

# Tropical Rainforests

## Where are Tropical Rainforests?

Major tracts of tropical rainforests can be found along the equator - in the Amazon River Basin of South America, in West and Central Africa, and in Southeast Asia. Rainforests also exist in parts of Central America and Mexico. Rainforests are filled with trees one hundred feet tall, and packed with thousands of types of plants and animals, many of which do not exist anywhere else in the world.



## What's it like in the rainforest?

If you are standing on the ground in a rainforest, you have to look up to see many of the plants and animals. This is because very little sunlight makes it through the thick trees, and so it is difficult for plants to grow on the floor of the forest. Above you is the understory, which is made up of tall bushes and young trees. Above the understory is the canopy, which is made up of treetops, vines and other plants and flowers. This layer is so thick, you can not see through it. Most of the living things in the rainforest live in the canopy. Above the canopy are the tops of very tall trees, some over 150 feet tall.

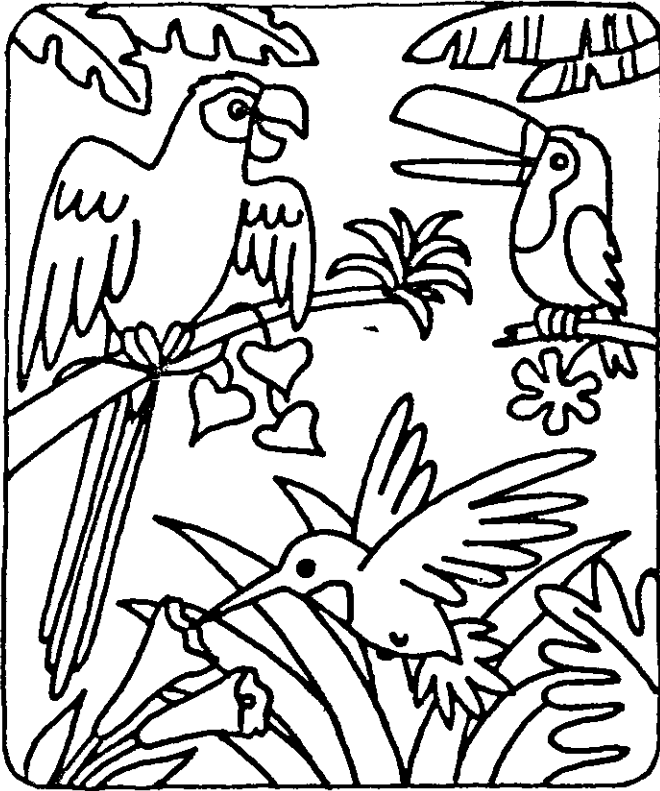
In the rainforest, there are thousands of types of birds and other animals, and millions of types of insects. On the ground you might see elephants, deer, wild pigs or wild cats like tigers, leopards or jaguars. In the branches of the trees you might see monkeys or sloths or even snakes. Flying above you are some of the most colorful birds in the world, like the toucan and the bird of paradise.

## Why are Tropical Rainforests important?

Wildlife Half of all the known plant and animal species on earth live in tropical rain forests, along with millions of other species not yet known to science. In addition, the rainforest provides an irreplaceable home to many species which are in danger of becoming extinct. Every year that rainforests are destroyed, thousands of species disappear forever.

Medicine Many of the important medicines used today are made from plants found in the rainforest and scientists expect that rainforests hold many more valuable medicines that are yet to be discovered.

Food and other products The rainforest produces a wide variety of food products such as coffee, cocoa, and many kinds of fruits, nuts, oils, flavorings and spices. The rainforest also produces valuable substances, like rubber, which is used for tires and rubber balls.



# PLANTS OF THE RAINFOREST

From top to bottom, the tropical rainforest is a world of lush green plants. More kinds of trees and plants grow here than in any other area in the world. Hot, humid conditions throughout the year support a diversity of plant life from shrubs, ferns, and colorful flowers to vines and giant towering trees. In this evergreen world, plants shed leaves continuously, a few at a time, as they grow rapidly in an ideal climate.

Although there is an amazing variety of plant life living in the rainforest, the soil is not very fertile. Most of the nutrients for plants are stored in the plants themselves or in a thin layer of decaying vegetation near the surface of the soil. Roots, found close to the surface, quickly absorb the nutrients. Since the root systems are so shallow, unusual roots called buttresses or still roots are needed for a strong base. Epiphytes, like the beautiful jungle orchids and bromeliads, use trees for support and get nutrients from dead leaves that fall from above. Lianas, woody vines that continually climb toward the sunlight, wind through the rainforest looking like a tangle of cobwebs. A complex system of layers, plants, ferns, shrubs, vines, and trees each have their own special niche in the tropical rainforest.

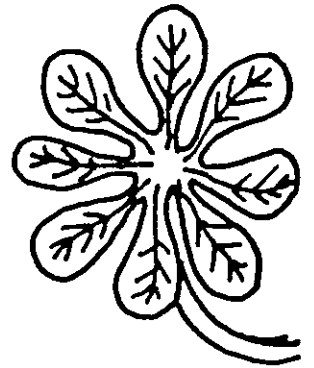
## Ceiba

The leaf of the ceiba tree has a "drip tip." This kind of leaf ends in a sharp tip that hangs downward. Raindrops falling on the leaf quickly drain off and the water trickles down to the forest floor.



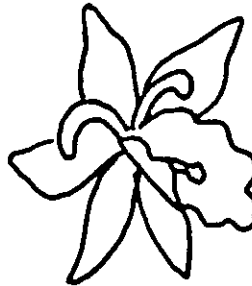
## Cecropia

The cecropia is a short umbrella-shaped tree that grows very fast. It is found in sunny clearings in the understory of the rainforest. The leaves and seeds of the cecropia are eaten by birds, rodents, bats, and other animals. The cecropia's trunk and branches are hollow, making a good home for the azteca ants. The cecropia and the ants have formed a partnership. The tree is a home for the ants and the ants protect the tree from harmful insects and vines.



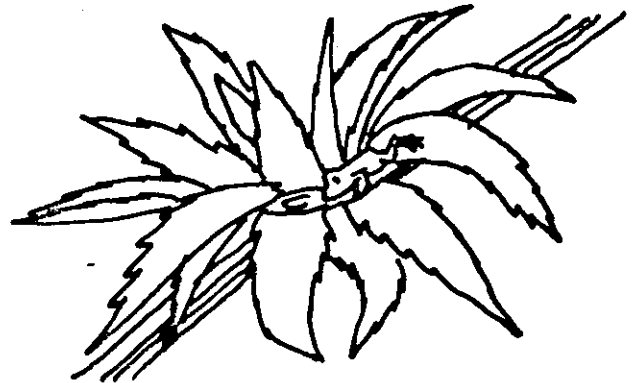
## Orchid

The orchid is a beautiful flower that grows in the rainforest. It is an epiphyte and uses the branches and trunks of trees for support. Its brightly colored flower and powerful fragrance attract bees who drink the nectar and pollinate the orchid.



## Tank Bromeliad

The tank bromeliad is an epiphyte that grows on the trunks and branches of trees. It has several wide leaves coming out from the center, surrounding a small pool of rainwater. The center forms a small garden, providing a home and a drink of water to many animals living in the canopy. Look for the plant patterns and directions for creating these plants from construction paper.



### **Kapok Tree**

The kapok tree grows in the tropical rainforest. It has a short, thick trunk and many long branches. When the fruit of the tree is ripe, the seedpods are picked. The seedpods contain a light, soft cotton-like fiber which is used as a filling for mattresses, furniture, and life jackets.

### **Cacao Tree**

The cacao tree has oblong, bright green leaves and is found in the understory of the rainforest. Large pods that look like melons grow from its trunk and branches. The pods contain many seeds or beans. Monkeys and small rodents break open the pods and scatter the seeds, planting other cacao trees. The seeds are used to make chocolate and cocoa.

### **Banana Plant**

The banana plant looks like a tree but is actually a plant. The stalks of the leaves are similar to a "trunk" and as the leaves unroll, they look like large droopy feathers. Flowers on the plant become tiny green bananas that turn yellow and begin to curve upward as they grow. Bananas are picked green so that they will be ripe when they reach the market.

### **Rubber Tree**

The hevea or rubber tree is a tall, straight, slender tree that grows in the rainforest. Latex containing rubber flows through tubes under the bark in the trunk of the tree. The latex is collected by cutting a groove in the bark and then catching the latex in a small cup. It must be taken to a factory to be made into rubber.

### **Palm**

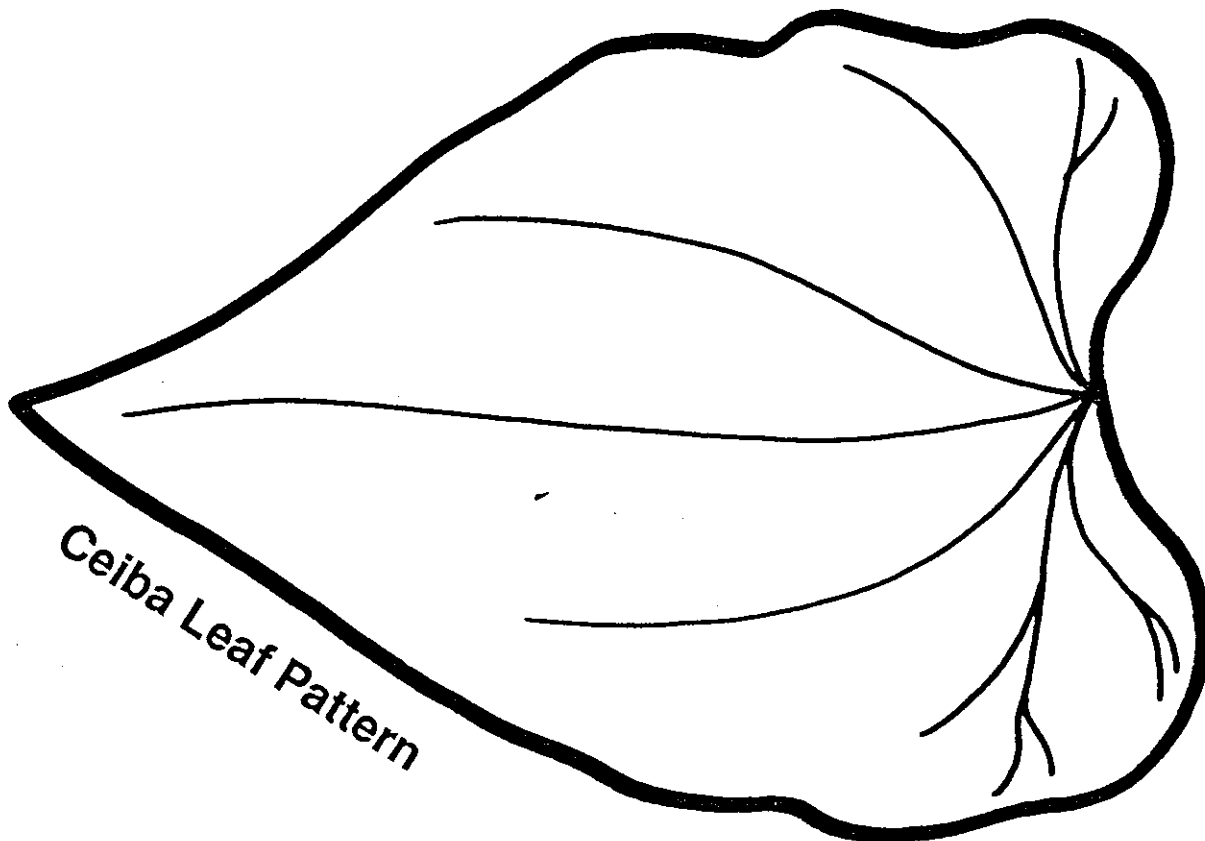
Many kinds of palms having different kinds of flowers, leaves, and fruits grow in the rainforest. Palms provide people with food, clothing, and building materials.

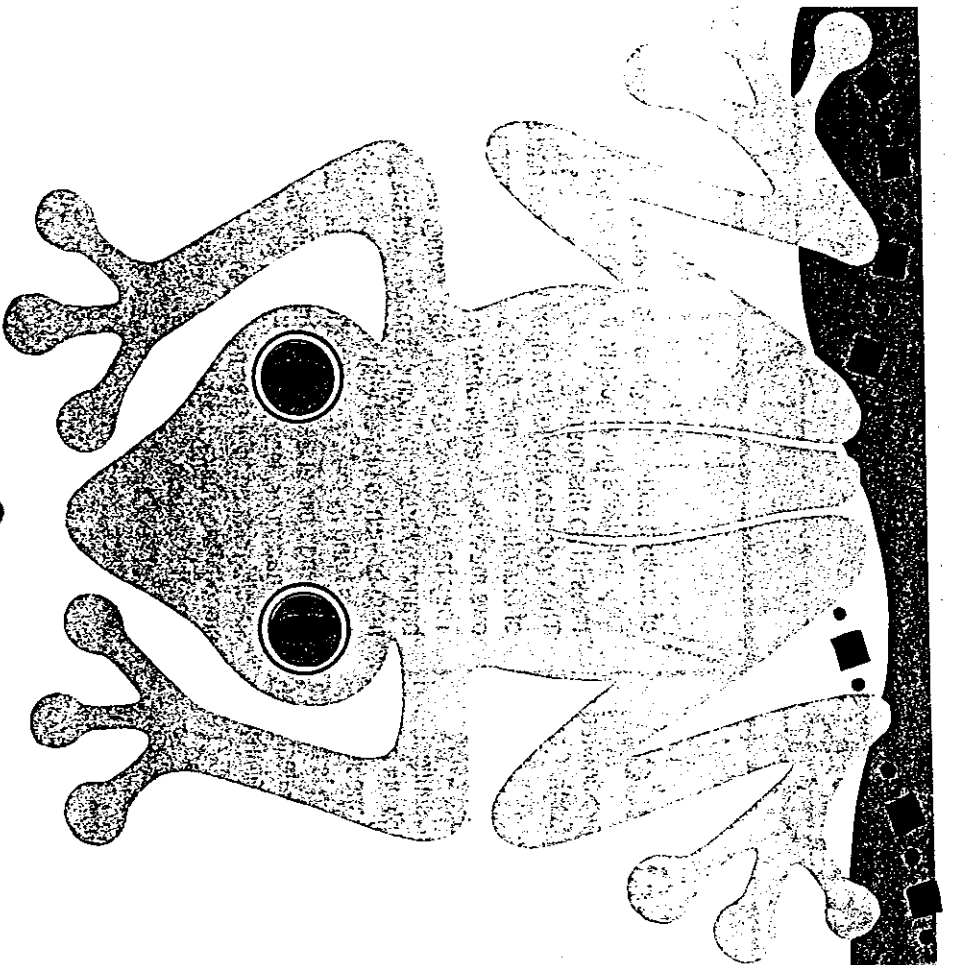
### **Fern**

Ferns, which grow in many sizes and shapes, are plants without flowers. Some are so tiny they look like moss while others are as large as trees. The tree ferns have woody trunks with feathery crowns of large leaves. Smaller ferns that creep up tree trunks and grow high above the ground are called air plants.

### **Mushrooms**

Mushrooms, fungi often shaped like small umbrellas, are everywhere in the rainforest. They can be found in many different shapes, sizes, and beautiful colors. Mushrooms grow on old trees and decaying plants and also in rich soil. When mushrooms grow on living plants they are called parasites.





# What is a Rainforest?

A rainforest is a thick, green forest that gets a lot of rain. It is home to many kinds of plants and animals. Sometimes a rainforest is called a jungle.

## How long have rainforests been on Earth?

Scientists think tropical rainforests have been a part of the Earth for about 100 million years. They existed when the dinosaurs roamed the Earth.

## What is happening to rainforests today?

Rainforests are being cut down and burned. When forests are destroyed, it is called deforestation. The land is being used for farming, logging, mining, roads, housing, and cattle ranching. In fact, half of the world's rainforests are already gone. Studies show that we are losing an area the size of a football field every second! This would mean that people are destroying an area the size of West Virginia every year. At this rate, all the tropical rainforests will be seriously damaged or destroyed in 50 years. How old will you be?

## Why are rainforests important to plants and animals?

They are the natural home or habitat of half of all the world's plants and animals. Scientists think that there may be thousands more species living in the rainforests that we don't even know about. Entire species of plants and animals are dying out because the rainforests—their home—are being cut down.

## Do people live in rainforests?

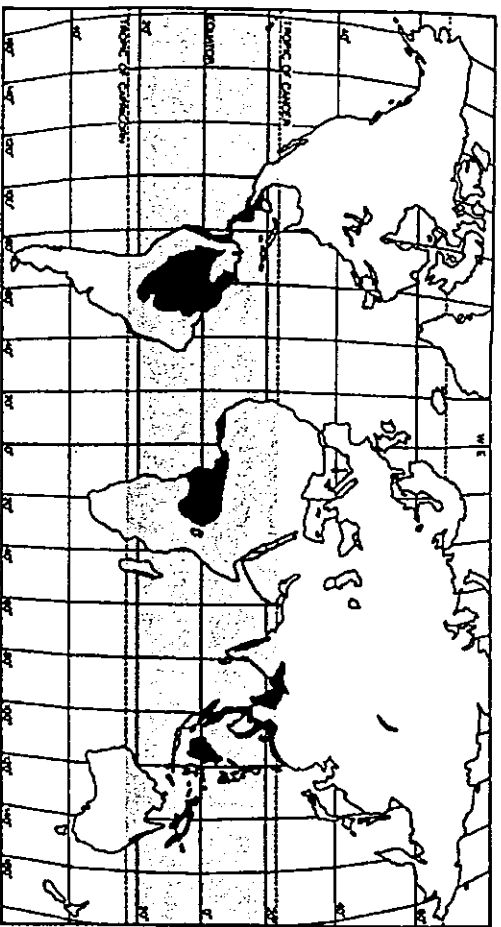
Yes. Rainforests have been home to native tribes for thousands of years. They live in harmony with the rainforest. They learned how to live off the land without harming it. Their knowledge of the rainforests is very important. Now their home and lifestyle are being destroyed.

## Are rainforests important to people who don't live there?

Rainforests provide many foods such as bananas, coffee,

## What is a tropical rainforest?

A tropical rainforest is found near the equator in an area called the tropics. Look at the map. The green shaded area shows the tropics. They make a wide band around the center of the earth. The black areas are rainforests.



## Are there tropical rainforests where I live?

Half of the world's tropical rainforests are found in South America and Central America. Southeast Asia has a large stretch. More are found in Africa. The United States has only a few tropical rainforests left. They are in Hawaii.

## How much does it rain in a rainforest?

It rains more than 200 days a year in tropical rainforests. They get at least 80 inches and sometimes as much as 240 inches a year! The plants grow so thick that rain can only reach the ground by rolling down leaves or tree trunks. Rainforests actually make rain. Leaves on the plants and trees of the rainforest breathe out water vapor. It equals as much as thousands of gallons of water per acre per day. This water vapor combines with the evaporated water from the oceans to make rain.

Yes. Rainforests provide foods such as bananas, coffee, sugar cane, cocoa, rice, corn, sweet potatoes, nuts, and oranges. In fact, when a crop becomes diseased, scientists often return to the rainforest to find the wild variety of this plant to help to wipe out the disease. One out of every four medicines is made from plants from the rainforest. Tropical rainforests have given us drugs to help fight cancer and heart disease. We get other products from the rainforest, too...wood for furniture, rubber for tires, rope, oils for perfume, and stuffing for pillows and mattresses.

## Why are rainforests so important to our environment?

Tropical rainforests, with their huge number of trees and plants, could be called the "lungs" of the Earth. Trees help to absorb a gas called carbon dioxide released into the air by people, cars, and factories. Trees also give off oxygen that people need to breathe. With every tree that is cut down, there is less oxygen on the Earth. When forests are burned, the carbon dioxide within the trees is released into the atmosphere, too. This carbon dioxide traps heat. It is feared that this will cause a warming of the climate on Earth.

## What can I do to help save rainforests?

Anything you can do to conserve energy and recycle goods helps the Earth. Learn more about rainforests so that you can teach others about the serious problem of deforestation. Do a school science project on rainforest ecology. Make posters to tell others in your school or community about rainforests. There are many environmental groups for kids and families. Join one of these groups and be active. Support your local zoo and find out ways you can help endangered species.



# RAINFOREST RESOURCES

## Poetry

Prelutsky, Jack. "Toucan Two"  
*Toucans Two and Other Poems* (Macmillan, 1970)

Silverstein, Shel. "The Toucan"  
*Where the Sidewalk Ends* (Harper & Row, 1974)

## Storybooks

Baker, Jeannie. *Where the Forest Meets the Sea*  
(Greenwillow Books, 1987)  
A young boy visits a forest near the sea. He pretends it is long ago as he walks among the ancient trees of an Australian tropical rainforest. He wonders how much longer the forest will remain.

Catchpole, Dr. Clive. *The Living World: Jungles*  
(Dial Books, 1984)  
Colorful illustrations tell about interrelationships and adaptations necessary for survival in the world's rainforests.

Catterwell, Thelma. *Aldita and the Forest*  
(Houghton Mifflin, 1989)  
Newborn butterfly Aldita, left alone by her own kind, finds herself in an Australian forest. She learns about "the plan" when she is befriended by other creatures. A colorful picture book.

Cherry, Lynne. *The Great Kapok Tree*  
(Harcourt Brace Jovanovich, 1990)  
When a man begins cutting down one of the rainforest's mighty trees, he becomes tired and lies down to rest. While sleeping, the animals living in the tree whisper in his ear. They tell him why he should not destroy their home. The story and illustrations provide a close-up look at the beauty of the Amazon rainforest and its inhabitants. It's a great starter for discussion about the importance of the rainforests and the effect destruction of it will have on its inhabitants.

Cobb, Vicki. *This Place Is Wet*  
(Walker and Company, 1989)  
Focuses on the land, ecology, people and animals of the Amazon rainforest in Brazil, presenting it as an example of a place where there is so much water that some houses need to be built on stilts.

Cowcher, Helen. *Rain Forest*  
(Farrar, Straus and Giroux, 1988)  
One day a large machine is heard in the rainforest and the animals scurry from their homes. When the machine crashes and disappears into a large hole, the animals return, but they are uncertain how long they will be able to remain. Splashes of color give the reader the feeling of a tropical rainforest and readers realize that there is more to a rainforest than just trees. The book, with its striking illustrations, will help introduce rainforest animals to your class.

Dorros, Arthur. *Rain Forest Secrets*  
(Scholastic Inc., 1990)  
A close-up look at the amazing variety of plants and animals that make their home in the different layers of the rainforest—more kinds of plants and animals than anywhere else on earth. A wonderful introduction to the ecosystem of the rainforest and its fragility.

Facklam, Margery. *And Then There Was One*  
(Little, Brown & Co., 1990)  
A picture book with an important message, this book talks about the mysteries of extinction. It addresses the issues of taking over animal habitats, causing species to become extinct.

George, Jean Craighead. *One Day in the Tropical Rain Forest* (Harper Collins, 1990)  
The future of the rainforest of the macaw depends on a scientist and a young Indian boy as they search for a nameless butterfly during one day in the rainforest.

Pittaway, Margaret. *The Rainforest Children*  
(Oxford University Press, 1980)  
The rainforest children travel from their home in a Queensland rainforest to a different habitat, a land of sea and sand. The story tells about the contrasting habitats.

## Recordings

"Jungle" Nature Recordings Vol. V  
P.O. Box 2749  
Friday Harbor, WA 98250  
Phone (800) 228-5711

"Tropical Jungle"  
The Nature Company  
P.O. Box 2310  
Berkeley, CA 94702



Name \_\_\_\_\_

Problem solving

# Watering Flowers

Gladys Gardner began a new plan to water her flowers. The plan is good for some flowers and bad for others. Follow the directions; then answer the questions.

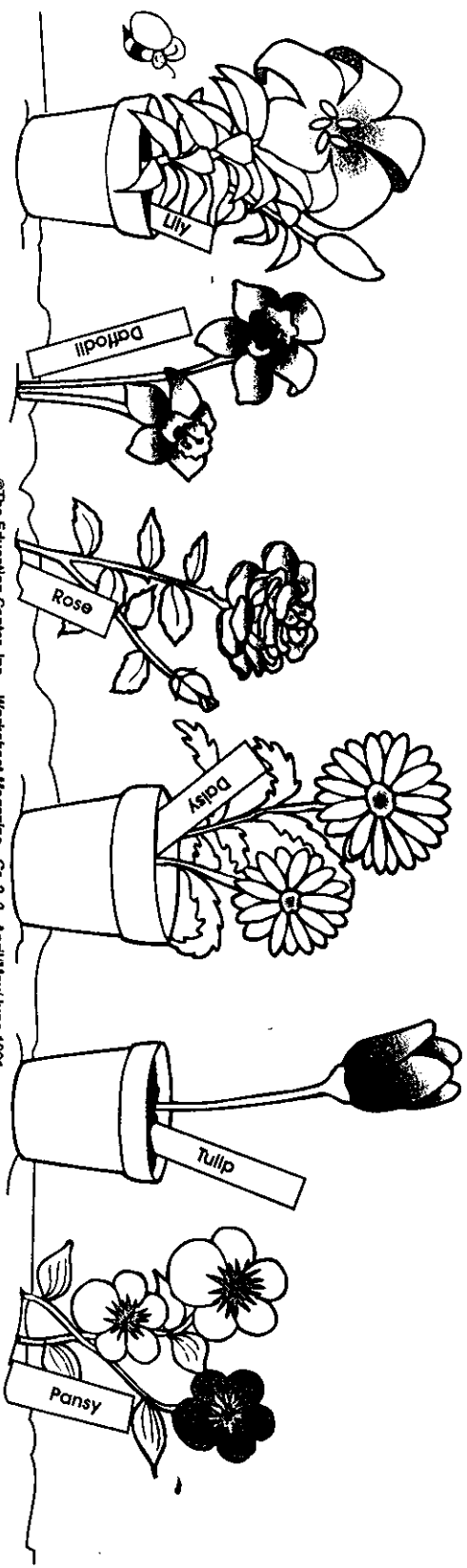
## Directions

- Gladys waters the flowers in pots in the morning. Color the pots brown.
- Gladys waters the flowers with leaves in the afternoon. Color the leaves green.
- Gladys waters the flowers with buds in the evening. Color the buds red.



## Questions

1. Which flower is watered three times? \_\_\_\_\_
2. Which flowers are watered only once? \_\_\_\_\_
3. Which flower doesn't get watered at all? \_\_\_\_\_
4. Why is Gladys Gardner's new watering plan not a good plan? \_\_\_\_\_



# Products of the Tropical Forests

Many people ask, "Since I don't live in the tropics, what does the rain forest have to do with me?" That's a good question. If you live in a house or apartment, wash your hair, eat fruits and vegetables, need medicines, chew gum or wear sneakers, chances are you may be using products that originated in the tropical forests.

Tropical plants have been used to treat many illnesses of the world's population. Quinine treats malaria. A West African vine is medication for leukemia and Hodgkin's disease. In fact, of the 3,000 plant species in the world that are known to contain anti-cancer properties, 2,100 are from the tropical rain forests. These plants can save lives! Scientists have been able to look at less than one percent of the tropical plants for medical purposes. So, many more medical uses may be discovered.



Remember those Tarzan films, in which the tribes used blow darts to defeat their enemies? The poison on the darts, curare, is an important anesthetic used to relax muscles during surgery.

Natural rubber comes from rain forest areas. For many uses, only natural rubber from trees will do. Rubber gives us surgical gloves, balloons, bandaids, sporting goods, sneakers, and chewing gum. Imagine a world without sneakers and bubble gum!

From tropical plants we get fibers for things like furniture, soundproofing, and insulation. From palm oil we get ingredients for margarine, cooking oil, bakery goods, soap, candles, and mayonnaise.

Foods that we now take for granted originated in the jungle. Today these are grown as crops and include bananas, rice, avocados, eggplant, lemons, limes, oranges, cucumbers, tea, cashews, pineapples, and papayas. Spices like black pepper, chili, cinnamon, cloves, vanilla, paprika, ginger, and nutmeg originated in the rain forest. Our tropical rain forests have given us an abundance of foods and spices.

## Activities

1. Make a rain forest products collage.
2. Research to find other products that originated in the jungle.
3. Make a product map to show which rain forests the products come from.

# Tropical Rainforests

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## What's it like in the rainforest?

If you are standing on the ground in a rainforest, you have to look up to see many of the plants and animals. This is because very little sunlight makes it through the thick trees, and so it is difficult for plants to grow on the floor of the forest. Above you is the understory, which is made up of tall bushes and young trees. Above the understory is the canopy, which is made up of treetops, vines and other plants and flowers. This layer is so thick, you can not see through it. Most of the living things in the rainforest live in the canopy. Above the canopy are the tops of very tall trees, some over 150 feet tall.

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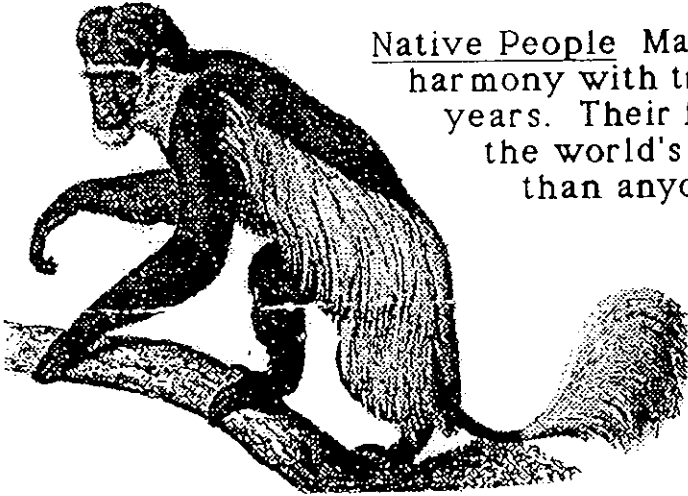
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Environment Rainforests are often called the "lungs of the world" because of the important role they play in cleaning the atmosphere and producing the oxygen we breath. Healthy rainforests also help keep rainfall at a steady pace throughout the year, which prevents floods and draughts. When rainforests are cut, the soil on the floor of the forest washes away and clogs up streams and rivers.



Native People Many tribes of native people have lived in harmony with tropical rainforests for thousands of years. Their future depends upon the protection of the world's rainforests. These people know better than anyone how to use the plants of the rainforest for food and medicine, and the rest of the world could learn many valuable lessons from them.

## What are the major threats to the Tropical Rainforests?

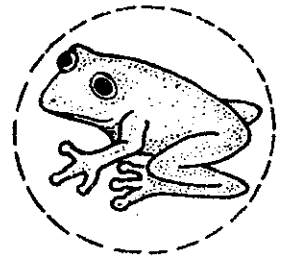
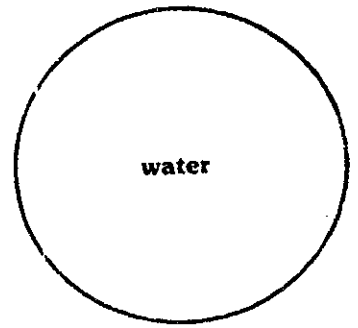
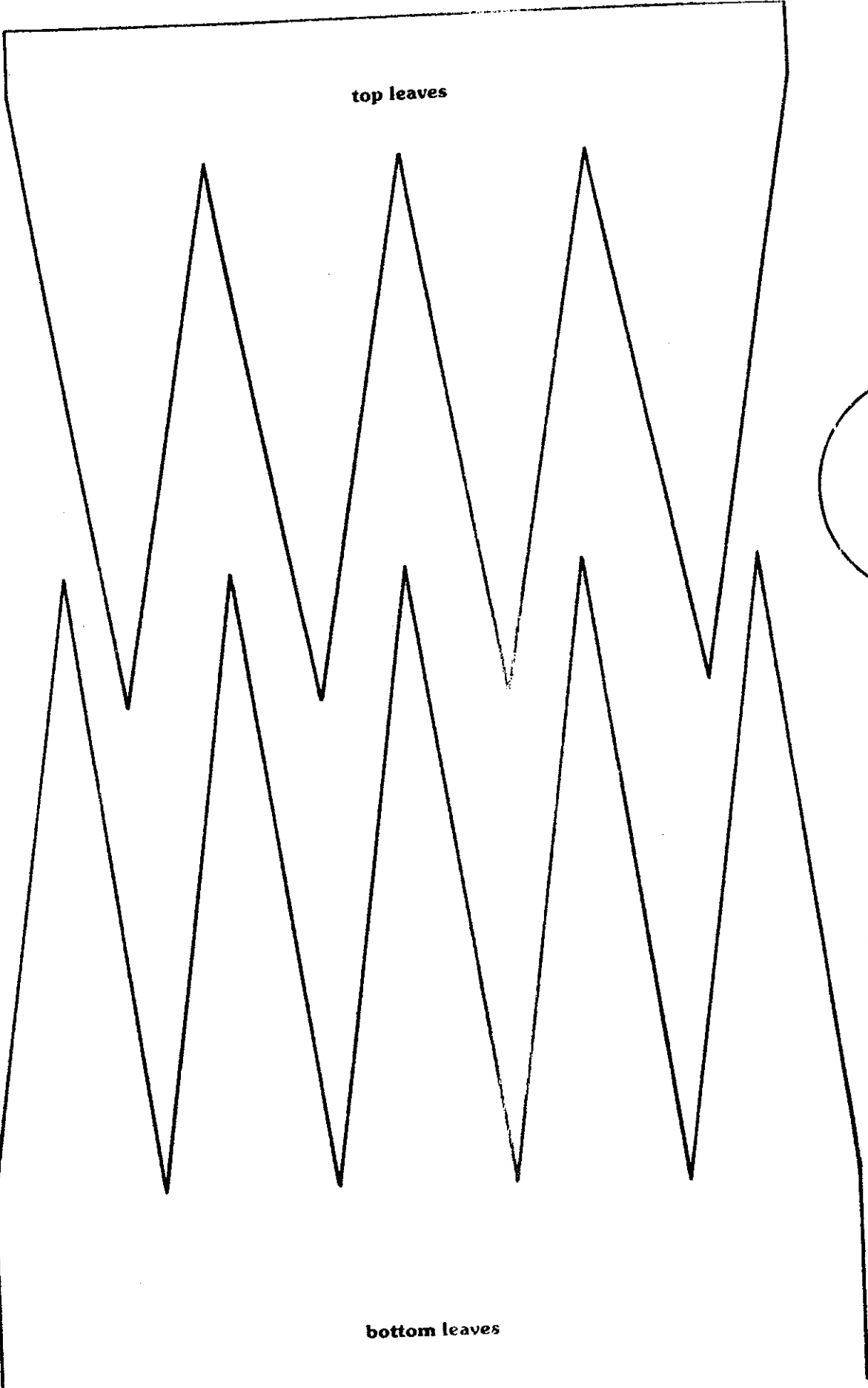
Turning forests into farmland One of the main threats to rainforsts comes from farmers who cut or burn down rainforest, and then use the land for farming. Many of these farmers are poor, and have no other land. Unfortunately, once the trees are cut, the soil can only produce food for a few years before it is washed away or loses its nutrients. Then the farmers have to cut down more forests in order to grow their crops.

Logging The cutting down of rainforest trees for use as firewood and building materials is another major cause of rainforest destruction. Wood from the rainforest is famous for its beauty and strength.

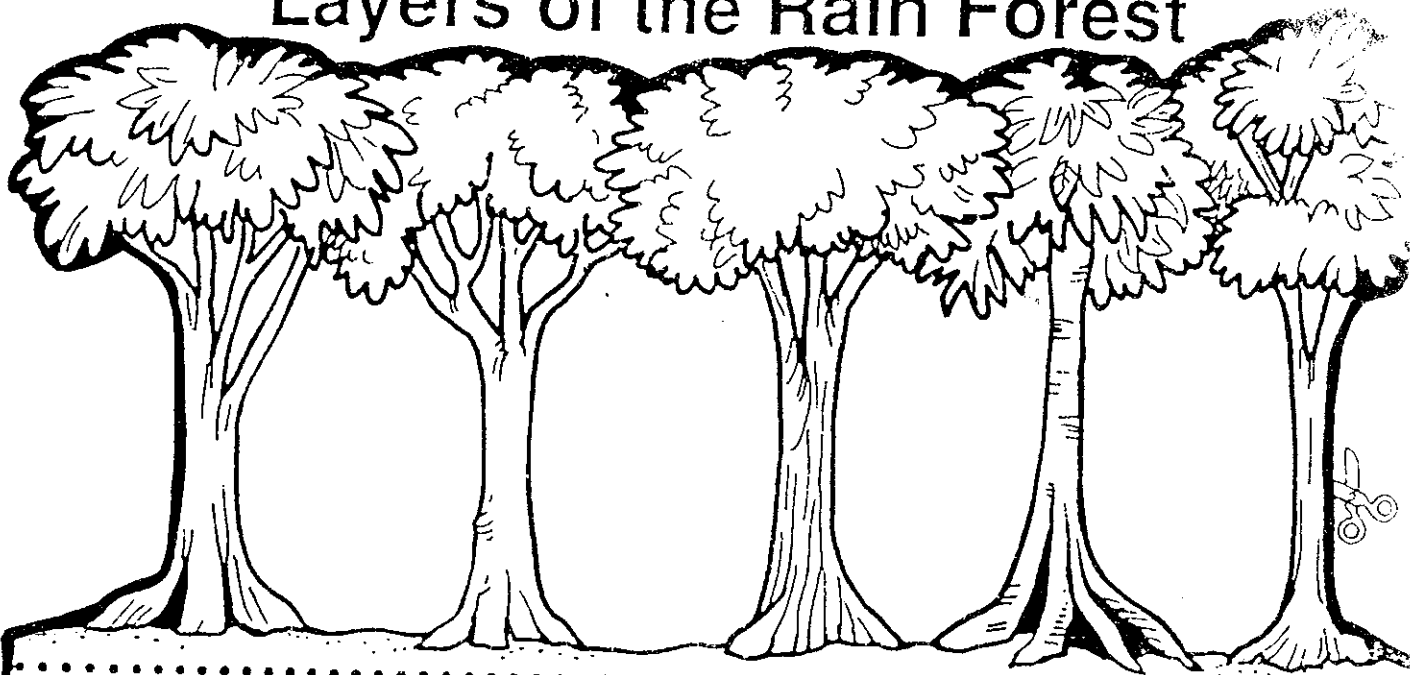
Cattle Ranching Large amounts of rainforest are cut down, mostly in Central and South America, to provide cattle ranchers with grazing lands for their cattle. Cleared rainforests only supports cattle for a few years, so, like the farmers, cattle ranchers have to keep clearing rainforest to keep their business going.

Construction and Mining Building highways, drilling for oil and mining for things like gold leads to the destruction of large areas of rainforest. This is because trees have to be cut down to make room for the roads and mines, and also because the cars on the road and equipment used to drill and mine cause pollution which can destroy the rainforest.

Illegal Wildlife Trade Much of the rainforest's exotic wildlife, such as its colorful birds, is threatened by traders who buy and sell these animals for profit.



## Layers of the Rain Forest



The canopy is the main top layer of the rain forest. It is made up of trees whose tops are very close together.



The understory is made up of shrubs, ferns, and small trees.



The forest floor is made up of fungi (plants that do not have flowers or leaves), mosses, and decaying leaves.

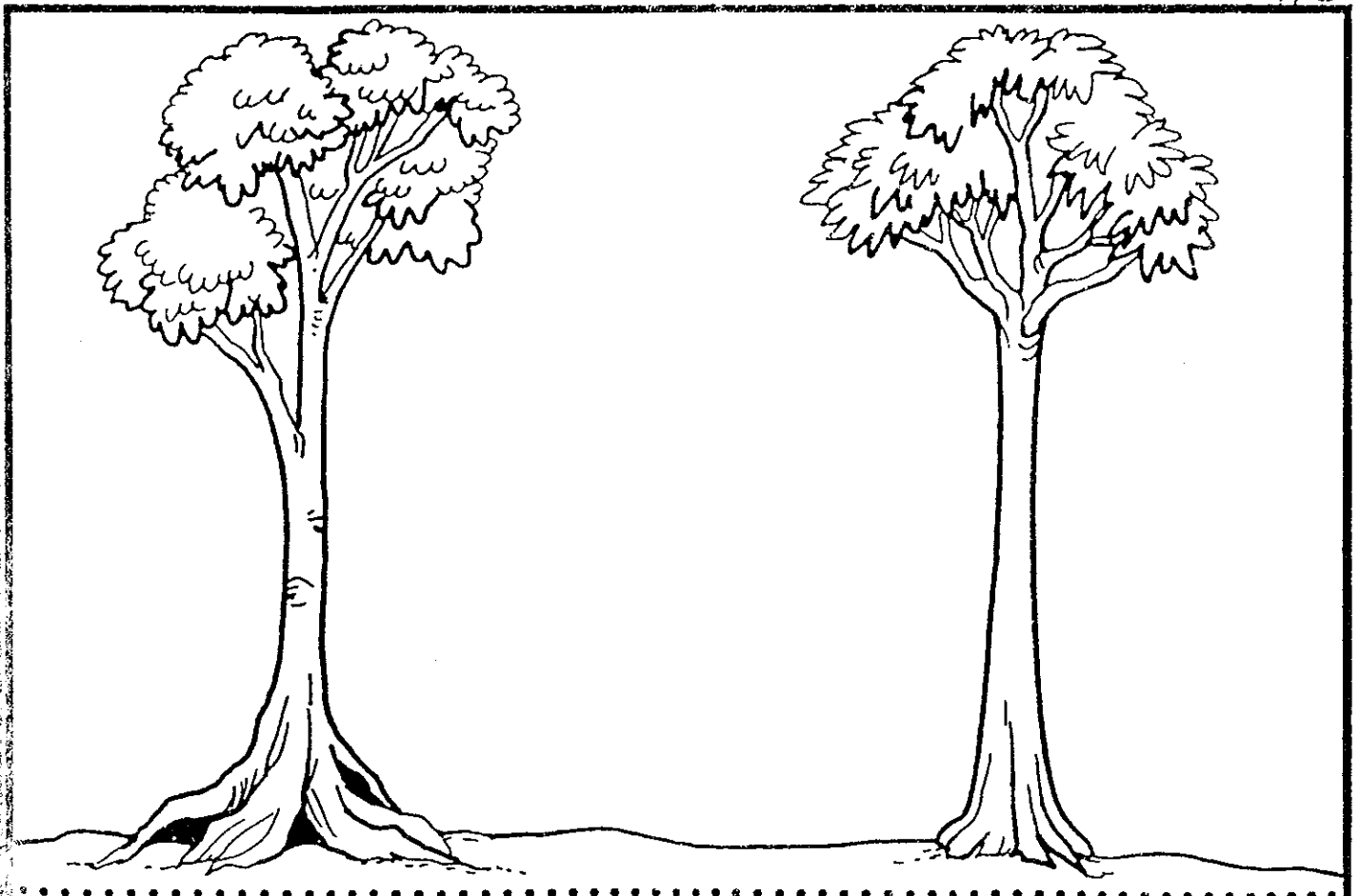
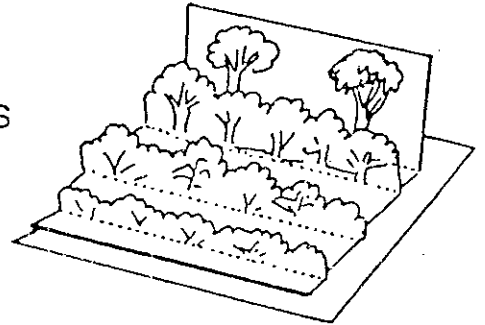
Name \_\_\_\_\_

Skill: Making a visual display

# Layers of the Rain Forest

Make a stand-up display showing the layers that make up a rain forest.

1. Color the pictures. Cut along the heavy lines.
2. Fold on the dotted lines so that the pictures stand up and the words can be seen.
3. On a sheet of 5" x 8" tagboard, arrange the pictures one behind the other in order of height. Glue them so they stand up on the tagboard.



The emergent layer is made up of tall trees that rise above the rain forest's canopy.

Name \_\_\_\_\_

## High-flying Haiku

A **haiku** is a three-line poem about nature.

Line **one** has **five syllables**. (5)

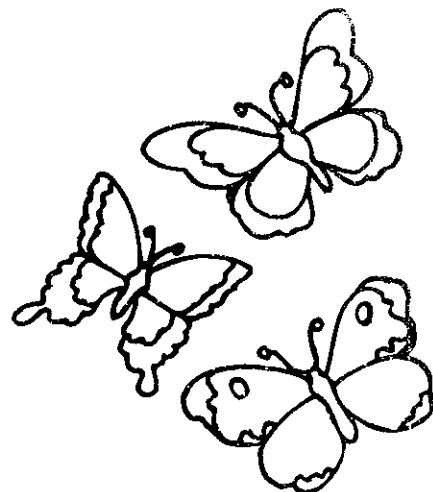
Line **two** has **seven syllables**. (7)

Line **three** has **five syllables**. (5)

Look at the haiku below.

Underline the syllables in each line.

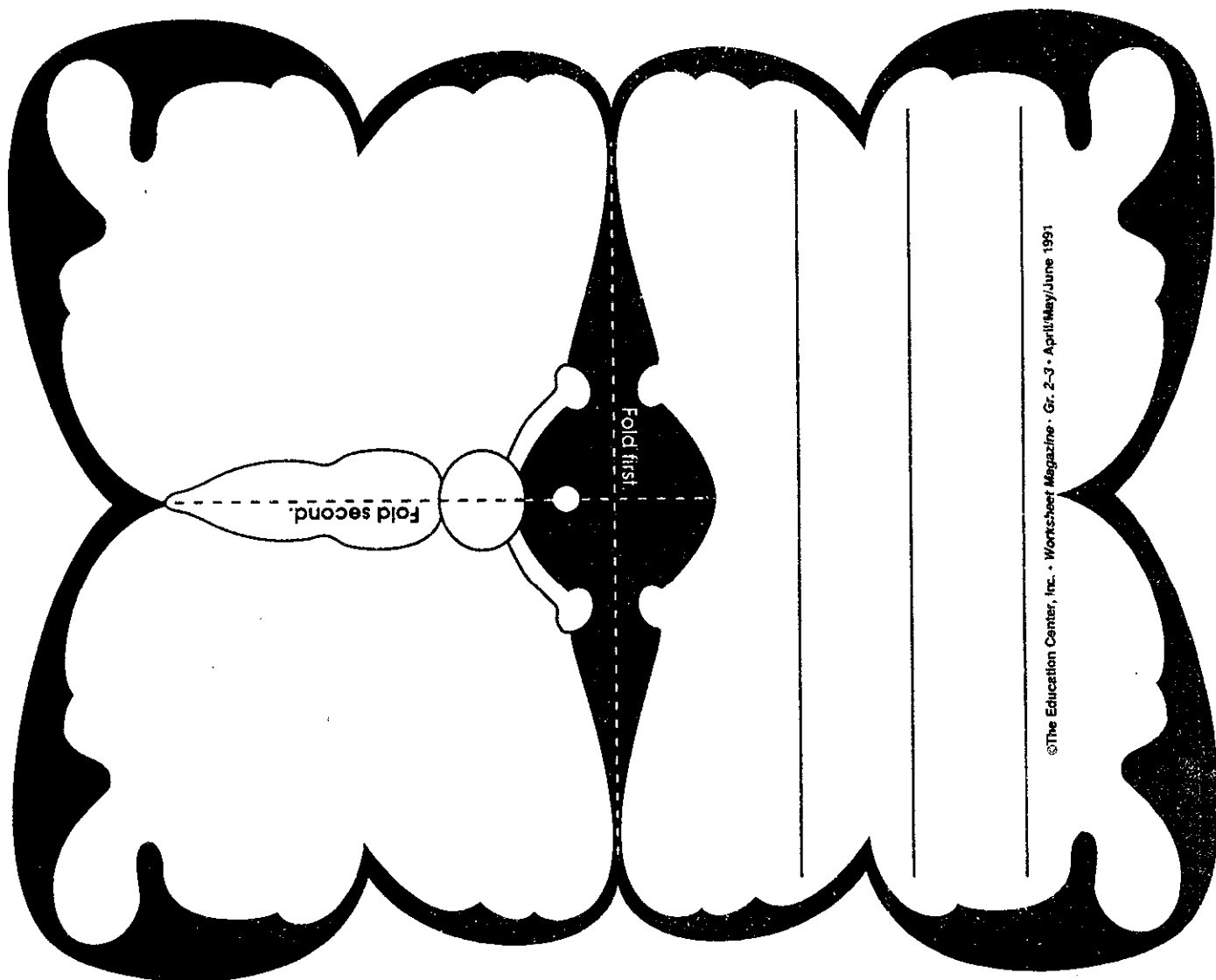
A butterfly floats  
through the summer air with ease,  
a colorful sight.



On another sheet of paper, write a haiku about a butterfly.

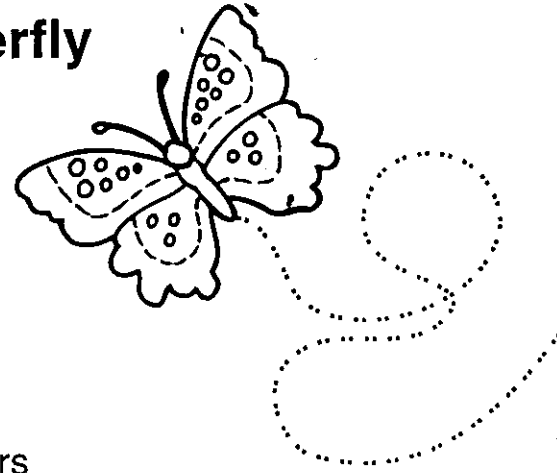
Copy your haiku in your best handwriting on the lines of the butterfly below.

Color the other side of the butterfly.



# Float Like A Butterfly

Float like a butterfly; sting like a bee.  
This, my friend, is a simile.



A simile uses the word **like** or **as** to compare things.

Draw lines to match the similes below.

as hard as

like stars

as soft as

a rock

eyes

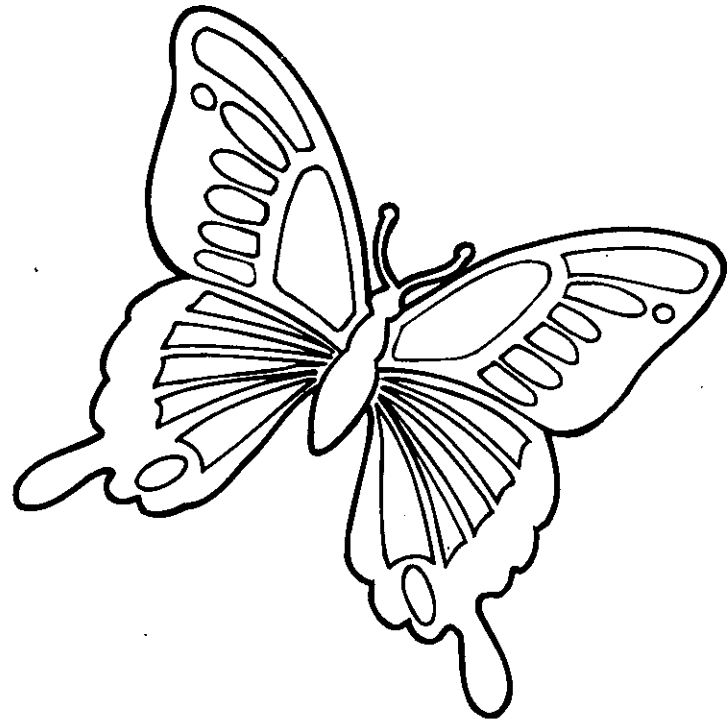
a kitten

waddle

like a duck

Think about how a butterfly moves.  
Complete the simile below.

The butterfly moves like...



**Bonus Box:** On the back of this sheet,  
write another simile. Draw and color a  
picture of your simile.



## Butterfly Pattern

Fold a 12"x18" sheet of construction paper in half.  
Placing dotted line of pattern on fold, trace and cut out butterfly.  
Use this pattern for Flutterbys and Stained Glass Butterflies.



# Save Trees by Making Your Own Recycled Paper

## Objectives:

- Increase awareness of forest products and uses.
- Discover how important it is to recycle and how easy it is to make recycled paper.



Everyday we use something that is made from trees. One of the things we use most often — especially in school — is paper. Although paper can be made from a variety of natural materials including cotton, hemp, grass, banana plants, tobacco and even elephant dung in some parts of the world, paper is most often made from pulp that is produced by grinding up trees.

**DID YOU KNOW...** It takes about 20,000 trees to make the Saturday edition of a big-city newspaper? That's more than a million trees a year!

Because paper is so important to us and because we use so much of it, we need to make sure we don't waste it. It only takes a second to use a paper napkin or tissue, but decades for a tree to grow.

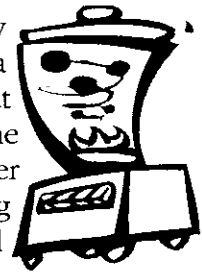
Fortunately, we can save trees by using less paper and by recycling paper. Here's how you can make your own homemade paper.

## What You Need

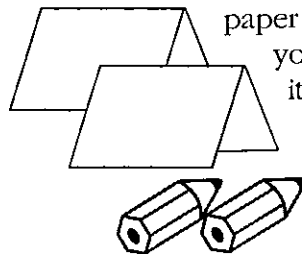
- scrap paper &/or newspaper
- a blender or wire whisk
- water
- a bucket
- a big square pan that's at least 8 cm deep
- a piece of window screen that fits inside the pan
- an iron or rolling pin
- a measuring cup
- tea towels
- vegetable scraps or dye for colour

## What You Do

1. Tear the scrap paper into tiny pieces and soak them in a bucket of hot water for about 30 minutes. Put a handful of the soaked paper into the blender and mix until mush. Or if using a whisk, beat the mixture until it is a creamy pulp. Add a small amount of vegetable scraps or dye for colour (or even leaves for added texture).
2. Pour the blended pulp into a measuring cup. Pour roughly 3 cm of water into the pan. Put the screen into the pan and pour one cup of the paper pulp onto the screen.
3. Spread the pulp evenly in the water with your fingers. It should feel kind of mushy. Lift the screen and let the water drain.
4. Lay the pulp-covered screen face down on a cloth (tea towel) or in between some newspaper. Lift the screen away, leaving the paper pulp on the cloth. Cover with another cloth and iron with a hot iron, or use a rolling pin to flatten and press out excess moisture. Let the pulp dry for at least 24 hours.

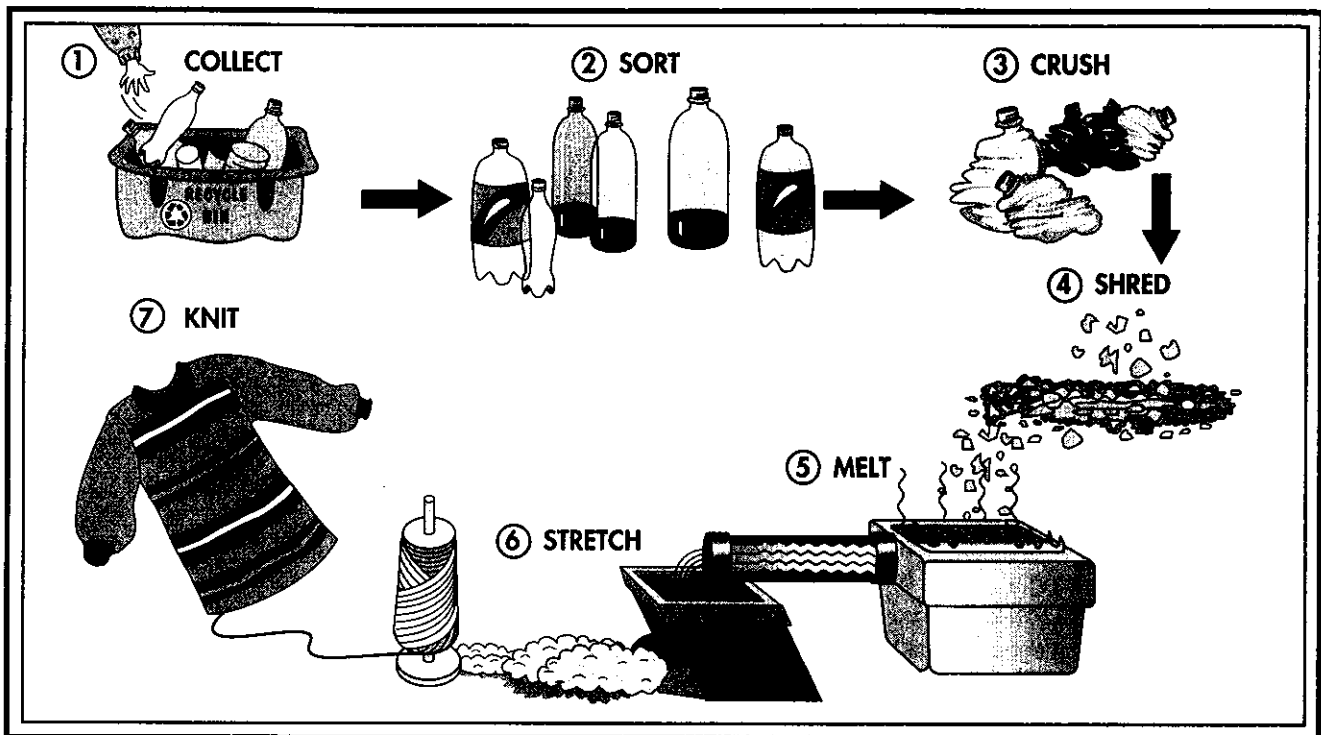


5. Once it's dry, use the newly made paper to create greeting cards for your friends and family, or use it to write a letter to your member of parliament encouraging more recycling in your community.



# From Plastic Bottles to Clothes...

The chart below shows step-by-step how plastic bottles are recycled into sweaters and other clothes.



Read each sentence below. Write the number **1** on the line next to the sentence that tells what is happening in **step 1** in the picture. Put a **2** on the line next to the sentence that tells what is happening in **step 2**. Continue numbering the sentence strips in order. Then cut out the sentence strips and paste them in the correct order on another sheet of paper.

- \_\_\_ a. The melted plastic is stretched to form thin yarn.
- \_\_\_ b. At the recycling center, workers sort bottles by color.
- \_\_\_ c. The tiny plastic bits are melted in special vats.
- \_\_\_ d. The yarn is used to knit sweaters and other clothes.
- \_\_\_ e. Machines crush the bottles.
- \_\_\_ f. At home, people collect bottles for recycling.
- \_\_\_ g. Another machine shreds the bottles into tiny bits of plastic.

# Recycling

Did you know that every 3 months, the United States throws away enough aluminum to rebuild our commercial airline fleet? It's true. And that is just the beginning of the story. The average American family produces about 45.4 kg (100 lb) of trash each week. An estimated 14.5 trillion kg (14 billion tons) of trash are dumped into the sea each year. In addition, tons of garbage are taken to landfills. If we continue to produce this much garbage, 500 new dump sites will be needed every year.

People now know that trash is polluting our earth and hurting the things living on it. Municipalities across the nation are asking or requiring people to separate their trash into recyclable and nonrecyclable items. Items such as glass, aluminum, and tin are collected to be used again. And the recycling of plastic items has increased, too! Some plastics, like those used to hold soft drinks, are recycled into new bottles, fiberfill, and rugs. Other plastics are recycled into toys and plastic lumber.

Think about all the disposable items you use in a day. What items could you easily do without? What items do you think are overpackaged?

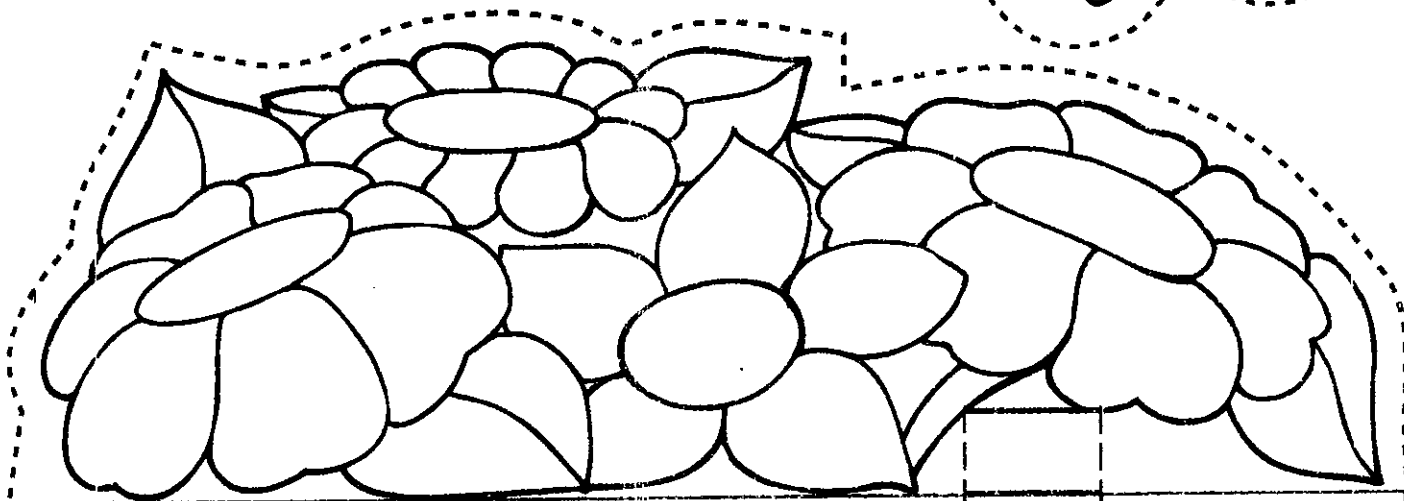
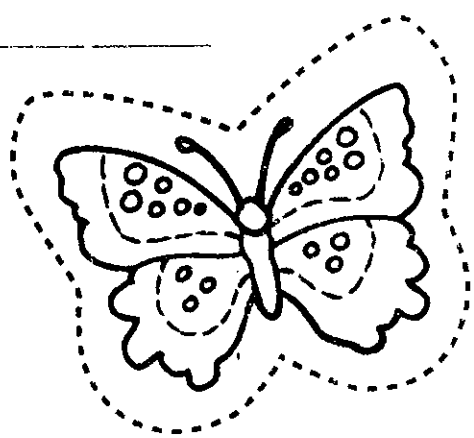
## Activity: Keep Track of Trash

Make a large copy of the chart pictured below. Keep a record for 3 days, of the plastic, aluminum, tin, and paper products that you and your family use.

	Day 1	Day 2	Day 3
Plastic			
Aluminum			
Tin			
Paper			

Name \_\_\_\_\_

Alphabet poetry is as easy as ABC!  
Work with a partner.  
Think about butterflies—how they look,  
what they do, what they eat.  
Then write a butterfly word for each letter  
of the alphabet below.



### B Is For Butterfly

Glue.

Alphabet poetry

A _____	J _____	S _____
B _____	K _____	T _____
C _____	L _____	U _____
D _____	M _____	V _____
E _____	N _____	W _____
F _____	O _____	X _____
G _____	P _____	Y _____
H _____	Q _____	Z _____
I _____	R _____	

Name \_\_\_\_\_ Date \_\_\_\_\_

# Watching Your Waste

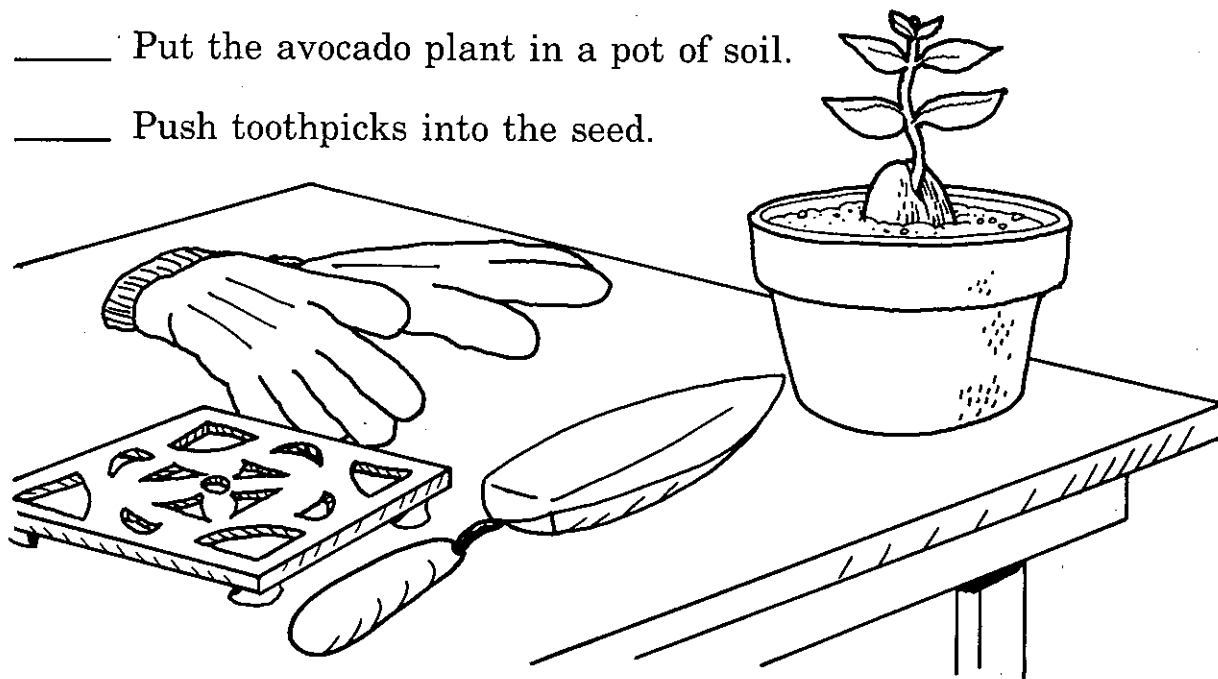
1. At lunch time, you and your partner can observe the various products that students use while eating lunch. One of you can call out the products and the other can be the recorder.
2. Record how many students you see using the products in the table below.
3. Make a mark by those products that you think are convenient but not really necessary.
4. What items that are thrown away could be used again for the same purpose? What items could be used for a different purpose?
5. Circle those products that you think could be replaced with nondisposable items. Write the name of a nondisposable item that could replace each.

Item used	Number of items used	Nondisposable Replacement
Plastic bag		
Plastic wrap		
Aluminum can		
Paper bag		
Styrofoam container		
Reusable lunch box		
Plastic drink container		
Paper napkin		
Paper plate		
Paper cup		
Plastic fork, knife, spoon		
Other		
Other		

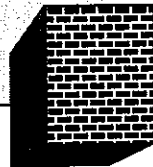
## HOW TO GROW AN AVOCADO

● Read the pairs of statements below. In each pair, make a check (✓) in front of the direction that should be done first. Then number the directions from 1 to 10 in order.

- \_\_\_\_\_ Place the seed in a drinking glass.
- \_\_\_\_\_ Change the water in the glass every day.
- \_\_\_\_\_ Find a warm, dark place for the glass and seed.
- \_\_\_\_\_ Buy an avocado.
- \_\_\_\_\_ Clean the seed.
- \_\_\_\_\_ Let the seed dry.
- \_\_\_\_\_ Fill the glass with water until the seed is half covered.
- \_\_\_\_\_ Place the glass and seed in a sunny spot.
- \_\_\_\_\_ Put the avocado plant in a pot of soil.
- \_\_\_\_\_ Push toothpicks into the seed.



# Conservation At Home



Name \_\_\_\_\_

Taking a s\_\_\_\_\_

Every effort made to save energy conserves and protects the world's natural resources. See how you and your family rate in conserving energy. Answer the questions below. If an answer is **ALWAYS**—score 10 points, **SOMETIMES**—score 5 points, or **NEVER**—score 0. Total the scores and check your rating.

1. Does your family use energy-saving fluorescent light bulbs instead of incandescent light bulbs?

3. Do your parents turn down the heat on winter nights while you sleep?

5. Do you turn off the lights in unoccupied rooms?

7. Does your family limit using the home air conditioner?

9. Is your water heater insulated?

11. Do you avoid using single-serving containers?

2. Do you turn off the water while you brush your teeth?

4. Do you recycle paper, glass, and aluminum cans?

6. Do you have a compost pile in your backyard?

8. Do your parents avoid using herbicides and pesticides around the house?

10. Do you avoid buying foods packaged in plastic?



12. Do you and your family wash your clothes in cold water?

**RATING**  
 100-120 You're super-savers!  
 60-99 You're on the way to becoming super-savers!  
 0-59 Time to join the super-savers!

TOTAL = \_\_\_\_\_

# Who Says You Can't Change The World?

Your efforts can make a difference in our world. Color in the earth by each action you take or have taken. Record the date(s) for each. Return this contract to class by \_\_\_\_\_ date \_\_\_\_\_  
See what a difference you can make!

Action	Date(s)	Action	Date(s)
 Plant flowers.		 Reuse foil or plastics in your lunches.	
 Hold a yard sale to recycle unused items.		 Turn off electrical appliances when not in use.	
 Collect newspapers for recycling.		 Collect aluminum cans for recycling.	
 Plant a tree or shrub.		 Turn off the water while brushing your teeth.	
 Take a short shower instead of a bath.		 Pick up litter in your neighborhood.	
 Turn off the lights in unoccupied rooms.		 Refuse a bag when buying a small item.	
 Collect glass for recycling.		 Avoid using single-serving containers (juice boxes or snack packs).	
 Avoid buying soda or other items in plastic containers.		 Walk or ride your bike instead of riding somewhere in a car.	
 Ask for paper packaging instead of Styrofoam or plastic at fast-food restaurants.		 Write letters to your congresspeople, urging them to pass laws to protect the oceans, forests, and air.	



## WOODS, CANES, AND FIBERS

### Woods

(furniture, floors, doors, paneling, cabinets, carvings, toys, models)

- \_\_\_ balsa
- \_\_\_ mahogany
- \_\_\_ rosewood
- \_\_\_ sandalwood
- \_\_\_ teak\*

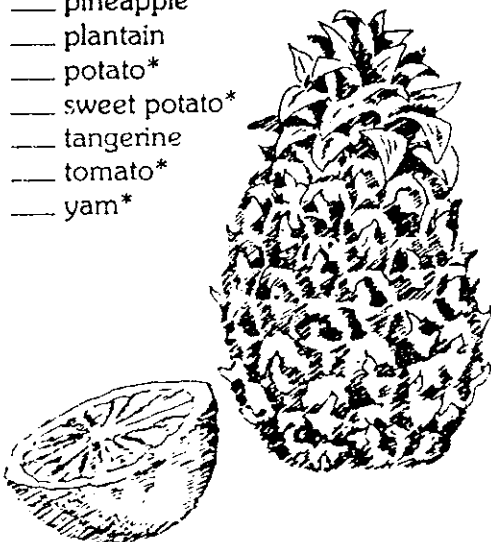
### Canes and Fibers

- \_\_\_ bamboo (cane furniture, crafts)
- \_\_\_ jute\* (rope, twine, burlap)
- \_\_\_ kapok (insulation, stuffing)
- \_\_\_ ramie\* (knit materials)
- \_\_\_ rattan (furniture, wicker, cane chair seats)

## FOOD PRODUCTS

### Fruits and Vegetables

- \_\_\_ avocado
- \_\_\_ banana
- \_\_\_ grapefruit
- \_\_\_ guava
- \_\_\_ heart of palm
- \_\_\_ lemon
- \_\_\_ lime
- \_\_\_ mango
- \_\_\_ orange
- \_\_\_ papaya
- \_\_\_ passion fruit
- \_\_\_ pepper
- \_\_\_ pineapple
- \_\_\_ plantain
- \_\_\_ potato\*
- \_\_\_ sweet potato\*
- \_\_\_ tangerine
- \_\_\_ tomato\*
- \_\_\_ yam\*



### Spices and Flavors

- \_\_\_ allspice
- \_\_\_ black pepper
- \_\_\_ cardamom
- \_\_\_ cayenne (red pepper)
- \_\_\_ chili pepper
- \_\_\_ chocolate or cocoa
- \_\_\_ cinnamon
- \_\_\_ cloves
- \_\_\_ ginger
- \_\_\_ mace
- \_\_\_ nutmeg
- \_\_\_ paprika
- \_\_\_ turmeric
- \_\_\_ vanilla

### Other Food Products

- \_\_\_ Brazil nuts
- \_\_\_ cashew nuts
- \_\_\_ coconut
- \_\_\_ coffee
- \_\_\_ cola
- \_\_\_ corn\*
- \_\_\_ macadamia nuts
- \_\_\_ peanuts\*
- \_\_\_ rice\*
- \_\_\_ sesame seeds\*
- \_\_\_ sugar\*
- \_\_\_ tapioca
- \_\_\_ tea

## HOUSEHOLD PRODUCTS

### Houseplants

- \_\_\_ African violet
- \_\_\_ aluminum plant
- \_\_\_ *Begonia*
- \_\_\_ bird's-nest fern
- \_\_\_ bromeliads
- \_\_\_ Christmas cactus
- \_\_\_ *Croton*
- \_\_\_ *Dracaena*
- \_\_\_ dumb cane (*D. effenbachia*)
- \_\_\_ fiddle-leaf fig
- \_\_\_ kentia palm
- \_\_\_ orchids
- \_\_\_ *Philodendron*
- \_\_\_ prayer plant
- \_\_\_ rubber plant
- \_\_\_ snake plant (*Sansevieria*)
- \_\_\_ spathe fig
- \_\_\_ swiss-cheese plant
- \_\_\_ umbrella tree (*Schefflera*)
- \_\_\_ zebra plant (*Aphelandra*)

### Oils

- \_\_\_ bay (bay rum lotion)
- \_\_\_ camphor (insect repellent, medicine)
- \_\_\_ coconut (snack food, baked goods, lotions, soap)
- \_\_\_ lime (food flavoring, candles, soap, bath oil)
- \_\_\_ palm (snack food, baked goods)
- \_\_\_ patchouli (perfume, soap)
- \_\_\_ rosewood (perfume)
- \_\_\_ sandalwood (scap, candles, perfume)

### Gums and Resins

- \_\_\_ chicle (chewing gum)
- \_\_\_ copal (varnish, printing ink)
- \_\_\_ dammar (varnish, lacquer)
- \_\_\_ rubber (balloons, erasers, foam rubber, balls, rubber bands, rubber cement, gloves, hoses, shoes, tires)

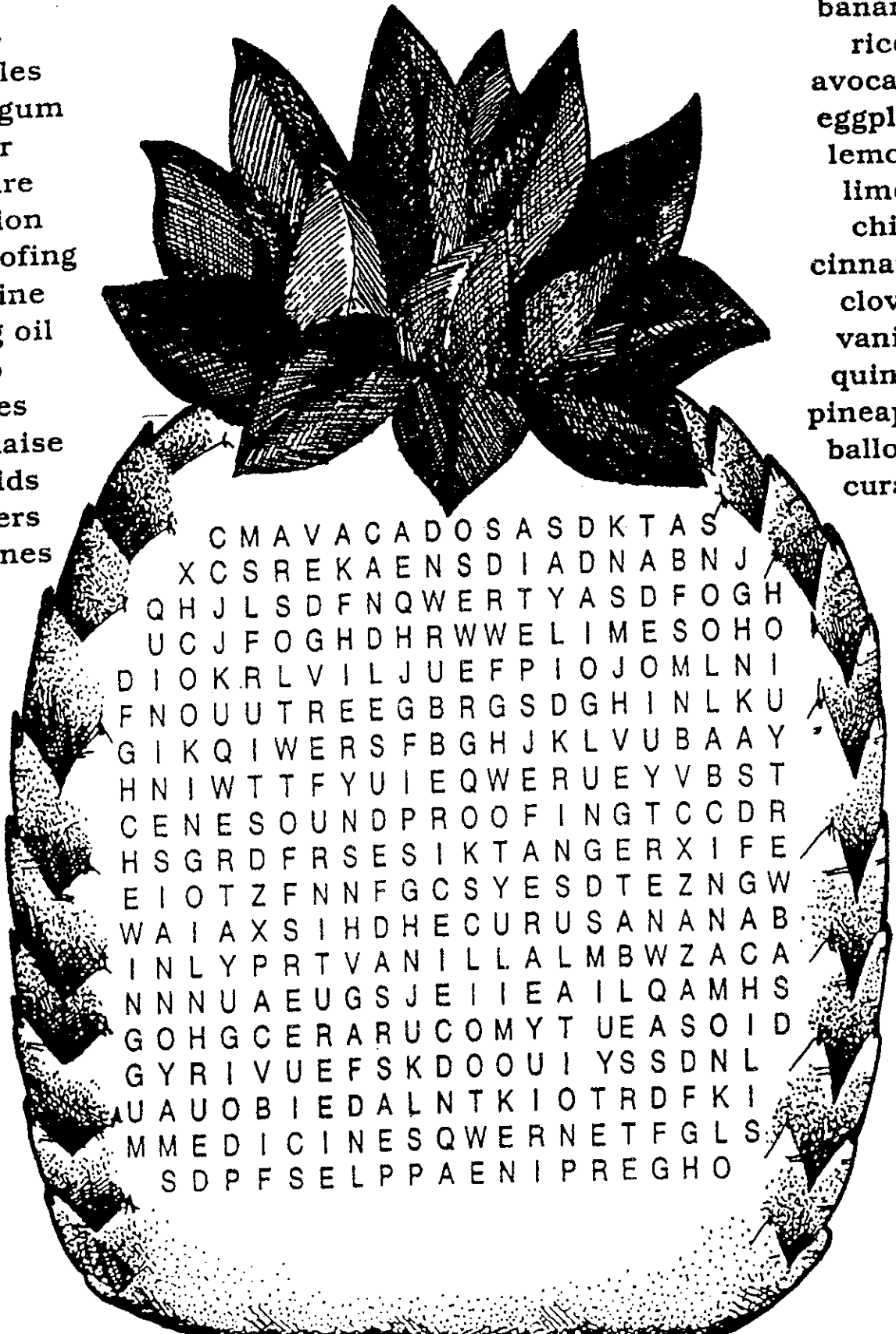
\* products that may have originated in other types of tropical habitats near rain forests



# Products Related to the Rain Forest

fruits  
vegetables  
chewing gum  
rubber  
furniture  
insulation  
soundproofing  
margarine  
cooking oil  
soap  
candles  
mayonnaise  
bandaids  
sneakers  
medicines

bananas  
rice  
avocados  
eggplant  
lemons  
limes  
chili  
cinnamon  
cloves  
vanilla  
quinine  
pineapples  
balloons  
curare



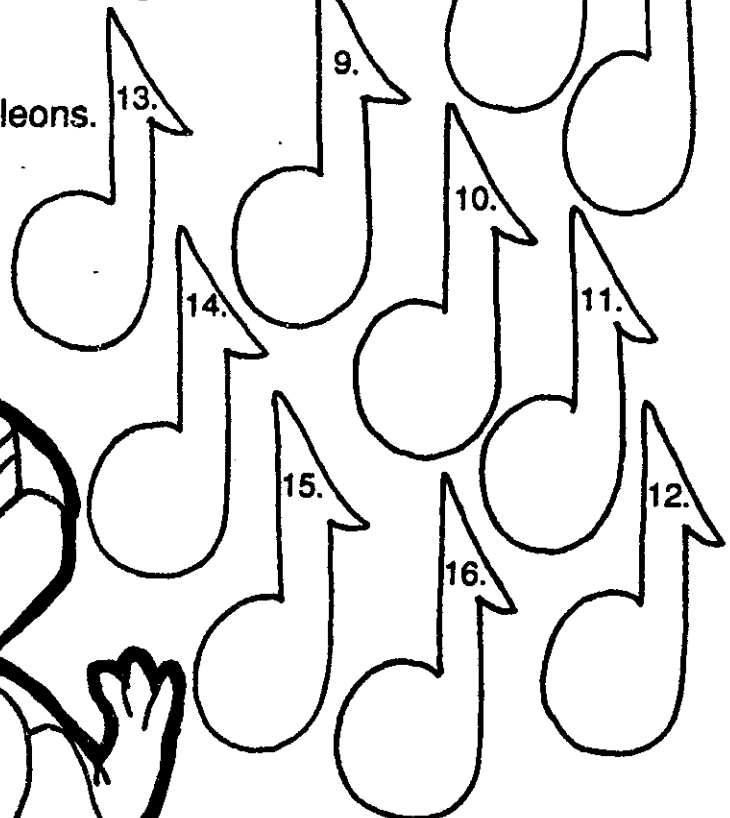
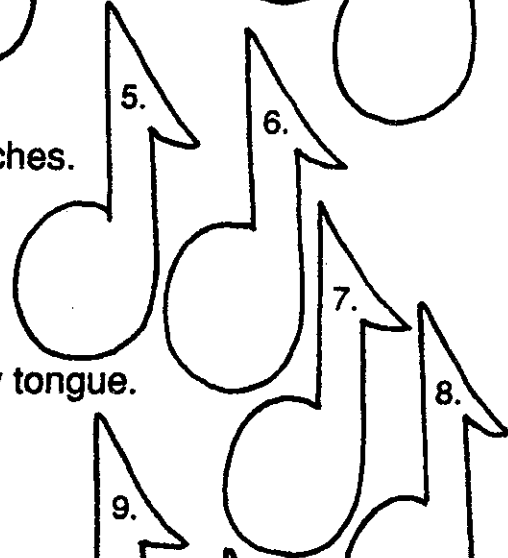
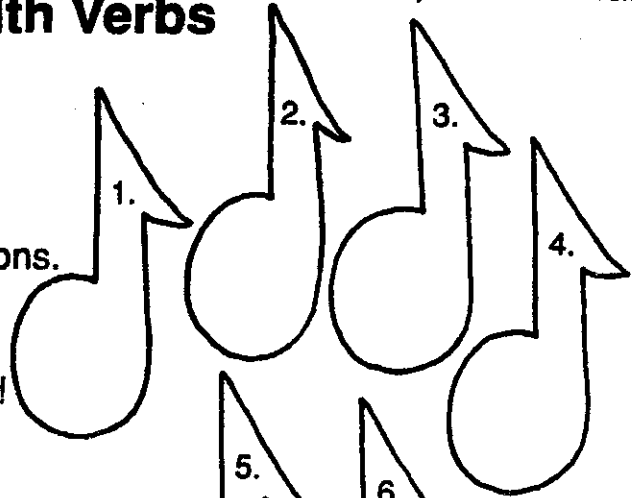
**In Tune With Verbs**

Circle the verb in each sentence.

Write the verbs in the matching notes.

Use the code below to color the notes.

1. José looked for a book about chameleons.
2. The librarian helped José.
3. José finished the book in one day.
4. Now he knows a lot about chameleons!
5. Most chameleons live in Africa.
6. They climb trees.
7. Chameleons wrap their tails around tree branches.
8. A chameleon sees very well.
9. It watches its prey carefully.
10. One green chameleon climbed a big tree.
11. It watched a bug closely.
12. Then the chameleon pushed out its long sticky tongue.
13. The chameleon's tongue captured the bug!
14. Chameleons like bugs!
15. Chameleons change colors, too.
16. José liked the book about chameleons.

**Color Code**

past tense verb = red

present tense verb = yellow

**\*\*\*PLAY WITH TRASH\*\*\***

**PURPOSE:** To recycle cardboard boxes. To create puzzles from trash.

**PROCEDURE:** Cut the panels off the box. Save one small side piece. Carefully, cut the large panel into many small pieces. Save the pieces in an envelope. Glue the side piece on the envelope to identify the puzzle. Try and put your puzzle back together.

**\*\*\*FLOOR MATS\*\*\***

**PURPOSE:** To use disposable items for another purpose.  
(Recycle)

**PROCEDURE:** Place a stack of old newspapers inside a paper grocery bag. Fold the excess sack under the bag and tape well. Cut a picture from an old magazine or calendar and glue or tape onto the top of the bag. Decorate with construction paper or marker. "Laminate" by covering picture with wide packaging tape.

**\*\*\*RAINFOREST SOILS\*\*\***

**PURPOSE:** To show the soil composition in tropical rainforests.

**PROCEDURE:** Fill a paper baking cup three-fourths full with sand. Add a thin layer of clay to the sand. Cover the clay with moss or imitation grass. Place a stick vertically into the clay to make a tree. Add leaves to the stick if needed.

**SAND=** the poor soil underneath the top soil

**CLAY=** the rich (but very shallow) top soil

**GRASS=** the leaf litter on the forest floor

**STICK=** the trees

**\*\*\*CLASSROOM RAINFOREST (SILLY SNAKLES)\*\*\***

**PURPOSE:** To develop an appreciation for the diverse forms of plant and animal life in the rainforest.

**PROCEDURE:** Crumple newspaper into a long, thick strand. Dip strips of newspaper into the Art Paste and wrap around the "snake". Continue doing this until it is covered with strips of newspaper. Allow the "snake" to dry. Paint with paints or markers.

**\*\*\*CLASSROOM RAINFOREST (VINES)\*\*\***

**PURPOSE:** To develop an appreciation for the diverse forms of plant and animal life in the rainforest.

**PROCEDURE:** Cut a strand of twine long enough to hang from the ceiling. Cut paper leaves out of green paper. Attach the leaves to the twine using craft glue or a glue gun.

**\*\*\*CLASSROOM RAINFOREST (BIRD NESTS)\*\*\***

**PURPOSE:** To develop an appreciation for the diverse forms of plant and animal life in the rainforest.

**PROCEDURE:** Blow up a small balloon. Tie a piece of twine or yarn to the top - this will be for hanging the bird nest. Carefully wrap twine all around the balloon leaving one area open for the birds to enter. Brush the Art Paste solution on the balloon and twine until wet. When the Art Paste dries, pop the balloon and hang up your nest.

### **\*\*\*FOLDER GAME\*\*\***

**PURPOSE:** To develop a game activity by which students learn to identify the plants and animals that live in the canopy, top layer, understory and the forest floor.

**PROCEDURE:** Color worksheets. Label each playing square with either canopy, top layer, understory or forest floor. You may also include such prompts as "move back three spaces" or "return to understory". Cut and color animal cards. Mount the game board onto a manila folder. Laminate all the game pieces.

Students play the game by drawing an animal card. They must move their markers to the place on the game board where that animal would be found.

### **\*\*\*CLASSROOM RAINFOREST (BROMELIADS)\*\*\***

**PURPOSE:** To develop an appreciation for the diverse forms of plant and animal life in the rainforest.

**PROCEDURE:** Trace the bromeliad patterns onto green paper four or five times. Cut out the traced patterns. Tape the green bromeliad leaves onto a toilet paper roll beginning at the top of the roll. Tape them on. Curl the leaves.

**\*\*\*CLASSROOM RAINFOREST (MURAL)\*\*\***

**PURPOSE:** To develop an appreciation for the diverse forms of plant and animal life in the rainforest.

**PROCEDURE:** Hang long pieces of white butcher paper on a wall. Use markers, crayons, colored pencils and imagination to create a mural of the rainforest. Add animal pictures to the mural.

**\*\*\*CLASSROOM RAINFOREST (CANOPY)\*\*\***

**PURPOSE:** To develop an appreciation for the diverse forms of plant and animal life in the rainforest.

**PROCEDURE:** Cut a long piece of cheese cloth. Dip the cheese cloth into water that has been colored with food coloring. Wring out all excess water. Hang the colored cheese cloth across the ceiling to represent the canopy in the rainforest.

**\*\*\*JUNGLE PUNCH\*\*\***

**PURPOSE:** To develop an appreciation for tropical forest ingredients.

**PROCEDURE:** Puree a ripe banana in a blender. Add two cups of pineapple-orange juice. Blend. Mix in one cup of lemon-lime soda. Pour over sherbert. Enjoy.

**\*\*\*GET INVOLVED\*\*\***

**PURPOSE:** To take part in activities to help protect tropical rainforests.

**PROCEDURE:** Choose an organization. Address the post card. Request more information. Write your return address. Decorate your post card. Put a stamp on it and mail.

**\*\*\*FINISHED WITH YOUR CUP?\*\*\***

**PURPOSE:** To re-use and recycle paper cups. To make a positive response to the environment.

**PROCEDURE:** Layer cup with gravel, charcoal and soil. Plant a seed.

**\*\*\*MINI-RAINFOREST\*\*\***

**PURPOSE:** To show the balance of water within an ecosystem.

**PROCEDURE:** Layer in a jar; gravel, charcoal and soil. Plant small plants in the soil. Spray with a fine water mist. Close jar with lid.