6

Science Standard
6.5.c.

Teacher's Masters

California Education and the Environment Initiative

Energy: Pass It On!

California Education and the Environment Initiative

Approved by the California State Board of Education, 2010

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

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Key Partners:

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Contents

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

Name: _____

2,000 Energy Units

- Mountain lion unit of energy

Name: _____

Instructions: Select the best answer and circle the correct letter. (1 point each)

1. An organism that uses the energy of the Sun to make its food is called a (an) _____.
   a. herbivore b. consumer
   c. carnivore d. producer

2. Organisms that obtain their energy from foods that they eat are called _____.
   a. plants b. consumers
   c. producers d. tropic levels

3. An animal, such as a deer, that primarily eats plant material is called a (an) _____ .
   a. omnivore b. producer
   c. herbivore d. carnivore

4. An animal, such as a lizard, that primarily eats other animals is called a (an) _____.
   a. omnivore b. producer
   c. herbivore d. carnivore

5. An animal that eats both plants and animals is called a (an) _____.
   a. omnivore b. producer
   c. herbivore d. carnivore

6. Organisms, such as bacteria, that obtain their energy by breaking down dead organisms are called _____ .
   a. decomposers b. scavengers
   c. producers d. herbivores

7. Animals, such as vultures, that eat dead organisms are called _____.
   a. decomposers b. scavengers
   c. producers d. herbivores

8. Which of the following would be considered a scientific description of a population?
   a. 147 catfish lived in the pond last summer.
   b. There were now 34 deer.
   c. 35 students
   d. There are now fewer bears living in the forest.

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

_____

_____

_____

_____

_____

_____

_____

_____

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

In the right column, give an example of an organism at each trophic level. (4 points)

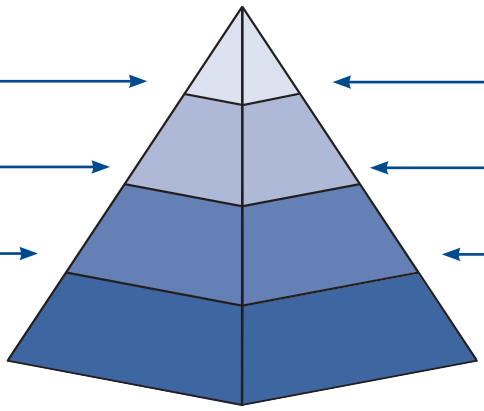
Trophic Levels / Types of Organisms **Examples of Organisms**

a.

b.

c.

d.



e.

f.

g.

h.

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)

_____

_____

_____

_____

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Name: _____

18. Choose a resource you have studied that humans get from natural systems. Think about the process of getting and using this resource. What are two examples of ways that humans decide to get this resource that could affect an ecosystem? (4 points)

19. Could the consumption of the resource you mentioned in question 18 affect the food web/ energy pyramid in an ecosystem? Explain why or why not. (4 points)

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

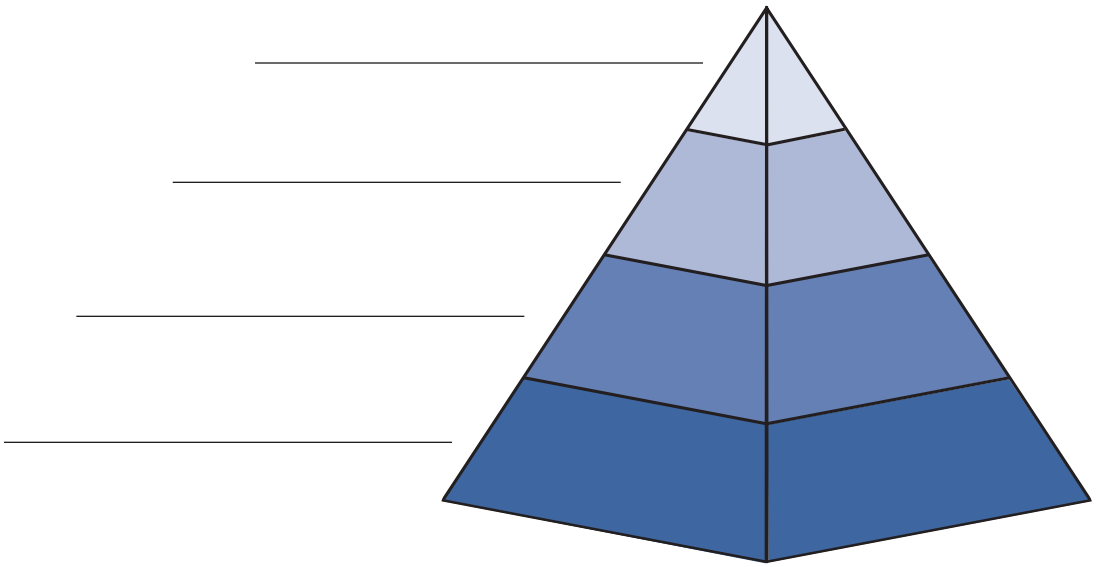
4. List one example from your ecosystem of each of these: (1 point each)

Producer		
Consumers	**Herbivores**	
	Carnivores	
	Omnivores	
	Scavengers	
Decomposers		

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)

_____

_____

_____

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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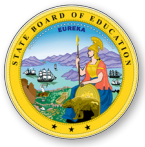

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