Name _____ Date _____ Period _____

Principles of Ecology – Chapters 2, 3 and 4

1. Ecology

a. Define ***ecology***.

b. What is the difference between *biotic and abiotic factors* in an ecosystem?

c. Identify 3 examples of both biotic and abiotic factors in the rainforest.

2. Ecological Levels of Organization

a. The _____ is the portion of the Earth which contains life.

b. In order from *smallest to largest*, what makes up the biosphere?

_____→_____→_____→_____→_____→ BIOSPHERE

c. For each level of organization, describe and give an example of its contents.

	Organism	Population	Community	Ecosystem	Biome	Biosphere
Description						
Example(s)						

3. Terrestrial Biomes

a. Identify the four major categories used to classify a **biome**.

b. List the terrestrial biomes.

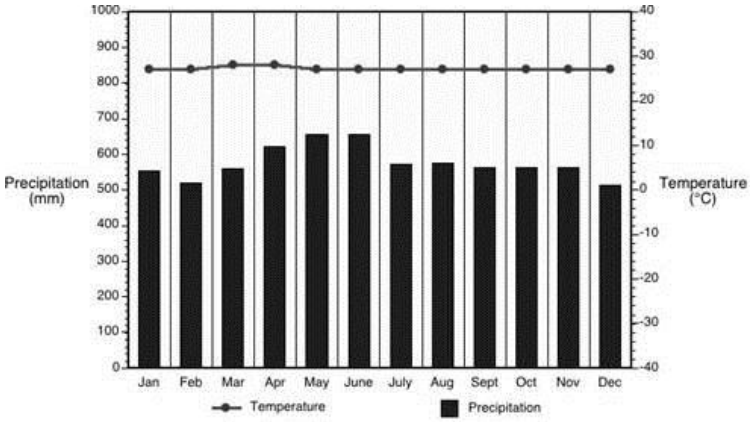
c. Chose a terrestrial biome and describe its <u>temperature</u>, <u>rainfall</u>, <u>plants</u> and <u>animals</u>.

d. Can you think of any **adaptations** *plants in the coniferous forest* might have?

e. Use the <u>top left graph</u> to answer the following question: Which biome has an average annual precipitation of 150cm and an average annual temperature of 10°C?

f. Use the <u>top right graph</u> to answer the following question: Which biome would you expect to find closer to the equator, the temperate deciduous forest or the coniferous forest?

g. You would expect the climatogram seen to the right to represent data from which biome?



4. Aquatic Biomes

a. Approximately _____% of all water on Earth is **salt water**.

b. The most ***biodiverse*** aquatic ecosystems, both freshwater and marine, are the *shallowest zones*. Why are these zones able to support such a large number and variety of living organisms?

5. Ecosystem Interactions

a. Define **habitat**.

b. An organism's **niche** is the _____ that an organism has in its environment.

   i. Give an example of an organism's niche.

6. Community Ecology

a. A ***limiting factor*** is anything which limits the size of a population. Give 4 examples of limiting factors.

b. What is the maximum number of a certain species that an ecosystem can hold?

c. The graph illustrates an ecosystem with a carrying capacity for approximately _____ deer.

d. What is the difference between *density dependent and density independent* limiting factors?

e. Give 2 examples of each, density dependent and density independent factors.

7. Ecological succession

a. Describe ***ecological succession***.

b. *Primary succession* takes place on newly exposed _____ which lacks topsoil.

i. Identify events which can lead to primary succession.

ii. Summarize the process of primary succession.

c. *Secondary succession* takes place in a newly cleared area where the _____ remains.

i. Identify events which can lead to secondary succession.

ii. Summarize the process of secondary succession.

8. Community Interactions

a. Define competition.

b. Predation takes place when one organism hunts and kills another. The _____ is the hunter, which the _____ is the hunted.

9. Symbiotic Relationships

a. What is a long, close term relationship between two different species? _____

b. Fill in the chart on the three symbiotic relationships. Use smiley, sad or straight faces for "symbols."

Symbiotic Relationship	"Symbols"	Description	Example
Mutualism			
Commensalism			
Parasitism			

10. Energy in an Ecosystem

a. Explain the difference between *autotrophs and heterotrophs* and the way they obtain energy/food.

b. **Herbivores** eat _____. **Carnivores** eat _____.

c. What do **omnivores** eat?

11. Models of Energy Flow

a. The _____ level of an organism identifies its position in the food chain/web.

b. Which type of organism ALWAYS makes up the *first trophic level*? Why?

c. What does an **arrow** in a food web or food chain illustrate?

d. A food _____ shows ALL feeding relationships within a biological community.

e. Draw a simple food chain in the box below. Label the following terms: producer, primary consumer, secondary consumer and tertiary consumer.

12. Energy Pyramids

a. _____% of energy is **lost** at each trophic level, while only _____% is **retained**.

b. Describe the purpose of an **energy pyramid**.

c. Which type of organism has the *most available energy* and therefore the largest biomass?

d. Why would large carnivores, such as an orca (killer whale), be at the top of an energy pyramid?