

Chapter Six

More forest biomes



Day One:

Today, you and your child will:

1. Read the text
2. Review the text with your child
3. Complete the student worksheets
4. Collect the materials you will need for days two and three

National Science Education Standards covered this week:

An organism's pattern of behavior is related to the nature of its environment. This includes the kinds and numbers of other organisms present, the availability of food and resources, and the physical characteristics of the environment.

The coniferous forest biome is mostly cool throughout the year with plenty of rainfall and poor, rocky soil. This biome contains many different kinds of organisms.

Tropical rain forest biome is always very hot and wet. However, the soil in this biome is typically poor and very thin. Nevertheless, it contains a large variety of organisms.

Definitions

Coniferous forest biome	a biome that has long winters and is filled with trees known as conifers
Conifers	trees with short, waxy needles instead of leaves which make seeds that are called "cones" (like pinecones)
Evergreens	plants with leaves that stay green throughout the winter
Tropical rain forest biome	a biome that is always warm, has a lot of rainfall and contains a huge amount of different kinds of plants and animals

Sample questions to ask your child after completing the weekly reading.

Why do they call conifers "evergreens"?

Conifers contain short waxy leaves that are not lost during the winter. Therefore, these trees stay green all year long.

What is different between the soils of the coniferous forest and the tropical rain forest?

Yes. The soil in the coniferous forest and the tropical rain forest is very thin; however, there are much more small rocks found inside the soil of the coniferous forest.

What are the reasons for so many different organisms in the tropical rain forest?

The weather in this biome is always warm so animals do not have to hibernate. In addition, there is plenty of water and nutrients to support a large number of organisms.

Answers to worksheet questions:

Page 1:

coniferous forest biome
conifers
evergreens
tropical rain forest biome

Page 2:

3 - coniferous forest biome
2 - conifers
4 - evergreens
1 - tropical rain forest biome

Page 3:

"Many animals that live in the tropical rain forest spend their entire lives in the trees. Some of them never even touch the ground. What do you think it would be like to live in the trees for your entire life? What would you need to be able to do if you could never touch the ground again? Be creative."

Answers will vary

Day Two:

Today, you and your child will:

1. Review Day One using the following text
2. Run the first activity this week

The following text will give you the most important items to review for your activity today.

Heat is typically trapped in dark-colored objects. Light-colored objects tend to reflect sunlight and remain cooler.

Therefore, dark-colored organisms tend to maintain a warmer body temperature. Because of this, the organism may choose to move towards cooler areas during the warmest parts of the day. Light-colored organisms have the ability to withstand the warmest parts of the day as their body reflects much of the sunlight that strikes them.

Sock it to me...

Objective:

In this experiment, the child will test how heat can be trapped in different colored objects.

Materials:

black socks, white socks and socks of different colors
thermometer

Procedure:

Place the thermometer into the white sock.

Record the temperature on the thermometer after it has set indoors for twenty minutes.

Place the sock (with the thermometer inside) in a sunny location for twenty minutes and record the temperature.

Remove the thermometer and let it sit indoors until it reaches room temperature.

Place the thermometer into the black sock for twenty minutes and then record its temperature.

Place the sock in a sunny location for twenty minutes and record the temperature.

You may repeat this experiment with many different colors of socks.

Explanation:

From this experiment, you should notice that the black sock had a much higher temperature change than the white sock. This is because an object that is black absorbs much more light (and heat!) than an object that is white. White objects reflect the sun's rays; while a black object absorbs them.

But what does this have to do with rain forests?

Rain forests are found near the equator where the temperatures are very high all year long. The animals and plants that live in the rain forests are used to these high temperatures. Their colors affect how much heat is absorbed. Body temperature affects the movements of an animal in its habitat.

Sock it to me... Data Table

	Temperature of the sock before placing it in the sunlight	Temperature of the sock after placing it in the sunlight
Black sock: Trial 1		
Black sock: Trial 2		
Black sock: Trial 3		
Black sock: Average		
White sock: Trial 1		
White sock: Trial 2		
White sock: Trial 3		
White sock: Average		

Day Three: Lab Activity

Today, you and your child will:

1. Review Day One using the following text
2. Run the first activity this week

The following text will give you the most important items to review for your activity today.

The use of technology to obtain data is vital to the existence of science.

Through the use of a handful of household items (like a cardboard square, string, a drinking straw, a measuring tape and a small weight) a person can easily identify the height of an object. These items will be utilized to construct a simple device known as a quadrant. This tool has been the cornerstone of higher mathematical equations, including geometry and trigonometry for hundreds of years.

ESP Activity: Towering Tree Tops

Objective:

Students will utilize a quadrant to determine the height of a tree.

Materials:

cardboard square

drinking straw

tape

one-two foot piece of string

spool of thread, action figure, etc (to be used as a weight)

measuring tape

Procedure:

Tape the straw along one of the edges of the cardboard square.

Tape a one to two foot piece of string at one of the corners of the square where the straw has been attached.

Allow the string to hang freely and attach the weight to the end of the string.

Locate the top of an old tree by looking through end of the straw that is farthest away from the string. The string should be allowed to swing freely alongside the cardboard square.

Position yourself so that when looking at the top of the tree through the straw, the string is aligned with the bottom corner of the square.

Measure the distance between yourself and the tree.

For experimentation, repeat this procedure with trees of noticeably different heights.

The actual height of the tree can be determined by following the procedure in the EXPLANATION section of this activity.

Explanation:

The cardboard square/straw instrument is a simplified tool known as a quadrant. By placing oneself in the position from the tree as described in the procedure, a right triangle will be formed by the person holding the quadrant, the base of the tree and the top of the tree. Since you have formed a right triangle, the height of the tree is equal to the distance between the observer and the base of the tree.

The distance between the observer and the height of the tree can be determined using the Pythagorean Theorem ($a^2 + b^2 = c^2$) where "a" is the distance from the observer to the tree and "b" is the height of the tree.

In the tropical rain forest, most trees are about 90 feet tall; however, some trees in this biome can reach over 250 feet tall.

Independent variable: Height of the tree

Dependent variable: Distance from the tree

Hypothesis:

If the height of the tree is (increased/decreased), then the distance from the tree will (increase/decrease).