s action of passing the oxygen bottle around ‘like a pipe of peace’ suggest about their response to the situation?

II Answer the following questions.

1. What was the purpose of the alarm? What had caused its failure?
2. How does the crew’s reaction to Claribel change over the course of the story?
3. What does the last part of the story tell us about the significance of unusual ways of problem solving?
4. Justify the appropriateness of the title of the story.
5. ‘Without Claribel, we should soon have been slightly dead.’ What does this line suggest about uncertainty of life in space?
6. Explain how has the writer presented science fiction with a touch of humour.
7. How would Sven reflect on his experience of almost losing Claribel and for saving the lives of the entire crew?





Let us learn

I Choose the appropriate adjectives from the box given below to match with the words 1–8 that follow.

nagging	vague	delighted	narrow
sluggish	hushed	inexplicable	sheepish

1. _____ path
2. _____ worry
3. _____ plan
4. _____ look
5. _____ reason
6. _____ traffic
7. _____ voices
8. _____ expression

Now, underline the sentences that use these adjectives in the text.

II The word ‘intercom’ is used in the text. It is called a **merged word** as it is made by combining the parts of two words—‘internal’ and ‘communication’. Merged words are made by combining two words.

Combine the words in Column 1 with the words in Column 2 to make merged words. Write the merged word and its meaning.

One example has been done for you.

Column 1	Column 2	Merged word	Meaning
breakfast	lunch	(i) brunch	meal eaten between breakfast and lunch hours
motor	hotel	(ii)	
smoke	fog	(iii)	
situation	comedy	(iv)	
video	log	(v)	
spoon	fork	(vi)	
web	seminar	(vii)	

III Read the following sentence from the text and fill in the blank.

It will mean that you're being doubly safeguarded.

In the given sentence, 'will' denotes _____ (past/present/future) time.

There are several ways to use verbs to talk about the future in English.

The following table lists some of the usages of future time references.

S. No.	Tense	Usage	Examples
1.	'will' [Note: also common in offers, promises, and orders expressing willingness, certainty or obligations]	When we provide information about future events or discuss possible future occurrences.	I think the Kailash House will win.
2.	Simple Present Tense	When we talk about the future only in situations that are a part of a regular schedule or planned action.	My school reopens on 03 January.
3.	Present Progressive Tense	When we use for future actions and events mostly for personal arrangements and fixed plans.	- My exams are getting over this weekend. - I am visiting my grandparents during the vacation.
4.	'Going to'	Present Progressive Tense of 'go'— This is common in informal style, especially in speech or conversation.	We're going to get a new motorbike soon.
5.	Future Perfect (will have + Past Participle)	When we say that something will be finished or completed by a certain time in future.	The teacher says, she will have completed the portions by next month.

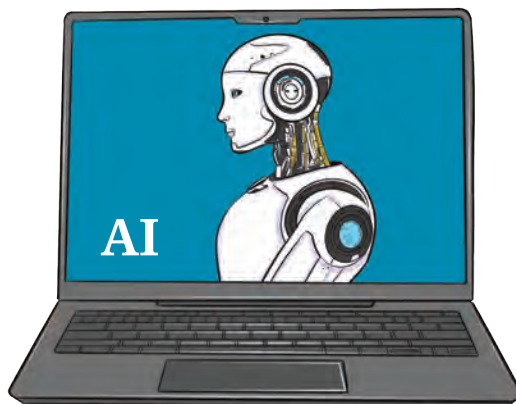


6.	Future Progressive (will + be + -ing)	When we say that something will be in progress at a particular moment in the future.	This time tomorrow I will be relaxing at home.
7.	Future in the Past	Sometimes, when we talk about the past, we need to mention something that was still in the future at that time—something that had not happened yet.	- I had no time to shop as I was leaving for Chennai in an hour. (instead of 'am leaving') - Last time I saw you, you were going to start a new business. (instead of 'are going to') - In 2024, I arrived in a town where I would spend the rest of my life. (instead of 'will spend')

IV Fill in the blanks with the correct form (Simple Present, Present Progressive, 'will', or 'going to') to indicate future time.

- Our flight _____ (leave) at 10.00 a.m. tomorrow.
- They _____ (finish) the project by the end of this week.
- The weather forecast says it _____ (rain) later today.
- We _____ (move) into our new house next month.
- I _____ (start) my new hobby class next Monday.
- She _____ (go) to the mall this afternoon.
- The team _____ (have) a meeting at 3.00 p.m. tomorrow.
- I _____ (help) you with your homework after dinner.

V Fill in the blanks with the suitable forms of verbs given in brackets to express future time reference.



By 2040, artificial intelligence 1. _____ (revolutionise) medical treatments. Researchers 2. _____ (develop) AI-powered diagnostic tools that 3. _____ (transform) healthcare by the end of this decade. Next week, the International Science Congress 4. _____ (open) to showcase advancements in AI and robotics. In the coming years, robots 5. _____ (assist) surgeons in performing complex operations. Years ago, experts had predicted that AI would reshape our world, and now, as we approach the future, this 6. _____ (be) our new reality.



Let us listen

I You will listen to a conversation between Monika and Toby. Toby is a Martian and is stranded on Earth. He has become Monika's friend. As you listen, put a tick mark (✓) against the correct statements and a cross against the wrong ones. (Transcript for teacher on page 249)

1. Toby misses his school.
2. Monika accepts Toby as her friend.
3. Monika asks Toby about one of his facial features.
4. Toby tells Monika that she had a banana for breakfast.
5. Toby shares that he can see much clearer with a closed eye.



II Listen to the conversation again and fill in the blanks with the exact words you hear.

1. Toby: I miss my _____ and home.
2. Toby: Well, we _____ don't need to eat anything. We get our _____ from the Sun.
3. Monika: Oh! Don't you ever feel like having ice-creams and _____!
4. Monika: Okay, tell me one thing. How are you able to see only with _____ eye?
5. Toby: I can see beyond mountains and _____, woods and even _____.



Let us speak

I Read the following words from the text aloud and circle the letters that are not pronounced (silent letters).

ballet (ba-lay) [ba pronounced as in bat] whistle (wi-sl)

alarm (uh-laam) psychologist (sai-ko-luh-juhst)

Now, read some more words with silent letters. As you read, circle the letters that are not pronounced.

receipt	debris	pneumonia	almond	foreign
island	wreck	aisle	campaign	fasten

II Work in pairs. Use the given situations to ask for and give suggestions.

- You need to make a model of the solar system for the Science Exhibition but don't know what materials to use. Ask your friend for suggestions.
- You need to prepare for the inter-class quiz on the topic Chandrayaan-3. Ask your friend for advice on how to prepare.

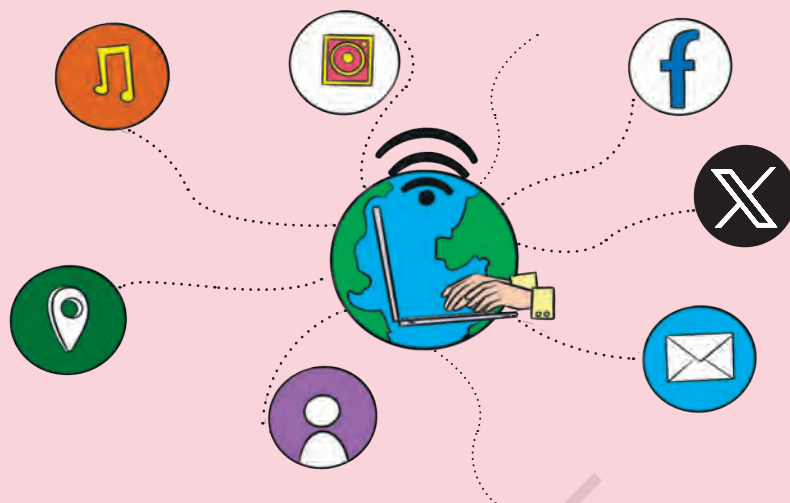
You may use the prompts given below.

Asking for Advice	Giving Advice
• What should I do... ?	• I feel you should...
• How can I... ?	• You should ensure...
• What are the best ways... ?	• It's good to prepare yourself...
• How can I make sure... ?	• If you have an issue... , try...
• What should I... ?	• It is best to use...



Let us write

I Complete the social media web given below with the uses of the internet.



Now, write an article titled 'The Importance of Internet' with the help of the social media web.

Points to remember:

Heading/Title

Name of the writer

PARAGRAPH 1: Give a general introduction to the topic.

PARAGRAPH 2: Explain the uses of the internet and why it is important. Give examples to support your view.

PARAGRAPH 3: End with a comment and leave the reader with a thoughtful idea or quote.



Let us explore

'A canary in the coal mine' is a popular phrase to describe early signs of potential danger.

I Coal miners in places like Arunachal Pradesh used canary birds to detect the presence of carbon monoxide. Such gases are a potential risk to the life of the miners. These little birds are particularly sensitive to carbon monoxide and can prevent mining accidents.



II Astronauts living in space stations have to do things differently. Read how they manage the routine tasks in the absence of gravity. You may find out more information about it from the internet.

1. Write: Astronauts use a special Space Pen which has a cartridge with ink combined with resin. The ink remains solid until friction with the ball at the point of the pen liquefies it. It works in all positions, in extreme heat and cold, and in atmospheres ranging from pure oxygen to vacuum.
2. Exercise: Astronauts use resistance exercise equipment. Weight training is done by applying a load using vacuum cylinders. Running on the treadmill is made possible with the bodies held down using rubber straps.
3. Eat: Astronauts eat preserved foods which is dried, canned, vacuum-packed, and frozen. These can be prepared by adding cold or hot water, and some can be heated in an oven. They also eat ready-to-eat items, such as nuts, breads, and fruits.
4. Sleep: Astronauts can sleep on a floor, wall, or ceiling as there's no distinction between up and down but they may gradually float away while sleeping. Therefore, they need to restrain their bodies in small sleeping compartments or sleeping bags.

III Did you know that animals can save humans from natural calamities? Animals can sense natural calamities. Read the following examples and decide if this is true.

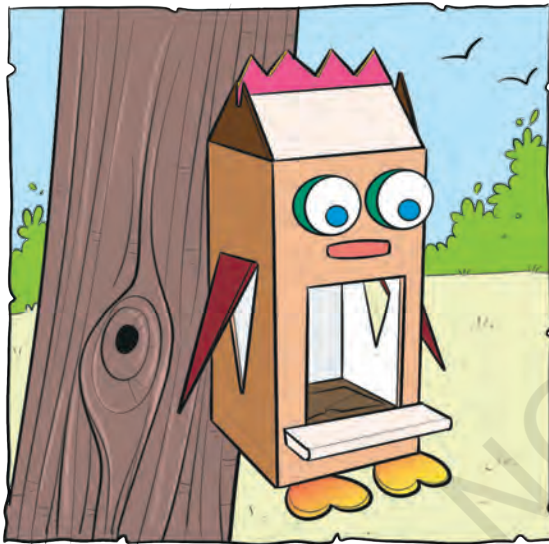
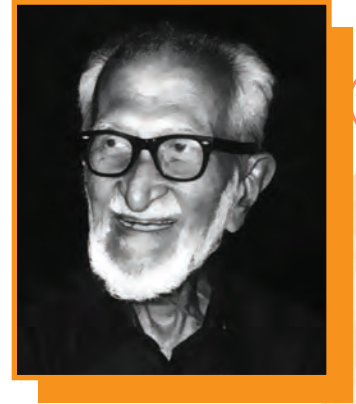
- In 2004, before a tsunami could hit the coastline of Indonesia, some animals made efforts to flee—elephants ran for higher ground, flamingos abandoned low-lying nesting areas, and dogs refused to go outdoors.
- Minutes before the Naples quake of 1805, oxen, sheep, dogs, and geese started making alarm calls in unison.
- Migratory birds crossing the Pacific are able to dodge storms and other hazards.
- In the Gulf of Mexico, sharks sense the drop in barometric pressure that precedes hurricanes and tend to swim to deeper waters as a result. Dolphins have also been observed swimming away from storm-prone areas.

Scientists have studied this behaviour and found that when severe stresses arise in deep rock before the earthquake, ultra-low frequency electromagnetic waves are generated that animals can sense.

IV Salim Ali, the 'Birdman of India', was an Indian ornithologist (a person who studies birds). He was the first Indian to conduct systematic bird surveys across India and wrote several books on birds. He was awarded the Padma Bhushan in 1958 and the Padma Vibhushan in 1976.

V We need to conserve our 'feathered' friends. Work in groups of four.

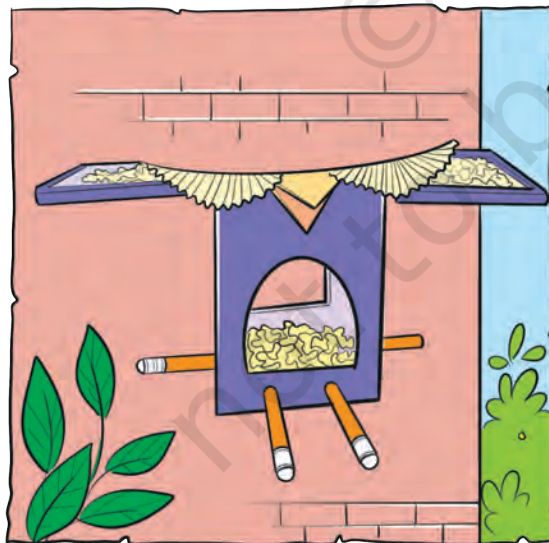
Look at the pictures and make a bird feeder with cardboard, chart paper, etc.



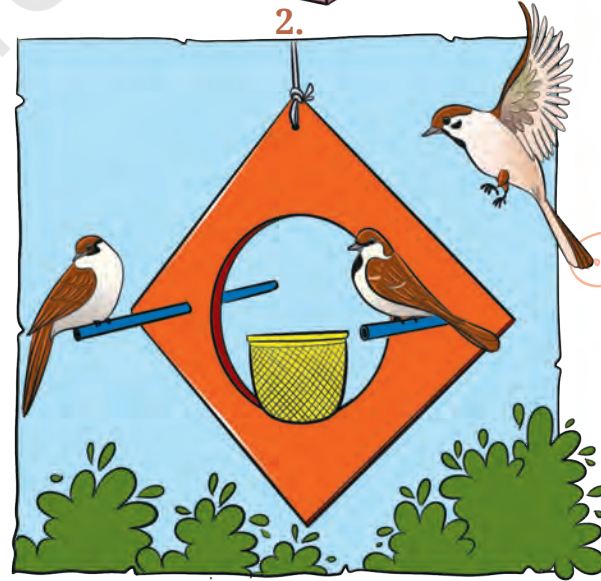
1.



2.



3.



4.

