5

Science Standard
5.3.c.

Teacher's Masters

California Education and the Environment Initiative

Precipitation, People, and the Natural World

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 The Importance of Precipitation in California

None required for this lesson.

Lesson 2 How Clouds Form in California

None required for this lesson.

Lesson 3 Precipitation and Terrestrial Ecosystems

None required for this lesson.

Lesson 4 People Depend on Precipitation

None required for this lesson.

Lesson 5 Human Activities and Water Quality

None required for this lesson.

Lesson 6 Effects of Human Activities on the Quantity and Distribution of Precipitation

Hot Air Demonstration 2

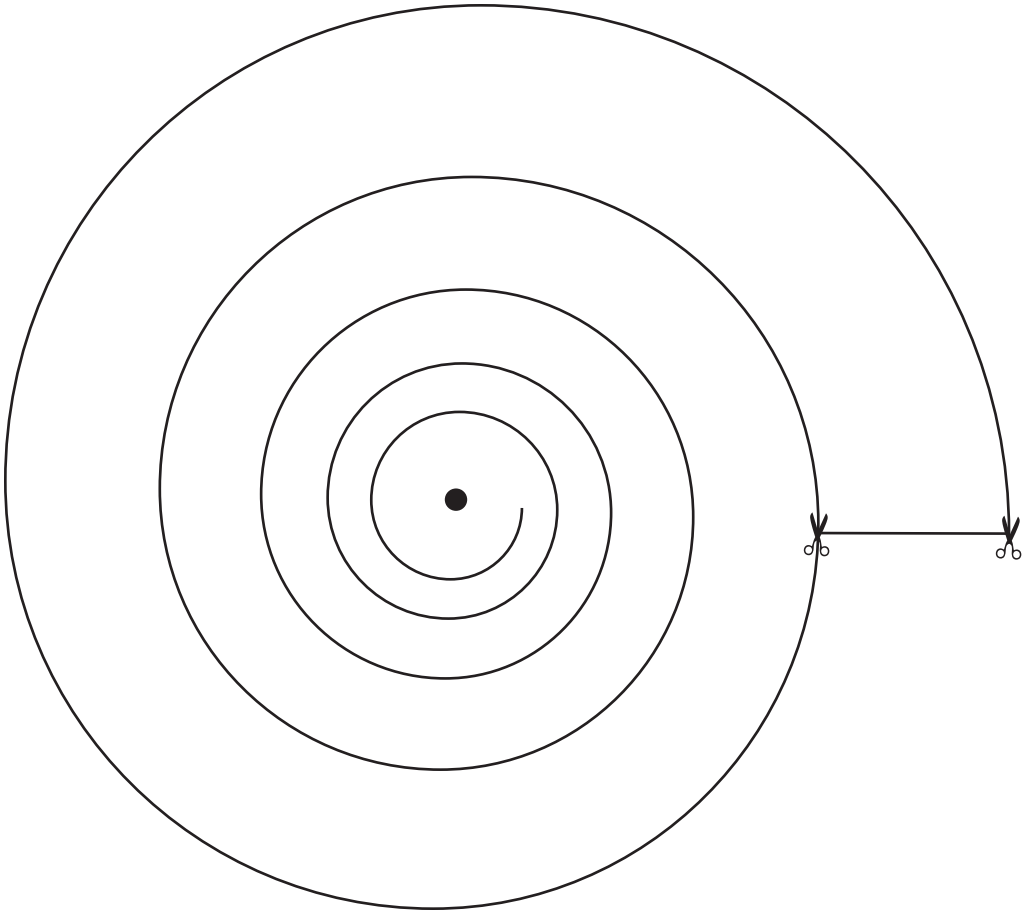
Assessments

Precipitation, People, and Natural Systems—
Traditional Unit Assessment Master 3

Writing About Water—Alternative Unit Assessment Master 6

Instructions:

1. Cut out the paper spiral below.



2. Punch a hole in the center of the spiral.
3. Attach a 12”–18” piece of thread through the hole.
4. Hold the spiral over a lamp, making sure not to touch the lamp with the paper.
5. Turn on the lamp.

Name: _____

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

1. Which kind of precipitation normally occurs only during thunderstorms?
   a. sleet
   b. hail
   c. freezing rain
   d. snow

2. Which of these ecosystems has the least rainfall?
   a. oak woodland
   b. redwood forest
   c. mixed conifer and evergreen forest
   d. grasslands

3. About two-thirds of California's water comes from:
   a. the mountains
   b. the Central Valley
   c. the northwest coast
   d. the southwest coast

4. Most of the pollutants that cause acid precipitation come from:
   a. households
   b. coal-burning power plants
   c. agriculture
   d. cars

5. The effect of urban heat islands along the coast of California is:
   a. cooler temperatures than in the surrounding countryside.
   b. increased precipitation upwind from them.
   c. decreased precipitation downwind.
   d. no change in precipitation patterns.

6. Acid rain can:
   a. acidify lakes
   b. kill trees
   c. corrode statues
   d. all of the above

Instructions: Find the correct description for each term. Write the correct letter on the line provided. (1 point each)

____ 7. freezing rain	a. a collection of water droplets close to the ground
____ 8. rainshadow effect	b. rain that freezes when it hits the ground
____ 9. aerosols	c. total accumulation of snow
____ 10. sleet	d. tiny particles of liquids or gases in the air
____ 11. snowpack	e. precipitation in the form of solid ice
____ 12. fog	f. formation of a dry climate on the leeward side of a mountain

Name: _____

Intructions: Answer the following questions in a few sentences. (2 points each)

13. Explain why we need California's water projects, which include aqueducts, dams, and reservoirs.

_____

_____

_____

_____

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14. Explain how and why precipitation patterns in the Sierra Nevada are changing.

_____

_____

15. Explain how urban areas in California decrease local precipitation.

_____

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16. Explain how urban areas in a warm, moist climate increase local precipitation.

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17. What three things are needed to form clouds?

_____

_____

Name: _____

18. Describe how most clouds and precipitation form in California.

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19. List three ways that people and communities depend on precipitation.

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20. Why are there different kinds of natural regions in California? What role does precipitation play?

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Name: _____

Instructions: Read the writing prompt and complete the assigned tasks.

Imagine you are a writer working for a water education group. Your job is to write a convincing newspaper article, pamphlet, or radio script. The purpose of the piece is to educate the public about the importance of precipitation in California. Your piece should reflect your understanding of the unit content. Be creative. Write clearly and concisely.

A. Begin by outlining the key points you want to include in your pamphlet, script, or article. Include information about these three key areas:

1. Identify and thoroughly describe the role of precipitation in California's ecosystems. For example:
   - How do land ecosystems, like redwood forests and alpine meadows, rely on precipitation?
   - How does precipitation usually form in California?
   - Where does most of the precipitation occur in California?

2. Provide examples of how Californians depend on precipitation. For example:
   - How do cities in California depend on precipitation?
   - How does the agriculture industry rely on precipitation?
   - How do individual households depend on precipitation?

3. Provide examples of how human activities can influence the quantity, distribution, and chemical characteristics of precipitation. For example:
   - How does pollution from burning fossil fuels change precipitation patterns in California?
   - What are some actions people can take to lessen their influence on precipitation in California?

B. Once you have outlined the content you want to include, figure out a way to get your message across in a convincing and entertaining way. (12 points)
Here are some helpful hints for writing a complete and thorough article, pamphlet, or radio script:
   - Find an angle for your piece. What will be the overall theme of your piece?
   - Grab the reader's attention by using an opening sentence that is a question or something unexpected.
   - Give the details after you get their attention.
   - Try ending with a quote or a catchy phrase.

Name: _____

Writing About Water Scoring Tool

	4 points	3 points	2 points	1 point
Identifies the role of precipitation in ecosystems in California.	Identifies and thoroughly describes the role of precipitation in California's ecosystems.	Identifies and provides a complete description of the role of precipitation in California's ecosystems.	Identifies and provides some description of the role of precipitation in California's ecosystems.	Identifies but does not provide any description of the role of precipitation in California's ecosystems.
Provides examples of how humans depend on precipitation.	Provides four more examples of how humans depend on precipitation.	Provides three examples of how humans depend on precipitation.	Provides two examples of how humans depend on precipitation.	Provides one example of how humans depend on precipitation.
Provides examples of how human activities can influence the quantity, distribution, and chemical characteristics of precipitation.	Provides three examples of how human activities influence quantity, distribution, and chemical characteristics of precipitation.	Provides two examples of how human activities influence quantity, distribution, or chemical characteristics of precipitation.	Provides one example of how human activities influence quantity, distribution, or chemical characteristics of precipitation.	Mentions that human activities influence quantity, distribution, or chemical characteristics of precipitation.

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