Name: _____

Start Date: _____

Test Date: _____

Ecosystems

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Middle School Science Edition

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Vocabulary

Ecosystem	A community of organisms surrounded by a physical environment
Abiotic Factor	Any nonliving component of an ecosystem that may affect an organism
Biotic Factor	Any living component of an ecosystem that may affect an organism
Food Chain	A linear series of organisms that feed off of lower levels
Food Web	A complex system of organisms that feed off of or supply energy to multiple levels
Producer	Any organism that can make its own food from abiotic sources (autotroph)
Consumer	Any organism that cannot make its own food and must eat other organisms
Decomposer	Any organism that gains it nutrients from breaking down dead matter
Aquatic Ecosystem	Any ecosystem that is contained in a body of water (freshwater or salt water)
Terrestrial Ecosystem	Any ecosystem that is located only on land with a lower availability of water
Stimulus	Any thing that causes a reaction in an organism
Response	A reaction or reflex due to an outside factor
Dormancy	A period of inactivity in a seed before it germinates; occurs when conditions are unfavorable for growth
Germination	Occurs when a seed sprouts and begins to grow
Tropism	A plant's movement toward (positive) or away (negative) from a stimulus
Biome	A large community of organisms living in a specific type of habitat (grassland, desert, tundra, etc.)
Limiting Factor	Any factor that may reduce the amount of organisms in an area in some way

Unit Organizer

Pre-Check

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Post-Check

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Bell Ringers

1. Which is the best _____ of an _____?

   Answer: _____

   _____

2. Which is an _____ of an _____ factor?

   Answer: _____

   _____

3. Which is an _____ of a _____ factor?

   Answer: _____

   _____

4. Which best describes the _____ levels of _____?

   Answer: _____

   _____

5. Which best describes _____?

   Answer: _____

   _____

6. What is the _____ source of _____ for life?

   Answer: _____

   _____

7. How is _____ energy _____ to usable energy?

   Answer: _____

   _____

8. Which type of _____ may carry out _____?

   Answer: _____

   _____

9. Which best describes a _____?

   Answer: _____

   _____

10. The largest amount of _____ can be found

    Answer: _____

    _____

Bell Ringers

11. What happens to _____ each step of a food chain?

    Answer: _____

    _____

12. _____ is needed to power which of the following _____ in an _____?

    Answer: _____

    _____

13. Which best describes a _____?

    Answer: _____

    _____

14. Which is a community _____ that may _____ an _____?

    Answer: _____

    _____

15. Which best describes a difference between a _____ and an _____ ecosystem?

    Answer: _____

    _____

16. A _____ is characterized by _____ and great _____. What type of _____ is it?

    Answer: _____

    _____

17. Which _____ may be encountered in a _____?

    Answer: _____

    _____

18. A _____ grows toward the _____. What best describes this?

    Answer: _____

    _____

19. Which best explains why a _____ may go _____?

    Answer: _____

    _____

20. A plant _____ to its _____ in many different ways. Which is an accurate description of one of these methods?

    Answer: _____

    _____

Intro to Ecosystems

-_____ are _____ systems in which living _____ interact with one another and their _____

Two major components make up _____:

-_____ factors - _____

-May be _____ or _____

-Examples: _____

_____

-What are some ways that you use abiotic factors?

_____

_____

_____

-_____ factors - _____

-Examples: _____

_____

-What are some ways that you use biotic factors?

_____

_____

_____

-In order to _____, organisms must use both _____ and _____ factors

-Ecosystems have a _____ structure

-_____ of _____

-They describe _____ relationships or groups among _____ and their surroundings

-Begins with the individual _____

-The _____ category includes the _____ portions of the Earth where all _____ exists

-_____

Intro to Ecosystems

The _____ of an _____ is important for the _____ of its _____

-A _____ ecosystem is one that exhibits the following _____:

-The _____ of each organism _____ at a _____ rate

-Even when numbers _____, a balance is maintained

-The supply of _____ fluctuates at a _____ rate

-As resources are _____, more appear

-_____ flows at a _____ rate

-Energy flows through an _____ in _____ only

-Cycles of _____ continuously occur in ecosystems as well

-Matter: _____

-_____ - _____

_____

-_____ - _____

_____

-_____ - _____

_____

-_____ - _____

_____

Energy in an Ecosystem

-Energy allows _____ to function on many levels

-From the smallest _____ to the largest _____,

all organisms in an ecosystem need _____

-How is energy _____?

-The original source is the _____

-Organisms who can make their own food (_____):

-Use _____ (or _____) to make food,

which is then transformed into _____

-_____ & _____

-Photosynthesis: _____, _____, and _____

are converted into _____ (used as food) and _____,

which is released into the atmosphere

-_____, _____, _____

-These organisms are _____ (_____)

-Bottom of the _____

-Also important for making our _____

-Respiration & Metabolism: occur when organisms use _____ to

produce _____ (used to _____ and live)

-Chemical reactions that use _____ to break down

_____ (from food) to make _____ and release

_____

-_____, _____

-These organisms are _____ (_____)

-May also occur without _____

-_____

-Where do you get your energy? _____

_____

_____

-How do you use energy on a daily basis? _____

_____

_____

Energy in an Ecosystem

-The processes required to _____ and _____ energy

allow energy to be passed through _____

-This happens along _____ & _____

-Can be shown in _____

-Energy _____ show how energy is _____

from _____ to _____ to _____

	Producers (autotrophs)	Consumers (heterotrophs)	Decomposers
Process			
Description			
What is Used			
What is Made			
Importance			
Examples			

Food Chains and Food Webs

-A food chain is the simplest path that energy takes through an ecosystem

-Always begins with _____

-Every level is called a _____ (troph = food)

-At each level, organisms _____ energy for respiration, lose some as _____ and _____ some

-1st Trophic Level:

-2nd Trophic Level:

-3rd Trophic Level:

Food Chains and Food Webs

-The _____ available for each _____ level in an ecosystem can be shown in a _____

-Shows connections between all the _____ in an ecosystem

-Depicts the transfer of _____

Select a type of ecosystem and construct a food web representing feeding relationships in that ecosystem. Use printed pictures or cut out pictures from a magazine and glue in the space below. Include at least 8 organisms.

Terrestrial Environments

-Ecosystems are classified based on their _____

-One of the major _____ features of an _____ is its _____ surroundings

-All environments on Earth are either _____ or _____, meaning that organisms either primarily live in _____ or out of _____

-Research a terrestrial (land) habitat of your choice and complete the following information:

Terrestrial Ecosystems

Habitat: _____

Organisms: _____

Resources: _____

Interactions (competition, predator/prey, cooperation): _____

How energy is used or produced: _____

Additional information: _____

Aquatic Environments

-Is energy still needed in an aquatic environment? If so, how is it used? Do living organisms still need oxygen if they live in the water? What do you think? _____

-Energy use in aquatic habitats: _____

-Oxygen in aquatic habitats: _____

-Research an aquatic habitat and complete the information below:

Aquatic Ecosystems

Habitat: _____

Organisms: _____

Resources: _____

Interactions (competition, predator/prey, cooperation): _____

How energy is used or produced: _____

Additional information: _____

Ecosystem Interactions

-_____ are constantly interacting in _____

-This allows _____ to function

-Allows them to remain _____

-Balances _____ and _____

-_____

_____

_____

-_____ can trigger population _____

-Sometimes they can _____ population _____

-Interactions in ecosystems have a strong _____ on both _____ and _____ factors

-Types of interactions between organisms:

1. _____ - one organism must _____ and _____ another organism for _____

-Keeps populations _____

-Example: _____

_____

2. Competition - occurs when two _____ need the same _____, especially when _____

-Best _____ organisms _____

-May occur between members of the same _____ or _____ species

-Niche - _____ an organism has in its environment

-Example: _____

_____

3. Cooperation - a close _____ between members of the same ecosystem

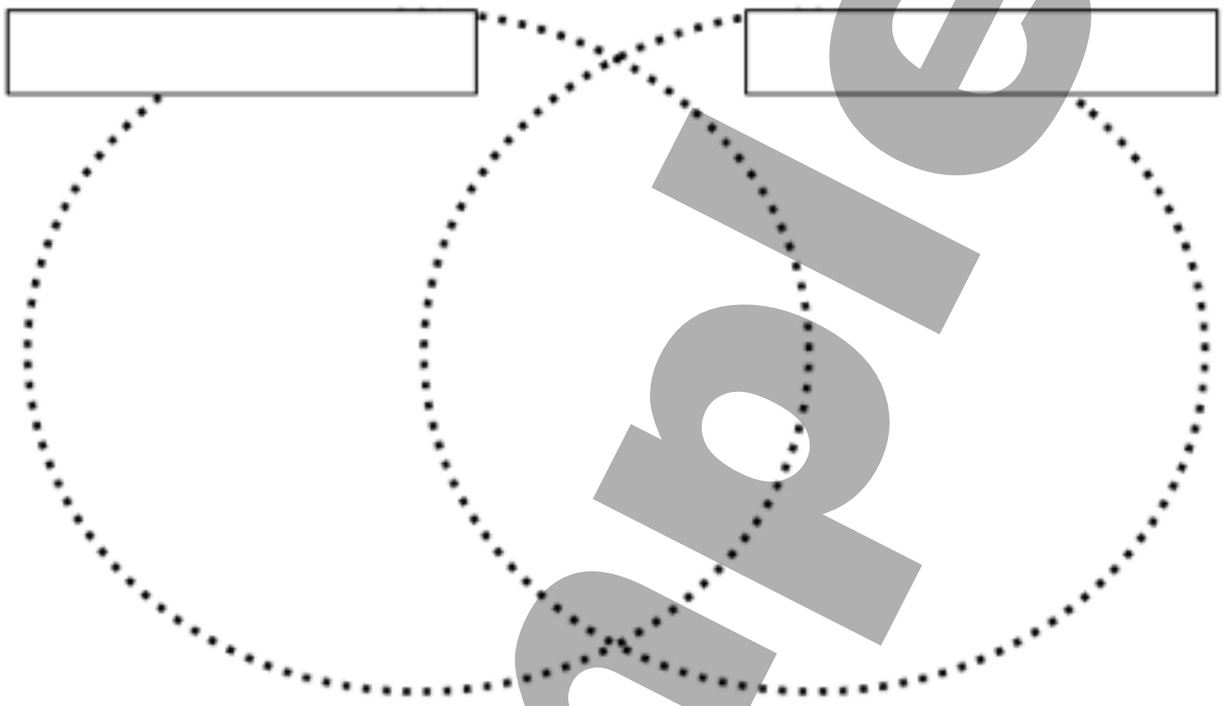
-Help each other _____ and _____

-Example: _____

_____

Ecosystem Interactions

Compare and contrast positive and negative community interactions in the chart below:



The survival of organisms in an ecosystem depends on these variables as well as the conditions of the surrounding environment. If resources are limited, competition will increase and population changes will occur. Any factor that limits population growth is called a **limiting factor**. How would the following factors influence interactions and changes in an ecosystem?

1. Food: _____
2. Water: _____
3. Space: _____
4. Weather: _____
5. Predation: _____
6. Soil: _____
7. Pollution: _____
8. Natural disasters: _____
9. Plants: _____
10. Sunlight: _____

Exploring Biomes

_____ is home to many types of _____ that vary by _____, _____, _____, and many other characteristics.

-You have already learned about _____ and _____ ecosystems

-Describe at least three characteristics of each of these below:

-Aquatic:_____

_____

_____

-Terrestrial:_____

_____

_____

-These ecosystems can be further classified as _____

-Biome: _____

_____

-How do you think the characteristics of the world's biomes affect the organisms that live within them? _____

_____

_____

_____

-Color and label the map below to show the major biomes of the world:

Exploring Biomes

Biome	Description	Interactions
Fresh-water		
Marine		
Grass-lands		
Tundra		
Forests		
Deserts		

Plants in an Ecosystem

-Organisms _____ to the environment in which they live (_____ to a _____)

-Stimulus: _____

-Response: _____

-Why do you think it is beneficial for plants to respond to their environments? _____

_____

_____

-Dormancy: _____

_____

-In seeds: _____

-In mature plants: _____

-Tropisms: _____

_____

-Positive tropism: _____

-Example: _____

_____

-Negative tropism: _____

-Example: _____

_____

-Food production: _____

_____

Plants in an Ecosystem

Use the information in the presentation to design your own botany lab. How can you observe the effects of plants on their ecosystems? How can a plant respond to its environment? How does a plant use the materials and resources around it in order to grow, reproduce, and survive?

Materials: _____

_____

I will be testing the effects of _____ on _____. My hypothesis is _____

_____

_____

Describe your procedure:

_____

_____

_____

_____

List your observations:

_____

_____

_____

_____

Record your data and calculations:

_____

_____

Explain your conclusion - What did you learn?

_____

_____

_____

_____

Investigating Ecosystems

Resources determine how ecosystems work!

-All _____ organisms need _____ to function!

-The original source of _____ comes from the _____

-_____ make their own food from the sun

-Through the process of _____

-_____ is a _____ pigment that allows _____ to absorb _____

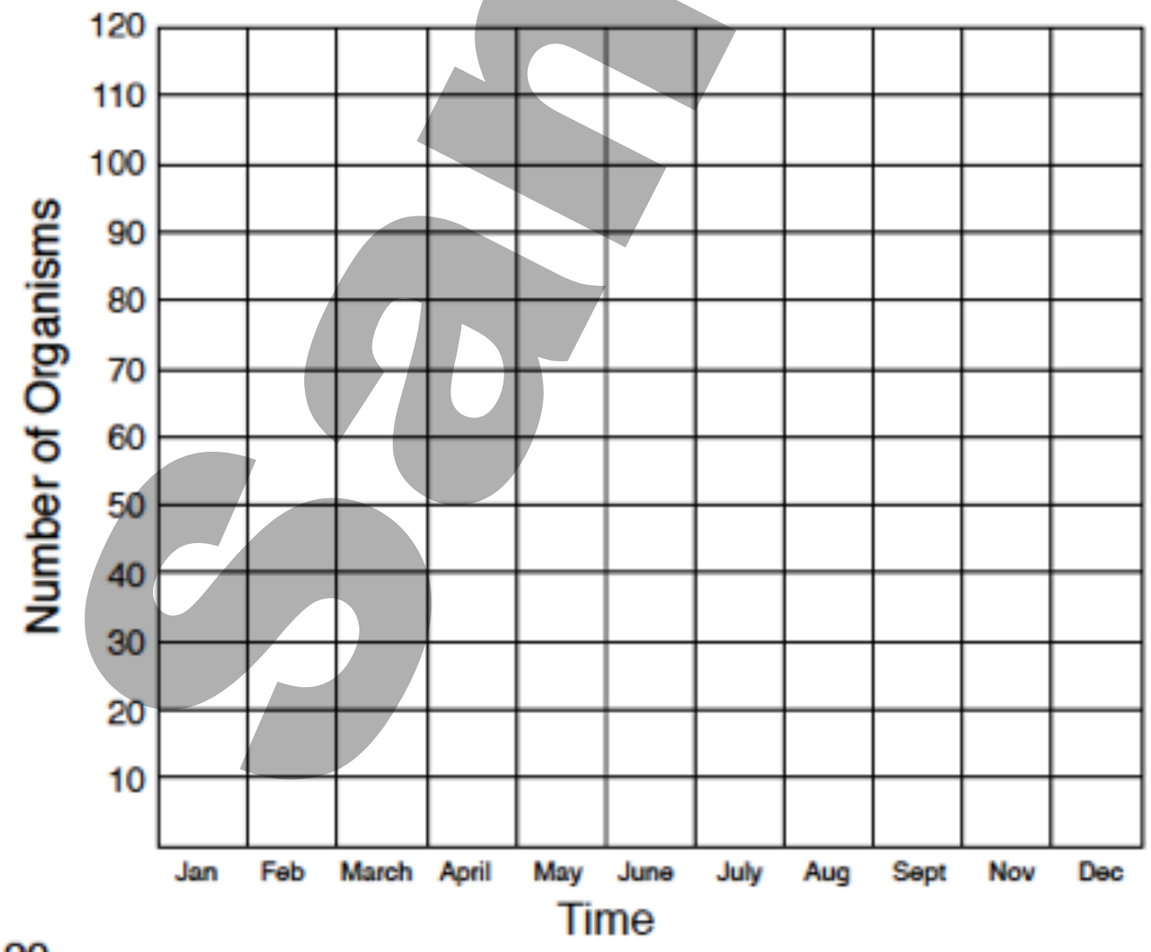
-_____ eat _____ for food, and other _____ eat them in a _____

-Many _____ form a _____

-_____ break down dead organic matter

-All _____ go through _____ in an ecosystem depending on the surrounding _____

-Use the information in the presentation to complete the graph:



Unit Review

1. What is an ecosystem? _____
2. What is the difference between an abiotic and a biotic factor? _____
3. Give three examples of abiotic factors: _____
4. Give three examples biotic factors: _____
5. What is a biome? _____
6. What are two ways in which terrestrial and aquatic ecosystems differ? How are they similar? _____
7. Explain how a population's growth may slow or stop: _____
8. Give 3 examples of community interactions: _____
9. Describe a biome that you learned about in this unit: _____
10. What is a producer? _____
11. Describe the pattern of predator-prey populations in an ecosystem: _____
12. As resources dwindle, what may increase? _____
13. Any factor in an ecosystem that may run out and reduce population growth is called a _____
14. List and describe three ways in which a plant increases its chance of survival: _____
15. Why are producers important to ecosystems? _____

Unit Review

16. What is the original source of energy for all life on the Earth?

_____

17. What type of organism is found at the beginning of the food chain ?

_____

18. A snake eats a frog that has eaten an insect that has eaten the grass. Describe the role of each organism: _____

_____

_____

19. What two things can autotrophs use to acquire energy?

_____

20. Explain what might cause a plant to grow toward light. What is this called? _____

_____

_____

Written assignment: Choose a biome that you learned about in this unit and describe the interactions that occur within it. Include examples of available resources, niches of specific organisms, and feeding relationships. How are each of these factors important to the functioning of the ecosystem?

Energy moves in one direction! Only 10% moves up each level. It is lost in the form of heat	An organism that can't produce its own food so it must eat other organisms - top levels of an energy pyramid.	Makes its own food from organic compounds - bottom level of an energy pyramid. Majority of all biomass.
Movement of a plant away from a stimulus	Movement of a plant toward a stimulus	Type of ecosystem: forest, grassland, desert, tundra, etc.
Living factor that influences an ecosystem	A period of inactivity (often in seeds or plants when energy is limited)	Interconnected feeding relationships in an ecosystem
Any resource or disturbance that may limit a population's growth	Occurs when a seed sprouts and begins to grow	A group of the same type of species living in the same area
Also known as a producer (makes its own food)	Fungi and algae living together (break up rocks to form soil)	The organism that is hunted by a predator
Original source of energy for all life	Process that allows sunlight energy to be converted to glucose	Occurs when one organism must hunt and kill another for food
The ability to do work; powers all life processes	A group of many different populations living in the same area	A community plus its abiotic surroundings

Producer	Consumer	Energy Transfer
Biome	Positive Tropism	Negative Tropism
Food Web	Dormancy	Biotic Factor
Population	Germination	Limiting Factor
Prey	Lichen	Autotroph
Predation	Photosynthesis	Sunlight
Ecosystem	Community	Energy