



## **EMERGENT LAYER**

The tallest trees are the emergents, towering as much as 200 feet above the forest floor with trunks that measure up to 16 feet around. Most of these trees are broad-leaved, hardwood evergreens. Sunlight is plentiful up here. Animals found are eagles, monkeys, bats and butterflies.



## CANOPY LAYER

This is the primary layer of the forest and forms a roof over the two remaining layers. Most canopy trees have smooth, oval leaves that come to a point. It's a maze of leaves and branches. Many animals live in this area since food is abundant.

Those animals include: snakes, toucans and tree frogs.



## UNDERSTORY LAYER

Little sunshine reaches this area so the plants have to grow larger leaves to reach the sunlight. The plants in this area seldom grow to 12 feet. Many animals live here including jaguars, red-eyed tree frogs and leopards.



## FOREST FLOOR

It's very dark down here. Almost no plants grow in this area, as a result. Since hardly any sun reaches the forest floor things begin to decay quickly. A leaf that might take one year to decompose in a regular climate will disappear in 6 weeks. Giant anteaters live in this layer.



## LAYERS OF A RAINFOREST Quiz

Name the layers of the Rainforest on the lines below.



<http://www.srl.caltech.edu/personnel/krubal/rainforest/Edit560s6/www/whlayers.html>



## Earth Observatory-Rainforests

There are two types of rainforests: tropical and temperate. Tropical rainforests are found closer to the equator where it is warm. Most are found between the Tropic of Cancer and the Tropic of Capricorn. The tropical rainforest is a hot, moist biome where it rains all year long. It is known for its dense canopies of vegetation that form three different layers

Temperate rainforests are found near the cooler coastal areas further north or south of the equator.

Read the paragraphs above and answer the following questions.

1. What are two types of rainforests? \_\_\_\_\_  
\_\_\_\_\_

2. Where is the first type found?  
\_\_\_\_\_

3. Where is the second type found?  
\_\_\_\_\_

4. How are they different?  
\_\_\_\_\_

<http://earthobservatory.nasa.gov/Laboratory/Biome/biorainforest.html>



## TROPICAL DEFORESTATION

By Gerald Urquhart, Walter Chomentowski,  
David Skole, and Chris Barber



The clearing of tropical forests across the Earth has been occurring on a large-scale basis for many centuries. This process, known as deforestation, involves the cutting down, burning, and damaging of forests. The loss of tropical rain forest is more profound than merely destruction of beautiful areas. If the current rate of deforestation continues, the world's rain forests will vanish within 100 years-causing unknown effects on global climate and eliminating the majority of plant and animal species on the planet.

### Why Deforestation Happens

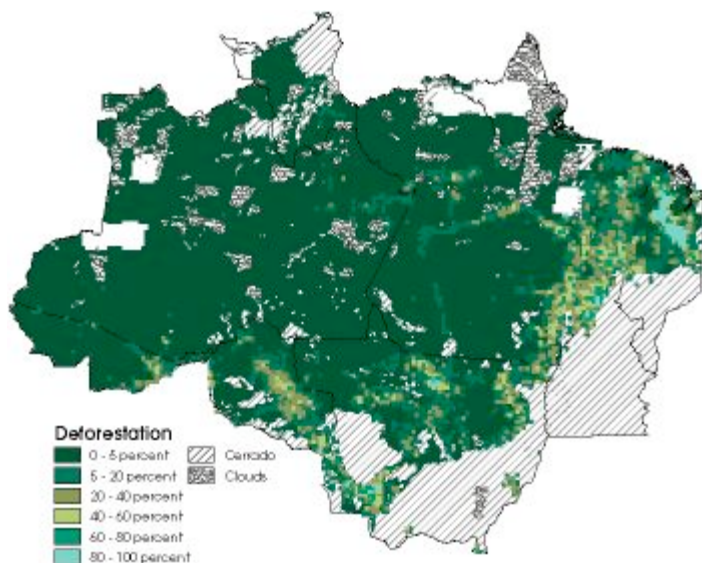
Deforestation occurs in many ways. Most of the clearing is done for agricultural purposes-grazing cattle, planting crops. Poor farmers chop down a small area (typically a few acres) and burn the tree trunks-a process called Slash and Burn agriculture. Intensive, or modern, agriculture occurs on a much larger scale, sometimes deforesting several square miles at a time. Large cattle pastures often replace rain forest to grow beef for the world market.

Commercial logging is another common form of deforestation, cutting trees for sale as timber or pulp. Logging can occur selectively-where only the economically valuable species are cut-or by clear cutting, where all the trees are cut.

Commercial logging uses heavy machinery, such as bulldozers, road graders, and log skidders, to remove cut trees and build roads, which is just as damaging to a forest overall as the chainsaws are to the individual trees.

The causes of deforestation are very complex. A competitive global economy drives the need for money in economically challenged tropical countries. At the national level, governments sell logging concessions to raise money for projects, to pay international debt, or to develop industry. For example, Brazil had an international debt of \$159 billion in 1995, on which it must make payments each year. The logging companies seek to harvest the forest and make profit from the sales of pulp and valuable hardwoods such as mahogany.





**Figure 1.** Deforestation in the Brazilian Amazon in 1986. The darker the area, the more forest that is remaining.

Deforestation by a peasant farmer is often done to raise crops for self-subsistence, and is driven by the basic human need for food. Most tropical countries are very poor by U.S. standards, and farming is a basic way of life for a large part of the population. In Brazil, for example, the average annual earnings per person is U.S. \$5400, compared to \$26,980 per person in the United States (World Bank, 1998). In Bolivia, which holds part of the Amazon rain forest, the average earnings per person is \$800. Farmers in these countries do not have the money to buy necessities and must raise crops for food and to sell.

There are other reasons for deforestation, such as to construct towns or dams that flood large areas. Yet, these latter cases constitute only a very small part of the total deforestation.

<http://earthobservatory.nasa.gov/Library/Deforestation/>

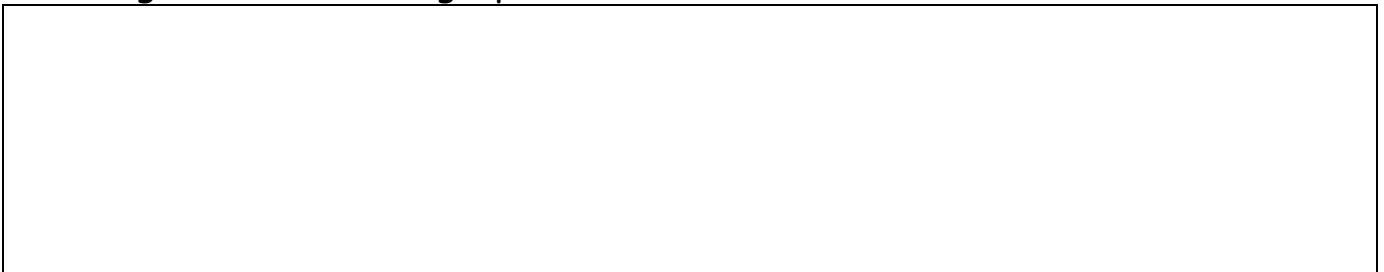


# Seven Important Sentences of “Tropical Deforestation”

**Directions:** Find each of the 7 important sentences in the article “Tropical Deforestation”. Highlight each sentence in the article, and write the page, paragraph and line number for each of the sentences below, then draw a picture to represent that sentence.

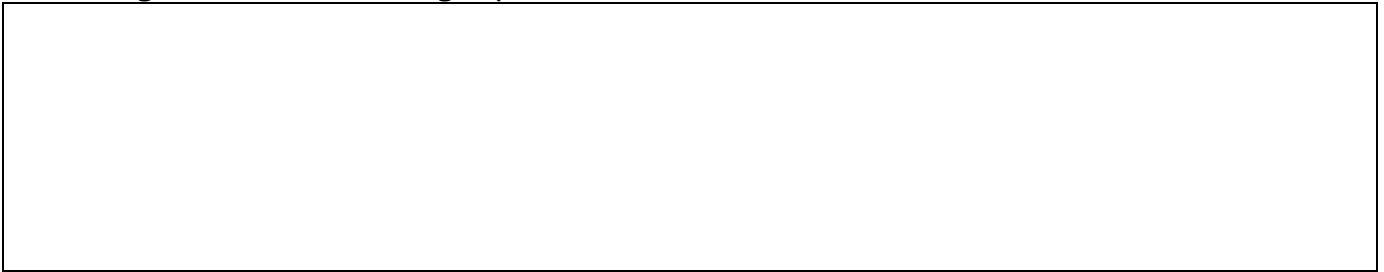
1. This process, known as deforestation, involves the cutting down, burning, and damaging of forests.

Page: \_\_\_\_\_ Paragraph: \_\_\_\_\_ Line: \_\_\_\_\_



2. . Most of the clearing is done for agricultural purposes-grazing cattle, planting crops.

Page: \_\_\_\_\_ Paragraph: \_\_\_\_\_ Line: \_\_\_\_\_



3. Poor farmers chop down a small area (typically a few acres) and burn the tree trunks-a process called Slash and Burn agriculture.

Page: \_\_\_\_\_ Paragraph: \_\_\_\_\_ Line: \_\_\_\_\_



4. Commercial logging is another common form of deforestation, cutting trees for sale as timber or pulp.

Page: \_\_\_\_\_ Paragraph: \_\_\_\_\_ Line: \_\_\_\_\_

5. At the national level, governments sell logging concessions to raise money for projects, to pay international debt, or to develop industry.

Page: \_\_\_\_\_ Paragraph: \_\_\_\_\_ Line: \_\_\_\_\_

6. Most tropical countries are very poor by U.S. standards, and farming is a basic way of life for a large part of the population.

Page: \_\_\_\_\_ Paragraph: \_\_\_\_\_ Line: \_\_\_\_\_

7. There are other reasons for deforestation, such as to construct towns or dams which flood large areas.

Page: \_\_\_\_\_ Paragraph: \_\_\_\_\_ Line: \_\_\_\_\_



## Deforestation True/False Questions

- \_\_\_\_\_ 1. Cutting down, burning, and damaging of forests is called deforestation.
- \_\_\_\_\_ 2. Deforestation happens because people need more area to plant crops and graze cattle.
- \_\_\_\_\_ 3. Slash and Burn happens when trees are cut and burned.
- \_\_\_\_\_ 4.. Cutting down trees for timber and pulp is another reason for deforestation.
- \_\_\_\_\_ 5. Governments sell lumber to pay international debt and to build new industry.
- \_\_\_\_\_ 6. Most tropical countries are very rich countries, where there is a lot of industry and they have a large population.
- \_\_\_\_\_ 7. Another reason for deforestation is to construct towns and build dams.



## MEMO FRAME

Fill in the To, From, RE, and Date by reading Option A of Final Assessment. Next, from your study of the Rainforest you should know the latitude and countries where Rainforests are located.

Place the proper latitude and country in the first two blanks then place the remaining words where they belong in the MEMO.

### Memo

To: \_\_\_\_\_

From: \_\_\_\_\_

RE: \_\_\_\_\_

Date: \_\_\_\_\_

You will be working at the (latitude) \_\_\_\_\_ in

(country) \_\_\_\_\_. We need to find as much

\_\_\_\_\_ as possible to produce \_\_\_\_\_. Your job is

to make sure you peel the bark off of the \_\_\_\_\_ in your area. Then cut

the trees as low to the \_\_\_\_\_ as possible. Cut the tree into

\_\_\_\_\_ lengths and place in \_\_\_\_\_ piles. \_\_\_\_\_ the trees so there is nothing left.

burn  
ground  
large  
medicine  
one foot  
tree bark  
trees



## Answer Key to True/False

All are True except #6

## Answers to Paragraph

You will be working at the (latitude) \_\_\_\_\_ in  
(country) \_\_\_\_\_. We need to find as much  
\_\_\_\_\_ **tree bark** \_\_\_\_\_ as possible to produce \_\_\_\_\_ **medicine** \_\_\_\_\_. Your job is  
to make sure you peel the bark off of the \_\_\_\_\_ **trees** \_\_\_\_\_ in your area. Then  
cut the trees as low to the \_\_\_\_\_ **ground** \_\_\_\_\_ as possible. Cut the tree into  
\_\_\_\_\_ **one-foot** \_\_\_\_\_ lengths and place in \_\_\_\_\_ **large** \_\_\_\_\_ piles. \_\_\_\_\_ **Burn** \_\_\_\_\_  
the trees so there is nothing left.





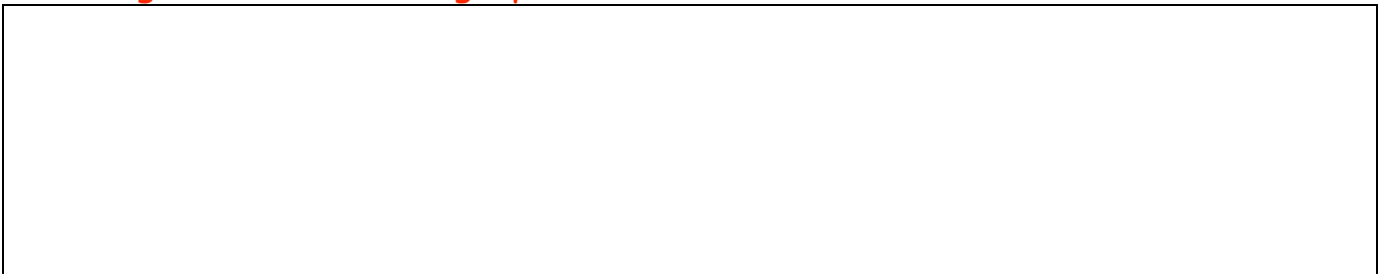
# Seven Important Sentences of “Tropical Deforestation”

## Answer Key

**Directions:** Find each of the 7 important sentences in the article “Tropical Deforestation”. Highlight each sentence in the article, and write the page, paragraph and line number for each of the sentences below, then draw a picture to represent that sentence.

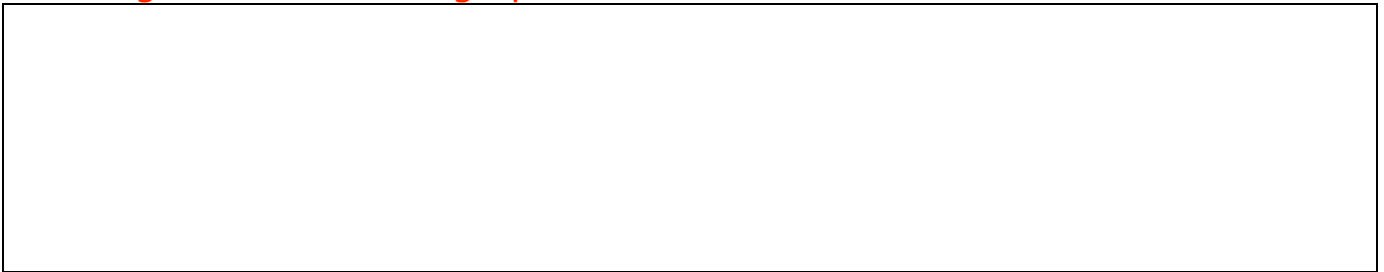
1. This process, known as deforestation, involves the cutting down, burning, and damaging of forests.

Page: 1 Paragraph: 1 Line: 2



2. . Most of the clearing is done for agricultural purposes-grazing cattle, planting crops.

Page: 1 Paragraph: 2 Line: 1



3. Poor farmers chop down a small area (typically a few acres) and burn the tree trunks-a process called Slash and Burn agriculture.

Page: 1 Paragraph: 2 Line: 2



4. Commercial logging is another common form of deforestation, cutting trees for sale as timber or pulp.

Page: 1 Paragraph: 3 Line: 1

5. At the national level, governments sell logging concessions to raise money for projects, to pay international debt, or to develop industry.

Page: 1 Paragraph: 4 Line: 2

6. Most tropical countries are very poor by U.S. standards, and farming is a basic way of life for a large part of the population.

Page: 2 Paragraph: 2 Line: 2

7. There are other reasons for deforestation, such as to construct towns or dams which flood large areas.

Page: 2 Paragraph: 2 Line: 1



## Earth Observatory-Rainforests **Answer Key**

There are two types of rainforests: tropical and temperate. Tropical rainforests are found closer to the equator where it is warm. Most are found between the Tropic of Cancer and the Tropic of Capricorn. The tropical rainforest is a hot, moist biome where it rains all year long. It is known for its dense canopies of vegetation that form three different layers

Temperate rainforests are found near the cooler coastal areas further north or south of the equator.

Read the paragraphs above and answer the following questions.

1. What are two types of rainforests? **tropical and temperate**
2. Where is the first type found? **near the equator**
3. Where is the second type found? **near the cooler coastal areas**
4. How are they different? **They vary by temperature.**

<http://earthobservatory.nasa.gov/Laboratory/Biome/biorainforest.html>

