

6

Science Standard
6.5.c.



Energy: Pass It On!

California Education and the Environment Initiative

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The Education and the Environment Curriculum is a cooperative endeavor of the following entities:

California Environmental Protection Agency
California Natural Resources Agency
Office of the Secretary of Education
California State Board of Education
California Department of Education
California Integrated Waste Management Board

Key Leadership for the Education and Environment Initiative:

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Andrea Lewis, Assistant Secretary for Education and Quality Programs, California Environmental Protection Agency
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Key Partners:

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Lesson 1 What Is a Population?

None required for this lesson.

Lesson 2 Making a Living

None required for this lesson.

Lesson 3 The Higher, the Fewer

2,000 Energy Units. 2

Lesson 4 Cause and Effect?

None required for this lesson.

Lesson 5 Making Choices: The Effects of Human Consumption

None required for this lesson.

Assessments

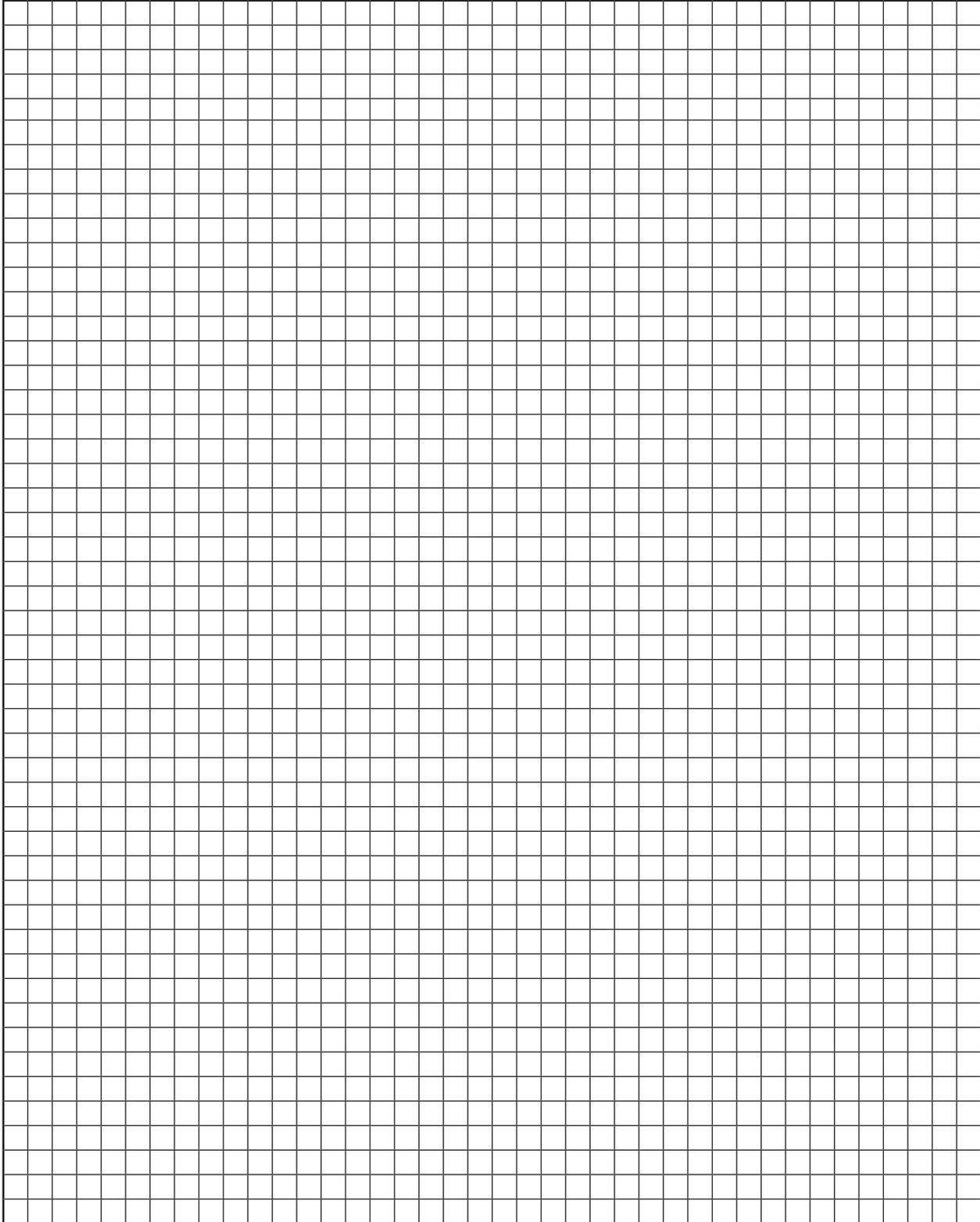
Energy: Pass It On! —Traditional Unit Assessment Master 3
Summary of an Ecosystem —Alternative Unit Assessment Master. 7

2,000 Energy Units

Lesson 3

Name: _____

2,000 Energy Units



▪ Mountain lion unit of energy

Energy: Pass It On!

Name: _____

- 9. At each trophic level, less energy is available to the organisms than was available at lower levels. This is because _____.
 - a. most organisms are wasteful
 - b. organisms use energy in the process of living
 - c. most organisms try to conserve energy
 - d. organisms store energy rather than pass it on

- 10. A commonly used estimate of the amount of energy available to the next trophic level in a food chain is about _____.
 - a. 1%
 - b. 10%
 - c. 50%
 - d. 90%

- 11. In a food pyramid, which of the following would be considered a primary consumer?
 - a. bobcat
 - b. bacteria
 - c. vulture
 - d. rabbit

- 12. In a food pyramid, which of the following would be considered a secondary consumer?
 - a. mouse
 - b. deer
 - c. worm
 - d. hawk

- 13. In a food pyramid, humans are _____.
 - a. producers
 - b. consumers
 - c. scavengers
 - d. decomposers

Instructions: Read and complete the tasks in the spaces provided.

- 14. Tell how energy from the Sun enables a top carnivore such as a mountain lion to live. Show your understanding of the following terms as you use them in your answer. (5 points)

producer	photosynthesis	consumer	herbivore	carnivore
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Name: _____

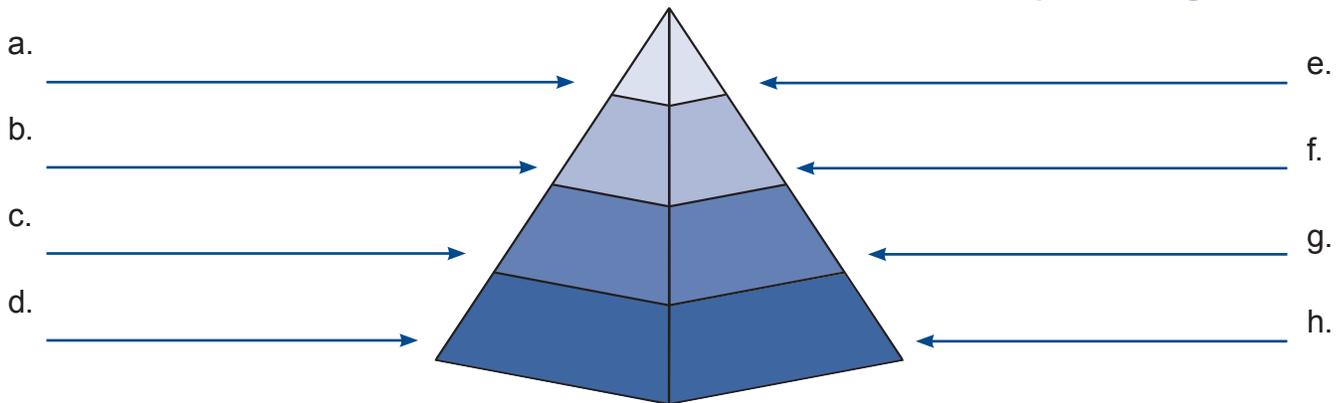
15. Label the trophic levels of the energy pyramid below. Use the following terms in your labels in the left column. Some of the lines will need more than one term. (6 points)

primary consumer producer	secondary consumer herbivore	tertiary consumer carnivore
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In the right column, give an example of an organism at each trophic level. (4 points)

Trophic Levels / Types of Organisms

Examples of Organisms



16. If 100,000 units of energy are stored in the grass in the following food chain, how many units of energy would be available to the hawk? (2 points)

grass → grasshopper → frog → snake → hawk

17. Explain why the hawk has less energy than is found in the grass. (2 points)

Summary of an Ecosystem

Name: _____

Instructions: Select an ecosystem in California that you have studied in this unit. Use examples from this ecosystem to complete all the questions in this assessment.

Ecosystem: _____

Part 1: Populations

1. What is a population? (1 point)

2. Describe a population that lives in your ecosystem. (1 point)

3. Name another population that affects the organisms described in question 2. How does one affect the other? (2 points)

Part 2: Functions in an Ecosystem

4. List one example from your ecosystem of each of these: (1 point each)

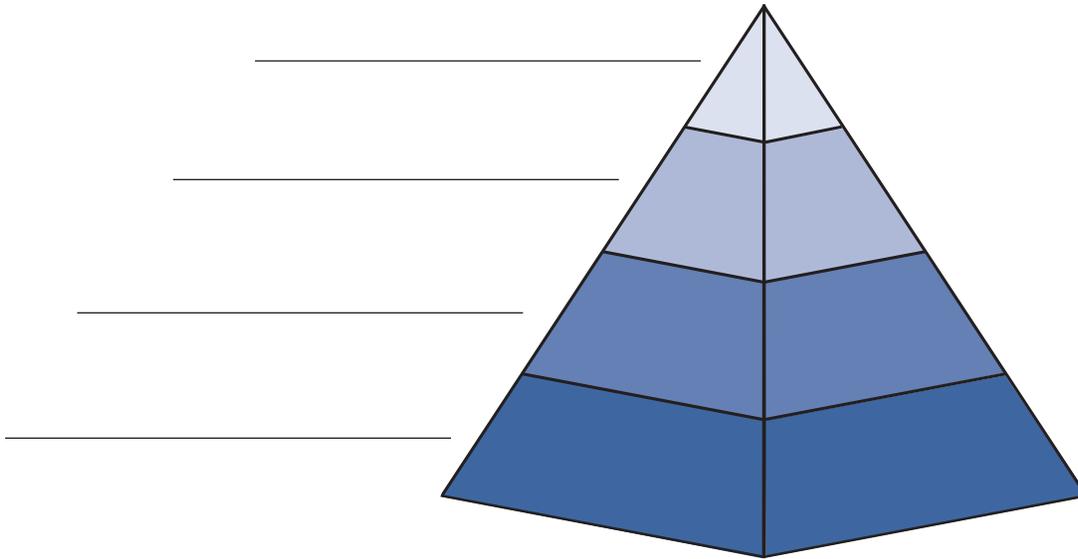
Producer		
Consumers	Herbivores	
	Carnivores	
	Omnivores	
	Scavengers	
Decomposers		

Summary of an Ecosystem

Name: _____

Part 3: Energy in an Ecosystem

5. Think of one food chain in your ecosystem. Use the food pyramid below to show which organism in the food chain will be at each different trophic level. (4 points)



6. What is the name of the level of consumption at the bottom of the pyramid? (1 point)

7. Which animal in your pyramid is the tertiary consumer? (1 point)

8. Why is this food chain represented as a pyramid? What does this say about how energy flows through this system? (2 points)

9. Imagine that the Sun provides a 10,000 kcal of energy to an area. Which of these organisms will be able to store the most amount of this energy? Which will store the least? (2 points)

Summary of an Ecosystem

Name: _____

Part 4: Effects of Humans in the Ecosystem

10. Think about the food web in your ecosystem. Give one example of how a human practice affects the relationships in your food web. (2 points)

11. Describe a good that humans consume from your ecosystem. (1 point)

12. Identify and describe a byproduct generated by human consumption of the good you described in question 11. How does this byproduct affect your ecosystem? (2 points)

13. Describe a choice that people can make about the consumption of these goods. How does this choice change the amount of byproducts that affect your system? How does this choice affect the survival of organisms in your ecosystem? (2 points)



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