Teacher's Masters

California Education and the Environment Initiative

4

Science Standard 4.2.a.

Plants: The Ultimate Energy Resource

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

Key Leadership for the Education and Environment Initiative:

Linda Adams, Secretary, California Environmental Protection Agency
Patty Zwarts, Deputy Secretary for Policy and Legislation, California Environmental Protection Agency
Andrea Lewis, Assistant Secretary for Education and Quality Programs, California Environmental Protection Agency
Mark Leary, Executive Director, California Integrated Waste Management Board
Mindy Fox, Director, Office of Education and the Environment, California Integrated Waste Management Board

Key Partners:

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Contents

Lesson 1 California's Cash Crops

None required for this lesson.

Lesson 2 Energy for Survival

None required for this lesson.

Lesson 3 The Chain Game

None required for this lesson.

Lesson 4 Energy: The Source

None required for this lesson.

Lesson 5 Natural Systems: The Source of it All

None required for this lesson.

Assessments

Plants: The Ultimate Energy Resource—Traditional Unit Assessment Master 2

California Agriculture Brochure Instructions and Scoring Tool—
Alternative Unit Assessment Master 4

Name: _____

Instructions: Select the best answer and circle the correct letter. (2 points each)

1. All organisms need:
   a. to eat animals
   b. to eat plants
   c. energy and matter to live and grow
   d. light from the Sun for energy

2. The primary source of matter and energy entering most food chains is
   a. animals
   b. plants
   c. insects

3. Which of the following is the correct representation of a food chain?
   a. bird→grasshopper→leaves
   b. grasshopper→leaves→bird
   c. leaves→bird→grasshopper
   d. leaves→grasshopper→bird

4. Almonds are an example of:
   a. a natural resource
   b. an ecosystem service
   c. a vegetable
   d. a natural system

5. An example of a process that helps people get resources from nature is:
   a. plants
   b. seed dispersal
   c. animals
   d. ecosystems

Instructions: Read the questions below and complete the tasks.

6. Write a five sentence paragraph that explains how plants help animals, including humans, and other living things survive. Explain how the matter and energy are produced. Use these words in your writing: **natural systems, energy, plants,** and **food chain**. (10 points)

_____

_____

_____

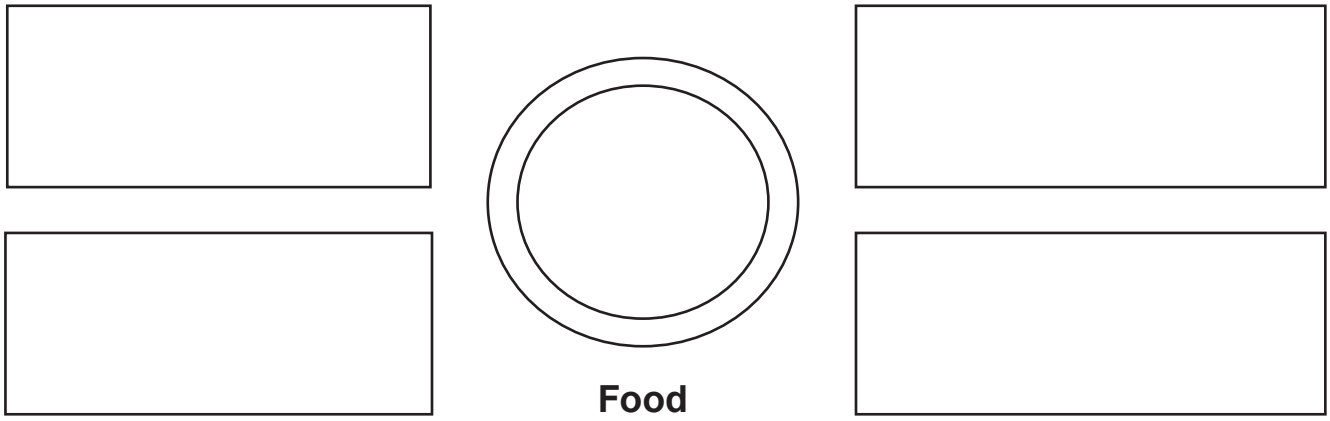
_____

_____

_____

Name: _____

7. Follow these instructions for the final task.
   - Choose one of the following food items: pizza, hamburger, or chicken Caesar salad.
   - Create a word web that traces all the ingredients in the food item back to the plants they originally come from.
   - Complete the sheet by listing the natural resources and natural processes that were used to provide the food item. (10 points)



Natural resources:

lettuce

Natural processes:

plants changing sunlight into energy they can use

Instructions: Review the procedures below for creating your brochure. Use the scoring tool on the next page to guide the writing for each panel.

The California Agriculture Club has hired you to prepare a brochure. The brochure will promote the importance of plants. Club members will hand out the brochure at Farmers' Markets all over California. They hope more people will learn that we need plants to survive. You need to write and illustrate the brochure.

Writing Your Brochure

Your brochure needs to cover these five topics:

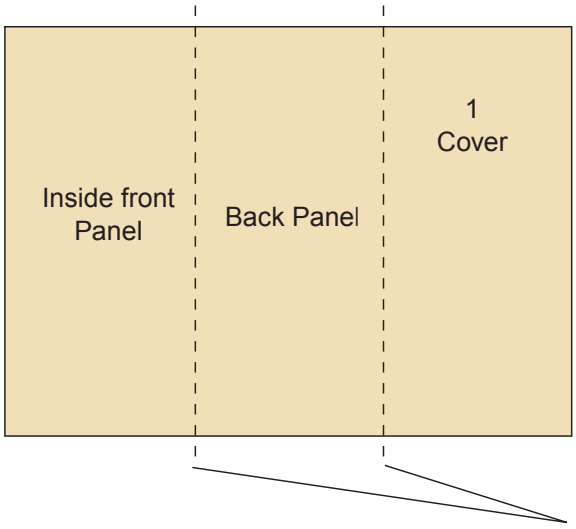
- the role of plants in food chains
- why people need energy
- why plants are important to people
- how people depend on ecosystems
- the importance of California agriculture

Write at least three sentences explaining each of these ideas.

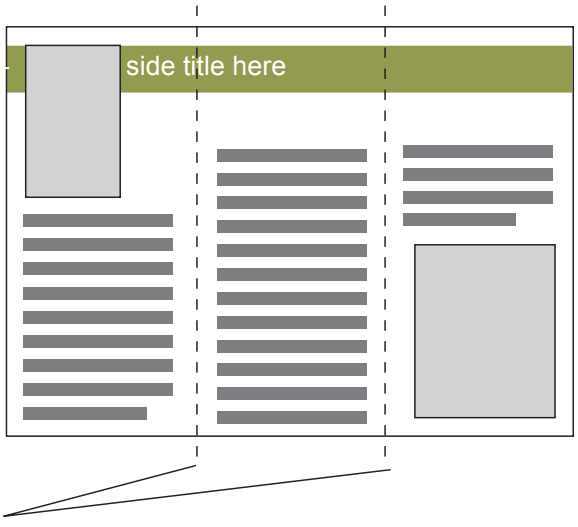
Designing Your Brochure

1. Fold a blank piece of paper in thirds to create six panels.

Outside Brochure



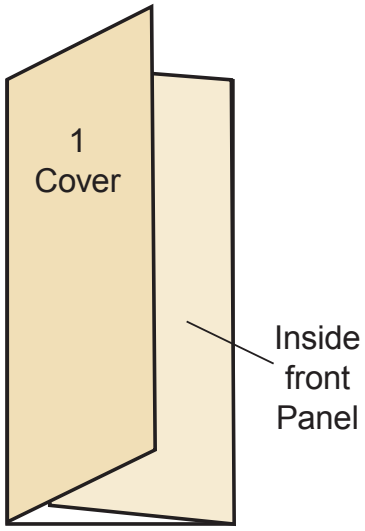
Inside Brochure



fold lines

2. The first panel is the cover of your brochure. Write the title on the cover. You can use “The Importance of Plants” as your title, or you can make up your own title. Draw or use magazine pictures to illustrate your cover.

3. On each of the other panels, add what you wrote about the five topics listed above. Include a title for each section. Add illustrations wherever you have enough space. You may use colored pens to make your design more interesting.

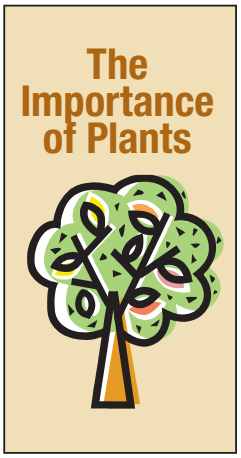


Folded Brochure

Grading

You will be graded on:

- how well you explain each of the five topics.
- whether your brochure is neat and clear, with all words spelled correctly.



Brochure Cover

California Agriculture Brochure Scoring Tool

	4	3	2	1
The role of plants in food chains	States that plants are the primary energy source for most food chains, and that plants convert water and carbon dioxide, in the presence of sunlight, into usable energy.	States that plants are the primary source of energy in most food chains.	States that plants are a source of energy in food chains.	States that plants are a part of most food chains.
Why people need energy	States that energy is necessary for proper body functions (such as breathing and growing), and that people need energy for all their daily activities.	States that energy is important so people can engage in their daily activities.	States that all living things need energy.	States that energy is important, but gives no reasons.
Why plants are important to people	States that, through food chains, plants provide people, and all other living things, with the energy they need. Also states that plants are an important source of nutrition for people.	States that, through food chains, plants provide energy for people and all other living things.	States that plants are important because they provide energy.	States that plants are important, but gives no reasons.
How people depend on ecosystems	Explains that people use natural resources, and that ecosystem processes help provide those resources. Gives examples of important resources and processes. States that people rely on healthy ecosystems.	Explains that people use natural resources and that the processes that occur in ecosystems help provide those resources. Gives examples.	Explains that people use natural resources, and that the processes that occur in ecosystems help provide those resources.	States that ecosystems provide people with resources, but gives no reasons why ecosystems are important.
The importance of California agriculture	Provides two or three reasons that agriculture is important to California, and explains why there is so much agriculture in the state.	Provides two or three reasons that agriculture is important to California.	Provides one reason that agriculture is important to California (for example, major source of income for the state, major producer of foods for the country and world, provides employment for many people).	States that agriculture is important to California, but gives no reasons.
Presentation	Well organized, clearly written information, no misspellings, nicely illustrated, attention paid to layout.	Well organized, clearly written information, few if any misspellings, nicely illustrated.	Organized, few misspelled words, one or two illustrations.	Not organized, difficult to understand, many misspelled words, no illustrations.

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