

ENVIRONMENT

UNIT 4

(SUMMARY)

SECTION	In this UNIT you will develop your				
	LISTENING SKILLS	SPEAKING SKILLS	READING SKILLS	WRITING SKILLS	VOCABULARY
Introduction	Selecting and extracting information required for a specific purpose.	Completing sentences.	Words related to preservation		
(A) Treading the Green Path-Towards Preservation	- Listening for information required for a specific purpose - Distinguishing main points from supporting details - Understanding and interpreting messages conveyed.	Role Play: speaking intelligibly using appropriate word stress, sentence intonation patterns	- Recognizing the organization of a text. - Identifying the main points of a text	- Writing a letter to the editor - Transcoding information from a table to verbal form - Writing a news-paper report.	Words related to eco systems
(B) Heroes of the Environment.	Understanding and interpreting spontaneous discourse	- Taking active part in a group discussion - Presenting a report clearly and confidently	- Analysing, interpreting, inferring and evaluating the ideas in a text - Retrieving and synthesising information. - Identifying the main points of a text. - Deducing the meaning of unfamiliar lexical items.	- Writing instructions - Designing a poster - Writing a power point presentation - Writing an e-mail	Words related to environment and conservation.

SECTION	In this UNIT you will develop your				
	LISTENING SKILLS	SPEAKING SKILLS	READING SKILLS	WRITING SKILLS	VOCABULARY
(C) Let's clean up		Taking active part in a group discussion.	- Selecting and extracting information required for a specific purpose - Analysing, interpreting and evaluating information.	- Expressing ideas in clear and grammatically correct English, using appropriate punctuation and cohesion devices - Writing a letter to the editor.	Words related to food waste and ways to reduce food wastage.
(D) A Tale of Three Villages		Expressing and arguing a point of view clearly and effectively.	- Identifying the main points of a text - Selecting and extracting information required for a specific purpose - Retrieving and synthesising information	Filling in a worksheet	Words related to environmental degradation
(E) Geological Heritage		Participating in spontaneous spoken discourse.	- Anticipating and predicting what will come next in a text. - Identifying the main points of a text.	Writing a power point presentation "Preparing a poster."	Words related to Geology.

Introduction

Complete the following statements by choosing answers from the box given below and check your awareness about environment.

1. This animal is hunted for its under wool, shahtoosh, which is used to make shawls and scarves. This is the
2. The key threat to tigers is.....
3. The Sumatran Rhino is possibly the most critically endangered of the Asian Rhinos. The rhinos are hunted primarily because of their horn, which is used in
4. The tiger has few enemies. The main predator of the tiger is the
5. The largest endangered land mammal is the
6. The name given to the list of endangered/threatened species is....
7. The major environmental factor thought to cause the loss of habitat for the polar bear is.....
8. One of the reasons the WWF (World Wildlife Foundation) was created was to

human being, traditional Asian medicine, , The Red List of Threatened Species, Chiru/ Tibetan Antelope, global warming, loss of habitat, educate and encourage conservation, , Asian elephant

A. TREADING THE GREEN PATH - TOWARDS PRESERVATION

A.1. Read about Romulus Earl Whitaker, a herpetologist, wildlife conservationist and founder of the Madras Snake Park, The Andaman and Nicobar Environment Trust, and the Madras Crocodile Bank Trust.

1. Romulus Whitaker, an American-born, 65-year-old Indian citizen, is a reptile expert and environment film-maker. What drives him is a boundless enthusiasm for the wonders of nature, and a determination to save them. "It is fascination with

the endless natural mysteries, questions on why critters do what they do, and empathy and sympathy in the face of the destruction all around," he explains from his base in the southern Indian state of Tamil Nadu. "I haven't had to do a nine-to-five job ever in my life, and that is a very envious situation to be in if you like the wild. Life has been much like a river in that it picks you up and carries you along. I have got into things as they come towards me."

2. This seemingly relaxed attitude belies the original thinking and careful and considered planning behind his many projects for wildlife, for forests and for the people living in them. His current ambition, for which he has been selected as an Associate Laureate in the 2008 Rolex Awards, is to create a network of rainforest research stations throughout India, part of a vision he has been elaborating in his mind for many years. "The idea of the



Romulus Whitaker

rainforest research stations has been with me absolutely forever, but I didn't have the wherewithal to do anything about it. Then all these things started falling into place over the last few years. I bought a block of land at Agumbe, in southern India. Then the Whitley Award for Nature came along and helped set up the Agumbe Rainforest Research Station and get it working really well."

3. A mother's tolerance for a small boy's fascination with snakes became the basis of a notable career in herpetology for Whitaker. Author of eight books and over 150 articles, he served in key reptile posts and has inspired many with 23 acclaimed environmental documentaries, such as the National Geographic film "King Cobra". In 1984, for his project to help the indigenous Irula people of Tamil Nadu make the transition from their old trade (catching snakes for the now-banned skin trade) to collecting snake venom to produce life-saving anti-venom serum, he received an Honourable Mention in the Rolex Awards for Enterprise.

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4. Whitaker realized long ago that snakes and the other species he loves cannot survive without their habitats. So, like many others, he has evolved from naturalist to conservationist. "A lot of us get wrapped up in our own little special animal and then we wake up and start thinking it has got to be habitat and it has to be eco-development that involves people and, now, in my case, it has crystallized into the whole idea of water resources.
5. "India has a history of droughts, floods and famines," Whitaker explains. "Food production has been successfully tackled and dealt with, but we are now faced with a water shortage that will dwarf any of the past problems faced by the people. Owing to forest clearance and ill-advised dam projects, rivers are drying up, ground water reserves are being used up faster than they can be replenished and pollution is hitting most of our sources of drinking water. These are the obvious problems, but there are other, possibly much more serious threats facing our water regimes including climate change, which we must tackle on a war footing."
6. Ironically, the water that Whitaker is intent on saving is - in the form of rain - one of the major obstacles to conservation research in many parts of India. Despite being recognized worldwide as biodiversity hotspots, relatively little is known about India's dwindling rainforests and the many species for which they are home. But monsoon downpours make it near-impossible for researchers to operate at the very time the most scientifically interesting events are occurring in the landscape and the lives of its inhabitants. At Agumbe, where Whitaker caught his first king cobra back in 1971, annual rainfall of 10 metres or so condemns outsiders not just to swarms of leeches, along with wet clothes and tents, but also to guaranteed malfunction in all the equipment bound up in recording, communicating and calculating.
7. Whitaker's base at Agumbe, constructed in 2005, and now a fully functioning research, conservation and education centre, is the first of seven research stations that will connect key remaining rainforest strongholds throughout India. Sita Nadi, a river that has its source near the Agumbe Station, is a major focus for Whitaker and his team, who have started a small but ambitious plan to clean up and maintain the integrity of the river, using a three-pronged approach:

evaluating the problems, involving the people and implementing a practical action plan. Whitaker cannot emphasize enough the importance of the region's rainforests for water resources. "The rainforests of India are the origin of all the major rivers in the south and the north-east," he points out. "The rivers in the Western Ghats [in India's south] provide the water for 350 to 400 million people, about a third of India's population."

8. The Agumbe station itself consists of living and working quarters purpose-built to function during the monsoon and to be self-sufficient in renewable energy. It is strategically located on about three hectares of land adjacent to a wildlife sanctuary and a national park so that field scientists have easy access to the forest. The base has hosted dozens of Indian researchers,



The Agumbe station

journalists and naturalists. But the station's mission extends beyond science. It is a springboard for local conservation, including the sustainable use of minor forest produce and medicinal plants. The station has educated hundreds of school children about the forest. "Children are a bit shaky about going into the forest at first, but fascination with what we show them soon gets them hooked," Whitaker says.

9. The network of seven stations will produce vital information, building on discoveries by Whitaker's colleagues of over 100 new species of frogs in the last decade, and the study of crabs that live in trees. The network will allow immediate exchange of expertise and research, creation of a comprehensive biodiversity database, and expanded mobile educational programmes. Five of the stations in the network, including Agumbe, will be located in the states that span the Western Ghats. A sixth station will be located in the far north-eastern state of Assam, a vital haven for large numbers of migratory birds and endangered mammals. The seventh station is in the Andaman and Nicobar Islands, situated 1,200 kilometres

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from the Indian mainland in the Bay of Bengal.

10. Six of the seven stations already exist in various stages of development and now need vital new laboratory equipment and in some cases physical expansion to bring them up to speed for the network. Whitaker will use the Rolex award to help make this happen. Only one station, near the Kalakkad-Mundanthurai Tiger Reserve in the southern tip of India, needs to be built from the ground up. The Rolex funds will also be used to fit out the bases with automatic weather stations. "Climate change is tightly linked with the future of water resources and we need to be monitoring it now," he says.
11. Whitaker puts his trust not just in his own skills, but also in the aspirations of younger generations: "We are doing a lot of work with young people, bringing them to the forest and showing them what happens here and why it matters. It can be very difficult to change adult attitudes, but with the young, it is easier to get across the knowledge that what we are doing to the forests, we are doing to ourselves."

A2. The author of the article had made the following sub headings, but they got mixed up. Re-order them in the correct sequence, and write the number(s) of the paragraphs that would come under each sub heading.

- * The network of rainforest research stations
- * Whitaker's achievements
- * People support
- * Whitaker's love for nature, his vision and ambition
- * The Agumbe station
- * Water shortage and the need to save rainforests
- * Becoming a conservationist

A.3 On the basis of your reading of the above article choose the correct option to complete the following statements:

1. Romulus Whitaker was able to pursue his dream because
 - a) he was determined

- b) of his fascination with nature
 - c) he didn't have a regular job
 - d) he was sympathetic
2. Romulus's ambition was to
- a) save reptiles and frogs
 - b) establish rainforest research stations
 - c) start a water conservation project
 - d) create awareness about the king cobra
3. Whitaker was able to fulfill his ambition with the help of
- a) his friends and colleagues
 - b) Whitley award money
 - c) Rolex award money
 - d) his personal savings
4. Whitaker evolved from a Naturalist to Conservationist because he realized that
- a) Naturalists get obsessed with animals
 - b) It was the requirement of Rolex award
 - c) Conservationist has more importance than naturalist
 - d) Animals cannot be saved without saving their habitat
5. According to Whitaker the most serious threat facing the humanity is
- a) Forest clearance
 - b) Drying of rivers
 - c) Water shortage
 - d) Climate change

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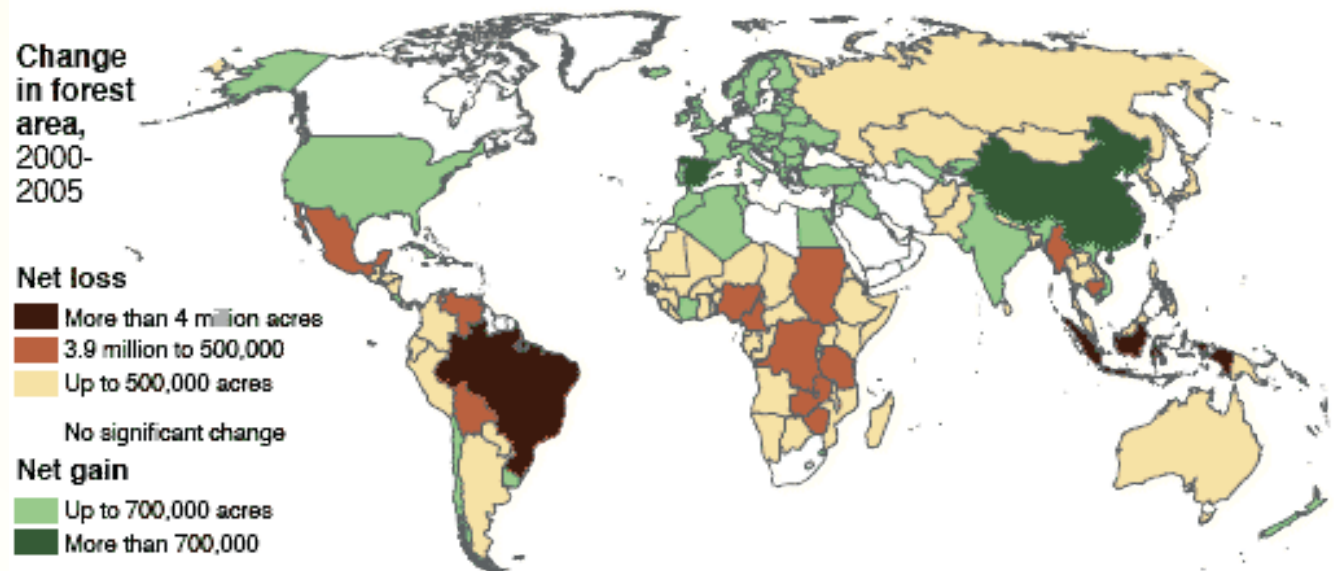
6. The mission of Agumbe research station is to
- Educate children
 - Play host to Researchers, Journalists and Naturalists
 - Sustainable development of forest products
 - All the above

A.4 The dwindling forest cover not only threatens the habitat of millions of species but also endangers water reserves. On the basis of the above article and the visual input given, write a letter to the editor of a national daily expressing your concern about the threat to the bio reserves.

a)

Rain forests vanishing at rapid rate

From Brazil to central Africa to Asia's archipelagos, human encroachment is shrinking the world's forests, spewing heat-trapping carbon dioxide into the atmosphere. Africa is losing trees fastest. The world's nations have begun talks on a plan to pay poorer nations to preserve their forests.



SOURCES: Food and Agriculture Organization of the United Nations; ESRI

AP

b) Threat to animals

	Not Endangered	Vulnerable Endangered	Endangered	Critically Endangered
Fish	50%	20%	10%	20%
Amphibians	70%	10%	12%	8%
Reptiles	40%	30%	17%	13%
Birds	90%	5%	3%	2%
Mammals	75%	10%	8%	7%

- A5. Romulus Whitaker has been awarded the Whitley Award for his work towards conservation of nature. He is in town for a press conference. Choose a student for the Hot Seat- to role play Whitaker. Divide the class into three groups; one group of students will be responsible for interviewing Whitaker. The second group will note down the interaction and the third group will issue a report for the class newsletter.**

How to write a newspaper report

A report is a description of an event that has already taken place. It is a factual account of some event or happening that may have occurred somewhere but is of interest to the general masses or the readers for whom it is meant to be.

A newspaper report must be comprehensive but brief; factual yet interesting. Hence factual reporting is the accurate and truthful coverage of an event. It is a brief review of a situation or a process that includes only the relevant points and information. It is usually written in third person and indirect speech. Passive voice is used. The language is neutral and figurative. Ornamental language is avoided. The content should include **when, where, why** and **how** of the topic to be written about.

Headline

Every news article has a headline to attract the attention of the reader. The headline must state the topic of the news in a strong, short phrase or statement.

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Headline must be:

- catchy
- brief - leave out articles, prepositions, etc where possible, use abbreviations/shortened word-forms wherever possible

Byline

Since this is your news article you need to let the reader know who wrote it. The line with your name on it is called "by" line because it tells by whom the article has been written.

Write the word "By" followed by your first and last name.

On the next line, write your School and City.

Paragraph 1

A lead paragraph usually answers the questions: Who? What? Where? When? Why? It tells the reader how the incident happened. Narrate the incident in the chronological order. Eyewitness accounts add to authenticity of the news. Also, they may interest the reader. Include some quotes from the eyewitnesses' comments. Also describe what they have felt about the incident.

Paragraph 2

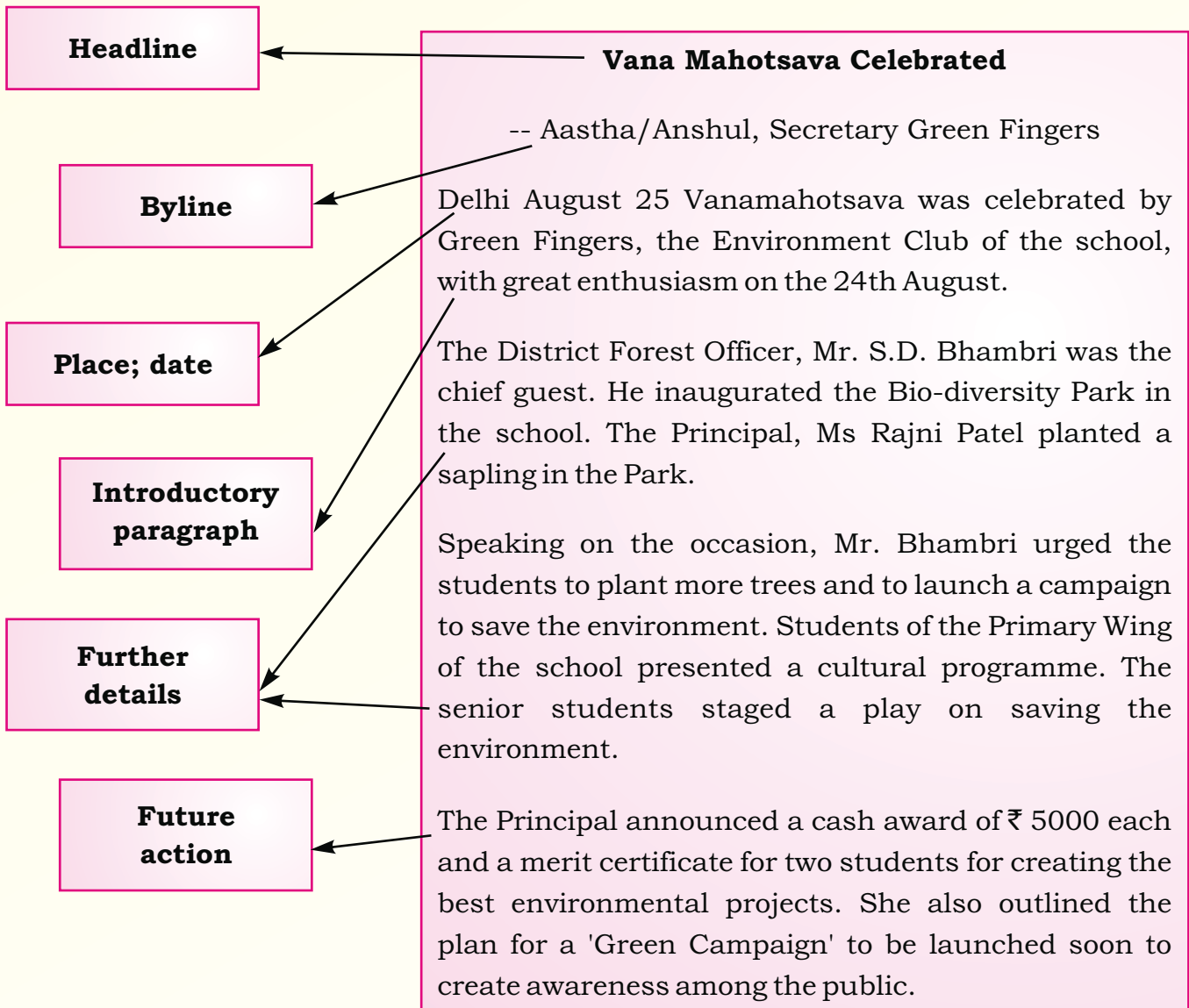
Give details of the event. If it is an interview, use quotes from the interviewee.

Paragraph 3

Describe the future course of action being planned

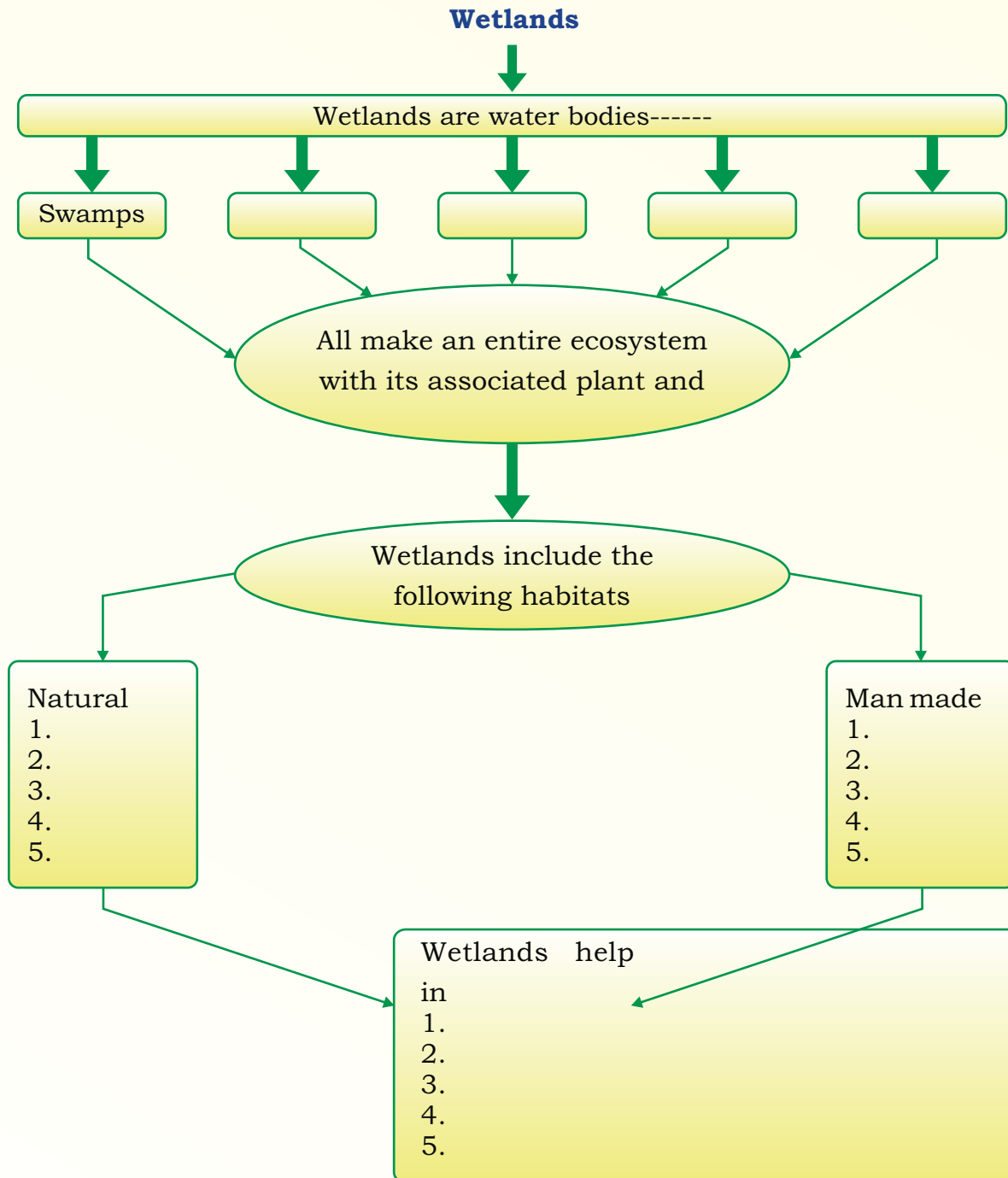
Remember to use simple, clear but formal language

Aastha/ Anshul is the Secretary of Green Fingers, the Environment Club of Gurukul School, Delhi. The school has celebrated Van Mahotsava on August 24. She/he has written a report of the programme for the school newsletter. As Aastha/Anshul write the report.



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- A6. You are going to listen to an environmentalist giving a speech at a seminar on World Environment Day on 'Wetlands, an important Ecosystem'. As you listen, complete the flowchart given below.



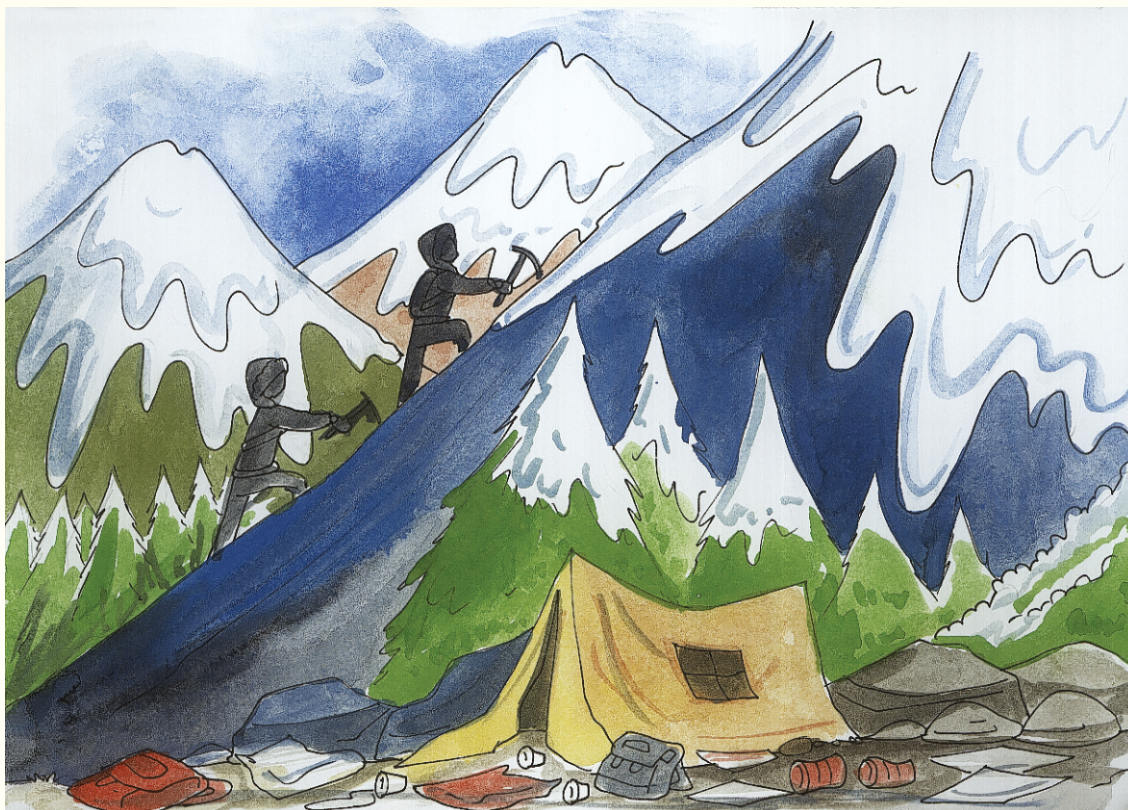
B: Heroes of the Environment**B.1. Read the following Newspaper story:****Sherpa to clean Mount Everest**

Mount Everest will be cleaned up, thanks to the efforts of twenty Nepali climbers who are setting off to remove decades-old garbage from the mountain.

The expedition, led by Namgyal Sherpa, will clean the area known as the "death zone." Sherpa stated: "This is the first time we are cleaning at that height, the death zone. It is very difficult and dangerous." The death zone gets its name from thin air, sub-freezing temperatures and extreme climbing conditions.

"The garbage was buried under snow in the past. But now it has come out on the surface because of the melting of snow due to global warming," the Sherpa said.

Many consider Everest to be the world's highest garbage dump. Some climbers leave behind their trash and gear such as climbing equipment, food, plastics, tins, aluminum cans, glass, clothes, paper, tents, and even dead bodies.



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American Barry G. Bishop, upon his return from Mount Everest, labeled the mountain "the highest junkyard in the world." The team will attempt to remove at least 4,400 pounds of garbage during the expedition.

More than 4,000 climbers have reached Mount Everest's summit since it was first conquered. A special effort is being made to remove the body of a Swiss climber who died on the mountain in a 2008 climbing attempt.

The team's mission is the collection of waste to set an example for future climbers.

B.2. On the basis of your reading of the news story, discuss with your partner and complete the following table.

Adverse environmental effects of tourism and adventure sports.	- Personal conquests seem to be more important than preserving the integrity of a natural site.
Ways to prevent it	- Charge high climbing fees

B.3. Now imagine you are in charge of a mountaineering expedition to Mount Everest. You have to address the first time climbers. Write the instructions that you would give to the climbers on keeping the track clean besides

giving instructions on safety measures. Instruct how they can contribute in preventing the Everest from becoming, "the highest junkyard in the world".

Before writing the instructions, read the following questionnaire on how to write instructions and tick mark the right option:

1. What tense is commonly used in writing imperative sentences?
 - a. Present Continuous
 - b. Simple Past
 - c. Simple Present
2. Where do verbs most commonly come in these instructions ?
 - a. At the beginning of a sentence or a clause
 - b. In the middle of a sentence or a clause
3. How long are the sentences?
 - a. Very long
 - b. Mixed length
 - c. Short
4. Why are the instructions so written/given?
 - a. So that the reader can understand more easily
 - b. So that the writer can write more easily
5. What is the order of the instructions?
 - a. Mixed order
 - b. The order in which the instructions have to be carried out
6. Are the instructions numbered?
 - a. No
 - b. Yes

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B. 4. How to design a Poster?

Posters are an amalgam of notices, advertisements and invitations. They may be in the form of large hoardings to be put up on walls, or the size of the handbills to be displayed on the notice boards etc. Hence, they have to be captivating, attractive and persuasive so as to influence a large number of people. Generally they are designed to create social awareness about issues related to current problems or needs, or to even extend public invitations.

Main Features of a poster

(a) Layout

- Visually attractive
- Catchy title/jingle
- Sketch or simple visuals
- Fonts of different shapes and sizes

(b) Content

- Theme/subject
- Description/details related to the theme
- Essential details e.g. date, time, venue
- Name i.e. issuing authority, organizers

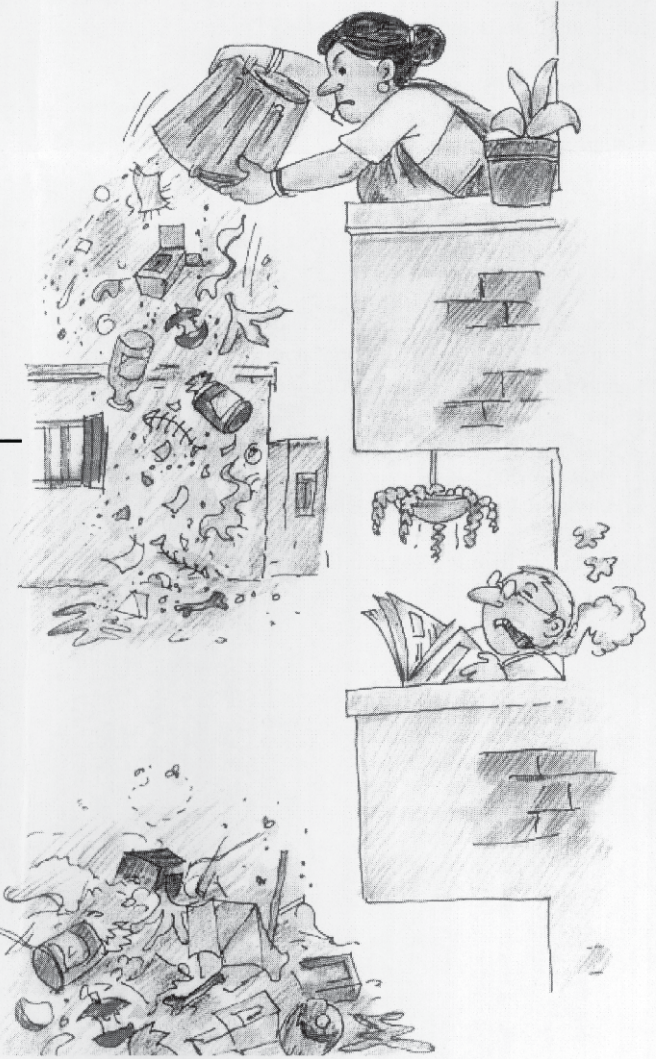
(c) Expression

- Organizing and sequencing of content
- Appropriate language
- Creativity (language and design)

(i) Look at the poster for promoting cleanliness in the surroundings of your colony and discuss its salient features along with your partner.

Slogan

Stop! Garbage on the roads
Is Causing PLANET OVERLOAD



Visual

Issuing Authority

Issued by
Residents' Welfare Association
Malviya Nagar
Jaipur

- (ii) On the basis of this, design a poster urging mountaineers to preserve the pristine glory of the mountainsides. Work in groups of 4-5

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- B.5. Wangari Maathai started the Green Belt Movement and also fought for equal rights for women in Africa. She is the first African woman to win the Nobel Peace Prize. Read the excerpts from her interview with NHK Radio (Japan).**

Question: How did you become aware of the environment?

W M: From the time we started, we were trying to respond to the basic needs of people in the rural areas; and people were asking for clean drinking water, for food, for energy (which is mostly firewood), for building material, for fodder for the animals. And all these come from the land. So we knew that what the people in the rural areas were asking for had to do with the environment. They did not have those things because the environment was degraded. So, from the very beginning we understood that we have to rehabilitate the environment.



The forested mountains were the source of water and the source of rain, so when you deforest you cause a shortage of water and a change of rainfall patterns and therefore people are not able to get food and water. Therefore, in order for them to have good environment that can sustain their livelihoods, it is important to have a government that accounts to them, that protects them, that protects their interests, that is concerned about their lives.

Question: How is peace connected to a good environment?

W M: Many wars that are fought in the world are fought over natural resources. Some wars are fought because the environment is so degraded that it is not able to support communities and so they fight over the little that is left. Others are fought because some people want to take a lot of resources, to control them, and to keep many other people out.

Now, whether this happens at the national level or at the regional level, or even at the global level, sooner or later there is discontent; and when that discontent is

strong enough, there is conflict. So good management of the natural resources, equitable distribution of these resources, is important for peace. At the same time, good management of the natural resources is not possible if you do not have democratic space, respect for human beings, respect for human rights, give other people dignity.

That is why the three themes are related, like the African stool, with three legs and the basin on which you sit. The three legs: one leg is peace, the other leg is good governance, the third leg is sustainable management of resources. When you have those three legs, you can put the basin, which is development. And if you try to balance that stool without those three, it won't happen.

We have not shared our resources equitably. We have allowed some people, especially those in power, to acquire a lot at the expense of the majority. And we have also engaged in conflict.

Question: What was the environment like when you were young, and how did you go about saving it?

W M: When I was a child, which is almost more than fifty years ago, the environment was very pristine, very beautiful, and very green. We were a British colony, and the British government at that time started to clear cut the indigenous forests in our forested mountains because they wanted to establish commercial plantations of exotic species of trees such as the pines from the northern hemisphere and the eucalyptus from Australia. These trees are very nice, they grow tall, and they grow very fast, but as they grow they destroy all the local biological diversity. All the flora and fauna disappeared. So although we were getting commercial timber for the growing timber industry, we also destroyed our local flora and fauna.

As a result, these forests, which were the water towers, were no longer able to contain the water, so when the rains fell the water ran downstream and ended up in the lakes and ocean instead of going down into the underground reservoir so that it could come back to us in the form of rivers. One thing we noted is that not only did the rain patterns change, became less, but also the rivers started drying up. We lost our local biological diversity. So, that's a lot of damage to our environment.

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That is why in 1975, at the very first United Nations Conference for Women in Mexico, many of the women were saying, "We need food, we need water, we need clean drinking water, we need fodder for our animals." And I was wondering, what has happened? These are things that were there twenty years ago when I was a child. The environment had changed; and that's when I started this campaign to restore the vegetation and to restore the land and to rehabilitate the forests.

Question: What happened when you started working with the women?

W M: Well, the first time when I told them, "Let us plant trees," the women said they did not know how to plant trees. So I asked the foresters to come and teach them, but they were very complicated-they are professionals. It became very complicated for ordinary illiterate women so I told the women, "We



shall use our common sense, and just do what we do with other seeds." Women work on the farms. They're the ones who plant. They're the ones who cultivate. They're the ones who produce food, so I told them that seeds of trees are like any other seeds. So if they were to treat these tree seeds the same way they treat other seeds of food crops, there is no difference. I told them to look for old broken pots even and put seeds there. They will germinate and they will know these are the seedlings from the seeds they planted and we gave them plastic bags to be able to put those seedlings and to nurture them and when they were about half a meter long then they could go and transplant them on their farms.

In the beginning it was difficult, but they soon gained confidence and they became very competent foresters. So I called them "Foresters without Diplomas".

Question: Why do you think they responded so well to your message?

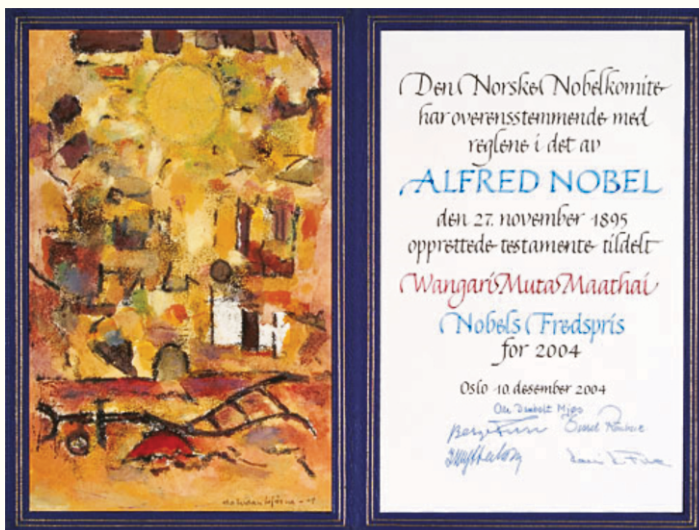
W M: It was a need. When the women said they needed firewood and building material, we responded to that need. Plant trees; then you will have trees for firewood. In the tropics, trees grow very fast. In five to ten years these trees serve as firewood, as building materials.

Once we had planted those trees, we saw the need for them to understand why we have to have good governance; so it became important to give them civic education so that they could understand how we govern ourselves, why we govern ourselves the way we govern ourselves, why we are managing our environment the way we are managing it. Because we were dealing with the environment, we gave them education both in civics and also in environment. That made them understand clearly why they should take up the responsibility of protecting their environment-that it was not the responsibility of the government or the responsibility of somebody else to come and rehabilitate their environment on their own land. It's them; it's their responsibility.

Question: What transformations did you see?

W M: One of the biggest transformations that I saw was that ability of an ordinary, illiterate woman to get to understand and to be able to plant trees that in five or ten years became big trees and she was able to cut them and be able to give herself energy; to be able to sell those trees and give herself an income; to be able to feel confident that she had done something for herself. That sense of pride, sense of dignity that they are not begging, that they are doing things for themselves was very empowering. That transformation was very very powerful.

The other is the transformation of the landscape. Places where there was dust, there is no more dust.



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There are trees, even birds and rabbits. They come back and they make the environment very beautiful. There is shade and sometimes even dry springs come back because the water is not running, the water is going into the ground. Very profound transformation.

And the other transformation that I saw was the willingness of the people to fight for their rights; to decide that they have a right to a good clean environment; to decide that they will fight for their forests, they will protect their forests, they will not allow corrupt leaders to take their public land.

Question: How do you think you can influence the rest of Africa?

W M: Our efforts will inspire other people to stop wasting their resources and their youth in wars and instead engage in creating a peaceful environment, more peaceful states.

I'm very happy about the fact that now in Africa you see new efforts of ensuring that Africans engage in dialogue, that they invest in peaceful negotiations for conflicts, that we manage our environment. We must restore our environment and try to ensure that we do not fight, because we are allowing the environment, especially the land, to be degraded; and then we fight over agricultural land and grazing land. I see a lot of hope in what is happening in Somalia, what is happening in the Sudan, what is happening in West Africa. I see a lot of African leaders encouraging each other to engage in dialogue.

Question: What is the one thing we can do?

W M: For me, my greatest activity is to plant a tree. I think that a tree is a wonderful symbol for the environment and when we plant a tree we plant hope. We plant the future for ourselves, for our children, for the birds. We plant something that will last, long after we are gone.

B.6. Based on your reading of Wangari Maathai's interview answer the following questions:

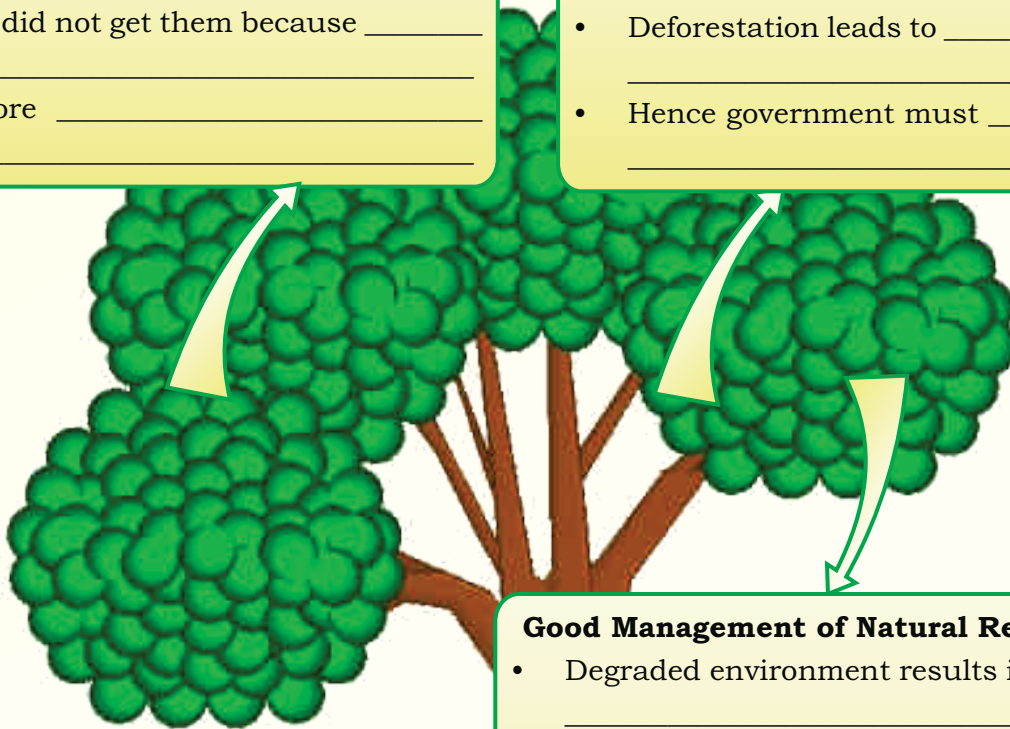
1. Complete the tree of environment:

Need to rehabilitate the Environment

- Things that came from the environment _____
- People did not get them because _____
- Therefore _____

Protecting forested mountains

- Source of _____
- Deforestation leads to _____
- Hence government must _____



Good Management of Natural Resources

- Degraded environment results in _____
- It leads to _____ and _____
- Good management of natural resources means _____
- It is essential for _____
- Good management possible only when we have _____

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2. How does Wangari Maathai explain the essential components of development? Label and explain through the analogy of the stool.



3. What changes in the environment had Wangari Maathai noticed after growing up?
4. What is the importance of indigenous flora and fauna?
5. How did the campaign to save environment lead to the empowerment of women?
6. What transformation did Wangari Mathai see in people and the environment?

B7. Match the 'environment words' with their meanings.

Words	Meanings
• ecology	A person who advocates preservation and careful management of natural resources.
• habitat	The variety and variability among living organisms and the ecological complexes in which they occur.
• herpetologist	The relationship of living things to one another and their environment, or the study of such relationships.
• extinct	Tropical evergreen trees or shrubs forming dense thickets along tidal shores.
• aquifer	A place where a population lives and its surroundings, both living and non-living.

• naturalist	A zoologist who studies reptiles and amphibians.
• biodiversity	Having no living representative.
• mangrove	An underground geological formation, containing water.
• conservationist	A person who studies plants and animals, especially outdoors.

B.8. Identify an area in India that needs efforts on a war footing to conserve the bio system. On the model of Wangari Maathai's efforts, prepare in groups a power point presentation covering the environmental problem, causes, effects and solutions. Each student in the group should present a part of the presentation.

B.9. After reading the interview of Wangari Maathai, you are inspired and motivated to do a summer training under her at one of the Research Stations. Write an email to Wangari Mathai. In your mail describe Wangari's influence on you and your desire to work under her and convince her as to why you should be given a chance to work under her.

C: Let's Clean Up

C.1. Read the inputs given as I and II and have a class discussion on 'Food Wastage'.

I. Love Food, Hate Waste - Britain throws away £10bn of food every year

Global food shortages, soaring prices and alarm over the environment. But every day, according to a government-backed report, Britain throws away 220,000 loaves of bread, 1.6m bananas, 5,500 chickens, 5.1m potatoes, 660,000 eggs, 1.2 m sausages and 1.3m yoghurts. The roll call of daily waste costs an average home more than £420 a year but for a family with children the annual cost rises to £610.

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**II. Kerala shows the way**

BIOTECH has succeeded in tackling the problem of the dumping of food waste in the streets of Kerala through the installation of biogas plants that use the food waste to produce gas for cooking and, in some cases, electricity for lighting; the residue serves as fertiliser. To date BIOTECH has built and installed an impressive 12000 domestic plants (160 of which also use human waste to avoid contamination of ground water), 220 institutional plants and 17 municipal plants that use waste from markets to power generators. The disposal of food waste and the production of clean energy are not the only benefits of biotech's scheme. The plants also replace the equivalent of about 3.7 tonnes of LPG and diesel which in turn results in the saving of about 3700 tonnes/year of CO₂, with further savings from the reduction in methane production as a result of the uncontrolled decomposition of waste, and from the transport of LPG. BIOTECH won an Ashden Award for Sustainable Energy in 2007.

C.2. Punctuate the passage given below

what exactly is waste waste is anything discarded, rejected, or otherwise released into the environment in a manner that could have an impact on that environment how can we help we can help by practicing the three rs of waste management reduce reuse and recycle it has been estimated that every ton of recycled paper saves 17 trees 7000 gallons of water 4100 kilowatt hour of energy and three cubic yards of landfill space how does reduce and reuse help reducing consumption is decreasing waste whereas the reuse of products such as recyclable plastics prevents the need for excess production of these exact same plastics hence the emission released from factories is lessened recycled products also take less energy to produce

C3. With the help of the inputs given below, write a letter to the Editor of a newspaper on the colossal wastage of food in the lavish Indian weddings.



- * Indians spend life's saving on weddings.
- * Wedding market in India is approximately ₹ 1,50,000 crores per year.
- * India also hosts one of the biggest armies of starving people in the world.
- * No wastage more condemnable than wastage of food
- * Responsibility of the guests to limit the size of the servings according to their appetite.
- * Take spoonfulls of each to taste and decide, instead of filling the plate with every dish.

D. A Tale Of Three Villages

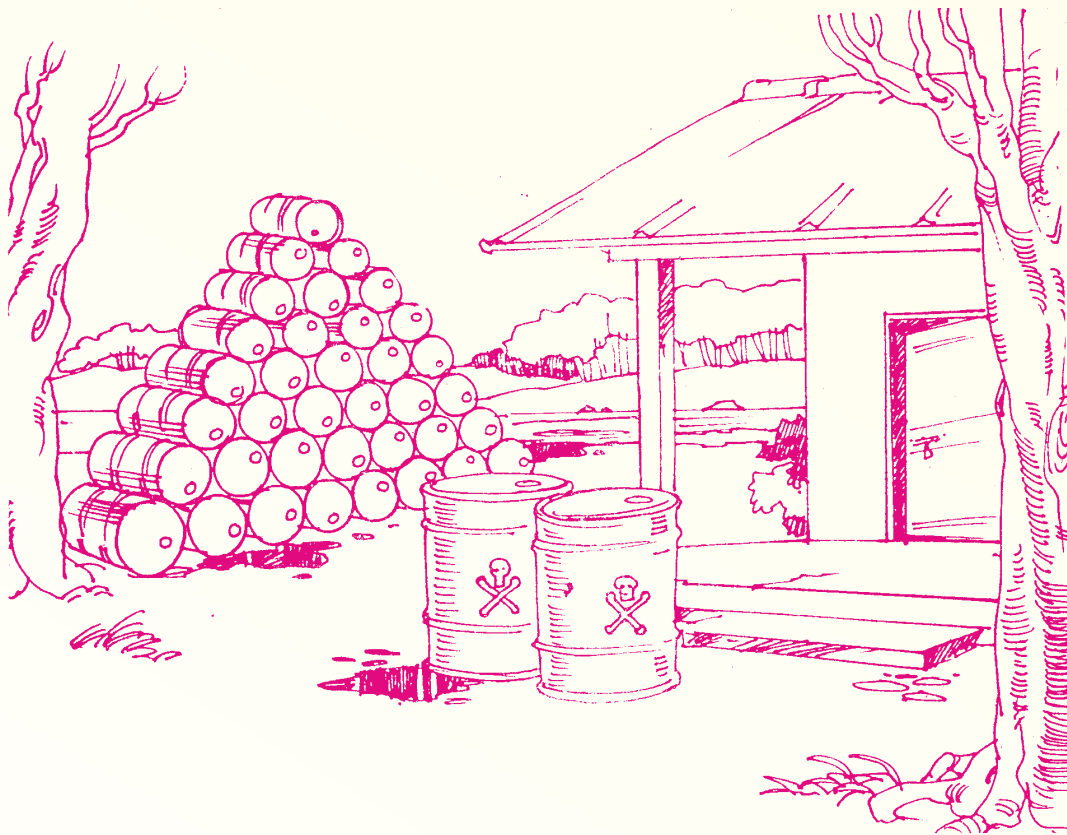
In groups of three, one of you read story D.1. another D.2. and the third D.3. Then exchange information to complete the table in D.4.

D.1 Koko Village, Nigeria

Mr. Sunday Nana, his wife and four small children live in Koko Village. Nigeria. The village is like any other African village-picturesque, colourful and noisy. The Nana family's house, too, is the same as all the other houses in the village, with mud walls and a rusting corrugated iron roof, and with children and chickens sharing the compound.

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There is one difference, however. Outside Mr. Nana's front are three large empty metal drums, the bright red paint now flaking away, but the skull and crossbones symbol clearly visible on each. And in a clearing 200m away from the village, next to a stream that the villagers get their drinking water from, is an enormous pyramid of identical drums, reaching to the sky. Some of them are badly corroded, their slimy contents of various colours - grey, dark green, bright orange, etc. - leaking out, down, on to the baked African earth and into the stream. Some have fallen down and rolled - or been rolled by playful children - into the bush. Some are smoking in the midday heat. Some are swelling, as if their contents are bursting to get out. Some have already burst.



"They came on a Wednesday," said Sunday, "Many, many big lorries. They took all day unloading them. No-one told us what was in them. They gave the Chief a brown paper bag-I saw him smiling as the lorries drove away. This was five years ago. Then three months ago, one of the brightest boys in the village - Thomas Agonyo - started university in Lagos. He came home one weekend with a new

Chemistry book, and spent all day looking at the drums and writing things down and talking to himself and shaking his head. We all thought he had gone mad. Then he called a meeting of the village and told us that the drums contained poisonous chemicals. He said they had come from Italy. But I don't know where that is. Is it in Europe?

Mr. Sunday Nana stopped, frowning, a troubled look on his face, "In the last five years, 13 people have died in this village, my own elder brother being one of them. They have been in pain, terrible pain. We have never seen deaths like that before. Lots of our children are sick. We have asked the Government to take the drums away, but they do nothing. We have written to Italy, but they do nothing. The Chief says we should move our houses to another place. But we have no money to buy land. We have no choice. We have to stay here. And they"---- pointing to the mountain of death in the clearing - "are our neighbours."

D.2 Ponnimanthuri Village, India

"I can remember the time." she said wistfully, "when all the fields around this village were green and the harvests good." Her outstretched arm described a complete circle as she stood in the morning sun. "Then they built those monsters, those..." Her voice spluttered in anger as she shook her fist at a collection of ominous-looking black buildings on the horizon, covered in a low-lying shroud of thick smoke. "They said that factories need leather to make shoes, handbags and clothes. They said our menfolk would get jobs. They said we would all become rich."

We stood silent, each thinking our own thoughts. Yes, they told you all that. But there is so much they didn't tell you. They didn't tell you that to change animal skins into leather - which they call tanning - uses as many as 250 different chemicals, including heavy metals such as cadmium, arsenic and chromium. They didn't tell you that these chemicals are discharged into the environment from those chimney stacks and fall to earth for miles around, polluting the earth below. They didn't tell you that this would poison your fields, so that nothing will grow.

"They didn't tell us that the chemicals would be dumped in open fields and into our rivers," sighed Vijayasama. We had been thinking the same thoughts. "They

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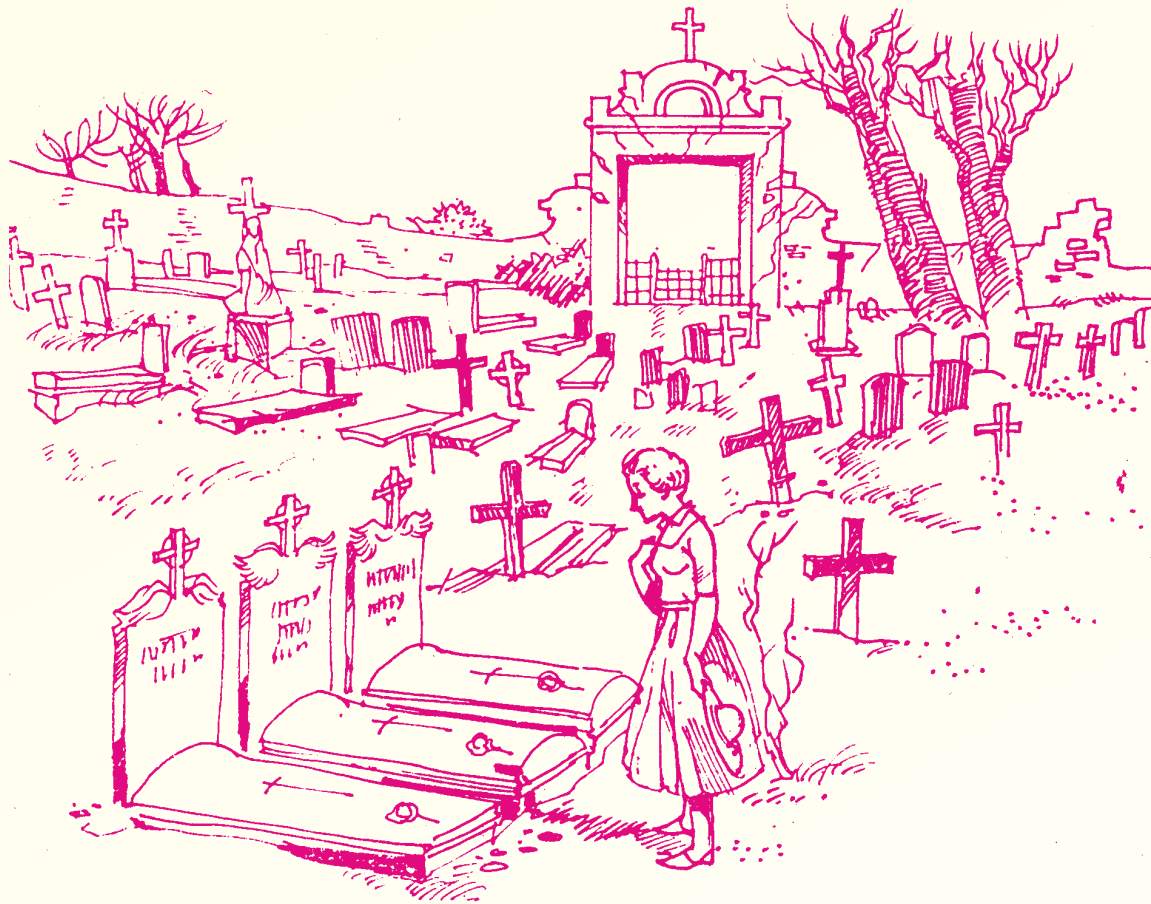


didn't tell us that our women would have to walk ten kilometers every day. They didn't tell us that we would get ulcer and sores on our bodies. They didn't tell us..." Her voice trailed off. There is so much they didn't tell you, I thought.

"We don't buy leather shoes or leather handbags or leather clothes," she said.

D.3 Vorobyov Village, Ukraine (formerly USSR)

"It happened on April the 26th 1986. I remember the date because it was my mother's birthday. We heard the explosion early in the morning. We didn't worry, because there had been explosions before from Chernobyl. But this one was bigger. Everyone stopped what they were doing and listened. Then we ran out into the garden. We could see a cloud of white smoke coming from the nuclear reactor." Natasha Revenko wiped her hands nervously on her apron. Tears came to the corners of her eyes, and slid slowly down her pinched, pale cheeks.



"It was a Saturday ," she went on, still wiping her hands on her apron. "It was a lovely warm day, and the children played outside all weekend. Even when the dust began to fall, they still played outside. They picked up handfuls of it and threw it at each other, laughing. It was Wednesday before the loudspeaker van came to the village, telling us to keep our children indoors and not to touch the radioactive dust. They also told us to wash down our houses and roads with water. A week later the children began to vomit. Their hair fell out. They couldn't eat. They grew so thin, and sores appeared all over their little bodies. Two weeks after that, all three died - all three on the same day." She broke down now and cried quietly, as she had done so many times before. "They're buried over there." She pointed to the church graveyard. "Lots of village children are. And adults."

I touched her gently on the shoulder, leaving her to her bitter-sweet memories, and walked on through the silence. It was a ghost town. No- one lived there any more. They had either died or been forcibly evacuated. The fields were barren.

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Nothing grew. Nothing ever would again. There was no bird-song. No rabbit peered at me. No cow endlessly chewed. No horse neighed.

Natasha caught me up as we boarded the bus marked MOSCOW. "Thank you for coming with me." She said. "I wanted to see the graves and the house again, before I die."

- D.4. Now that you have each read one of the stories above, first complete the appropriate column of the table below. When you have done that, ask the other two students in your group about the stories you have not read. For example, ask "In which country did your story take place? What type of pollution is there?" When it is your turn to give information, only do so when the other two students ask you questions. As you receive the answer, complete the other two columns.**

	D. 1	D. 2	D. 3
Country			
Cause (s)of pollution			
Who is responsible?			
Consequences			
What do you think should be done to solve the problem?			

- D.5. Work in groups of three, and answer the following questions:**

Koko Village, Nigeria

- * Why are there "three large, empty metal drums" outside Mr. Nana's front door?
- * Why were the drums sent from Italy to Nigeria?
- * What was in the brown paper bag that the Chief received?
- * Why are the drums referred to as "the mountain of death"?

Ponnimanthuri Village, India

- * Vijayasama and the narrator both refer many times to "they." Who do you think "they" are?
- * Why do you think that the women of the village have to walk 10 km every day?
- * Why does Vijayasama say: "We don't buy leather shoes or leather handbags or leather clothes?"

Vorobyov Village, Ukraine

- * Why did Natasha's three children die?
- * Where does Natasha live now?
- * What might happen to Natasha very soon? Why?

D.6. Still working in groups of three, find any ten "happy" words and ten "unhappy" words from the passages you have just read. First, copy and complete the table below:

	"happy" words	"unhappy" words
Koko Village, Nigeria	picturesque, colourful	skull and crossbones symbol, corroded, slimy
Ponnimanthuri Village, India		
Vorobyov Village, Ukraine		

Now give reasons why you have classified them as 'happy' and 'unhappy' words.

D.7. The Ecological Footprint

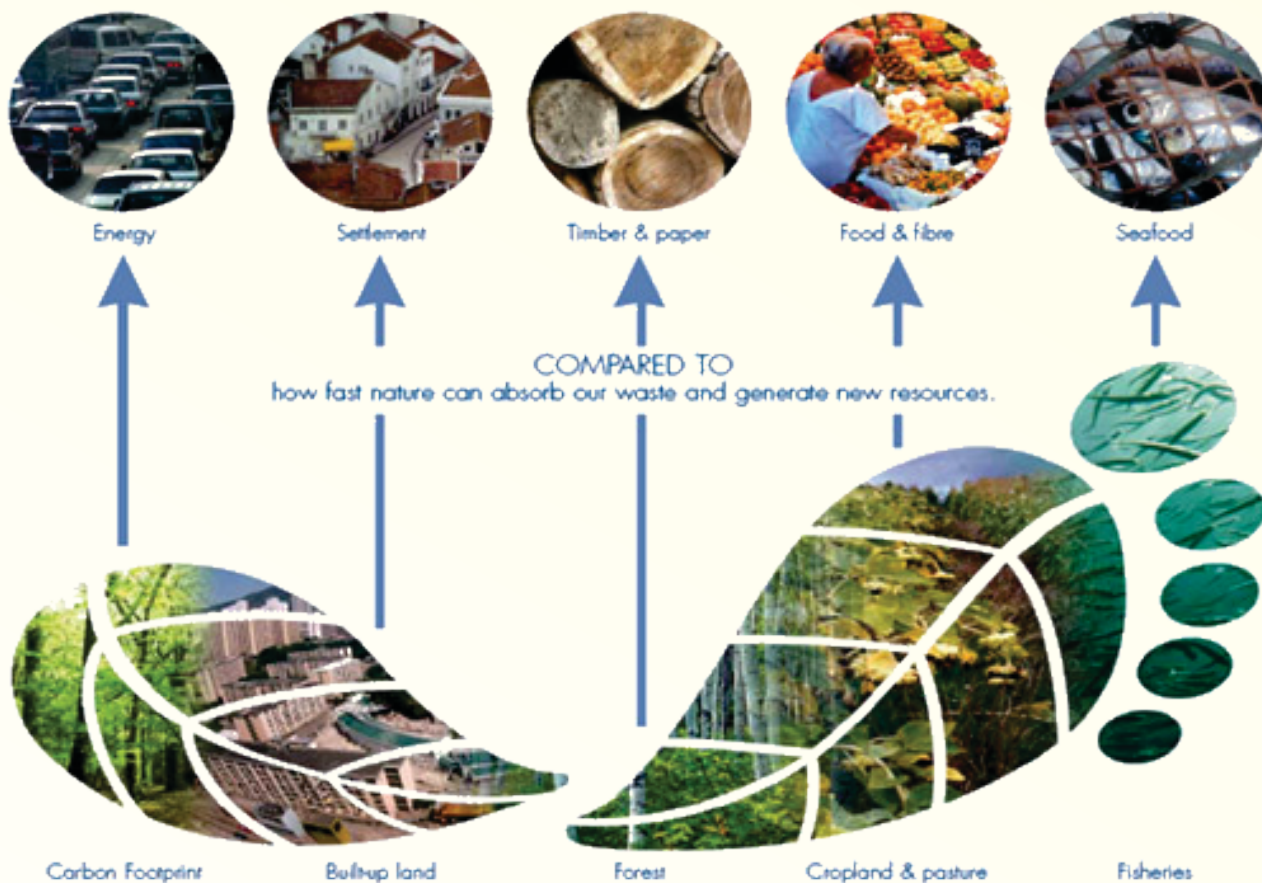
The Ecological Footprint is the measure of humanity's demand on nature. It measures how much land and water area a human population requires to produce the resource it consumes and to absorb its wastes, using prevailing technology.

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The Ecological Footprint

MEASURES

how fast we consume resources and generate waste



Since the 1970s, humanity has been in ecological overshoot with annual demand on resources exceeding what Earth can regenerate each year. It now takes the Earth one year and six months to regenerate what we use in a year.

By measuring our Ecological Footprint we can assess our pressure on the planet. This will help us manage our ecological assets more wisely and take personal and collective action in support of a world where humanity lives within the Earth's bounds.

The situation is not hopeless. There are lots of things we can do to reduce our impact on the planet! Fill in the worksheet given to measure your ecological footprint.

My Ecological Footprint

Worksheet : Measures Your Impact

Instructions

1. You need to write down 10 activities and record, what resources are used. Activities may cover catching a bus, brushing teeth, getting dressed, eating lunch, and playing sport, to name a few.
2. You also need to record, what resources are used to undertake the activity. The resources include water, and energy. Also record the waste produced.
3. You then need to estimate how much of the resource you have used and write down the number 1, 2 or 3 in the usage boxes. Use the following guide :

Length of Activity	Use	Score
Less than 10 minutes	Low	1
11 minutes - 1 hour	Medium	2
Over 1 hour	High	3

For example if you only had the television on for 30 minutes the resource used would be medium. However, if you had the television on for 3 hours, it would be high. An example is given below to get you started!

Activity	Resource(s)	Usage		
		Low	Medium	High
Brushing my teeth	Water	1		
Having a bath				
Commuting to school				
Watching Television				
Visiting Friends				
Using computer				
Using Fans/Air conditioners/Coolers				
Cooking				
Entertainment				
Subtotals (add up each column and write the subtotals in the boxes)				
Total Score (add all the subtotals)				

21-30 Dumping Dinosaur

How could you improve your score? Also reflect on the ways in which the waste produced in carrying out some of the activities above is disposed of.

Worksheet : How could you improve your score?

Use Less Energy	Use Less Water	Make Less Waste
Turn off the light when there is no one in the classroom or bedroom	Don't leave the water running when brushing	Put the rubbish in the recycling bins

E: Geological Heritage

Working to save a geological heritage

By Anita Satyajit

Look at the photograph given below. This is The Three Stooges, a bizarre rock formation that can be found in Goblin Valley. There are some exceptionally unique rock formations all over the world.



- A) Why do you feel such geological structures should be preserved?
 - a)
 - b)
 - c)
- B) What are the threats to such structures?
 - a)
 - b)
 - c)

E.1. Now read about the vanishing rocks of Hyderabad.

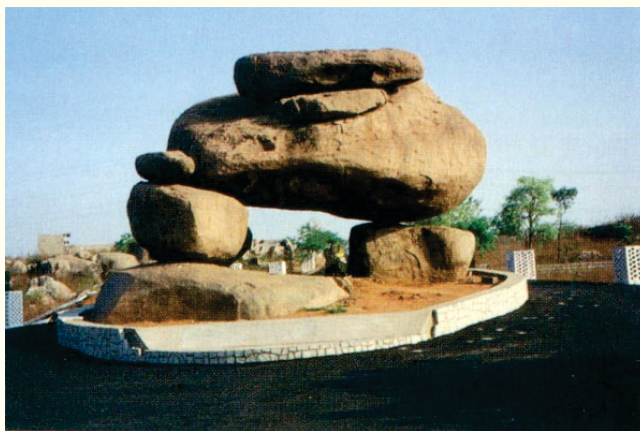
One of the most interesting facets of Hyderabad is the mammoth granite rocks in

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bewitching poses that capture one's eye and imagination. Rocks large and small precariously balance on one another to form shapes that mesmerise the mind. These rocks, among the oldest in the world, are Hyderabad's true heritage. Even the mighty Himalayas at 40-60 million years old are younger than these rocks!

Nature's sculptures

The gigantic boulders inspire creativity and reverence in people, forcing them to look beyond the obvious shapes to create imaginary forms. These rocks seem to strike poses and imitate life—a puppy seated on its hind legs with its front legs raised in the air, a car-shaped



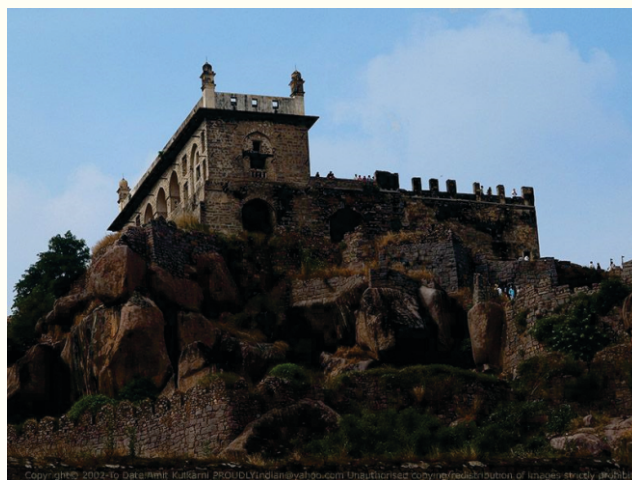
Tortoise Rock

formation, flying saucer resting on rocks, four chambers of the heart, and a woman standing with her face to the breeze; these are just a few shapes that tickle your imagination. It is no wonder then that people have taken to naming certain rocks after the shape, they think they resemble, or the idea they think they epitomise.

Some of these names have stuck on and the rocks have thus become landmarks in the city. And in some other places, rocks with their symbolic shapes have inspired the devout. Natural openings and cave like structures formed by the rocks have been used as temples by locals. Many people even consider them as symbols of the divine and worship these silent sentinels.

Maintaining ecological balance

Apart from being a visual treat for viewers, these rocks play an integral role in preserving and nurturing the ecological balance of the region. Lakes and ponds have always formed on adjoining rocky patches. This is a



Golconda fort of Hyderabad

natural occurrence as rocks help create the natural drainage system of the area. Subterranean passages created by these rocks result in the natural flow of rain water to that area, aiding the formation of ponds and lakes and recharging ground water levels.

And where there is green, there are birds and bees. Rocky hills often act as the biodiversity hub for the area. Prickly thick shrubs and dry deciduous forests ensconce the rocks. Along the lakebeds, tall grass grows in wild abandon. Often even medicinal plants and aromatic herbs are found in the area. And hidden in this medley of plants are insects, birds and reptiles. So don't be surprised if a Baya weaver flies by or a snake wiggles past you, when you are trekking about the rocks. Fauna and flora of varied kinds thrive in rocky eco-systems. Nature is at its best in these spots and here is where people can go to for a whiff of the wild. But today, such spots are disappearing with alarming alacrity. Rocks are being destroyed indiscriminately; the price the city is paying for growth.

Development at the cost of nature

It is easy to wonder why someone would destroy rocks that are billions of years old. For centuries now, these rocks have been the building material for the city. Even the famous Golconda fort of Hyderabad which sits atop a granite hill is made of the very same granite rock. The problem however lies at the speed and magnitude with which these rocks are now disappearing. Just consider the following statistics. The official 2001 census stated that the Hyderabad population was around 3.7 million. But today, the overflowing buses, traffic jammed streets, and expanding city borders tell a very different story. Today, this natural legacy is giving way to tall residential high-rises and software parks. Hills are being replaced with malls and buildings.

As the massive inflow of population continues, rocks are being quarried round-the-clock to cater to the exponential boom in the construction industry. Large tracts of land have been approved for residential or commercial use, without taking into consideration what actually lies on the land. The rocks are blown down, land is cleared and the hard crystalline rocks are used as construction material. In the past four years itself, vast stretches of hills around the city's fringes have been turned to rubble or have completely disappeared. If you visit the places where the development is taking place your heart will bleed at the sight of

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the half quarried, half-eaten mountains.

Growth and development are inevitable and necessary to absorb the growing needs of the economy. But the problem lies, in the fact that none of this growth is monitored. Giant machines dig the earth out and transport mud to all corners of the city. Ratty trucks with broken remains of gigantic rocks can be seen ferrying the roads primarily during dusk or night. Most of this quarrying is illegal. Contractors excavate mud and destroy rocks in remote spots often under the dark cover of night for a paltry sum.

Mass destruction of rocks has exacerbated the depletion of green cover. Precious fauna and flora has been destroyed. Loss of these rocks has meant ground water depletion which has further compounded the city's water woes. Years ago tiny lakes dotted the entire city including the famous Jubilee and Banjara hills localities. Today lakes are found only on the city outskirts in places like Shamirpet. Lakes closer to the city are shrinking with every passing year.

Fighting for Conservation

Though Hyderabad has seen the gradual depletion of rock cover, ecological conservation is an issue that has not found much voice with the population. Most citizens, especially those new to the city, are too busy focusing on seeing a snazzy Hyderabad finding its spot on the global map. But even in this bleak scenario there is a ray of hope for the rocks.

Since 1996, a group of concerned citizens have come together to prevent indiscriminate destruction of the rocks and protect the rocky landscapes. Their organization 'Society to Save Rocks' (STSR) has since then been working hard to preserve the rocky ecosystem in the city and state.

Due to their dedicated campaigning, the Government of Andhra Pradesh has added nine rock formations in Regulation No. 13 of the Hyderabad Urban Development Authority (HUDA) for the protection of Heritage Buildings and Precincts. This act of the governments was hailed by conservationists across the country as a great step in recognising the importance of the rocks and the need to protect them. Today Hyderabad is the only city in India where rocks are protected as a natural heritage. Encouraging the government to preserve these rocks by

promoting them as tourist attractions is an alternative that the Society is pushing for.

But despite the dedicated efforts of STSR's the city faces a challenge, as much land in and around the city has already been sold off. Durgam Cheruvu, one of the designated heritage sites is the best place where the government's attempt at conservation and apathy towards rocks, are both visible.



Durgam Cheruvu

Years ago, the lake lay hidden between rocky cliffs and was inaccessible. A few years ago it was converted to a model tourist spot with boating and other leisure facilities.

But entire stretches of hills on one bank of this protected area have been destroyed in the past decade to accommodate the fast-growing Hi-tech city. Durgam Cheruvu thus epitomises the ongoing conflict between development and protection in the city.

However some individuals have successfully managed to integrate rocks that abut their house into the structure of their homes. The rock forms as much a part of their home's interior as does their sofa or any other furniture. Some builders and companies too have taken the initiative to include rocks in their building complexes. While they have included a natural rock structure within their building premise, their focus remains on decorative appeal rather than ecological consideration for the rocks.

Over the years, due to the efforts of organizations like the STSR, the rocks of Hyderabad have found a voice. But the din of the construction industry and growing needs of an expanding city are far louder than the voice of these few individuals. What the rocks require are greater public support and a deeper appreciation of their existence. Locals, tourists and governments need to take a pro-active approach to ensure that growth includes preservation of rocks and

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their eco-systems. After all if a booming economy overtakes billions of years of nature, the consequences and blame will have to be borne by none other than the citizens themselves for the only people who stand to gain will in reality be the ones who lose.

E.2. The box below contains ten words from the passage. Use them appropriately to fill the blanks in the sentences that follow:

mammoth	precariously	subterranean	ensconce
alacrity	exponential	snazzy	apathy
abutting	booming		

1. While food production has shown only marginal improvement, the demand for food grains, vegetables and fruits has registered an _____ growth the world over, forcing governments to initiate urgent measures to establish a balance between supply and demand.
2. To construct the _____ structure, the builder had to use enormous quantities of concrete.
3. When he returned from the office, he _____ himself in an armchair and asked for a cup of tea.
4. When the teacher saw a student perched _____ on the branch of a tree, she asked him to climb down immediately.
5. The newly appointed office assistant earned the praise of her colleagues for the _____ with which she completed the tasks assigned to her.
6. The new office building was _____ with its bright and fashionable exterior.
7. The pensioner did not get his dues in time on account of the _____ of the officials.
8. The land _____ the post office was procured by the authorities for expanding the building that housed it.
9. Merchants stock up on goods during festival seasons to meet the _____ demand and declare discounts when the sales

slacken.

10. During wars armies dig up _____ passages for the movement of troops and supplies unseen by the enemy.

E.3. On the basis of your comprehension of the text fill in the following table.

(a) Importance of rocks

Aesthetic importance

Ecological importance

(a)

(a)

(b)

(b)

(c)

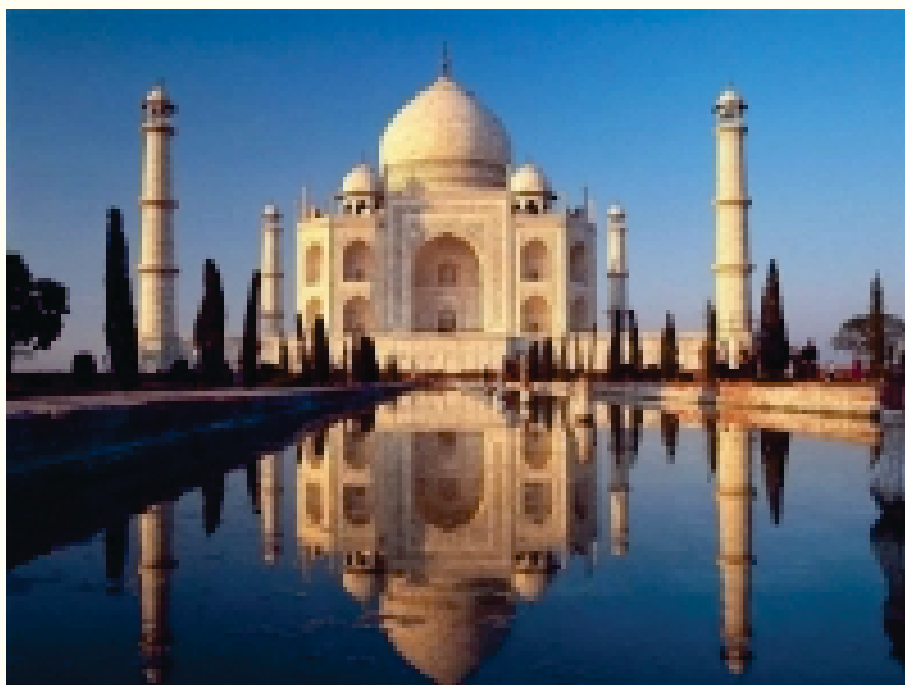
(c)

(b) Threats to the geological heritage.

Causes

(i)

(ii)



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Effects

(i)

(ii)

(c) The hope

(i) The efforts of 'Society to Save Rocks' led to
.....

(i.i) Challenge to the efforts of 'Society to Save Rocks' comes in the form of

(ii) Individuals have made efforts to preserve the heritage by.....

E.4. Select a historical site in need of conservation, research about its historical significance, identify the threatening factors and suggest ways of preserving the geological heritage. Prepare a power point presentation and make a presentation to the class.(This can be done in groups)

For example: The Taj Mahal has been diagnosed with a life threatening disease; Marble Cancer. Experts have predicted that if the air in Agra is not monitored and cleaned, the exterior of the mausoleum would eventually turn black. The application of Fuller's Earth has also disfigured the Taj.

The efforts to protect the monument were started in early 1990's.

- * Uptil 1993, 1700 factories in and around Agra were belching out noxious fumes and gases and the Supreme Court ordered the closure of 212 industrial plants in Agra. Cars and buses were barred from crossing the cultural landmark.
- * In 1999, the Supreme Court ordered to close 53 iron factories and 107 other plants that harm the Taj.
- * Many plants were planted in the Taj nature walk in order to preserve its beauty

- * In 2009, natural gas pipelines were placed to deliver clean fuel to industries in Agra and Firozabad. The three-wheelers previously running on diesel have been replaced by CNG-power and Mathura refinery has been making heavy investments to reduce pollution.
- * In February 2010, the government approved a plan to plant one million 'Tulsi' plants near Taj because Tulsi is considered to purify the environment owing to its ability to release high amount of oxygen.

E.5. Prepare a poster on 'Let's Preserve Our Heritage'

Remember

- * to include both textual and graphic elements
- * to make it easy to read
- * to make it easy to understand
- * to try for:
 - 20% text
 - 40% graphics
 - 40% empty space