AIMS Multimedia is a leading producer and distributor of educational programs serving schools and libraries for nearly 40 years. AIMS draws upon the most up-to-date knowledge, existing and emerging technologies, and all of the instructional and pedagogical resources available to develop and distribute educational programs in film, videocassette, laserdisc, CD-ROM and CD-i formats.

Persons or schools interested in obtaining additional copies of this AIMS Teaching Module, please contact:

AIMS Multimedia

1-800-FOR-AIMS
1-800-367-2467
Congratulations!

You have chosen a learning program that will actively motivate your students AND provide you with easily accessible and easily manageable instructional guidelines designed to make your teaching role efficient and rewarding.

The AIMS Teaching Module provides you with a video program keyed to your classroom curriculum, instructions and guidelines for use, plus a comprehensive teaching program containing a wide range of activities and ideas for interaction between all content areas. Our authors, educators, and consultants have written and reviewed the AIMS Teaching Modules to align with the Educate America Act: Goals 2000.

This ATM, with its clear definition of manageability, both in the classroom and beyond, allows you to tailor specific activities to meet all of your classroom needs.
RATIONALE

In today's classrooms, educational pedagogy is often founded on Benjamin S. Bloom's “Six Levels of Cognitive Complexity.” The practical application of Bloom's Taxonomy is to evaluate students' thinking skills on these levels, from the simple to the complex: Knowledge (rote memory skills), Comprehension (the ability to relate or retell), Application (the ability to apply knowledge outside its origin), Analysis (relating and differentiating parts of a whole), Synthesis (relating parts to a whole), and Evaluation (making a judgment or formulating an opinion).

The AIMS Teaching Module is designed to facilitate these intellectual capabilities, AND to integrate classroom experiences and assimilation of learning with the students' life experiences, realities, and expectations. AIMS' learner verification studies prove that our AIMS Teaching Modules help students to absorb, retain, and to demonstrate ability to use new knowledge in their world. Our educational materials are written and designed for today's classroom, which incorporates a wide range of intellectual, cultural, physical, and emotional diversities.
ORGANIZATION AND MANAGEMENT

To facilitate ease in classroom manageability, the AIMS Teaching Module is organized in four sections. You are reading Section 1, Introduction to the Aims Teaching Module (ATM).

SECTION 2, INTRODUCING THIS ATM will give you the specific information you need to integrate the program into your classroom curriculum.

SECTION 3, PREPARATION FOR VIEWING provides suggestions and strategies for motivation, language preparedness, readiness, and focus prior to viewing the program with your students.

SECTION 4, AFTER VIEWING THE PROGRAM provides suggestions for additional activities plus an assortment of consumable assessment and extended activities, designed to broaden comprehension of the topic and to make connections to other curriculum content areas.
FEATURES

INTRODUCING EACH ATM

SECTION 2

Your AIMS Teaching Module is designed to accompany a video program written and produced by some of the world’s most credible and creative writers and producers of educational programming. To facilitate diversity and flexibility in your classroom, your AIMS Teaching Module features these components:

Themes

The Major Theme tells how this AIMS Teaching Module is keyed into the curriculum. Related Themes offer suggestions for interaction with other curriculum content areas, enabling teachers to use the teaching module to incorporate the topic into a variety of learning areas.

Overview

The Overview provides a synopsis of content covered in the video program. Its purpose is to give you a summary of the subject matter and to enhance your introductory preparation.

Objectives

The ATM learning objectives provide guidelines for teachers to assess what learners can be expected to gain from each program. After completion of the AIMS Teaching Module, your students will be able to demonstrate dynamic and applied comprehension of the topic.
**PREPARATION FOR VIEWING**

**SECTION 3**

In preparation for viewing the video program, the AIMS Teaching Module offers activity and/or discussion ideas that you may use in any order or combination.

**Introduction To The Program**

Introduction to the Program is designed to enable students to recall or relate prior knowledge about the topic and to prepare them for what they are about to learn.

**Introduction To Vocabulary**

Introduction to Vocabulary is a review of language used in the program: words, phrases, usage. This vocabulary introduction is designed to ensure that all learners, including limited English proficiency learners, will have full understanding of the language usage in the content of the program.

**Discussion Ideas**

Discussion Ideas are designed to help you assess students' prior knowledge about the topic and to give students a preview of what they will learn. Active discussion stimulates interest in a subject and can motivate even the most reluctant learner. Listening, as well as speaking, is active participation. Encourage your students to participate at the rate they feel comfortable. Model sharing personal experiences when applicable, and model listening to students' ideas and opinions.

**Focus**

Help learners set a purpose for watching the program with Focus, designed to give students a focal point for comprehension continuity.

**Jump Right In**

Jump Right In provides abbreviated instructions for quick management of the program.

**AFTER VIEWING THE PROGRAM**

**SECTION 4**

After your students have viewed the program, you may introduce any or all of these activities to interact with other curriculum content areas, provide reinforcement, assess comprehension skills, or provide hands-on and in-depth extended study of the topic.
SUGGESTED ACTIVITIES

The Suggested Activities offer ideas for activities you can direct in the classroom or have your students complete independently, in pairs, or in small work groups after they have viewed the program. To accommodate your range of classroom needs, the activities are organized into skills categories. Their labels will tell you how to identify each activity and help you correlate it into your classroom curriculum. To help you schedule your classroom lesson time, the AIMS hourglass gives you an estimate of the time each activity should require. Some of the activities fall into these categories:

Meeting Individual Needs

These activities are designed to aid in classroom continuity. Reluctant learners and learners acquiring English will benefit from these activities geared to enhance comprehension of language in order to fully grasp content meaning.

Curriculum Connections

Many of the suggested activities are intended to integrate the content of the ATM program into other content areas of the classroom curriculum. These cross-connections turn the classroom teaching experience into a whole learning experience.

Critical Thinking

Critical Thinking activities are designed to stimulate learners’ own opinions and ideas. These activities require students to use the thinking process to discern fact from opinion, consider their own problems and formulate possible solutions, draw conclusions, discuss cause and effect, or combine what they already know with what they have learned to make inferences.

Cultural Diversity

Each AIMS Teaching Module has an activity called Cultural Awareness, Cultural Diversity, or Cultural Exchange that encourages students to share their backgrounds, cultures, heritage, or knowledge of other countries, customs, and language.

Hands On

These are experimental or tactile activities that relate directly to the material taught in the program. Your students will have opportunities to make discoveries and formulate ideas on their own, based on what they learn in this unit.

Writing

Every AIMS Teaching Module will contain an activity designed for students to use the writing process to express their ideas about what they have learned. The writing activity may also help them to make the connection between what they are learning in this unit and how it applies to other content areas.

In The Newsroom

Each AIMS Teaching Module contains a newsroom activity designed to help students make the relationship between what they learn in the classroom and how it applies in their world. The purpose of In The Newsroom is to actively involve each class member in a whole learning experience. Each student will have an opportunity to perform all of the tasks involved in production: writing, researching, producing, directing, and interviewing as they create their own classroom news program.

Extended Activities

These activities provide opportunities for students to work separately or together to conduct further research, explore answers to their own questions, or apply what they have learned to other media or content areas.

Link to the World

These activities offer ideas for connecting learners’ classroom activities to their community and the rest of the world.

Culminating Activity

To wrap up the unit, AIMS Teaching Modules offer suggestions for ways to reinforce what students have learned and how they can use their new knowledge to enhance their world view.
VOCABULARY

Every ATM contains an activity that reinforces the meaning and usage of the vocabulary words introduced in the program content. Students will either read or find the definition of each vocabulary word, then use the word in a written sentence.

CHECKING COMPREHENSION

Checking Comprehension is designed to help you evaluate how well your students understand, retain, and recall the information presented in the AIMS Teaching Module. Depending on your students’ needs, you may direct this activity to the whole group yourself, or you may want to have students work on the activity page independently, in pairs, or in small groups. Students can verify their written answers through discussion or by viewing the video a second time. If you choose, you can reproduce the answers from your Answer Key or write the answer choices in a Word Bank for students to use. Students can use this completed activity as a study guide to prepare for the test.

CONSUMABLE ACTIVITIES

The AIMS Teaching Module provides a selection of consumable activities, designed to specifically reinforce the content of this learning unit. Whenever applicable, they are arranged in order from low to high difficulty level, to allow a seamless facilitation of the learning process. You may choose to have students take these activities home or to work on them in the classroom independently, in pairs or in small groups.

CHECKING VOCABULARY

The Checking Vocabulary activity provides the opportunity for students to assess their knowledge of new vocabulary with this word game or puzzle. The format of this vocabulary activity allows students to use the related words and phrases in a different context.

TEST

The AIMS Teaching Module Test permits you to assess students’ understanding of what they have learned. The test is formatted in one of several standard test formats to give your students a range of experiences in test-taking techniques. Be sure to read, or remind students to read, the directions carefully and to read each answer choice before making a selection. Use the Answer Key to check their answers.
ADDITIONAL
AIMS MULTIMEDIA
PROGRAMS

After you have completed this AIMS Teaching Module you may be interested in more of the programs that AIMS offers. This list includes several related AIMS programs.

ADDITIONAL READING SUGGESTIONS

AIMS offers a carefully researched list of other resources that you and your students may find rewarding.

ANSWER KEY

Reproduces tests and work pages with answers marked.
THEMES

Real World Science: Ecosystems & Biomes takes students on a journey around the globe to tropical rain forests, deserts and grasslands. Live footage and colorful graphics give viewers a firsthand look at the Earth’s major regions and climates. Along the way, students learn about the symbiotic relationships between organisms working together to maintain a living environment.

OVERVIEW

A biome is a major region characterized by dominant organisms and a particular climate. One example is the arctic tundra, a very cold region with few living things. The coniferous forest is another type, with cone-bearing trees and dry soil that is not very fertile. In contrast, the soil in a deciduous forest is very fertile because the leaves fall off in autumn and decay. The desert biome has very little water and cannot support many forms of life. Grasslands, including hot savannas and fertile prairies, are found in many parts of the world. Seventy-five percent of the Earth is covered by aquatic regions, such as oceans and ponds. The final major biome, the rain forest, contains more species of plants and animals than any other biome.

OBJECTIVES

- To learn more about the seven major biomes of the Earth and the characteristics that make each one unique.
- To discuss how plants and animals adapt and coexist in diverse climates.
- To examine various regions of the Earth and their main ecosystems.
- To explore the types of plants and animals that live in various biomes.
- To discuss recycling and its benefits to the environment.
Use this page for your individual notes about planning and/or effective ways to manage this AIMS Teaching Module in your classroom.

Our AIMS Multimedia Educational Department welcomes your observations and comments. Please feel free to address your correspondence to:

AIMS Multimedia
Editorial Department
9710 DeSoto Avenue
Chatsworth, California 91311-4409
INTRODUCTION TO THE PROGRAM

All animals and plants who coexist in the same environment depend on each other in some way. Humans are also dependent on the organisms around them. The more we learn about our environment and the living things in it, the more we protect the well-being of ourselves, our fellow creatures and our planet.

INTRODUCTION TO VOCABULARY

Before starting the program, write the following words on the board. Ask the class to discuss the meaning of each word, and review the terms that are unfamiliar to students.

- **ecology** - the study of living things and their relationship to each other
- **organism** - any living thing, including plants, animals and humans
- **climate** - the average weather conditions of a particular region
- **environment** - the conditions and things—living and non-living—that surround us

DISCUSSION IDEAS

Ecologists study our relationship with the world around us. Changes in the environment affect our lives and the lives of other living creatures. Even air pollution in another nation or events in outer space can affect us. Talk with students about the importance of ecology. What kinds of things might an ecologist study? What sort of changes might take place as a result of our knowledge of ecology?

FOCUS

Ask students to think about how other living things help us. How do we help them? What would happen if the animals in our ecosystem disappeared? What if the plants disappeared? Ask the class to keep these questions in mind as they being the program.


JUMP RIGHT IN

HOW TO USE THE REAL WORLD SCIENCE: ECOSYSTEMS & BIOMES AIMS TEACHING MODULE

Preparation

▶ Read Real World Science: Ecosystems & Biomes Themes, Overview, and Objectives to become familiar with program content and expectations.

▶ Use Preparation for Viewing suggestions to introduce the topic to students.

Viewing REAL WORLD SCIENCE: ECOSYSTEMS & BIOMES

▶ Set up viewing monitor so that all students have a clear view.

▶ Depending on your classroom size and learning range, you may choose to have students view Real World Science: Ecosystems & Biomes together or in small groups.

▶ Some students may benefit from viewing the video more than one time.

After Viewing REAL WORLD SCIENCE: ECOSYSTEMS & BIOMES

▶ Select Suggested Activities that integrate into your classroom curriculum. If applicable, gather materials or resources.

▶ Choose the best way for students to work on each activity. Some activities work best for the whole group. Other activities are designed for students to work independently, in pairs, or in small groups. Whenever possible, encourage students to share their work with the rest of the group.

▶ Duplicate the appropriate number of Vocabulary, Checking Comprehension, and consumable activity pages for your students.

▶ You may choose to have students take consumable activities home, or complete them in the classroom, independently, or in groups.

▶ Administer the Test to assess students’ comprehension of what they have learned, and to provide them with practice in test-taking procedures.

▶ Use the Culminating Activity as a forum for students to display, summarize, extend, or share what they have learned with each other, the rest of the school, or a local community organization.
SUGGESTED ACTIVITIES

Writing

Ask students to pretend that they are explorers setting out on an expedition. Each student should choose one of the seven major biomes as his or her destination. Using their imaginations, they should write a one- to two-page diary explaining the events and discoveries of a typical day. They might want to include descriptions of:

—animals they encounter  
—flowers, plants and trees  
—insects, both on the ground and in the air  
—humans, if any, and their living habits  
—climate, including temperature, rainfall and humidity  
—geography of the area (mountains, rivers, canyons, etc.)

Encourage students to be creative with their language, making the descriptions as vivid and realistic as possible. When they are finished, compile their diary entries in a bound book entitled, “Our Adventures in the Ecosystem.”

Connection to Art

Continue the activity above by allowing students to add visual elements to their diary entries. They may choose to create sketches of the things they “encounter” on their expeditions. Or they may want to create a poster collage using photographs and paragraphs of written information about their chosen biome. They can even focus on a particular animal, plant, or geographic feature of their biome. When the projects are completed, display them on a classroom wall.

Meeting Individual Needs

Ask students to write seven sentences, each one explaining a characteristic of a different major biome. Students may choose to mention something about climate, animal or plant life, location, or geography. Make sure that their sentences display an understanding of the words as they relate to the program.

• arctic tundra  
• desert  
• deciduous forest  
• coniferous forest  
• grasslands  
• aquatic  
• rain forest
Connection to Science

Ecologists study the relationship between living things and their environment. For instance, if a forest is cleared to build a shopping mall, an ecologist may study the impact of the construction on the owls living in the forest. Other things ecologists might study include humans and their food supply, fish and their changing behavior in the wake of global warming, and the migration of insects based on wind patterns.

An ecologist may study one population of organisms, such as a pack of wolves or a colony of ants. They may also focus on a small area or community of plants and animals. Still other environmentalists study entire ecosystems, such as lakes, mountain ranges or tidal basins.

Talk with students about the daily activities of an ecologist. What might an ecologist do on a typical day? What kinds of samples and recordings would be made? What kind of information would be studied? Do any students think they would enjoy a career in ecology?

Critical Thinking

Many ecologists are working to make the Earth a better place. They study humans and their effect on the environment. Can students think of a particular problem that might concern ecologists?

(Ecologists are working to find ways to conserve the Earth’s natural resources. Some study the use of resources such as coal and oil, while working to find ways to use fuel more efficiently and responsibly. Other ecologists are concerned about the world’s quickly growing population. They are working to find new methods of farming that will help to feed the citizens of crowded nations. Air and water pollution, and its effects on living things, is also a big concern for ecologists.)

Hands On

Of the seven major biomes discussed in the program, which do students think they live in? Ask them to do some hands-on observation to find out. As a class, allow them to record information about their exterior environment. They can record precipitation and temperature several times during a one-week period. They can also take samples of small plants, tree leaves and other vegetation. In addition, encourage them to observe and record any forms of animal or insect life. Which organisms are the most common? Finally, what are the geographic features of their environment?

Once the class gathers enough information, discuss the findings and vote on a final conclusion. Some biomes can closely resemble others, so it may help to check a reference atlas to pinpoint your area’s classification.
Extended Activity

The program mentioned the average temperature of each biome in degrees Celsius. Converting this measurement to degrees Fahrenheit can seem confusing. However, with the correct formula, conversion is actually quite easy.

To convert degrees Celsius to degrees Fahrenheit, multiply by 9/5 and add 32.

Ask students to use this information to convert the following temperatures from degrees Celsius to degrees Fahrenheit. Have them round their answers to the nearest whole number.

- **TUNDRA**—typical daytime temperature: -20°C (or -4°F)
- **GRASSLANDS**—typical temperature in a savannah: 20°C (or 68°F)
- **TROPICAL RAIN FOREST**—typical daytime temperature: 30°C (or 86°F)
- **CONIFEROUS FOREST**—typical summer temperature: 12°C (or 54°F)
- **DECIDUOUS FOREST**—average temperature: 10°C (or 50°F)

Link to the World

Energy moves throughout an ecosystem by traveling along a food chain, or a series of stages that carry energy from one living thing to another. For instance, in a forest, trees get energy from the sun and from nutrients in the soil. Animals, such as squirrels, get energy by eating the nuts and leaves of the trees. Larger animals, such as foxes, get energy by eating the squirrels. When the trees and squirrels die, their bodies decompose and add nutrients to the soil. The chain starts all over again.

Ask students to choose a biome discussed in the program. Using what they know about the organisms living in the biome, ask them to chart a typical food chain found there. Encourage them to include plants and creatures of all sizes, keeping in mind the flow of energy from one living thing to the next.

Culminating Activity

Using what they have learned in the unit, ask each student to write a question related to the program. Collect the questions and use them to write a review quiz. After giving the quiz, ask students if they enjoyed designing the test. How would they feel about designing more tests in the future?
**VOCABULARY**

The following terms are from *Real World Science: Ecosystems & Biomes*. Fill in the number of each term next to its closest definition.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ecosystem</td>
<td>system formed by the interaction of a community of organisms with their physical environment</td>
</tr>
<tr>
<td>2. symbiosis</td>
<td>relationship in which living things work together and depend on each other to exist</td>
</tr>
<tr>
<td>3. biome</td>
<td>biome that includes marine and freshwater regions, including oceans, lakes and ponds</td>
</tr>
<tr>
<td>4. tundra</td>
<td>extremely cold biome with a dry climate and harsh conditions</td>
</tr>
<tr>
<td>5. coniferous forest</td>
<td>biome filled with cone-bearing trees, as well as animals like moose, rabbits and owls</td>
</tr>
<tr>
<td>6. deciduous forest</td>
<td>biome that consists of savannas and prairies, with fertile soil that is often using for farming</td>
</tr>
<tr>
<td>7. grasslands</td>
<td>extremely wet biome that contains almost half of the world’s plant and animal life</td>
</tr>
<tr>
<td>8. rain forest</td>
<td>extremely dry biome that supports little life; animals include snakes, frogs and camels</td>
</tr>
<tr>
<td>9. aquatic</td>
<td>fertile biome with trees that shed their leaves in the fall</td>
</tr>
<tr>
<td>10. desert</td>
<td>major region or community characterized by certain plants, animals and climate</td>
</tr>
</tbody>
</table>

© Copyright 2001  AIMS Multimedia  Real World Science: Ecosystems & Biomes
CHECKING COMPREHENSION

Read the following sentences and circle the letter of the word that best fills each blank.

___1___ are formed by the interaction of organisms with their physical environment. Living things and their non-living environment work together to exist in a relationship called ___2___. A ___3___ is a major region characterized by dominant organisms and a particular climate. One example is the ___4___, a very cold region with few living things. The ___5___ forest is another type, with cone-bearing trees and dry soil that is not very fertile. In contrast, the soil in a ___6___ forest is very fertile because the leaves fall off in autumn and decay. The ___7___ has very little water and cannot support many forms of life. ___8___, including hot savannahs and fertile prairies, are home to many farms. Seventy-five percent of the Earth is covered by ___9___ regions, such as oceans and ponds. The ___10___ contains more species of plants and animals than any other biome.

1. A. Climates  
   B. Temperatures  
   C. Ecosystems  
   D. Cells

2. A. symbiosis  
   B. biofeedback  
   C. physiology  
   D. homogeneity

3. A. nucleus  
   B. biome  
   C. colony  
   D. herd

4. A. savannah  
   B. deciduous forest  
   C. grasslands  
   D. tundra

5. A. temperate  
   B. rain  
   C. coniferous  
   D. deciduous

6. A. sub-arctic  
   B. permafrost  
   C. deciduous  
   D. coniferous

7. A. desert  
   B. rain forest  
   C. tundra  
   D. prairie

8. A. Tundras  
   B. Grasslands  
   C. Forests  
   D. Deserts

9. A. aquatic  
   B. desert  
   C. tropical  
   D. temperate

10. A. tundra  
    B. rain forest  
    C. desert  
    D. grasslands
TERM LINK

Write the letter of each term next to the group of words which best describe it.

A. precipitation
B. permafrost
C. coniferous
D. deciduous
E. fertile
F. savannah
G. prairie
H. tropical
I. terrarium
J. terrestrial

____ type of soil that contains decaying leaves, plants and dead animals; good for growing crops
____ area that is very hot and humid with lots of vegetation
____ subsoil that is permanently frozen due to constantly cold temperatures
____ mini-ecosystem contained in a small space, such as a glass jar or fishtank
____ describes something on land
____ type of tree with leaves that fall off in autumn
____ rainfall or snowfall in a particular area over a certain period of time
____ type of tree with cones, as well as leaves that do not fall off
____ type of grassland that is hot and tropical
____ type of grassland with nutrient-rich soil; in the U.S. this region is sometimes called the “Breadbasket of America”
TRUE OR FALSE

Place a T next to statements that are true and an F next to statements that are false.

1. ___ Plants and animals in each biome live independently, without affecting each other.

2. ___ A pond is a good example of an ecosystem.

3. ___ The arctic tundra is found in places that are warm and humid.

4. ___ Although the soil is not very fertile, coniferous forests have many trees.

5. ___ Deciduous forests are home to animals such as deer, squirrels and chipmunks.

6. ___ The desert is too hot and dry for any plants or animals to survive.

7. ___ Tropical grasslands in Africa are home to giraffes and zebras.

8. ___ Grasslands have dry soil and are not good for growing crops.

9. ___ Aquatic biomes are usually warmer and dryer than land biomes.

10. ___ Tropical rain forests contain an amazing variety of plants and animals.
NAME THAT BIOME

Use the terms below to name each biome described.

- arctic tundra
- coniferous forest
- deciduous forest
- desert
- grasslands
- aquatic
- rain forest

1. This biome has trees that lose their leaves in the fall. The decaying leaves make the soil very fertile. Many plants and animals live in this biome.

Which biome is this? ________________________________

2. This biome is very dry, with plants and animals that have adapted to living with very little water. The temperature in this biome can be hot or cool.

Which biome is this? ________________________________

3. This biome is frigid and dry. The soil is frozen almost all the time, making it difficult for plants to grow. In summer, it is just warm enough for a thin layer of soil to thaw.

Which biome is this? ________________________________

4. This biome consists of marine and freshwater areas. It is usually warmer and more humid than other biomes. Plants in this biome include algae, cattails, and lilies.

Which biome is this? ________________________________

5. This biome is filled with cone-bearing trees such as the spruce and hemlock. The climate is quite cold, especially in parts of upper North America and Alaska.

Which biome is this? ________________________________

6. This biome is divided into two groups: savannas and prairies. Savannas have dry, grassy fields, while prairies have nutrient-rich soil and rolling hills.

Which biome is this? ________________________________

6. This biome is home to over half of the plants and animals in the world. Its rich soil and warm, humid climate make it easy for many plants to grow. Animals include lizards and chimps.

Which biome is this? ________________________________
Color the map above using colored pencils and the code below. Some clues are given for each biome. Investigate library books and atlases to learn more about each biome. Try to make your colored map as accurate as possible.

GRAY: Arctic Tundra—located in Greenland, Antarctica, northern Alaska, extreme northern regions in Europe, North America and Asia

DARK GREEN: Coniferous Forest—located below the tundra regions of Europe, Alaska and Canada

LIGHT GREEN: Deciduous Forest—located in eastern North America, eastern Asia and much of Europe

YELLOW: Grasslands—found in the central United States, middle and southern regions of Africa, and middle regions of Asia

PURPLE: Rain forest—includes much of South America, Central America and southeast Asia

BROWN: Desert—includes much of northern Africa, western United States, Saudi Arabia and other middle-east nations, eastern and central Asia, central Australia

BLUE: Aquatic—found all over the world; for this exercise, color only the oceans blue
PLANTS, ANIMALS AND CLIMATE

Use library books and other resources to complete the chart below. Describe plant and animal life by listing a few species that live in the biome. For precipitation, write the average rainfall or snowfall. Under temperature, write the average temperature range.

<table>
<thead>
<tr>
<th>BIOME</th>
<th>PLANT LIFE</th>
<th>ANIMAL LIFE</th>
<th>PRECIPITATION</th>
<th>TEMPERATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESERT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARCTIC TUNDRA</td>
<td></td>
<td></td>
<td>savannah:</td>
<td>prairie:</td>
</tr>
<tr>
<td>GRASSLANDS</td>
<td></td>
<td></td>
<td>tropical:</td>
<td>temperate:</td>
</tr>
<tr>
<td>AQUATIC</td>
<td></td>
<td></td>
<td>tropical:</td>
<td></td>
</tr>
<tr>
<td>RAIN FOREST</td>
<td></td>
<td></td>
<td>tropical:</td>
<td>temperate:</td>
</tr>
<tr>
<td>CONIFEROUS FOREST</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DECIDUOUS FOREST</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TEST

Circle the phrase which best answers each question.

1. An example of an ecosystem is a:
   - pond.
   - puddle of water.
   - drop of water in a pond.
   - all of the above

2. When living things and their non-living environment work together to help maintain each other, they are said to be in:
   - domination.
   - exclusion.
   - symbiosis.
   - synthesis.

3. A biome is a major region or community with its own:
   - dominant animal life.
   - climate.
   - plant life.
   - all of the above

4. The arctic tundra is so cold, a layer of subsoil called ________ is constantly frozen.
   - glacier soil.
   - permafrost.
   - lichen.
   - tundra ice.

5. A deciduous tree is one that:
   - has many cones.
   - loses its leaves in the fall.
   - has needles.
   - all of the above
TEST (CONTINUED)

6. Many people have cleared deciduous forests to build farms and homes because the soil is:
   • wet and swampy.
   • permanently frozen in the winter.
   • very fertile.
   • sandy and dry.

7. The biome that gets little rainfall, with temperatures ranging from cold to very hot, is the:
   • grasslands.
   • desert.
   • coniferous forest.
   • mountains.

8. The prairies of the United States are often used for farming, which is why they are called:
   • “The Grasslands of America.”
   • “America’s Little Savannah.”
   • “The Breadbasket of America.”
   • “The Temperate Fields.”

9. The aquatic biome is divided into two basic types:
   • tropical and temperate.
   • arctic and subarctic.
   • northern and southern.
   • freshwater and marine.

10. Compared to tropical rain forests, temperate rain forests tend to be:
    • a bit cooler.
    • much hotter.
    • very dry.
    • much more compact in size.
ADDITIONAL AIMS MULTIMEDIA PROGRAMS

You and your students might also enjoy these other AIMS Multimedia programs:

#2570 - Real World Science: Electricity
#2571 - Real World Science: Scientific Method
#2572 - Real World Science: Magnetism
#2569 - Real World Science: Matter - Solids, Liquids and Gases
**VOCABULARY**

The following terms are from *Real World Science: Ecosystems & Biomes*. Fill in the number of each term next to its closest definition.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ecosystem</td>
<td>system formed by the interaction of a community of organisms with their physical environment</td>
</tr>
<tr>
<td>2. symbiosis</td>
<td>relationship in which living things work together and depend on each other to exist</td>
</tr>
<tr>
<td>3. biome</td>
<td>major region or community characterized by certain plants, animals and climate</td>
</tr>
<tr>
<td>4. tundra</td>
<td>extremely cold biome with a dry climate and harsh conditions</td>
</tr>
<tr>
<td>5. coniferous forest</td>
<td>biome filled with cone-bearing trees, as well as animals like moose, rabbits and owls</td>
</tr>
<tr>
<td>6. deciduous forest</td>
<td>fertile biome with trees that shed their leaves in the fall</td>
</tr>
<tr>
<td>7. grasslands</td>
<td>biome that consists of savannahs and prairies, with fertile soil that is often using for farming</td>
</tr>
<tr>
<td>8. rain forest</td>
<td>extremely wet biome that contains almost half of the world’s plant and animal life</td>
</tr>
<tr>
<td>9. aquatic</td>
<td>biome that includes marine and freshwater regions, including oceans, lakes and ponds</td>
</tr>
<tr>
<td>10. desert</td>
<td>very dry biome that supports little life; animals include snakes, frogs and camels</td>
</tr>
</tbody>
</table>
CHECKING COMPREHENSION

Read the following sentences and circle the letter of the word that best fills each blank.

___1___ are formed by the interaction of organisms with their physical environment. Living things and their non-living environment work together to exist in a relationship called ___2___ . A ___3___ is a major region characterized by dominant organisms and a particular climate. One example is the ___4___ , a very cold region with few living things. The ___5___ forest is another type, with cone-bearing trees and dry soil that is not very fertile. In contrast, the soil in a ___6___ forest is very fertile because the leaves fall off in autumn and decay. The ___7___ has very little water and cannot support many forms of life. ___8___ , including hot savannahs and fertile prairies, are home to many farms. Seventy-five percent of the Earth is covered by ___9___ regions, such as oceans and ponds. The ___10___ contains more species of plants and animals than any other biome.

1. A. Climates
   B. Temperatures
   C. Ecosystems
   D. Cells

2. A. symbiosis
   B. biofeedback
   C. physiology
   D. homogeny

3. A. nucleus
   B. biome
   C. colony
   D. herd

4. A. savannah
   B. deciduous forest
   C. grasslands
   D. tundra

5. A. temperate
   B. rain
   C. coniferous
   D. deciduous

6. A. sub-arctic
   B. permafrost
   C. deciduous
   D. coniferous

7. A. desert
   B. rain forest
   C. tundra
   D. prairie

8. A. Tundras
   B. Grasslands
   C. Forests
   D. Deserts

9. A. aquatic
   B. desert
   C. tropical
   D. temperate

10. A. tundra
    B. rain forest
    C. desert
    D. grasslands
TERM LINK

Write the letter of each term next to the group of words which best describe it.

A. precipitation
B. permafrost
C. coniferous
D. deciduous
E. fertile
F. savannah
G. prairie
H. tropical
I. terrarium
J. terrestrial

E  type of soil that contains decaying leaves, plants and dead animals; good for growing crops
H  area that is very hot and humid with lots of vegetation
B  subsoil that is permanently frozen due to constantly cold temperatures
I  mini-ecosystem contained in a small space, such as a glass jar or fishtank
J  describes something on land
D  type of tree with leaves that fall off in autumn
A  rainfall or snowfall in a particular area over a certain period of time
C  type of tree with cones, as well as leaves that do not fall off
F  type of grassland that is hot and tropical
G  type of grassland with nutrient-rich soil; in the U.S. this region is sometimes called the “Breadbasket of America”
TRUE OR FALSE

Place a T next to statements that are true and an F next to statements that are false.

1. F   Plants and animals in each biome live independently, without affecting each other.

2. T   A pond is a good example of an ecosystem.

3. F   The arctic tundra is found in places that are warm and humid.

4. T   Although the soil is not very fertile, coniferous forests have many trees.

5. T   Deciduous forests are home to animals such as deer, squirrels and chipmunks.

6. F   The desert is too hot and dry for any plants or animals to survive.

7. T   Tropical grasslands in Africa are home to giraffes and zebras.

8. F   Grasslands have dry soil and are not good for growing crops.

9. F   Aquatic biomes are usually warmer and dryer than land biomes.

10. T  Tropical rain forests contain an amazing variety of plants and animals.
NAME THAT BIOME

Use the terms below to name each biome described.

- arctic tundra
- coniferous forest
- deciduous forest
- desert
- grasslands
- aquatic
- rain forest

1. This biome has trees that lose their leaves in the fall. The decaying leaves make the soil very fertile. Many plants and animals live in this biome.
   Which biome is this? ________ **deciduous forest**

2. This biome is very dry, with plants and animals that have adapted to living with very little water. The temperature in this biome can be hot or cool.
   Which biome is this? ________ **desert**

3. This biome is frigid and dry. The soil is frozen almost all the time, making it difficult for plants to grow. In summer, it is just warm enough for a thin layer of soil to thaw.
   Which biome is this? ________ **arctic tundra**

4. This biome consists of marine and freshwater areas. It is usually warmer and more humid than other biomes. Plants in this biome include algae, cattails, and lilies.
   Which biome is this? ________ **aquatic**

5. This biome is filled with cone-bearing trees such as the spruce and hemlock. The climate is quite cold, especially in parts of upper North America and Alaska.
   Which biome is this? ________ **coniferous forest**

6. This biome is divided into two groups: savannahs and prairies. Savannahs have dry, grassy fields, while prairies have nutrient-rich soil and rolling hills.
   Which biome is this? ________ **grasslands**

6. This biome is home to over half of the plants and animals in the world. Its rich soil and warm, humid climate make it easy for many plants to grow. Animals include lizards and chimps.
   Which biome is this? ________ **rain forest**
Color the map above using colored pencils and the code below. Some clues are given for each biome. Investigate library books and atlases to learn more about each biome. Try to make your colored map as accurate as possible.

GRAY: Arctic Tundra—located in Greenland, Antarctica, northern Alaska, extreme northern regions in Europe, North America and Asia

DARK GREEN: Coniferous Forest—located below the tundra regions of Europe, Alaska and Canada

LIGHT GREEN: Deciduous Forest—located in eastern North America, eastern Asia and much of Europe

YELLOW: Grasslands—found in the central United States, middle and southern regions of Africa, and middle regions of Asia

PURPLE: Rain forest—includes much of South America, Central America and southeast Asia

BROWN: Desert—includes much of northern Africa, western United States, Saudi Arabia and other middle-east nations, eastern and central Asia, central Australia

BLUE: Aquatic—found all over the world; for this exercise, color only the oceans blue
**PLANTS, ANIMALS AND CLIMATE**

Use library books and other resources to complete the chart below. Describe plant and animal life by listing a few species that live in the biome. For precipitation, write the average rainfall or snowfall. Under temperature, write the average temperature range.

<table>
<thead>
<tr>
<th>Biome</th>
<th>PLANT LIFE</th>
<th>ANIMAL LIFE</th>
<th>PRECIPITATION</th>
<th>TEMPERATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESERT</td>
<td>palm tree, sagebrush, cactus, yucca</td>
<td>rattlesnake, camel, fox, coyote</td>
<td>less than 25 cm per year</td>
<td>temperatures vary greatly</td>
</tr>
<tr>
<td>ARCTIC TUNDRA</td>
<td>lichens, small shrubs</td>
<td>wolf, polar bear, walrus, owl, penguin</td>
<td>30-50 cm per year</td>
<td>-51°C to 10°C</td>
</tr>
<tr>
<td>GRASSLANDS</td>
<td>wild rye, prairie cordgrass, switchgrass</td>
<td>giraffe, zebra, lion, prairie dog, kangaroo</td>
<td>varies greatly; 25-75 cm per year</td>
<td>savannah: 20°C prairie: 0°C to 38°C</td>
</tr>
<tr>
<td>AQUATIC</td>
<td>water lily, reed grass moss, algae, seaweed</td>
<td>crocodile, killer whale, sting ray, crab</td>
<td>varies greatly</td>
<td>varies greatly</td>
</tr>
<tr>
<td>RAIN FOREST</td>
<td>fig tree, palm tree, lichens, orchids, vines</td>
<td>tarantula, chimp, jaguar, anteater</td>
<td>tropical: up to 400 cm per year</td>
<td>tropical: 20°C to 30°C temperate: 12°C to 25°C</td>
</tr>
<tr>
<td>CONIFEROUS FOREST</td>
<td>alpine fir, spruce, pine, moss</td>
<td>bighorn sheep, elk, moose, owl</td>
<td>30 to 85 cm per year</td>
<td>-55°C to 20°C</td>
</tr>
<tr>
<td>DECIDUOUS FOREST</td>
<td>elm, dogwood, geranium, azalea, oak</td>
<td>deer, squirrel, chipmunk, rabbits</td>
<td>70 to 150 cm per year</td>
<td>10°C</td>
</tr>
</tbody>
</table>
Circle the phrase which best answers each question.

1. An example of an ecosystem is a:
   - pond.
   - puddle of water.
   - drop of water in a pond.
   - all of the above

2. When living things and their non-living environment work together to help maintain each other, they are said to be in:
   - domination.
   - exclusion.
   - symbiosis.
   - synthesis.

3. A biome is a major region or community with its own:
   - dominant animal life.
   - climate.
   - plant life.
   - all of the above

4. The arctic tundra is so cold, a layer of subsoil called _________ is constantly frozen.
   - glacier soil.
   - permafrost.
   - lichen.
   - tundra ice.

5. A deciduous tree is one that:
   - has many cones.
   - loses its leaves in the fall.
   - has needles.
   - all of the above
TEST (CONTINUED)

6. Many people have cleared deciduous forests to build farms and homes because the soil is:
   • wet and swampy.
   • permanently frozen in the winter.
   • very fertile.
   • sandy and dry.

7. The biome that gets little rainfall, with temperatures ranging from cold to very hot, is the:
   • grasslands.
   • desert.
   • coniferous forest.
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