



Learning Question:

How can I investigate and explain how a habitat provides what a plant needs to survive?

Success Criteria:

- To understand that plants need habitats to survive.
- To know that some plants adapt to their habitats in order to survive.
- To identify at least three plant adaptations.
- To explain how these adaptations help the plant survive in the rainforest.
- To design a new plant perfectly adapted to overcome a survival problem.

Vocabulary

- Habitats
- Living things
- Plants
- Adapt
- Adaptations
- Survive

How have plants adapted to survive in the rainforest?

Adaptation:

The way in which something has changed to become better suited to its environment.

Plants and animals that live in the rainforest have adapted to the unique conditions they are trying to survive in. The main challenges rainforest species face are:

- exposure to extreme sunlight;
- high temperatures;
- competition for water;
- competition for sunlight;
- predators.

The following slides will introduce you to seven plants that have adapted to the rainforest conditions.

1. Buttress Roots



There are so many trees in the rainforest that shorter trees and plants live in the shade of the taller species. In order to reach the sunlight, some trees grow extremely tall. Owing to competition for space and the thin layer of nutrient rich soil in the rainforest, trees only have relatively shallow roots. Therefore, tall trees can be very unstable. Some have developed **buttress roots**. These are large roots that sit **above the soil** and act like props, widening the base of the tree and making it more secure.

2. Drip Tip Leaves



There is a lot of rain in the rainforest. Many plants have developed drip tip leaves to quickly funnel water off themselves to prevent rotting and fungus growth.

3. Lianas



These are thin, woody vines that plant their roots in the ground and then use trees as support to climb higher to reach the sunlight.

4. Epiphytes



These plants grow on the branches and trunks of larger trees. They use their host for support and to raise them up to higher levels where there is more sunlight. They collect moisture and nutrients from the air and do not damage the host tree, unless, of course, they get too heavy or strangle their host with their roots.

5. Bromeliads



Bromeliads have thick, overlapping leaves that act like a cup to store water. They can also absorb nutrients from the air.

6. Mangroves



Mangroves are trees that have wide spreading roots to stabilise them in water and mud. They have adapted to live in salty water - their roots filter the salt and channel it into leaves that then die and drop off. They live in the water at the edge of the rainforest to allow them access to sunlight.

7. Pitcher Plants



The pitcher plant has developed a unique way to source nutrients. The soil in the rainforest can be nutrient poor, so the pitcher plant uses its brightly coloured leaves and nectar to attract insects. The insects (and sometimes small animals, such as frogs) fall into the bowl of the plant, where they become trapped and dissolve in the poisonous liquid excreted by the plant.

Other Adaptations

Other adaptations besides those we have already seen include:

- A **waxy coating** on leaves that acts like a barrier from extreme sunlight. The wax also reduces water loss (transpiration) through the leaf's pores.
- Sharp thorns on the stem of plants to deter predators.
- Large, flat leaves to gather as much sunlight as possible in shady conditions.

Adaptations

	Adaptation	Diagram of adaptation	How does this help the plant survive?
Buttress roots			
Drip tip leaves			
Lianas			
Epiphytes			
Bromeliads			
Mangroves			
Pitcher plants			

Task

Draw and complete the table on the slide before and then design your own perfect plant that would suit the rainforest habitat.

Hard	Draw a diagram of your plant
Harder	Draw a diagram of your plant and label it.
Hardest	Draw a diagram of your plant label it and and explain how the features will keep it alive in the rainforest.
Herculean	Draw a diagram of your plant. Your plant must be able to survive at least two of these challenges: lack of water, very hot temperatures, shady conditions, predators or bright sunshine. Add labels and explain how the features will keep it alive in the rainforest.