

Name: _____ Date: _____ Block: _____

Miller and Spoolman's Living in the Environment 16th ed.

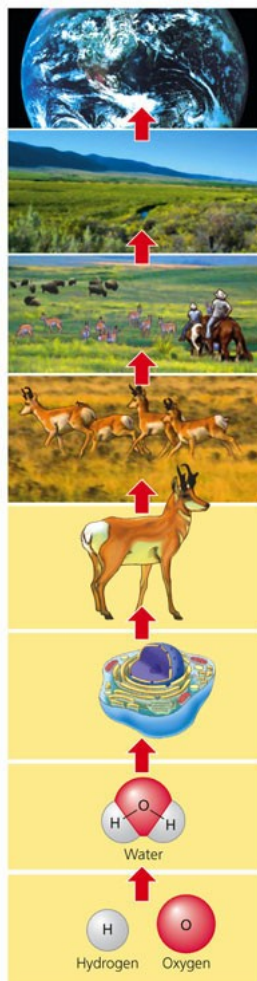
Chapter 3 Reading Guide – Ecosystems: What Are They and How Do They Work?

Case Study – Tropical Rain Forests Are Disappearing

1. Explain why tropical rain forests are so important to the study of ecosystems.
2. Identify and explain the three harmful effects of tropical rainforest destruction.

Section 3-1 – What Is Ecology?

3. Differentiate between prokaryotic and eukaryotic cells.
4. Label the figure below with the appropriate level of biological organization and explain each term.



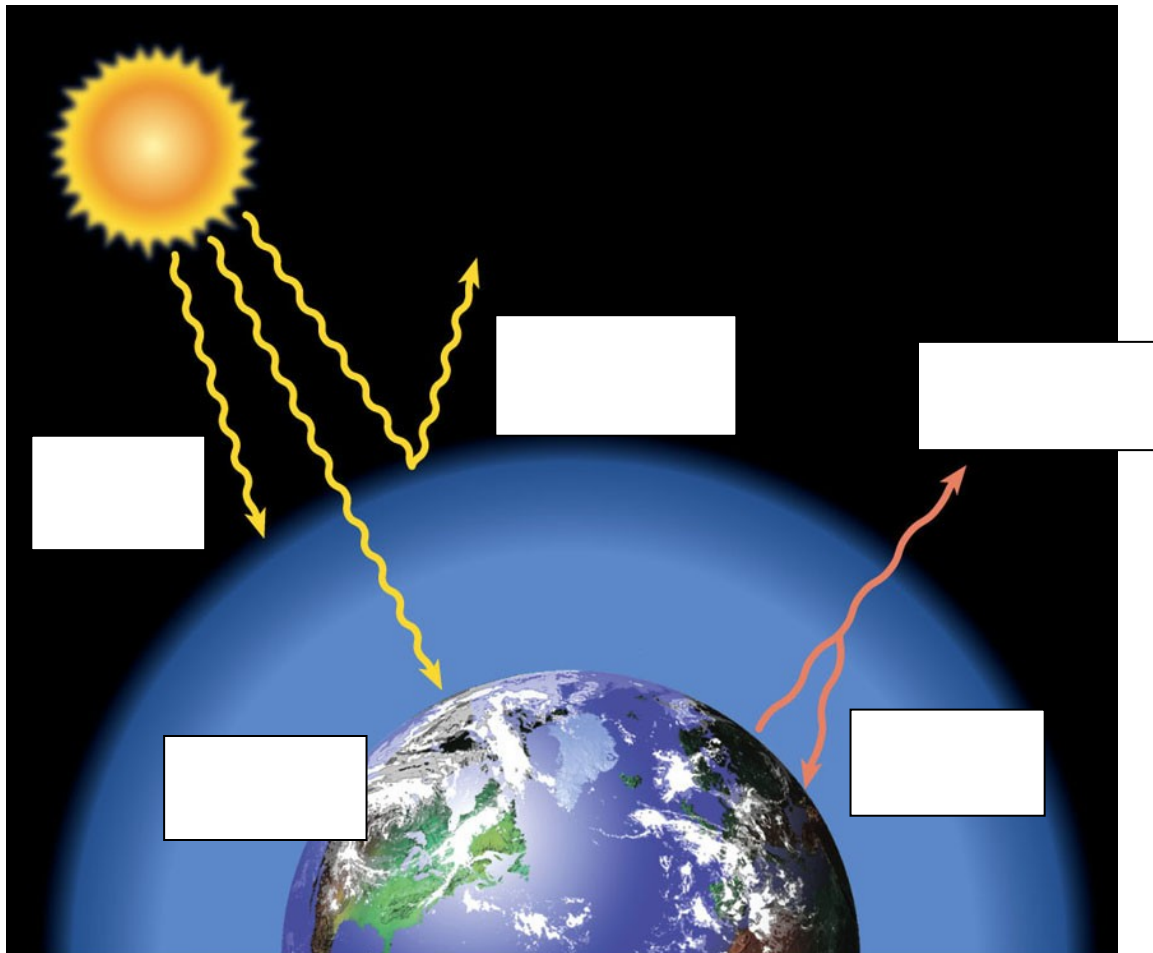
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Section 3-2 – What Keeps Us and Other Organisms Alive?

5. What are Earth's four life-support systems? What does each consist of?
6. What are biomes? Aquatic life zones?
7. Explain the three factors that sustain life on Earth.

Sun	
Cycling of matter/nutrients	
Gravity	

8. Use the figure below to describe how the energy we get from the sun is used.



Section 3-3 – What Are the Major Components of an Ecosystem?

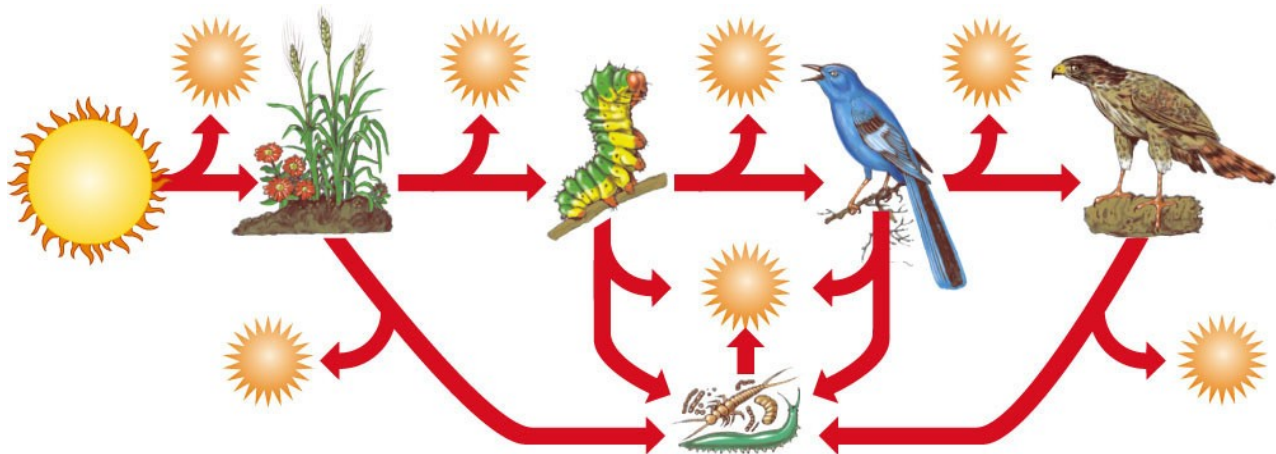
9. Define abiotic and biotic factors and list at least 2 examples of each.
10. What is the limiting factor principle?
11. Explain the role of each type of consumer in an ecosystem.

Primary consumer (herbivores)	
Secondary consumers (carnivores)	
Third- higher-level consumers	
Omnivores	
Decomposers	
Detritivores	

12. Explain the importance of aerobic and anaerobic respiration in an ecosystem.

Section 3-4 – What Happens to Energy in an Ecosystem?

13. Label the food chain diagram below with the trophic levels and producers/consumers at each level.



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14. What is the biomass of an ecosystem?
15. What is ecological efficiency?
16. Look at figure 3-15. Why is there so little usable energy for the tertiary consumers?
17. Differentiate between gross primary productivity and net primary productivity.

Section 3-5 – What Happens to Matter in an Ecosystem?

18. Describe the steps of the water cycle.
19. Describe the steps of the carbon cycle.
20. Describe the steps of the nitrogen cycle.
21. Describe the steps of the phosphorus cycle.
22. Describe the steps of the sulfur cycle.

Section 3-6 – How Do Scientists Study Ecosystems?

23. Briefly describe each way scientists study ecosystems.

Directly	
Laboratory	
Models	