

4.2 Evergreen Forest

Objective

Students will state characteristics of some evergreen forest animals and will sequence a simple food chain.

Materials

Introduction

- TM-4.2A An Evergreen Forest

Directed Instruction

- TM-4.2A An Evergreen Forest
- Crayons

Preparation

Select **TM-4.2A An Evergreen Forest** for display. (*Introduction, Directed Instruction*)

Obtain **CRAYONS**. (*Directed Instruction*)

Content

Forests cover about one-third of the earth's land surface. Their daytime temperatures vary greatly depending upon the location of each forest, but all forests need enough annual rainfall to support the growth of trees. There are several types of forests. Two types, evergreen forests and tropical rain forests, are discussed in this lesson and Lesson 4.3.

An evergreen forest supports an abundance of animal life. Many animals living in this habitat have small bodies that enable them to move easily through the dense growth. Birds, bats, squirrels, rabbits, raccoons, deer, bears, wolves, frogs, snails, and insects are only a few of the animals found in an evergreen forest. Since some evergreen forests have snowfalls during the winter months, certain types of animals hibernate or become less active then.

W Psalm 104:17–18 reads, “There the birds make their nests; the stork has its home in the pine trees. The high mountains belong to the wild goats; the crags are a refuge for the coney.” The psalmist affirms God’s design for animals and their respective habitats.

When you see forest animals so well suited to their habitat, what do you conclude about the Creator?

Introduction

Display **TM-4.2A An Evergreen Forest**. Explain that a forest is a woodland where many trees grow close together. This closeness causes most of the ground to be shaded. Convey that an **evergreen forest** is a *habitat that has mostly trees with leaves that stay green all year*. Share the following information: An evergreen forest is warm for part of the year, but it may have snow all winter. An evergreen forest is a habitat for the animals that live there. Animals living in an evergreen forest have bodies that help them move easily through the plant growth. Many of them are able to climb trees well. During the winter months, some evergreen forest animals are less active and may even hibernate, or sleep, for long periods. Some animals have brown or gray fur that turns white during the winter months. This color change helps the animals survive when there is snow. Choose volunteers to name the animals on TM-4.2A. (**beaver, owl, squirrel, bears, deer**)

Directed Instruction

- 1 Have students turn to the first student page. Read the text. Explain that an evergreen forest contains mostly coniferous trees. Reiterate that pine trees are conifers. Their leaves (needles) stay green all year; this is why they are called *evergreens*. Point out that some deciduous trees also grow in an evergreen forest. Aspen and maple trees are deciduous trees—those trees with leaves that change color and fall to the ground in the fall and winter. Reiterate that trees provide both food and shelter for animals. Ask students to say the name of the animals on TM-4.2A that are shown in or on a tree. (**owl, squirrel**) Point out that birds, raccoons, and many forest invertebrates (such as butterflies and bees) also take shelter in the trees.
- 2 Write the words *food chain* on the board. Explain that a sequence of how living things use other living things for food is called a *food chain*. Ask students to share the names of some evergreen forest animals that eat plants. (**Possible answers: beavers, squirrels, deer, rabbits**) What forest animals eat other animals for food? (**Possible answers: bears, wolves**)

Draw students' attention to the pictures of the wolf, the squirrel, and the acorns. Have students number the pictures in order, beginning with the first thing that is eaten in the food chain.

3 Direct students' attention to the second student page. Remind students that animals that eat other animals are part of the food chain. Explain that although some animals are food for others, not every animal is eaten by another. Certain characteristics can keep an animal safe. Ask students how a rabbit could stay safe from a wolf. (**Possible answers: run fast, hide, dive into its burrow, grow white fur in the winter**) Read the text on the page. Have students draw a line to match each animal pictured with something that helps it stays safe. Ask which of those four animals is an invertebrate. (**butterfly**) Point out that the picture at the bottom of the page shows the forest in the summer months when there is no snow on the ground. Ask students what color the rabbit would be during the summer months. (**brown, gray**) Challenge students to name the season of the year when the rabbit's fur would begin to turn white. (**autumn, fall**) Distribute the **CRAYONS** and have students color the evergreen forest animals.

4 Display TM-4.2A again. Discuss the characteristics of each animal shown that help the animal stay safe or find food in an evergreen forest. For example, point out the beaver. Inform students that its teeth allow it to eat bark from trees. Then ask how the beaver might stay safe from enemies. (**by diving under the water**) Teach students that beavers slap their tail on the water to warn other beavers of danger. Continue to discuss the characteristics of several other animals shown on TM-4.2A. Ask if the animals shown are vertebrates or invertebrates. (**vertebrates**)

+ Extension

Materials

- *Over in the Forest: Come and Take a Peek*
- *Baby Animals of the Woodland Forest*

Place a copy of *Over in the Forest: Come and Take a Peek* by Marianne Berkes (Dawn Publications, 2012) in your classroom library for students to read about a deciduous forest habitat.

Introduce students to a variety of forest animals by showing them the pictures in *Baby Animals of the Woodland Forest* by Carmen Bredeson (Enslow Publishers, 2012). This book is written for young readers to read independently, so ask volunteers to read aloud to the class.


Evergreen Forest 4.2

Most of the trees in an **evergreen forest** have leaves shaped like needles. These needles stay green throughout the year. The trees grow close together. The forest is warm for part of the year. There is enough rain for the trees to grow tall. An evergreen forest may have snow during winter. Rain and melted snow fill streams and small ponds in the forest.


Conifers like pine trees grow in the evergreen forest. Trees that have flat leaves can also grow in the forest. The trees provide shelter and food for animals.

Vertebrates and invertebrates live in an evergreen forest. Some evergreen forest animals eat trees or seeds from trees. Then other animals eat those animals. This is called a **food chain**.


Number the pictures **1, 2, and 3** to show the order that food is eaten in.



3



2




1

© Science Level 2 55

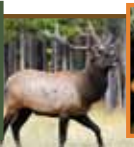
God placed evergreen forest animals in a habitat that is perfect for them. He designed many ways for forest animals to stay safe.

Many animals are fast. They can run from danger. Some animals can climb trees. Birds can fly away. Beavers can swim. Some animals' fur changes color with the seasons. Other animals have antlers, horns, or sharp quills.


1. Look at the animals. Match each animal with the word that shows how it stays safe in an evergreen forest.



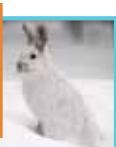
antlers



wings




white fur



quills

2. Color the evergreen forest animals. **Coloring will vary.**



© Science Level 2 56



7.4 Transparent, Translucent, Opaque

Objective

Students will differentiate among materials that are transparent, translucent, and opaque.

Materials

Introduction

- Cardboard piece, clear transparency sheet, tissue paper

Directed Instruction

- Flashlights; assorted transparent, translucent, and opaque items

Preparation

Obtain a **CARDBOARD PIECE**, a **CLEAR TRANSPARENCY SHEET**, and a sheet of **TISSUE PAPER**. (*Introduction*)

Gather 1 **FLASHLIGHT** for each group of students and **ASSORTED TRANSPARENT, TRANSLUCENT, AND OPAQUE ITEMS**, including smooth-edged pieces of plastic and glass, various types of paper and fabric, cardboard, wood, foam, packing materials, food wrap, and food storage items. Prepare the materials by having a variety of items for each group to explore. (*Directed Instruction*)

Content

Materials are transparent, translucent, or opaque with respect to light. Light passes through transparent materials; objects on the other side may be clearly seen. Some light can pass through translucent materials, but objects behind these materials cannot be clearly seen. Light cannot pass through opaque objects.

W For centuries, people have been aware of transparent, translucent, and opaque objects. In Mark 8:22–25, Jesus meets a blind man. When the man was blind, it was as if his eyes were opaque—no light came through. After Jesus touched his eyes, the man said, “I see people; they look like trees walking around.” His vision was blurry, as if he were looking through something translucent. So Jesus touched him again: “Then his eyes were opened, his sight was restored, and he saw everything clearly.” Perhaps the man’s corneas had changed from opaque to translucent to transparent!

Eyesight has limitations. God, of course, has no such limitations. In Psalm 139:12c, David said to God, “Darkness is as light to you.” God does not have the same limitations people have. And someday those limitations will be gone. Paul wrote, “Now we see but a poor reflection as in a mirror; then we shall see face to face. Now I know in part; then I shall know fully, even as I am fully known” (1 Corinthians 13:12).

As you teach this lesson, consider that the transparent, translucent, and opaque qualities of materials primarily relate to vision. Human sight is limited; people cannot see everything, everywhere. How can you guide your students to look to forward to the time when they will live in eternity without such limits?

Introduction

Hold a **CARDBOARD PIECE** in front of your hand, pause, then hold a **CLEAR TRANSPARENCY SHEET** in front of your hand. Ask students what difference they see between these two materials. (**Answers will vary but should include that they can see through one but not the other.**) Draw students’ attention to the transparency sheet and teach that the science word for something that may be seen through is *transparent*. Define **transparent** as *completely allowing light to pass through*. It is easy to see objects on the other side of something transparent.

Display a sheet of **TISSUE PAPER**. Hold it in front of your hand. Ask how this material is different from both the cardboard and the transparency. (**I can see through it but not clearly.**) Explain that materials that allow some light to pass through are called *translucent*. Define **translucent** as *partly allowing light to pass through*. Expound that objects seen through translucent materials appear blurry and cannot be seen clearly. Translucent glass is used in shower doors and in stained-glass windows. Some types of plastic are not transparent; they are translucent.

Hold the cardboard in front of your hand again. Convey to students that the cardboard is referred to as **opaque**, which is defined as *not allowing light to pass through*. Write *transparent*, *translucent*, and *opaque* on the board and help students read the words. Reiterate that transparent materials allow light rays to pass through completely and that opaque materials do not allow any light rays to pass through. Have students suggest some things that are

transparent (**glass, plastic, sandwich bags, water, air**) and some that are opaque (**metal, wood**). Remind students that translucent materials allow some light to pass through them. Have students suggest things that are translucent. (**frosted glass, stained-glass windows, some types of plastic**)

Directed Instruction

- 1 Direct students' attention to the first student page. Select volunteers to read each paragraph. Discuss the questions on the page.
- 2 Have students turn to the next student page. Read the directions and each of the sentences and answer choices. Remind students of the definitions of *transparent*, *translucent*, and *opaque*. Complete the page together.
- 3 Place students in groups and distribute a **FLASHLIGHT** and **ASSORTED TRANSPARENT, TRANSLUCENT, AND OPAQUE ITEMS** to each group for a sorting activity. Direct students to sort each object into one of three groups (transparent, translucent, or opaque) on the basis of its physical characteristic to allow light to pass through it. Circulate among the groups and check their progress. Pick up certain items and ask the group members why they classified each one as they did. Verify that they are able to support their classification with evidence. Review with students that if light from the flashlight can be seen through an object, such as a piece of plastic or a thin piece of cloth, it should be classified as translucent. Transparent items should be very easy to see through, and opaque materials should not allow any light to pass through them at all.

Extension

Materials

- Flashlights, colored transparency sheets (available online), colored tissue paper

Dim the classroom lights. Have students shine a flashlight through colored transparency sheets onto a white wall. Ask students to describe how the light changes color as the color of the transparency changes. Challenge students to predict the resulting color if the flashlight's beam is directed through a red sheet covered by a yellow sheet. Then have students shine the flashlight through various colors of tissue paper and see how the beam changes as it passes through a translucent material.

Transparent, Translucent, Opaque 7.4

Most solid objects reflect light. Some are transparent or translucent. **Transparent** materials let light pass through them. Objects can be seen clearly through transparent materials.



The children in the picture are looking through a window at a zoo. Because the glass is transparent, they can see through it clearly. What animal do they see?



These glass doors are **translucent**. Something that is translucent allows only some light to pass through. Objects cannot be seen clearly through translucent materials. What do you see behind the glass?

The boy is painting a wall. The wall is **opaque**. Something that is opaque does not let any light pass through it. It reflects or absorbs the light that hits it. Can the boy see things that are behind the wall?



© Science Level 2

113

Fill in the circle beside the word that best completes the sentences.



1. You can see the fish clearly through the water. The water is ____.

- transparent translucent opaque



2. You can see some light through the colored glass. You cannot clearly see objects on the other side of it. The window is ____.

- transparent translucent opaque



3. You cannot see what is behind the wall. The wall is ____.

- transparent translucent opaque

114

© Science Level 2