

## Living in the Tropics Instructions and Answers for Teachers

- Venue(s): World of Plants (Secret Life of Trees and Understorey)
- Estimated duration to complete all questions: 1 hour

### Level / Subject:

- Lower Secondary (Geography, Express & Normal Academic):  
Tropical Rainforest – How can we save the rainforest?

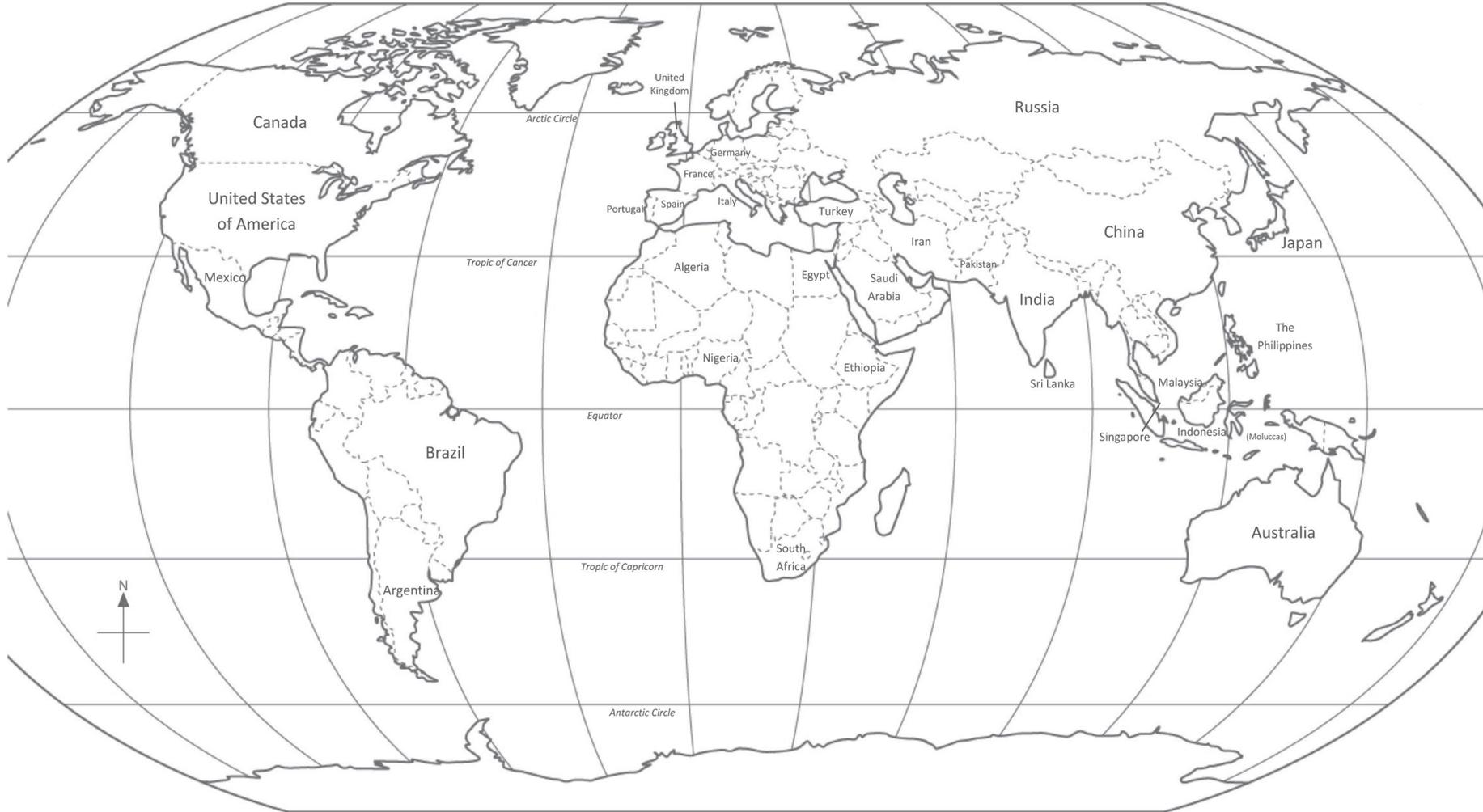
### Learning Objectives:

- Describe the characteristics of tropical rainforests
- Explain the adaptations of plants living in a tropical rainforest
- Recognise the causes and effects of deforestation of rainforests



**ACTIVITY 1: CLIMATE CHARACTERISTICS (15 mins)**

A tropical rainforest is a biome or ecosystem that is mainly found between 10°N and S of the Equator.

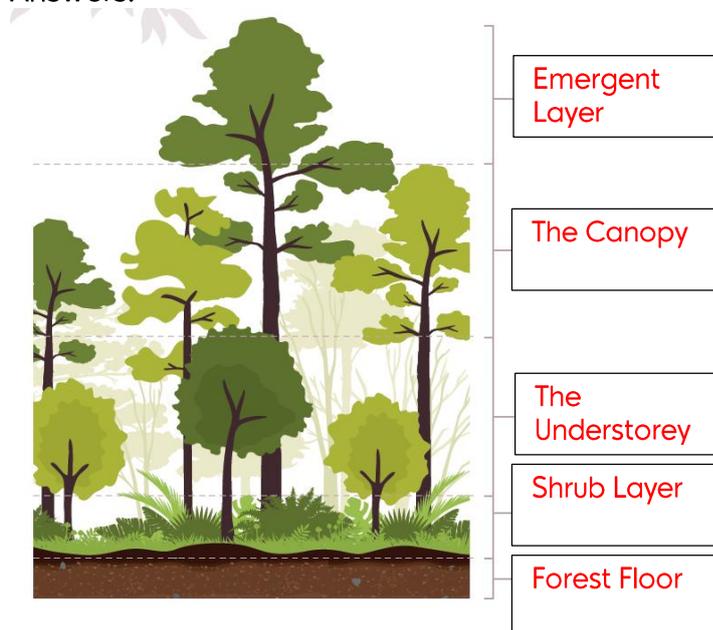


(a) Tropical rainforests are located in countries like Singapore. Observe where we are on the map. Identify other countries / regions where tropical rainforests can be found.  
 Answers: **Central America, South America / Brazil, Central Africa (Dominican Republic of the Congo), Madagascar, Southeast Asia (Malaysia, Indonesia).**

(b) The countries identified in (a) share a similar climate that results from their proximity to the Equator. It is these conditions that allow tropical rainforests to thrive. Describe the climate experienced in Singapore.  
 Answers: **Hot and humid, with a large amount of rainfall all year round (approximately 2000mm per year), and high average temperatures of about 27°C with little fluctuations.**

**ACTIVITY 2: LAYERS OF THE RAINFOREST (15 mins)**

(a) The tropical rainforest can be divided into five distinct layers according to height. Label the five layers in the image here.  
 Answers:



(b) The forest floor is damp and warm, so decomposition takes place very rapidly in this layer. The plants compete to absorb the nutrients released by this process. Any remaining nutrients that are not absorbed are eventually washed away by rain, leaving behind a very shallow layer of infertile soil.

Find the Kapok tree, a type of emergent, at the Secret Life of Trees. Observe the roots of this tree. What type of roots does it have and how do you think these are adapted to the conditions of the soil in the tropical rainforest?

Answers: **The Kapok tree has buttress roots that are thick and spread out widely for extra stability to anchor it firmly to the ground. The roots grow close to the surface to minimise the need to reach deep into the soil for water and nutrients. This helps in absorption before all is washed away by rain.**

(c) Proceed to the Understorey. As you stand under the canopy of trees here, describe the characteristics of this layer of a rainforest.

Answers: **The wide, shallow and umbrella-shaped crowns of the trees in the canopy layer above form a continuous leaf cover, preventing sunlight from penetrating into the lower layers of the rainforest. Trees here receive very little sunlight and are usually shorter and narrower. They often grow in places where gaps in the canopy allow**

sunlight to pass through. Smaller trees and shrubs that are adapted to living in low light conditions can also be found in this layer.

**GROUP ACTIVITY: SAVING THE RAINFORESTS (30 mins)**

The high rainfall and high average temperatures in the tropical climate create optimum conditions for plants and animals to grow. Tropical rainforests are home to the highest terrestrial biodiversity even though it makes up only 6% of the Earth’s land surface. Sadly, we are losing the world’s rainforests at an astonishing rate.

In your groups, discuss the causes and effects of deforestation of tropical rainforests around the world. List down the key points in the table provided.

<b>Causes</b>	<p>Logging for timber;          Clearing of land for agriculture / large scale plantations;          Clearing of land for urbanisation, building of roads and towns;          Mining for and extraction of minerals and other natural resources.</p>
<b>Effects</b>	<p>Loss of habitats;          Loss of biodiversity;          Increased greenhouse gases, contributing to global warming;          Loss of homes for the indigenous people;          Soil erosion, increased flooding;          Depletion of natural resources and other raw materials found in the rainforests.</p>

Accept any other reasonable answers

**Note to Teacher:**

For more on tropical rainforests, check out these Secondary School programmes:

- Exploratory Journey of the World of Plants
- Window to the Tropics

## ANNEX A: WORLD MAP

