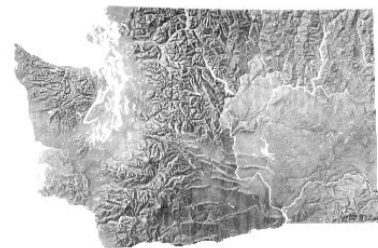


EARTH CONNECTIONS

Resources For Teaching Earth Science



HILLS, SCALES, AND HIKING TRAILS

BACKGROUND AND PURPOSE:

Contour lines connect a series of points of equal elevation measured from mean sea level. Lines that are closely spaced indicate steep slopes, lines that are farther apart indicate gentler slopes. Geology and geomorphic processes control the formation of different natural features. Every map needs a north arrow (usually pointing toward the top of the map) for orientation and a scale for estimation of distances. This lesson will teach you to recognize topographic features and human-made structures. The accompanying map sections were both taken from the U.S. Geological Survey Snoqualmie Pass 7½-minute (1:24,000-scale) quadrangle.

QUESTIONS

(Use both map sections. Grades 1–5 should answer questions A–D; grades 6–12 should answer A–I.)

- Name three human-made features represented by symbols on the map. Circle the symbols. (For example, highway, ski lift, house, hiking trail, logging road, footbridge.)
- Find and name one peak, two lakes, and three creeks or rivers.
- Using the scale bar, estimate how far you would travel to get from Ski Acres to Snoqualmie Ski Area. In which direction will you be traveling? Which way do both ski areas face?
- In what direction is Lodge Lake from Ski Acres?
- Find the ridge immediately west of the ski areas. What is the elevation of the highest point of this ridge? Why is this important?
- Describe some differences between the east and west slopes of the ridge at this location.
- Cliffs usually form in rock. Do you see any cliffs along the ridge? Which way do they face?
- Look at the top map section of the Middle Fork of the Snoqualmie River. What can you say about the shape of the valley (across the valley)? (Hint: consider the difference between closely spaced and widely spaced contour lines.) Try drawing a profile of the valley shape. What might have caused this valley shape?
- Using the scale, estimate how far it is along the hiking trail from Goldmyer Hot Springs to the wilderness boundary just east of Rock Creek. If your hiking speed averages 2 miles per hour (faster downhill, slower uphill), how long will it take you to get there? Which direction would take you less time?

DISCUSSION

- How do landforms control land uses?
- Where is it easier to build roads, and what are some of the effects of how and where we build roads?
- What areas of the map would be safer for home sites and why? What areas are unsafe and why?
- Note how some valleys have U-shaped bottoms and some have V-shaped bottoms. What geologic or geomorphic processes might cause these differences?
- Why is it important to have the radio tower located on the ridge?
- Use maps to estimate travel times and discuss types of terrain encountered.

ESSENTIAL SCIENCE LEARNING BENCHMARKS

- 1.1 Students will use properties to identify, describe and categorize landforms.
- 1.2 Students will recognize the components, structure, and interconnections of patterns among major landforms.

GRADE LEVELS

1st–12th grades

SUBJECTS

Geography
Earth science

CONCEPTS

Identifying geologic and human features on topographic maps.

SKILLS

Identifying patterns and relationships and interpreting maps.

OBJECTIVES

Students will become familiar with map use and orientation.

TIME NEEDED

45 minutes

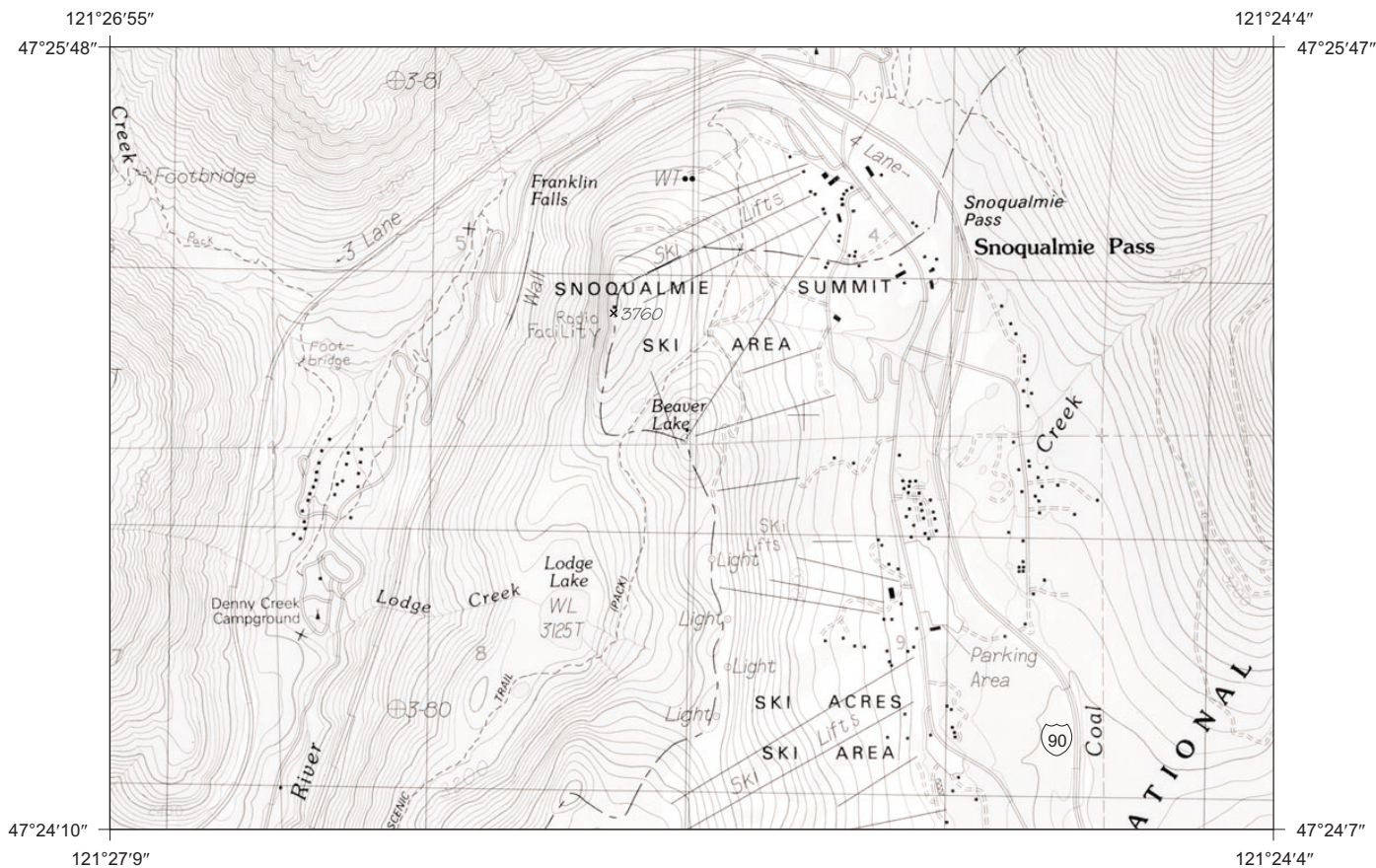
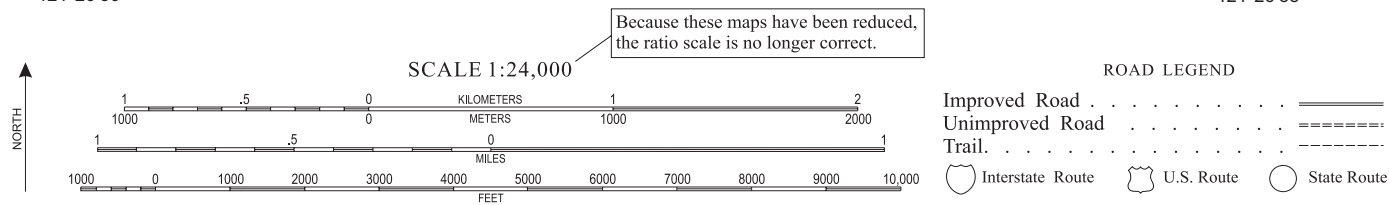
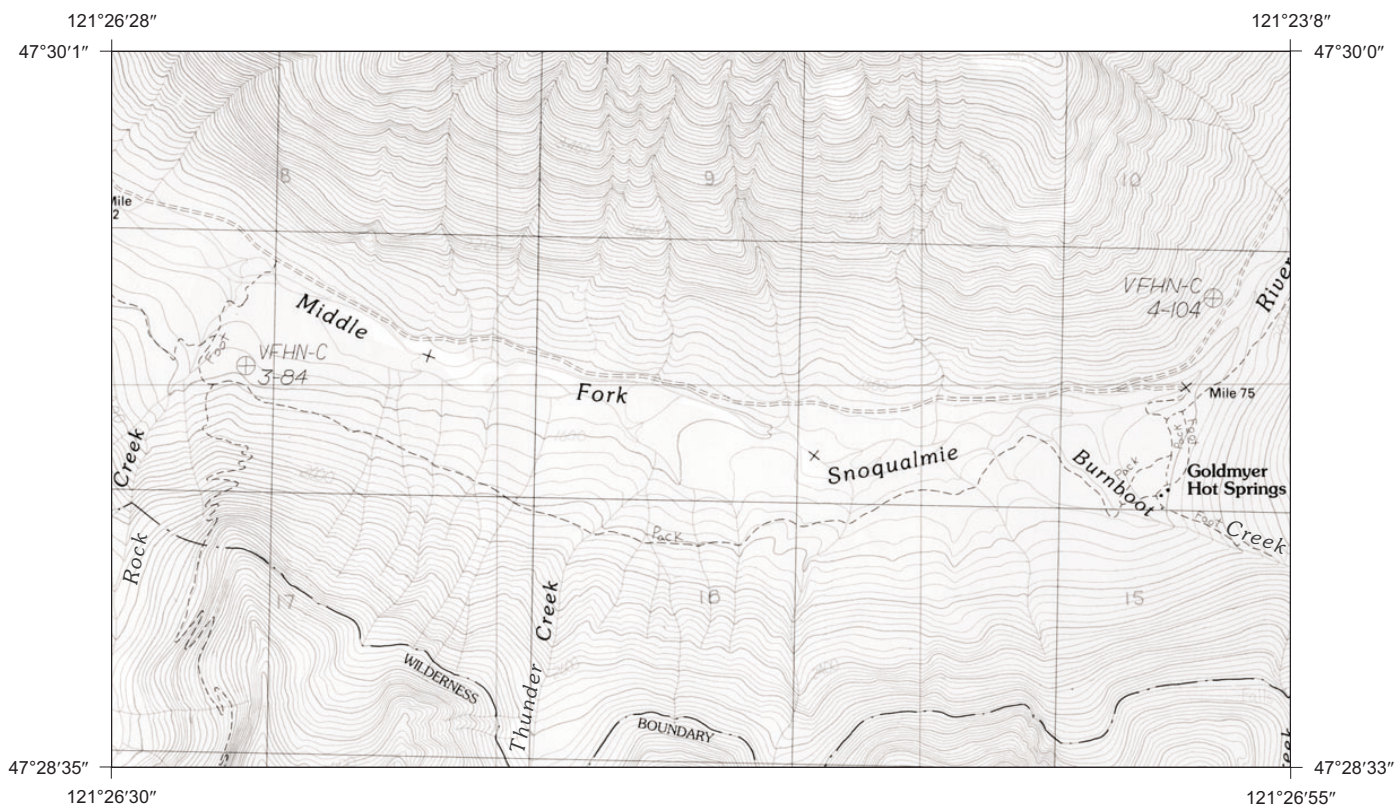
THERE IS NOTHING WHICH CAN BETTER DESERVE OUR PATRONAGE THAN THE PROMOTION OF SCIENCE AND LITERATURE. KNOWLEDGE IS IN EVERY COUNTRY THE SUREST BASIS OF PUBLIC HAPPINESS.

George Washington, address to Congress, January 8, 1790

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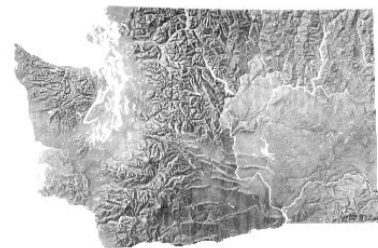
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Earth Connections No. 3



EARTH CONNECTIONS

Resources For Teaching Earth Science



VIRTUAL VACATION

BACKGROUND:

If you were unable to go very far for your summer vacation, a short geologic interlude is awaiting you on the Internet (your local library may have access). Visit the national parks and explore their geologic wonders on a 'virtual' vacation!

Complete the following data sheet and give it to your teacher to let him or her know you are having fun exploring the geology of your national parks. You may photocopy the data sheet for each park visited on the Internet.

And send a copy to *Washington Geology*; PO Box 47007; Olympia, WA 98504-7007, or e-mail it to geology@wadnr.gov. The best geologic exploration(s) submitted before the end of November 2000 may be published in a future edition of *Earth Connections*.

PROCEDURE:

Begin your journey at the Internet website for national parks—<http://www.nps.gov/>

Select *Nature Net: Natural Resources in the Park*; then select *Geology* for a list of park programs; then select *Park Geology Tour* for a variety of geologic topics. Select the one that interests you most (like volcanoes, glaciers, fossils, etc.). You will be shown a list of parks that have the geologic topic selected. Many national parks are listed under more than one of the geologic topics, for example, Mount Rainier, Washington, can be accessed through glaciers or volcanoes. Select the park you are interested in learning more about. Complete the data sheet and submit it as mentioned above.

DATA SHEET

Student name _____ Grade _____ Age _____

School _____ City _____ State _____

Park name _____ State _____

Geologic features present (glaciers, volcanoes, fossils, etc.) _____

Draw (and attach to this data sheet) a picture of your favorite geologic feature or a map of the location of your park within a state.

What is the age of the feature(s)? _____
(For example, the date of the last eruption of a volcano or the age of fossils)

What are some interesting connections between the biologic communities and the geology of this park that you learned from this vacation? (For example, how long it took plants to start to grow around Mount St. Helens after the 1980 eruption.)

If you were planning this for a family vacation, what modes of transportation would be necessary for you to get to the park gate?

ESSENTIAL SCIENCE LEARNING BENCHMARKS

1.1 Students will use properties to identify, describe and categorize landforms.

1.3 The student understands that science and technology are human endeavors, interrelated to each other, to society and to the workplace.

GRADE LEVELS

4th–8th grades

SUBJECTS

Earth science
Biological science

CONCEPTS

Earth science landforms may vary from park to park. National Parks hold many different landforms. The biotic and abiotic communities have different connections between them in various parks.

SKILLS

Using technology to acquire information; categorizing landforms.

OBJECTIVE

Students will use the Internet to research a particular national park and write about the geologic features present.

TIME NEEDED

20 minutes of Internet time

IT'S MORE IMPORTANT TO
PAVE THE WAY FOR THE
CHILD TO WANT TO KNOW,
THAN TO PUT HIM OR HER
ON A DIET OF FACTS.

Rachel Carson

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