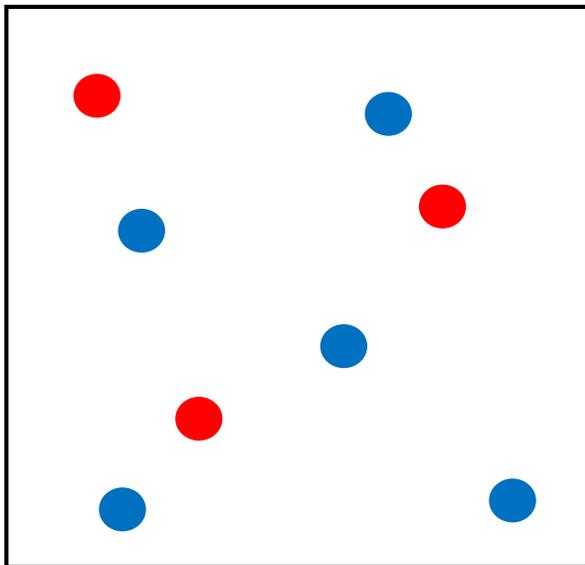


2nd Grade PSI

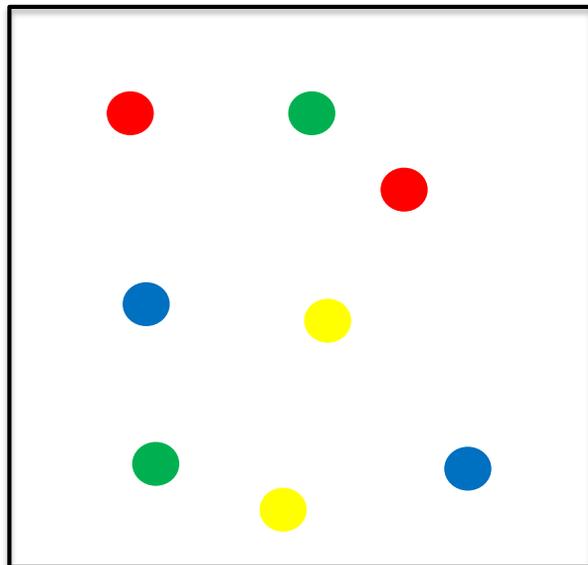
Biodiversity is the variety of living things in an area. Areas with high biodiversity are healthier than areas with low biodiversity.

The pictures below show two different ponds. The different colors represent different types of living things.

Pond #1



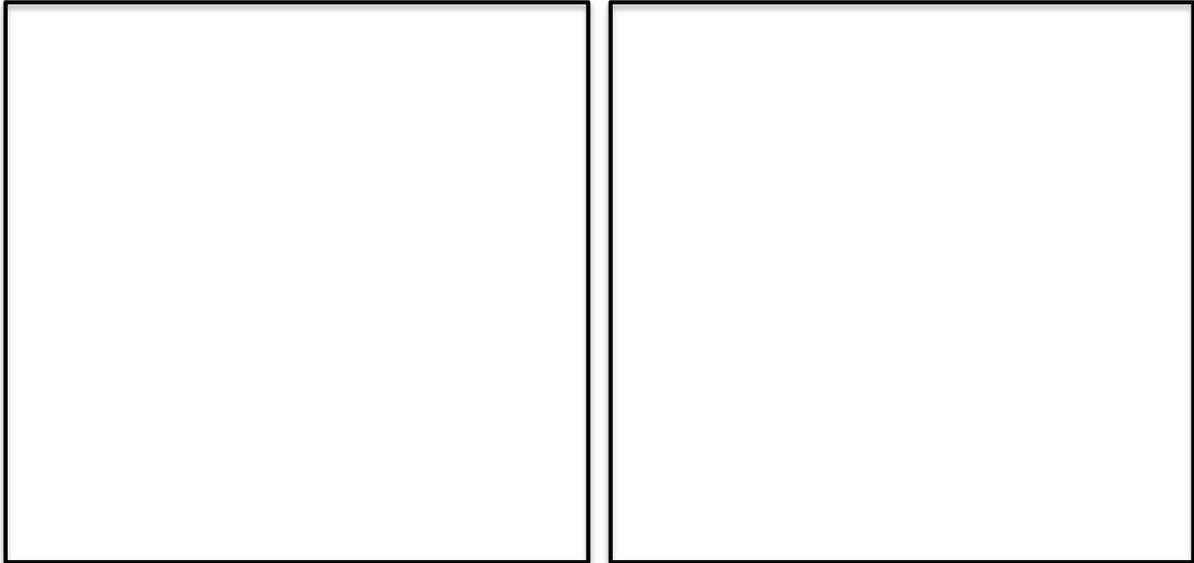
Pond #2



1. Which area has a higher biodiversity?

2. Which area is healthier?

3. Suppose that a disease came to each pond and killed all of the blue fish. Draw the new areas below, without the blue fish. How would this affect each area?



Biodiversity Homework

Name: _____

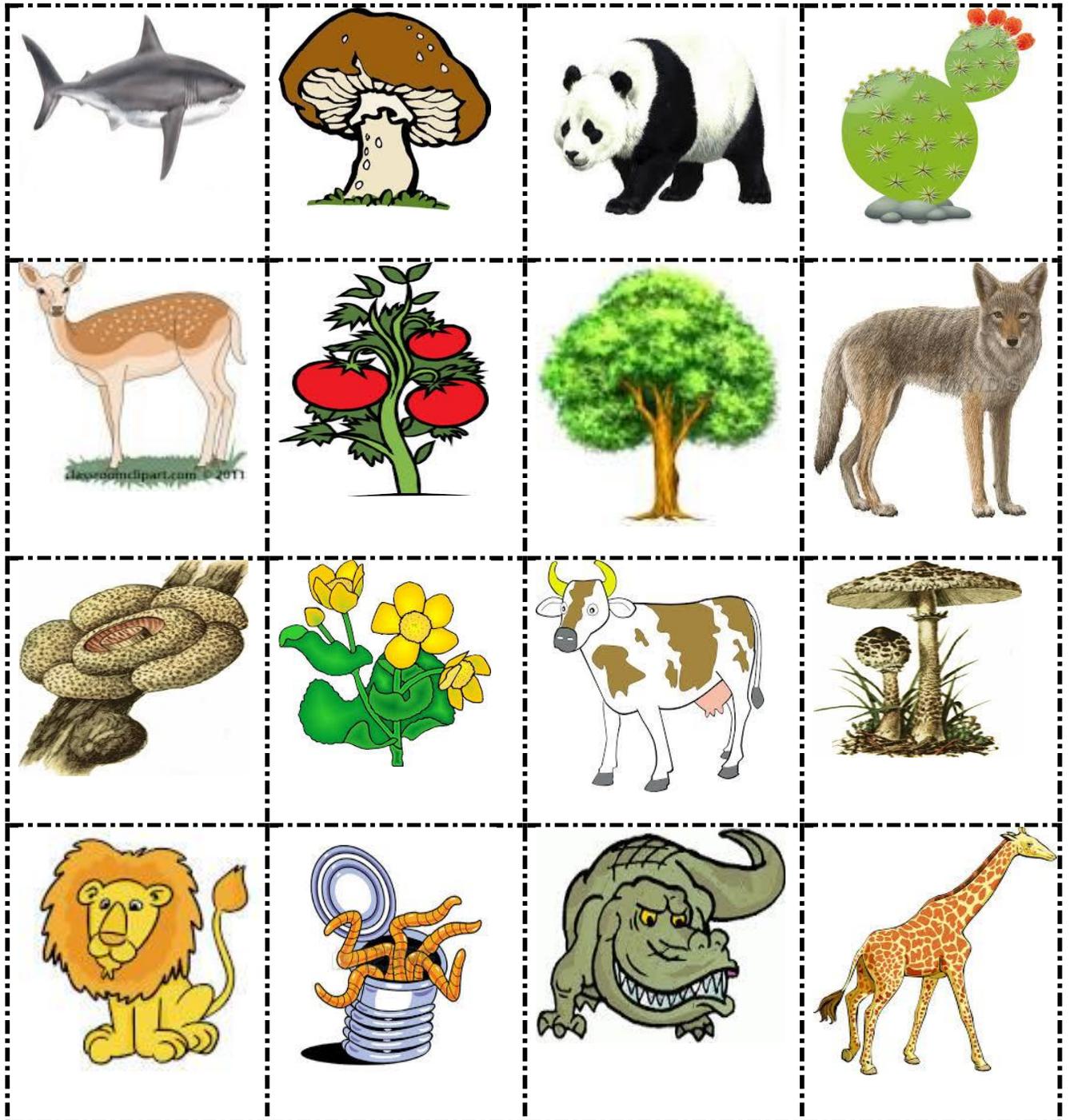
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Every year, scientists discover plants and animals that have never been seen before. Imagine you have discovered a new living thing. Draw a picture of the new life form. Write a paragraph explaining what it looks like, where it lives, what it eats, and how it behaves

A large, empty rectangular box with a black border, intended for a student to draw a picture of a new life form and write a paragraph describing it.

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Sort the images into the correct categories.



Producers	Consumer	Decomposer

1. What is the difference between a producer and a consumer?

2. Why are decomposers important?

2nd Grade PSI

Decide if each of these consumers is an herbivore, carnivore or omnivore.

1. _____ A whale shark is the biggest shark but it only eats tiny plants and animals in the water.

2. _____ A marine iguana is a large lizard that eats underwater plants.

3. _____ Sea snakes eat fish and eels.

4. _____ Whelks are large sea snails that eat algae and other tiny plants.

5. _____ Seahorses eat small shrimp and fish.

6. _____ Spider crabs crawl along the bottom of the ocean and eat any small plants and animals that they can find.

The deciduous forest ecosystem is home to many different types of living things. Many of the trees in deciduous forests, such as the maple, oak and sweet gum, lose their leaves in autumn. Shrubs and bushes also live in the forest.

Many of the trees in deciduous forests are home to different animals. Squirrels and birds both live in trees. Squirrels eat nuts, seeds and small bugs. Many of the small birds that live in trees eat seeds. Large birds, like hawks and eagles, eat fish, birds and other small animals.

There are many animals who live on the ground in deciduous forest. Deer eat plants, fruit, seeds and nuts. Coyotes also live on the ground. They eat small animals but sometimes also hunt deer.

The forest floor is also full of bacteria and fungi, both of which eat dead plants and animals. In one gram of soil, there are 40 million bacteria!

For the living things listed below, categorize each as producer, consumer or decomposer. If the living thing is a consumer, also write whether it is an herbivore, carnivore or omnivore.

1. Maple tree

2. Squirrel

3. Deer

4. Coyote

5. Fungi

6. In autumn, many trees lose their leaves. They fall to the ground where they die and sometimes make large piles. What role do bacteria play in removing these piles of leaves?

Meet The Dung Beetle



Decomposers are important to an area because they break down dead and decaying material. They return the nutrients to the soil for producers. An important decomposer is the dung beetle.

The dung beetle eats the dung, or poop, of other animals. The undigested bits of food found in the dung provide food for the dung beetle. Adult dung beetles suck up the juice found in the dung.

There are 7,000 types of dung beetles and they live on every continent, except Antarctica. These insects recycle waste material. They help prevent the spread of diseases by removing the dung that attracts flies. Finally, dung beetles help move seeds and are important for plant growth.

1. Why are decomposers important?

2. What do adult dung beetles eat?

3. List 3 ways dung beetles help the environment.

4. Explain what might happen if there were not any dung beetles.

When you think of a forest, you probably think of trees growing on land. Did you know there are forests that grow in the water?

Giant kelp are a type of seaweed that can grow to be 200 feet tall. A kelp forest is a large group of giant kelp that grow together underwater. Like a forest on land, a kelp forest provides shelter and protection for many organisms.

Giant kelp use the sun to create food. An animal that likes to eat giant kelp is the sea urchin. Sea otters, on the other hand, like to eat sea urchins. Kelp forests are also home to bacteria, which eat dead plants and animals.

Label the following living thing as producer, consumer or decomposer. If the living thing is a consumer, label it as an herbivore, carnivore or omnivore.

1. Giant kelp

2. Sea urchin

3. Sea otter

4. Bacteria

5. In some kelp forests, sea otters have disappeared. What is one thing that would happen to the ecosystem if sea otters are gone?

2nd Grade PSI

Producers are living things that are able to produce their own food. We are used to thinking about producers as plants that use sunlight to make food. In the deep ocean, however, there is a different type of producer.

Hydrothermic vents are found at the bottom of the ocean where there is a crack in the ocean floor. Through this crack, incredibly hot water flows up into the ocean.

Hydrothermic vent ecosystems have a high biodiversity. Since no sunlight can reach into the deep water, however, producers cannot use sunlight to make food. Special bacteria use sulfur in the heated water to make their own food.

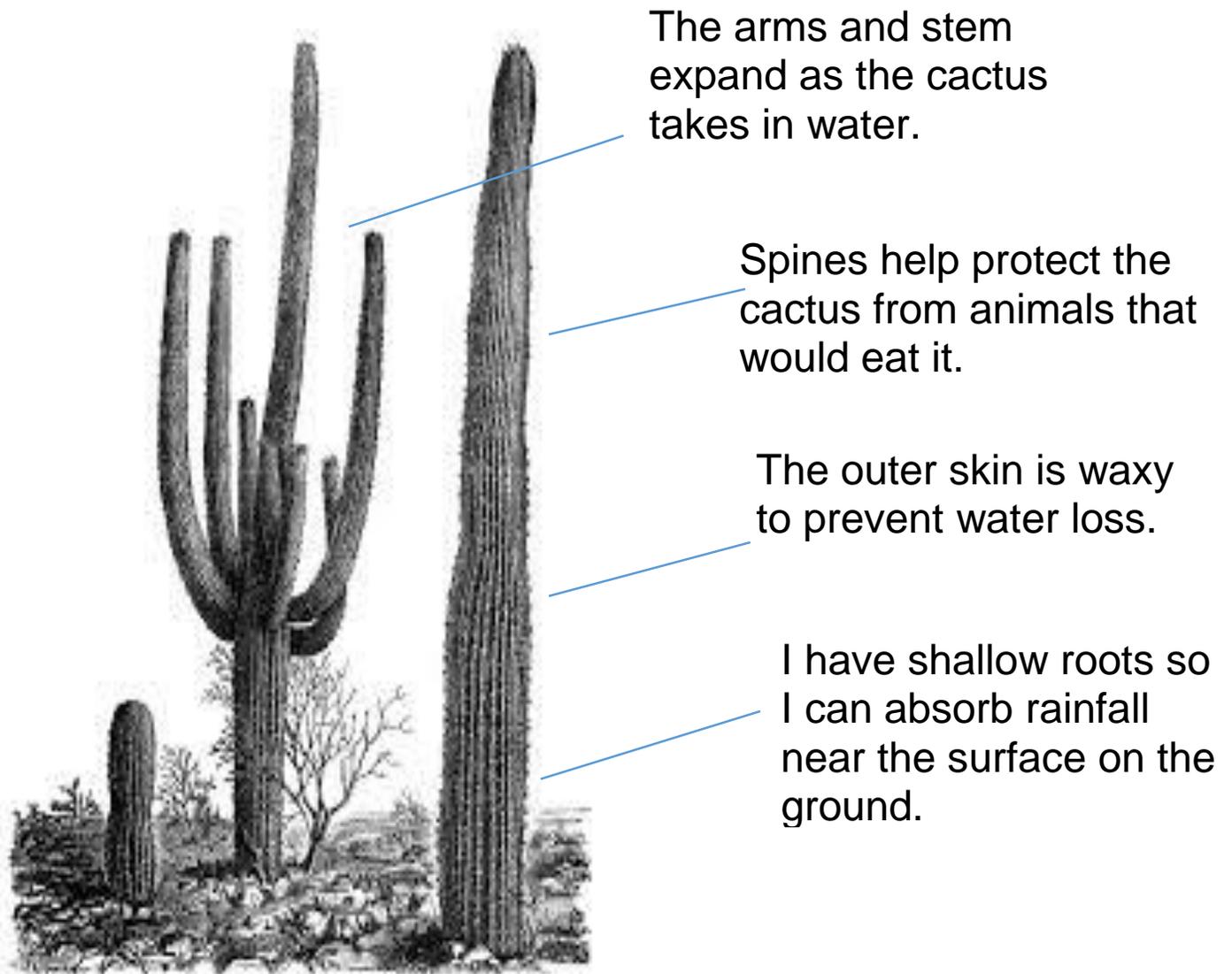
The chart below lists living things that can be found around a hydrothermal vent. The chart also lists what all of the living things eat.

Label the living things as producer, herbivore, carnivore, omnivore, or decomposer.

Living Thing	What It Eats	Type of Living Thing
Bacteria	Use sulfur to make their own food	
Shrimp	Dead plants and animals on the ocean floor	
Deep Sea Crabs	Mussels, clams, shrimp	
Fish	Small animals	
Octopus	Fish, crabs, snails	
Marine worms	Dead plant and animals on the ocean floor	

2nd Grade PSI

The cactus lives in the desert ecosystem where it is very hot and dry. Look at the traits of the cactus and then answer the questions that follow.



1. The arms of the cactus expand as it takes in water. How does this help the cactus to survive in the desert?

2. Think about the traits that a cactus has. If the cactus were moved to a rainforest where it can rain 1,000 cm (390 inches) every year, what might happen to it?

2nd Grade PSI

Organisms have traits that allow them to survive in specific environments. Match each animal below with its special traits.

Tiger



Shark



Camel



Polar Bear



1. I have long eyelashes to protect my eyes during sandstorms. Fat is stored in my hump to help me survive long periods without food and water.

I am a _____

2. My striped coat helps me blend into my jungle home. I have special eyes that help me see in the dark. I also large teeth which help me hunt.

I am a _____.

3. I am a strong swimmer. My fur traps heat and keeps me warm in my cold environment.

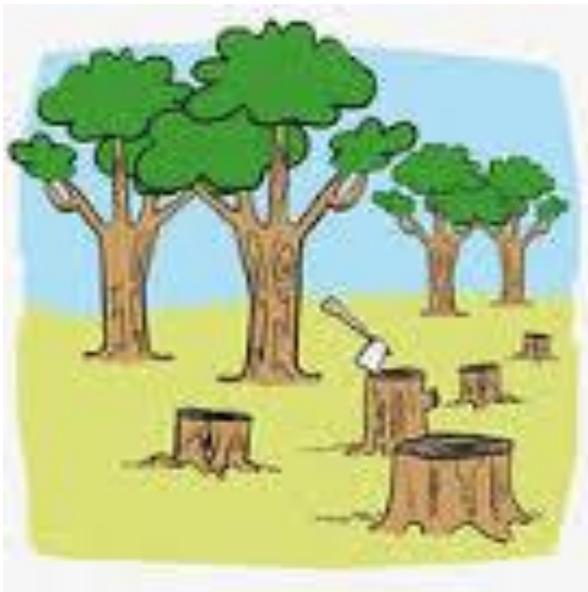
I am a _____

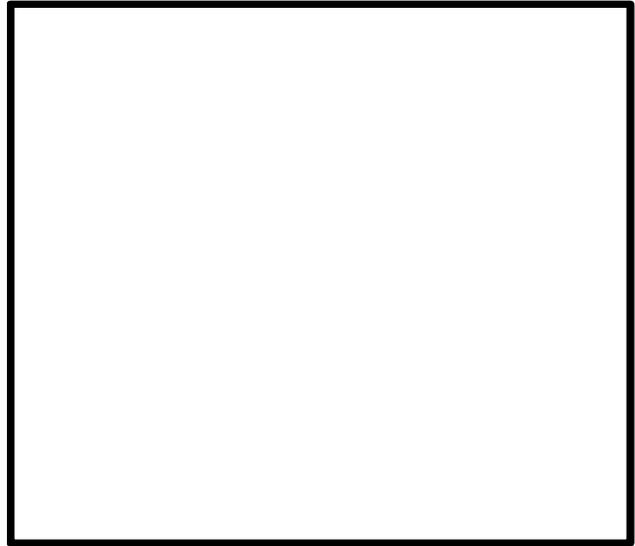
4. Moving keeps me alive. This forces water into my gills. I have multiple rows of teeth that never stop growing. I can smell a single drop of blood miles away.

I am a _____

2nd Grade PSI

Human activity has threatened the biodiversity of life on Earth. Look at the picture. Explain how it impacts the ecosystem. Draw a picture showing how people can repair the damage.







Kids have an important role to play in protecting the environment. Learning about ways to recycle, reuse, and conserve today will create a healthier Earth tomorrow. An easy, inexpensive and fun way is to **compost**.

Remember how decomposers break down dead plants and animals and add those minerals to the soil? And how by doing this, decomposers create healthy soil? Well, composting uses the power of decomposers to create healthy soil that can be used as fertilizer for gardens.

Kids can start a composting project at school. The compost can be used in the community or sold to local gardeners. First, set up your bin. Next, add layers of brown stuff and green stuff. The brown stuff is dead, dried plant parts like leaves, pine needles and even newspaper. The green stuff is fresh, living parts like grass clippings, weeds, and kitchen scraps. Do not use bones, meat, milk products or pet droppings. Add soil and water.

Soon, tiny organisms and larger living things like earthworms, sow bugs, and millipedes begin breaking down the organic matter. This is turned into

humus, material that forms in the soil when plant and animal matter decomposes. Humus can be used as fertilizer, potting soil, and mulch.

Composting recycles wastes, creates humus, and provides food for living things. Children who compost learn responsibility and teamwork as they help the Earth.

Use the article above to answer the questions.

1. What are the ingredients for compost?

2. What type of animals are earthworms, sow bugs and millipedes?

3. Name three things you should not add to the compost bin.

4. List three reasons why compost benefits the Earth.

Answer Key

Biodiversity Classwork

1. Pond #2 has higher biodiversity because it has the most variety of living things.
2. Pond #2 is healthier because it has higher biodiversity.
3. The drawings should show all of the blue dots removed. Pond #1 would only have one type of living thing left while pond #2 would still have three different types of living things left. (Explain to students: Areas with higher biodiversity can withstand/survive disturbances better.)

Biodiversity Homework

Answers will vary.

Types of Living Things Classwork

Producers – cactus, tomato plant, tree, flower

Consumers – shark, panda, deer, coyote, cow, lion, alligator, giraffe

Decomposers – mushroom #1, fungus, mushroom #2, worms

1. A producer makes its own food while a consumer has to eat other things.
2. Decomposers are important because they break down dead plants and animals. They recycle the nutrients back into the soil for producers to use.

Types of Living Things Homework

1. Omnivore
2. Herbivore
3. Carnivore
4. Herbivore
5. Carnivore
6. Omnivore

Living Things on Land Classwork

1. Producer
2. Consumer - omnivore
3. Consumer - herbivore
4. Consumer - carnivore
5. Decomposer
6. Bacteria break down the dead leaves and recycle the nutrients back into the soil for producers to use.

Living Things on Land Homework

1. Decomposers break down dead plants and animals and recycle the nutrient back into the soil.
2. They eat the dung of other animals.
3. Dung beetles break down the waste of other animals, prevent disease and move seeds to other areas to grow.
4. Answers will vary. Without dung beetles, waste would accumulate which could cause disease. Seeds would not be moved to different locations to grow.

Living Things in the Water Classwork

1. Producer
2. Consumer - herbivore
3. Consumer - carnivore
4. Decomposer
5. Answers will vary. Without sea otters, sea urchins would increase because nothing would be eating them. The large number of sea urchins would eat all of the giant kelp. This would destroy the ecosystem.

Living Things in the Water Homework

1. Decomposer
2. Decomposer
3. Carnivore
4. Carnivore
5. Carnivore
6. Decomposer

Ecosystems and Organisms Classwork

1. Since the arms expand with water, cactus can hold a large supply of water. They use this extra water when it is dry.
2. Answers will vary. The arms would expand too much with water. The shallow roots would take in too much water. The cactus would die.

Ecosystems and Organisms Homework

1. Camel
2. Tiger
3. Polar bear
4. Shark

Biodiversity and Humans Classwork

Trees – When trees are removed, this takes away homes and food for many other animals. This lowers biodiversity. Trees should be replanted.

Litter/Pollution – Litter and pollution creates unhealthy ecosystems. Many living things will die, which lowers biodiversity. Litter/pollution should be cleaned up.

Building roads – When roads are built, they cut ecosystems in half. This separates living things and creates dangerous conditions for wildlife. Biodiversity is lowered. Wildlife corridors can be built to help this.

Biodiversity and Humans Homework

1. Brown stuff, green stuff, soil and water
2. Decomposers
3. Bones, meat, milk, pet droppings
4. Composting recycles wastes, creates humus, and provides food for living things.