



### Lesson Plan: Ecosystems and Changes in Ecosystems

**Grade Level:** 4

**Subject:** Science

**Duration:** 45–60 min

**NGSS 4-ESS2-1:** Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

### Learning Objectives

By the end of this lesson, students will be able to:

- **Identify** the living (biotic) and nonliving (abiotic) components that make up an ecosystem.
- **Describe** different types of ecosystems, including deserts, grasslands, taiga, and aquatic environments.



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### Materials Needed: (all links are included in this PDF)

- Study Guide - Ecosystems and Changes (<https://newpathworksheets.com/api/guide/study-guide-science-grade-4-ecosystems-and-changes-in-ecosystems.pdf>)
- Worksheet 0 - Ecosystems Assessment (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-ecosystems-and-changes-in-ecosystems-0.pdf>)



- Worksheet 1 - Ecosystem Terms & Concepts  
(<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-ecosystems-and-changes-in-ecosystems-1.pdf>)
- Vocabulary Set 1 - Ecosystem Definitions  
(<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-ecosystems-and-changes-in-ecosystems-1.pdf>)
- Vocabulary Set 2 - Biomes & Roles  
(<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-ecosystems-and-changes-in-ecosystems-2.pdf>)

### Lesson Procedure

#### Step 1: Introduction (5 minutes)

- Ask students to brainstorm what living and nonliving things they might find in a local park or



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#### Step 4: Independent Practice (15 minutes)

- Have students complete Worksheet 1, applying their knowledge to answer multiple-choice questions about resources, competition, and erosion.  
(<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-ecosystems-and-changes-in-ecosystems-1.pdf>)
- Review the answers to Worksheet 1 as a class, discussing any difficult questions to ensure key concepts are understood.

#### Step 5: Assessment (10 minutes)



- Administer Worksheet 0 as a quiz to evaluate student understanding of ecosystem components, populations, and changes.  
(<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-ecosystems-and-changes-in-ecosystems-0.pdf>)

### 💡 Differentiation Strategies

#### For advanced learners:

- Research a specific example of secondary succession (e.g., after a forest fire) and present the stages of regrowth to the class.

#### For learners needing support:

- Provide a visual glossary for terms like 'Erosion' and 'Taiga' to assist with the vocabulary matching activity.



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- Worksheet 0 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-ecosystems-and-changes-in-ecosystems-0.pdf>)
- Worksheet 1 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-ecosystems-and-changes-in-ecosystems-1.pdf>)
- Worksheet 2 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-ecosystems-and-changes-in-ecosystems-2.pdf>)
- Vocabulary Set 1 (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-ecosystems-and-changes-in-ecosystems-1.pdf>)



- Vocabulary Set 2 (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-ecosystems-and-changes-in-ecosystems-2.pdf>)
- Vocabulary Set 3 (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-ecosystems-and-changes-in-ecosystems-3.pdf>)



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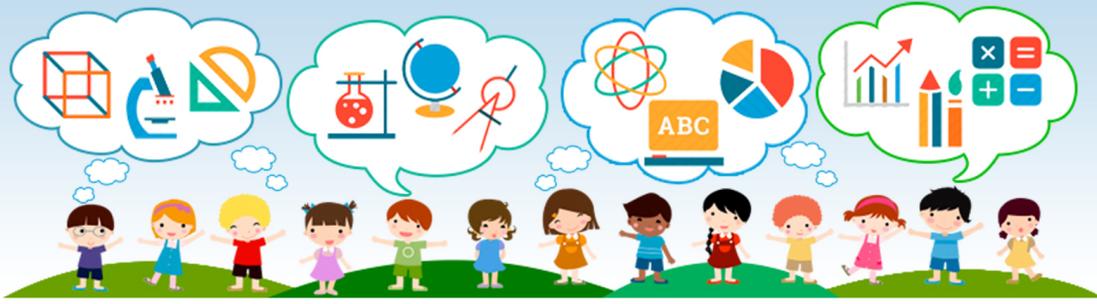
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## ECOSYSTEMS AND CHANGES IN ECOSYSTEMS

### What is an Ecosystem?

An **ecosystem** is the living and nonliving components of an environment and the way they interact with each other and their environment. There are several different ecosystems on the Earth.



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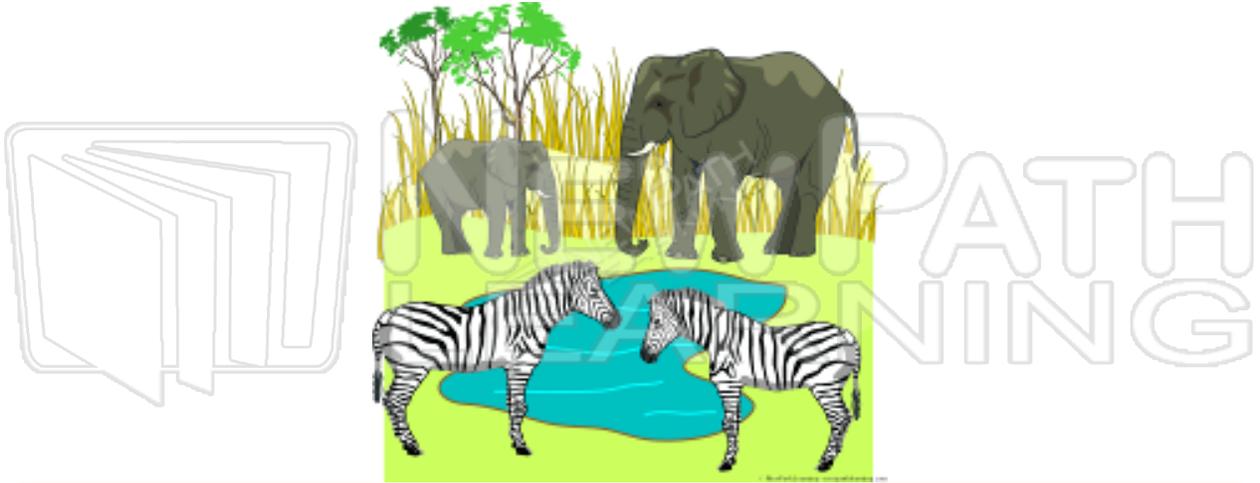
### *Lesson Checkpoint: What is an ecosystem?*

#### **Ecosystem Populations**

There are many individuals, families, and groups that live in an ecosystem:

- A **population** is a group of organisms of the **same** species living in the same area. So a population of birds might live in a rain forest.

- A **community** is different populations of plants and animals living and interacting with one another in a particular area. An example would be the community of living things in and around an oasis in the desert.



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things such as what an organism eats, how it gets its food, and what other animals eat it.

Organisms can only live in an environment where ALL of their **needs are met**. Some organisms can only survive in certain ecosystems.

**Lesson Checkpoint:**  
**What is a community?**

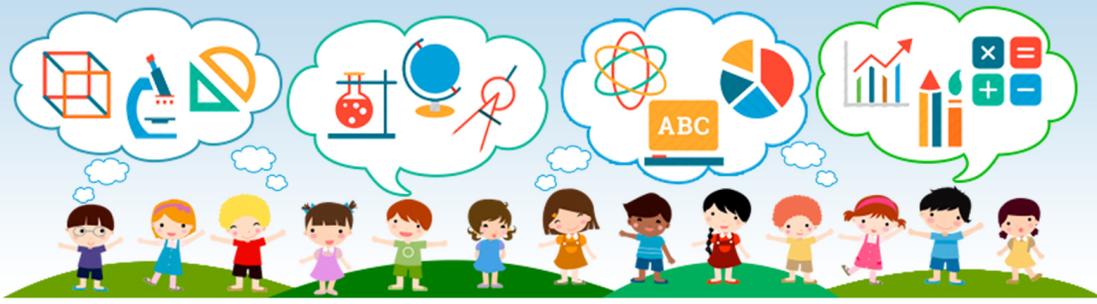
## Effects of Changes in an Ecosystem

Many things can affect an ecosystem, in some good ways and in some harmful ways. These effects can be sudden or they can happen over a long period of time. Strong, damaging wind, heavy rains and flooding, such as those that happen in a hurricane, would be an example of a sudden change.

**Drastic temperature changes** over a period of time in an ecosystem can cause some plants and animals to die, but can also provide just the right climate for other plants and animals to live.

**Soil erosion**, the wearing away of soil and rock, is an example of a way an ecosystem can be affected over a long period of time.

**Fires** can rapidly cause destruction in an ecosystem by destroying habitats. Fires can also be helpful to an ecosystem by making way for new plants to grow.



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hunting for the same food at different times or by hunting together and sharing what they find.



**Lesson Checkpoint:**  
**What happens when an ecosystem becomes overpopulated?**

## Ecosystems of the World

**Taiga** is an ecosystem of a moist forest that has mostly cone-producing trees, such as pine and fir trees.



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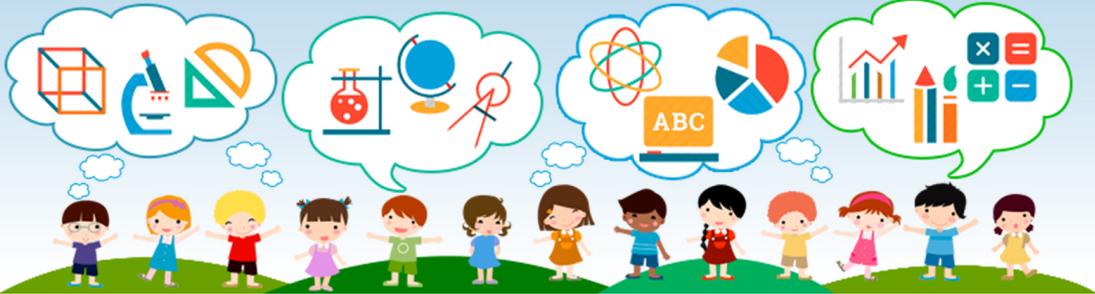


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A **desert** is the driest of all ecosystems and where there are few plants and very small amounts.



**Tropical rainforests** are always wet. Thousands of species of plants and animals live in this type of ecosystem. The temperature almost never changes; it is always warm and humid.



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**Lesson Checkpoint:**  
**What is an example of an ecosystem?**

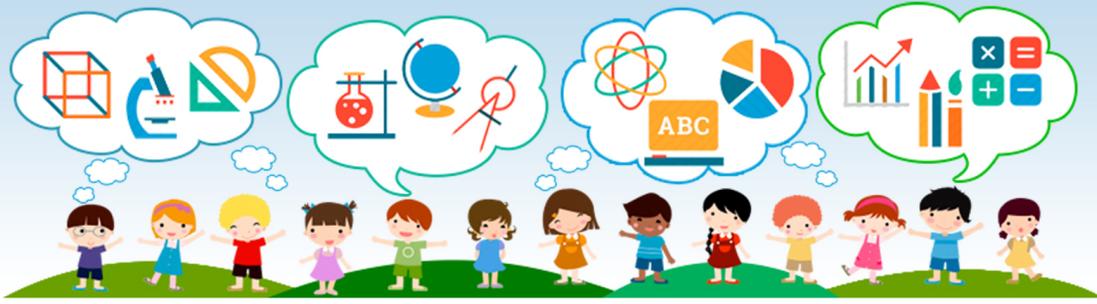
## Water Ecosystems

Many different plants and animals live in water ecosystems. Many organisms have to become adapted to different conditions in order to survive in a water ecosystem. For example, organisms that live on **salt water shorelines** have to become adapted to exposure to waves and air.

Water ecosystems are of many different sizes. Some are salt water and some are freshwater.

### Freshwater Ecosystems:

- A **river** ecosystem includes the river and the land around the river. A river and surrounding land provide wide ranges of habitat for plants, fish, birds, and other wildlife. Rivers are made of freshwater.
- A **lake** is a large body of **freshwater**.



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- The oceans are salt water ecosystems.
- There are different layers of the ocean. Most ocean life lives near the ocean's surface because the water here is warm, sunny, and moves constantly. As you go deeper into the ocean, there is no sunlight, which means no plants can grow there, the water is colder, and few organism live there.

**Lesson Checkpoint:**  
*What type of water makes up a river?*



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 A(n) \_\_\_\_\_ is the **community of organisms** that live in a particular area and their **nonliving surroundings**.

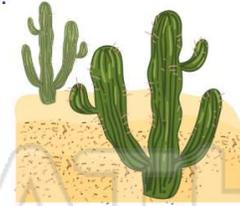
- A ecosystem
- B extinction
- C population
- D fossil



2 **Ecosystems** are always **large** such as a desert or ocean.

True or false?

- A true
- B false



3 There are a **variety of living elements** in the forest including \_\_\_\_\_.

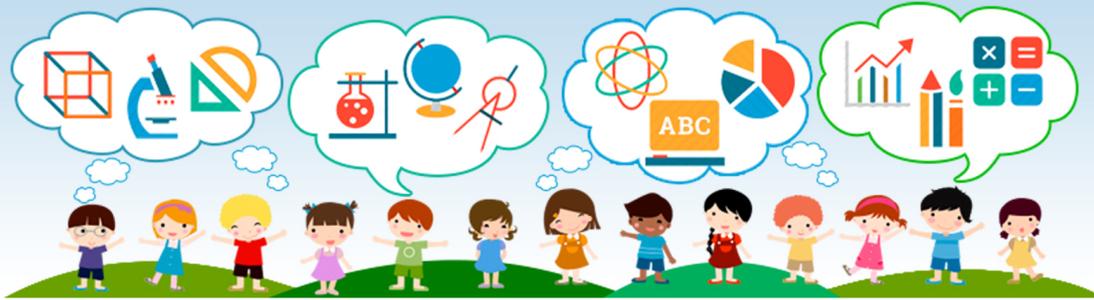
- A soil and sunlight
- B plants, trees, and animals
- C wind and water
- D sunlight and rain

4 There are many **nonliving elements** in the forest including \_\_\_\_\_.

- A animals and trees
- B plants and animals
- C water, soil, and sunlight



5



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- C habitat
- D an area



- D ecosystem



9

A **niche** includes several things such as what an organism **eats**, how it **gets its food**, and \_\_\_\_\_.

- A how it moves
- B what other animals eat it
- C how warm it is
- D how long it sleeps



10

Many things **affect ecosystems**. Those effects can be **sudden** or happen over a **long period of time**. Heavy rains and flooding, like those that in a hurricane, would be an example of a \_\_\_\_\_ change.

- A sudden
- B slow
- C necessary
- D beneficial



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 A(n) \_\_\_\_\_ is the **community of organisms** that live in a particular area and their **nonliving surroundings**.

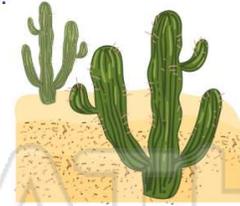
- A ecosystem
- B extinction
- C population
- D fossil



(A)

2 **Ecosystems** are always **large** such as a desert or ocean.  
True or false?

- A true
- B false



(B)

3 There are a **variety of living elements** in the forest including \_\_\_\_\_.

- A soil and sunlight
- B plants, trees, and animals
- C wind and water
- D sunlight and rain

(B)

4 There are many **nonliving elements** in the forest including \_\_\_\_\_.

- A animals and trees
- B plants and animals
- C water, soil, and sunlight



(C)

5



(D)

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(A)

- C habitat
- D an area



- D ecosystem



9

A **niche** includes several things such as what an organism **eats**, how it **gets its food**, and \_\_\_\_\_.

- A how it moves
- B what other animals eat it
- C how warm it is
- D how long it sleeps



(B)

10 Many things **affect ecosystems**. Those effects can be **sudden** or happen over a **long period of time**. Heavy rains and flooding, like those that in a hurricane, would be an example of a \_\_\_\_\_ change.

- A sudden
- B slow
- C necessary
- D beneficial

(A)



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 What effect can **drastic temperature changes** over a period of time have on an ecosystem?



- A can cause plants and animals to die
- B can cause overpopulation
- C can cause animals to see better
- D can make plants and animals bigger

2 **Soil erosion**, the **wearing away of soil and rock**, is an example of a way an ecosystem can be affected over a \_\_\_\_\_ period of time.



- A sudden
- B predictable
- C long
- D short

3 If there are **too many** of a certain kind of animal competing for **limited resources**, an ecosystem becomes \_\_\_\_\_.



- A scarce
- B warm

4 Animals **compete for resources** in an ecosystem. Which of the following are examples of **resources** that animals **compete** for?



- A food, water, and space
- B only food



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9 **Taiga** is an ecosystem of a **moist forest** that has mostly **cone-producing trees**, such as \_\_\_\_\_.



- A maple trees
- B oak trees
- C pine and fir trees
- D apple trees

10 A **grassland** is a region of land **covered** with \_\_\_\_\_.



- A green trees
- B green animals
- C green soil
- D tall grasses



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 What effect can **drastic temperature changes** over a period of time have on an ecosystem?



**A** can cause plants and animals to die  
**B** can cause overpopulation  
**C** can cause animals to see better  
**D** can make plants and animals bigger

(A)

2 **Soil erosion**, the **wearing away of soil and rock**, is an example of a way an ecosystem can be affected over a \_\_\_\_\_ period of time.



**A** sudden  
**B** predictable  
**C** long  
**D** short

(C)

3 If there are **too many** of a certain kind of animal competing for **limited resources**, an ecosystem becomes \_\_\_\_\_.



**A** scarce  
**B** warm

(D)

4 Animals **compete for resources** in an ecosystem. Which of the following are examples of **resources** that animals **compete** for?



**A** food, water, and space  
**B** only food

(A)

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(C)

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(A)

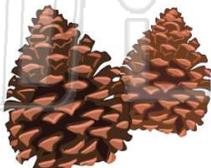
**B** Pollution  
**C** Precipitation  
**D** Population



**B** at least one  
**C** few  
**D** none



9 **Taiga** is an ecosystem of a **moist forest** that has mostly **cone-producing trees**, such as \_\_\_\_\_.



**A** maple trees  
**B** oak trees  
**C** pine and fir trees  
**D** apple trees

(C)

10 A **grassland** is a region of land **covered** with \_\_\_\_\_.



**A** green trees  
**B** green animals  
**C** green soil  
**D** tall grasses

(D)



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**Match each of the following terms to its definition:**

Community

Lake

Erosion

Grassland

Desert

Ecosystem

Niche

Habitat

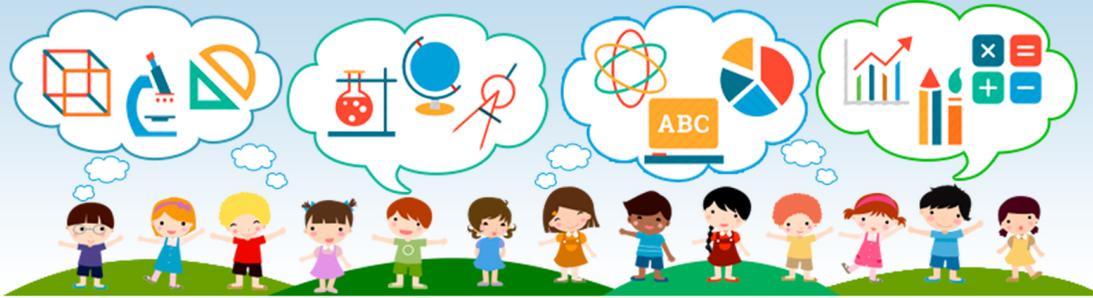
1. \_\_\_\_\_ - the place where an organism lives within an ecosystem; where living things make their homes and live; a place that supports a plant or animal and has everything they need to survive



2. \_\_\_\_\_ - the driest of all ecosystems where there are few plants and very small amounts of rainfall



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6. \_\_\_\_\_  
very li

7. \_\_\_\_\_ - a large body of freshwater that is surrounded by land



8. \_\_\_\_\_ - the specific role an organism has in the environment





Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**Match each of the following terms to its definition:**

Community

Lake

Erosion

Grassland

Desert

Ecosystem

Niche

Habitat

**1. habitat** - the place where an organism lives within an ecosystem; where living things make their homes and live; a place that supports a plant or animal and has everything they need to survive



**2. desert** - the driest of all ecosystems where there are few plants and very small amounts of rainfall



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**4. con**  
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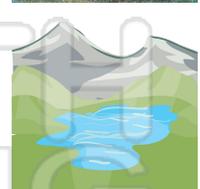
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**7. lake** - a large body of freshwater that is surrounded by land



**8. niche** - the specific role an organism has in the environment





Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**Match each of the following terms to its definition:**

Grassland

Taiga

Niche

Population

Temperate forest

Lake

Polar zone

Pond

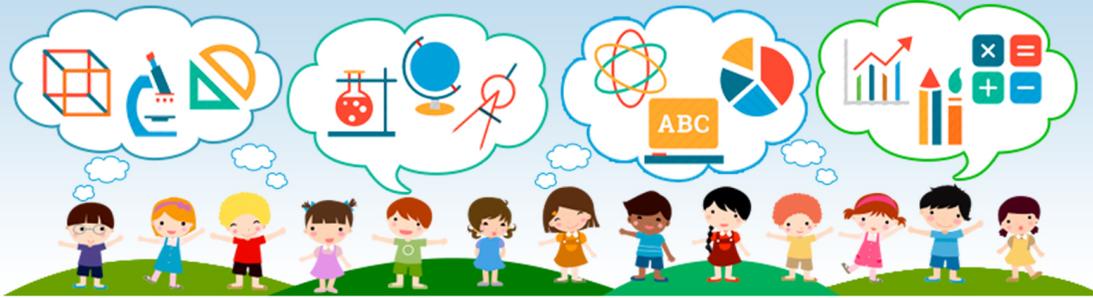
1. \_\_\_\_\_ - an ecosystem with tall grasses but no trees which receives very little rain



2. \_\_\_\_\_ - a large body of freshwater that is surrounded by land



3. \_\_\_\_\_ enviro



4. \_\_\_\_\_ latitud



5. \_\_\_\_\_ roots t  
bottom



6. \_\_\_\_\_ the sa



7. \_\_\_\_\_ - the biome found just south of the tundra marked by coniferous forests, acidic soil and relatively low annual precipitation of about 50 cm/yr.

Precipitation - low to moderate  
Temperature - low to moderate  
Soil - acidic



8. \_\_\_\_\_ - a biome consisting of thick woods and rich soil; the climate drastically changes from summer to winter

Precipitation - moderate to high  
Temperature - low to moderate  
Soil - nutrient rich



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Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**Match each of the following terms to its definition:**

Grassland

Taiga

Niche

Population

Temperate forest

Lake

Polar zone

Pond

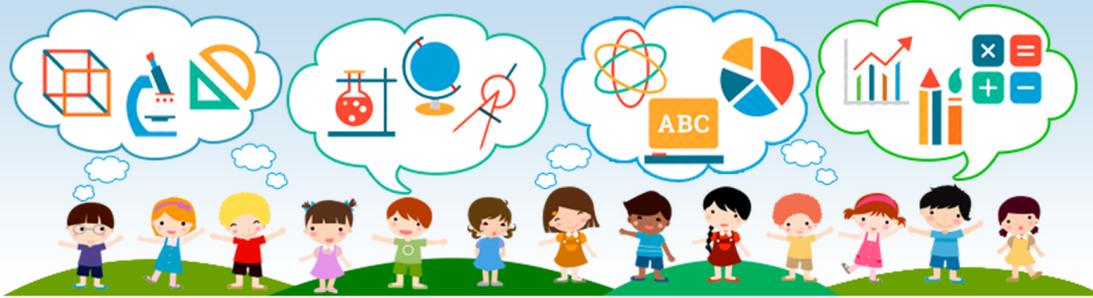
1. **grassland** - an ecosystem with tall grasses but no trees which receives very little rain



2. **lake** - a large body of freshwater that is surrounded by land



3. **niche**



4. **population** and **species**

5. **population** the **water** changes

6. **population** area a

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7. **taiga** - the biome found just south of the tundra marked by coniferous forests, acidic soil and relatively low annual precipitation of about 50 cm/yr.



Precipitation - low to moderate  
Temperature - low to moderate  
Soil - acidic



Precipitation - moderate to high  
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