

Name: \_\_\_\_\_

Period: \_\_\_\_\_

### Chapter 13

Assignment Name	Points Value	Predicted Points	Actual Points
Vocabulary	25		
Vocabulary Quiz	29		
Notes	20		
	10		
Lab	15		

#### Self Evaluation Reflection Questions:

1. Did I come to class prepared everyday? \_\_\_\_\_

If no Why not? \_\_\_\_\_

2. Did I use my class time wisely? \_\_\_\_\_

If no why not? \_\_\_\_\_

3. Did I work to the best of my ability on my assignments or did I get lazy? \_\_\_\_\_

\_\_\_\_\_

4. Did I ask meaningful questions if there was something I did not understand? \_\_\_\_\_

\_\_\_\_\_

5. Was I a valuable member of my group or was I more of a distraction than anything else? \_\_\_\_\_

\_\_\_\_\_

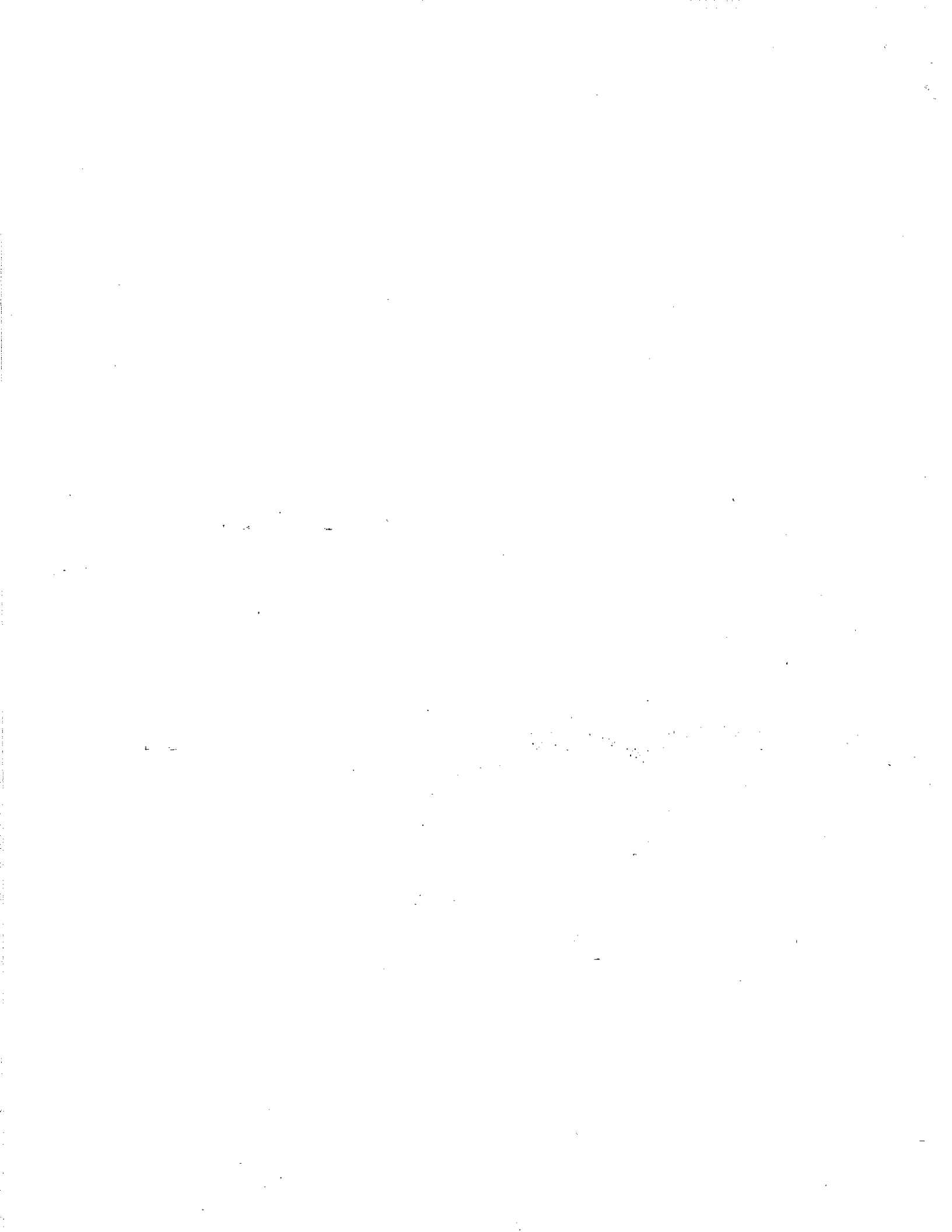
6. What did I do to prepare for the test? \_\_\_\_\_

\_\_\_\_\_

7. What can Mrs. Wetzell do to help me in the next unit? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Chapter 13 Overview  
Basic Ecology

Define: Ecology, community, ecosystem, biome, biotic, abiotic, biodiversity, keystone species, producer, autotroph, consumer, heterotrophy, chemosynthesis, food chain, herbivore, carnivore, omnivore, detritivore, decomposer, specialist, generalist, trophic level, food web, hydrologic cycle, biogeochemical cycle, nitrogen cycle, biomass, energy pyramid

**Key Concept:** Ecology is the study of the relationships among organisms and their environment.

**Main Idea:** Ecologists study environments at different levels of organization

Answer:

1. Write a description, and give an example of each level of ecological organization

Level	Description	Example
Organism		
Population		
Community		
Ecosystem		
Biome		

**Main Idea:** Ecological research methods include observations, experimentation, and modeling

2. What is modeling? \_\_\_\_\_  
\_\_\_\_\_

**Key Concept:** Every ecosystem includes both biotic and abiotic factors

3. \_\_\_\_\_ factors are living things such as \_\_\_\_\_, or \_\_\_\_\_.

4. \_\_\_\_\_ factors are non-living things such as \_\_\_\_\_, or \_\_\_\_\_.

**Main Idea:** Changing one factor in an ecosystem can affect many other factors.

5. What is the term for an organism that has an unusually large effect on its ecosystem?  
\_\_\_\_\_

6. Critical thinking; why is it important to preserve areas with high biodiversity? \_\_\_\_\_

\_\_\_\_\_

**Key Concept: Life in an ecosystem requires a source of energy.**

**Main Idea: Producers provide energy for other organisms in an ecosystem.**

7. \_\_\_\_\_ are organisms that get their energy from the \_\_\_\_\_. They make their own food and are also called \_\_\_\_\_.

8. \_\_\_\_\_ are organisms that get their energy by eating other \_\_\_\_\_. They are also called \_\_\_\_\_.

9. What is the difference between a consumer and a producer? \_\_\_\_\_

\_\_\_\_\_

**Key Concept: Food Chains and food webs model the flow of energy in an ecosystem**

**Main Idea: A food chain is a model that shows a sequence of feeding relationships**

10. How is a food web different from a food chain? \_\_\_\_\_

\_\_\_\_\_

11. What happens to energy at each link of the food chain? \_\_\_\_\_

\_\_\_\_\_

12. What type of organism is always at the base of the food chain? \_\_\_\_\_

Complete the following sentences

13. Herbivores eat \_\_\_\_\_

14. Carnivores eat \_\_\_\_\_

15. Omnivores eat \_\_\_\_\_

16. Detritivores eat \_\_\_\_\_

17. Decomposers eat \_\_\_\_\_

**Key Concept: Matter cycles in and out of an ecosystem**

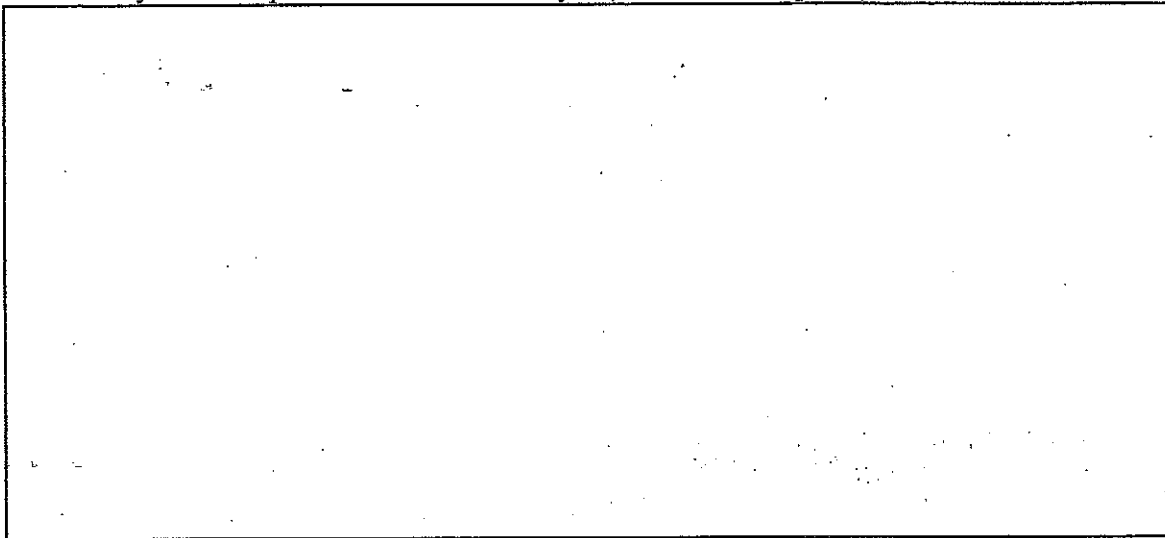
**Main Idea: Water cycles through the environment**

**Elements essential for life also cycle through ecosystems**

18. Complete the following table to describe how water cycles through the environment

Process	Description
Precipitation	
Evaporation	
Transpiration	
Condensation	

19. Briefly sketch a picture of the carbon cycle; label each step.



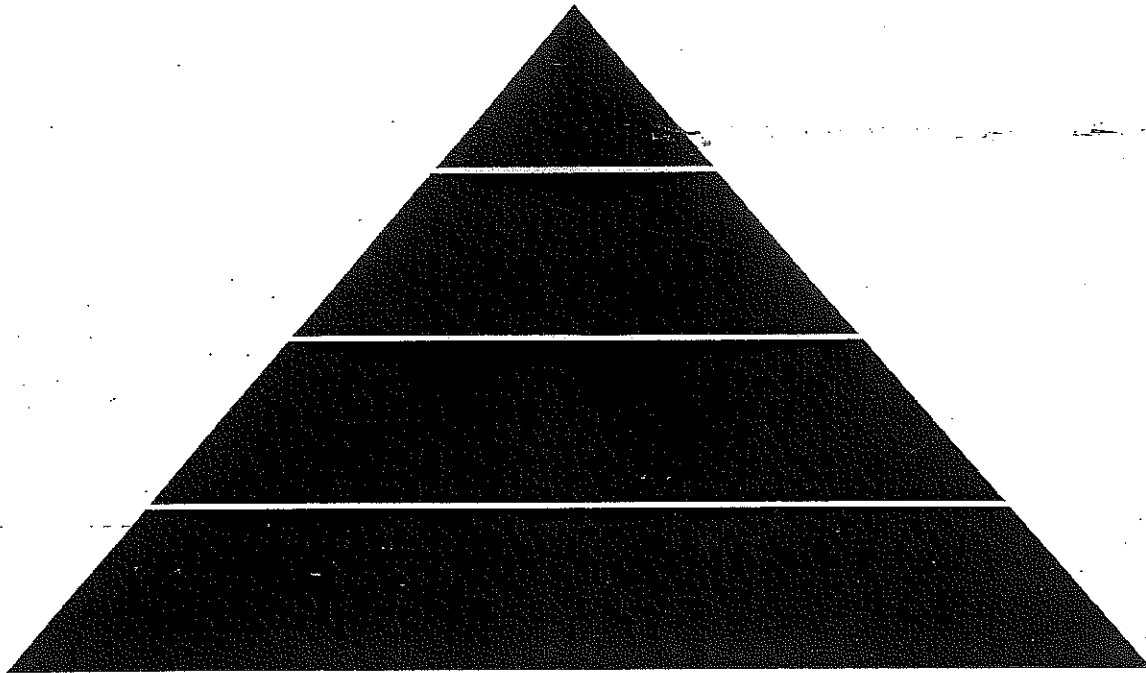
20. What is nitrogen fixation? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Key Concept:** Pyramids model the distribution of energy and matter in an ecosystem

**Main Idea:** An energy pyramid shows the distribution among trophic levels

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21. Label the four tiers of the energy pyramid with the correct trophic level (producer, primary consumer, secondary consumer, tertiary consumers).



### Ecology Unit

What is ecology?

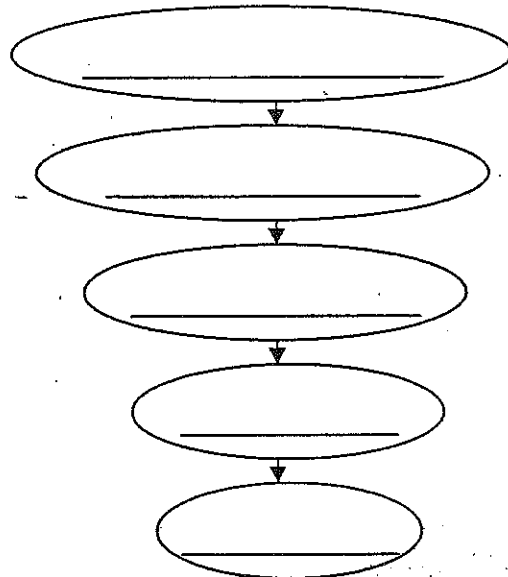
\_\_\_\_\_ - the scientific \_\_\_\_\_ of \_\_\_\_\_ between \_\_\_\_\_ and their \_\_\_\_\_, focusing on \_\_\_\_\_ transfer

- It is a science of \_\_\_\_\_.

What do you mean by environment?

The environment is made up of \_\_\_\_\_ factors:

- \_\_\_\_\_ factors- all \_\_\_\_\_ organisms inhabiting the Earth
- \_\_\_\_\_ factors- \_\_\_\_\_ parts of the environment (i.e. \_\_\_\_\_, soil, \_\_\_\_\_, moisture, \_\_\_\_\_ currents)



\_\_\_\_\_ - any \_\_\_\_\_ or \_\_\_\_\_ form exhibiting all of the characteristics of life, an \_\_\_\_\_

- The \_\_\_\_\_ level of organization

\_\_\_\_\_ - a group of organisms \_\_\_\_\_ living in the same \_\_\_\_\_ at the same \_\_\_\_\_ that \_\_\_\_\_ & \_\_\_\_\_ with each other for \_\_\_\_\_ (ex. food, mates, shelter)

\_\_\_\_\_ - \_\_\_\_\_ interacting \_\_\_\_\_ that inhabit a \_\_\_\_\_ environment and are \_\_\_\_\_.

\_\_\_\_\_ - populations in a \_\_\_\_\_ & the \_\_\_\_\_ factors with which they interact (ex. \_\_\_\_\_, terrestrial)

\_\_\_\_\_ - life supporting portions of \_\_\_\_\_ composed of air, \_\_\_\_\_, fresh water, and salt water.

- The \_\_\_\_\_ level of organization

### Habitat vs. Niche

\_\_\_\_\_ - the \_\_\_\_\_ a species plays in a community (job)

\_\_\_\_\_ - the \_\_\_\_\_ in which an organism \_\_\_\_\_ out its life (address)

A \_\_\_\_\_ is determined by the \_\_\_\_\_ of an organism, or a \_\_\_\_\_

\_\_\_\_\_ factor- any biotic or abiotic factor that \_\_\_\_\_ the \_\_\_\_\_ of organisms in a specific environment.

Examples of limiting factors-

- Amount of \_\_\_\_\_
- Amount of \_\_\_\_\_
- \_\_\_\_\_

### Feeding Relationships

- There are \_\_\_\_\_ main types of feeding relationships

1. \_\_\_\_\_ - \_\_\_\_\_

2. \_\_\_\_\_ - \_\_\_\_\_

3. \_\_\_\_\_ - \_\_\_\_\_

\_\_\_\_\_ - all \_\_\_\_\_ (plants), they trap \_\_\_\_\_ from the \_\_\_\_\_

- \_\_\_\_\_ of the food chain

\_\_\_\_\_ - all \_\_\_\_\_; they \_\_\_\_\_ containing the sun's energy

- \_\_\_\_\_
- Carnivores
- \_\_\_\_\_
- Decomposers

### Herbivores

- Eat \_\_\_\_\_

- \_\_\_\_\_ consumers
- \_\_\_\_\_ animals

### Carnivores

- Eat \_\_\_\_\_

- \_\_\_\_\_

- \_\_\_\_\_ prey animals for food.

- \_\_\_\_\_

- Feed on \_\_\_\_\_, dead animals

### Omnivores

- Eat \_\_\_\_\_ plants and animals

### Decomposers

- \_\_\_\_\_ the complex compounds of \_\_\_\_\_ and decaying plants and animals into simpler \_\_\_\_\_ that can be \_\_\_\_\_

### Symbiotic Relationships

\_\_\_\_\_ - \_\_\_\_\_ species living \_\_\_\_\_



\_\_\_ Types of symbiosis:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ species \_\_\_\_\_ and the other is \_\_\_\_\_ harmed nor helped

Ex. \_\_\_\_\_ on a tree, \_\_\_\_\_ bears and cyanobacteria

\_\_\_\_\_: A \_\_\_\_\_, such as a tropical orchid or a bromeliad, that \_\_\_\_\_ on another plant upon which it \_\_\_\_\_ for mechanical support but \_\_\_\_\_ for \_\_\_\_\_. Also called *aerophyte*, \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ species \_\_\_\_\_ (parasite) and the \_\_\_\_\_ is \_\_\_\_\_ (host)

• Parasite-\_\_\_\_\_ relationship

Ex. lampreys, \_\_\_\_\_, fleas, \_\_\_\_\_, tapeworms

\_\_\_\_\_ - \_\_\_\_\_ to \_\_\_\_\_ species

Ex. cleaning \_\_\_\_\_ and cleaner shrimp, \_\_\_\_\_

### Symbiosis Review

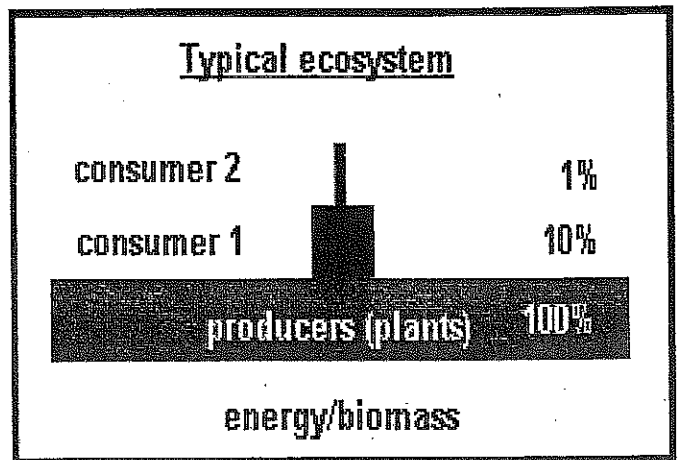
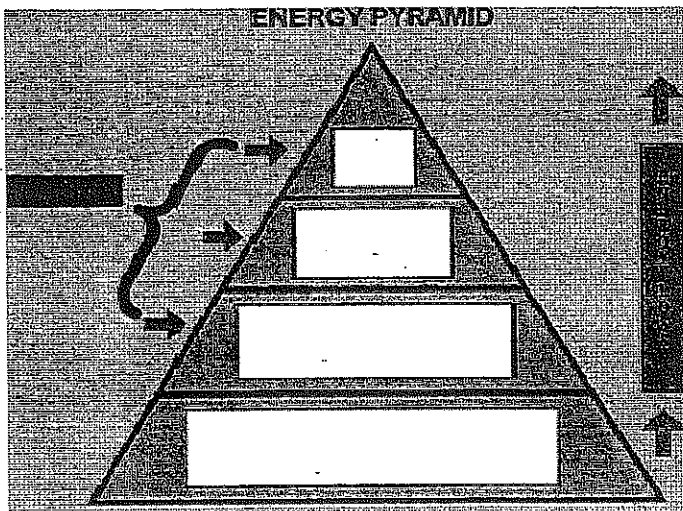
Type of relationship	Species harmed	Species benefits	Species neutral
1.			
2.			
3.			

### Trophic Levels

- Each \_\_\_\_\_ in a food \_\_\_\_\_ is known as a \_\_\_\_\_ level.
- Trophic levels \_\_\_\_\_ a feeding \_\_\_\_\_ in the \_\_\_\_\_ of \_\_\_\_\_ and matter in an ecosystem.

\_\_\_\_\_ - the \_\_\_\_\_ of \_\_\_\_\_ matter comprising a group of organisms in a habitat.

- As you move \_\_\_\_\_ a food chain, both available \_\_\_\_\_ & \_\_\_\_\_
- \_\_\_\_\_ is transferred upwards but is \_\_\_\_\_ with each transfer.



\_\_\_\_\_ chain- \_\_\_\_\_ model that shows how matter and \_\_\_\_\_ move through an ecosystem

Draw a sample food chain that you might see in Virginia: include a producer, a primary consumer, a secondary consumer, and a tertiary consumer



Food \_\_\_\_\_ - shows \_\_\_\_\_ possible feeding \_\_\_\_\_ in a community at each \_\_\_\_\_ level

- Represents a \_\_\_\_\_ of interconnected food \_\_\_\_\_

Food chain- just \_\_\_\_\_ path of energy

Food web- \_\_\_\_\_ possible energy paths

### Nutrient Cycles

Cycling maintains \_\_\_\_\_ (balance) in the environment.

- \_\_\_\_\_ cycles to investigate:

1. \_\_\_\_\_ cycle
2. \_\_\_\_\_ cycle
3. \_\_\_\_\_ cycle

\_\_\_\_\_ cycle- evaporation, \_\_\_\_\_, condensation, \_\_\_\_\_

\_\_\_\_\_ cycle- \_\_\_\_\_ and \_\_\_\_\_ cycle carbon and \_\_\_\_\_ through the environment.

\_\_\_\_\_ cycle-

\_\_\_\_\_ nitrogen ( $N_2$ ) makes up nearly \_\_\_\_\_ %- \_\_\_\_\_ % of air.

Organisms \_\_\_\_\_ use it in that form.

\_\_\_\_\_ and \_\_\_\_\_ convert nitrogen into \_\_\_\_\_ forms.

Only in certain \_\_\_\_\_ and industrial \_\_\_\_\_ can \_\_\_\_\_ nitrogen.

Nitrogen \_\_\_\_\_ - \_\_\_\_\_ atmospheric nitrogen ( $N_2$ ) into \_\_\_\_\_ ( $NH_4^+$ ) which can be \_\_\_\_\_ to make organic compounds like \_\_\_\_\_.

Nitrogen-fixing \_\_\_\_\_: Some live in a \_\_\_\_\_ relationship with plants of the \_\_\_\_\_ family (e.g., soybeans, clover, \_\_\_\_\_).

- Some \_\_\_\_\_-fixing bacteria live \_\_\_\_\_ in the \_\_\_\_\_.
- Nitrogen-fixing \_\_\_\_\_ are essential to maintaining the fertility of semi-\_\_\_\_\_ environments like \_\_\_\_\_ paddies.

\_\_\_\_\_ in food chains-

While energy \_\_\_\_\_ as it moves up the food chain, \_\_\_\_\_ in potency.

- This is called \_\_\_\_\_

Ex: \_\_\_\_\_ & Bald \_\_\_\_\_

Name \_\_\_\_\_

Date \_\_\_\_\_

## VOCABULARY PRACTICE

**C. Word Origins** Circle the Greek and Latin word parts in each vocabulary term. Then use the Greek and Latin meanings to construct a very basic definition of the vocabulary word.

bio- = life	auto- = self	carnus = flesh
eco- = home	hetero- = different	omnis = all
syn- = together	chemo- = chemical	detere = to wear away
-vore = eat	photo- = light	geo- = earth
-troph = nourishment	-logy = study of	
hydro- = water	herba = vegetation	

WORD	DEFINITION
1. ecology	
2. photosynthesis	
3. carnivore	
4. herbivore	
5. detritivore	
6. omnivore	
7. chemosynthesis	
8. autotroph	
9. heterotroph	
10. biogeochemical cycle	
11. hydrologic cycle	
12. biomass	

**D. Categorize Words** Write "A" next to words that can describe abiotic factors. Write "B" next to words that can describe biotic factors.

- |                    |                 |           |
|--------------------|-----------------|-----------|
| 1. ___ wind        | ___ sunlight    | ___ deer  |
| 2. ___ soil        | ___ sunflower   | ___ water |
| 3. ___ fungus      | ___ snow        | ___ eagle |
| 4. ___ temperature | ___ prairie dog | ___ frog  |

VOCABULARY PRACTICE

CHAPTER 13  
Principles of Ecology

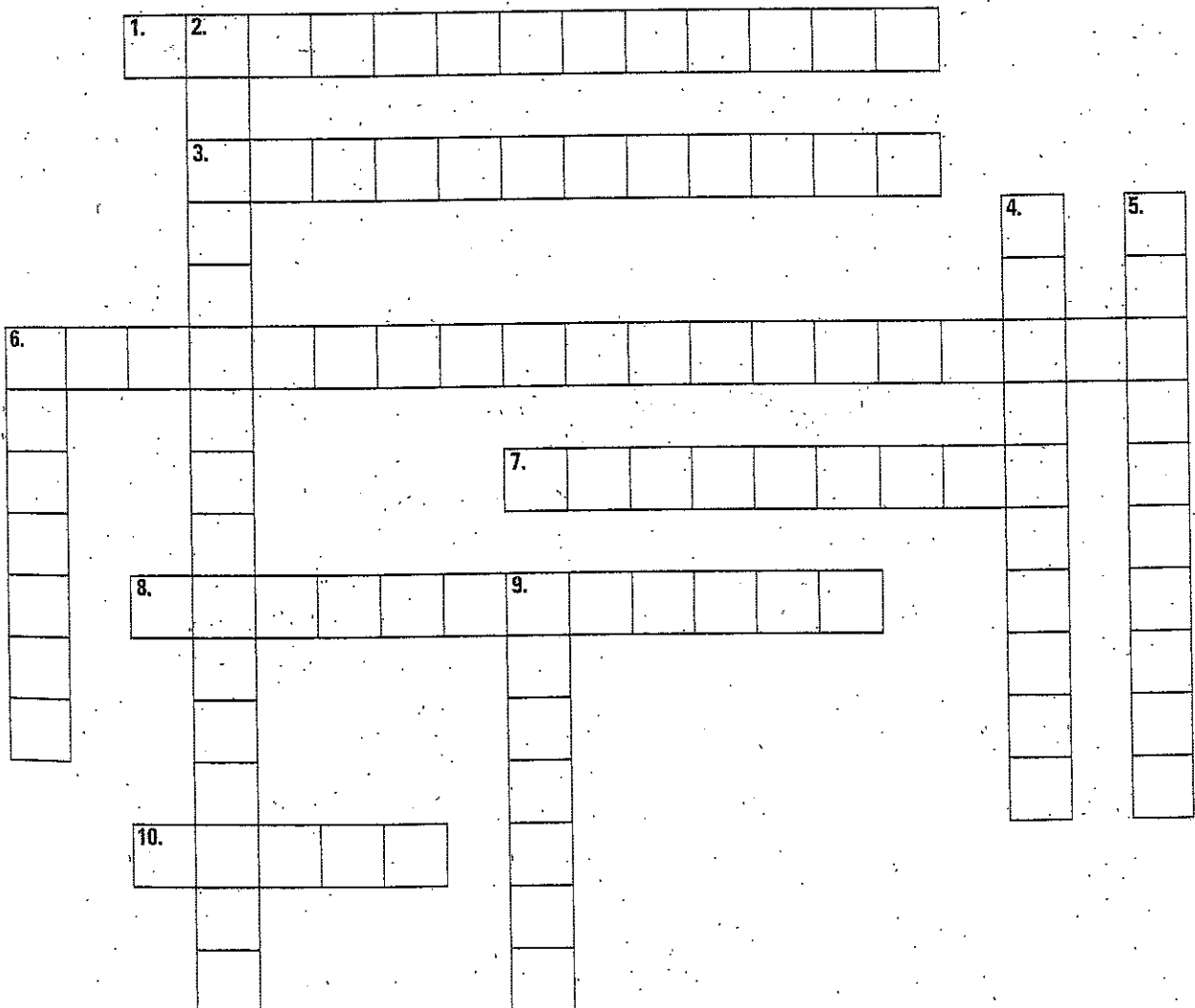
**G. Crossword Puzzle** Use the clues to solve the puzzle.

**Across**

1. A diagram that compares energy use among trophic levels
3. Level of nourishment in a food chain
6. Movement of a particular chemical through the living and nonliving parts of an ecosystem
7. All of the organisms as well as the abiotic factors in a given area
8. The variety of living things in an ecosystem
10. A major regional or global community of organisms

**Down**

2. The process by which gaseous nitrogen is converted into ammonia
4. Detritivore that breaks down organic matter into simpler compounds
5. A consumer that primarily eats one specific organism
6. The measure of the total dry mass of organisms in a given area
7. The study of the interactions among living things, and between living things and their surroundings



## Chapter 13 Test Study Guide

### Key Terms:

1. Organism
2. Population
3. Community
4. Ecosystem
5. Biome
6. Water cycle/ hydrologic
7. Carbon Cycle
8. Nitrogen cycle
9. Herbivore
10. Carnivore
11. Omnivore
12. Detritivore
13. Producer/ Autotrophs
14. Consumer/ Heterotrophs
15. Biotic vs. abiotic
16. Keystone species
17. Specialist vs. Generalist

### Main Ideas:

1. Identify parts of food web
2. Difference between food web and food chain
3. What happens if to other organisms in a food web if one organism is removed?





Learning Target Sheet  
Ecology #1  
Energy Flow in an Ecosystem

Exit Slip Activity:

Complete the following Sample Keystone question

### Sample Exam Questions

#### Standard BIO.B.4.1.1

Use the list below to answer the question.

##### Observations

- two grey wolves
- five moose
- several species of conifer trees
- large granite rock
- shallow pond

A student wrote several observations in a field notebook. Which term **best** classifies all of the student's observations?

- A. population
- B. food chain
- C. ecosystem
- D. community

#### Standard BIO.B.4.1.2

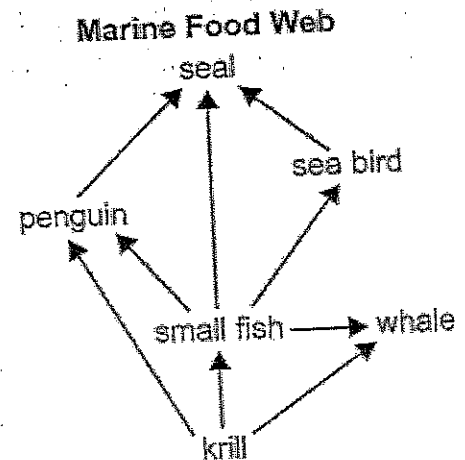
A researcher observing an ecosystem describes the amount of sunlight, precipitation, and type of soil present. Which factors is the researcher **most likely** describing?

- A. biotic factors in a forest
- B. biotic factors in a tundra
- C. abiotic factors in a prairie
- D. abiotic factors in an ocean

### Sample Exam Questions

#### Standard BIO.B.4.2.1

Use the diagram below to answer the question.



Which sequence correctly describes the flow of energy between organisms in the marine food web?

- A. from seals to penguins to krill
- B. from whales to krill to small fish
- C. from sea birds to seals to penguins
- D. from small fish to penguins to seals

#### Standard BIO.B.4.2.2

A species of snapping turtles has a tongue that resembles a worm. The tongue is used to attract small fish. Which **best** describes the interaction between the fish and the snapping turtle?

- A. predation
- B. symbiosis
- C. parasitism
- D. competition