

Teacher's Guide For California Geography – Coastline, Mountain Ranges and Valleys

For grade 7 – College

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MATERIALS IN THE PROGRAM

Teacher's Guide –This Teacher's Guide has been prepared to aid the teacher in utilizing materials contained within *California Geography: Coastline, Mountain Ranges and Valleys* program. In addition to this introductory material, the guide contains the following for each program:

- *Suggested Instructional Notes*
- *Student Learning Goals*
- *Blackline Masters Quiz for duplication and handout to students*
- *Timeline of Events for California*
- *Timeline of Events for Climate Change*
- *Maps & Graphics*

INSTRUCTIONAL NOTES

It is suggested that you preview the individual program that you will be teaching and read the Student Goals and Teacher Points. By doing so, you will become familiar with the materials and be better prepared to adapt the program to the needs of your class. Please note that the program is set up to be played continuously and you will probably find it best to follow the program in the order in which it is presented, but this is not necessary. The program in *California Geography: Coastline, Mountain Ranges and Valleys* can be divided into chapters accessed through the DVD's Menu Screen under Chapter Selects. In this way the program's chapters can be played and studied separately. A proposed Lesson Plan based on chapter headings accessed through the DVD menu screen can be found with the program presented in this Teacher's Guide. It is also suggested that the program presentation take place before the entire class and under your direction. As you review the instructional program outlined in the Teacher's Guide, you may find it necessary to make some changes, deletions, or additions to fit the specific needs of your students. After viewing the program, you may wish to copy the **Blackline Master Quiz** and distribute it to your class to measure students' comprehension of the events.

LINKS TO CURRICULUM STANDARDS

The design for this program was guided by Science Content Standards for California Public Schools, Kindergarten through Grade Twelve, with emphasis on Life Sciences and Earth Sciences Grades 4-6. In addition this program includes the following curriculum

correlations: National Science Education Standards, Content Standard D – Structure of the Earth system, Earth’s history, Earth in the solar system; and the McREL K–12 Science Standards and Benchmarks, Grade Levels K-4 and 5–8).

INTRODUCTION AND SUMMARY OF CALIFORNIA GEOGRAPHY - COASTLINE, MOUNTAIN RANGES AND VALLEYS

California Geography – Coastline, Mountain Ranges and Valleys is an in-depth look at the forces that have shaped California. The program is designed to present *California Geography – Coastline, Mountain Ranges and Valleys* in a way that promotes successful student learning. The program begins with an overview of California’s geography and climate as well as the tectonic and volcanic activity that has isolated the state from the rest of the country and created its unique landmasses and ecosystems. It then discusses the oceanic coastline’s landforms and tidepool ecosystems. Next the program explains the origins California’s complex network of distinct mountain ranges and the ecosystems they support. Lastly, the state’s valleys and their importance to agriculture are shown.

Student Goals – In *California Geography – Coastline, Mountain Ranges and Valleys* the students will learn:

- California’s varied landforms and how they were shaped by tectonic action and volcanoes
- California’s coastline and ecosystems
- California’s Mediterranean climate and ecosystems
- The origin of the state’s mountain ranges and how they isolate the state from the rest of North America
- The extent of the state’s valleys and their importance as agricultural centers for the entire country

SUGGESTED LESSON PLAN

California Geography: Coastline, Mountain Ranges and Valleys is laid out so that the program can be viewed in its entirety, or by selecting the DVD Menu Screen, Chapter Selects, individual chapters can be viewed separately to create a lesson plan. Each chapter presents a part of the uniqueness of California. The program shows how the diverse geology, climates and people have shaped the region from millions of years ago to the present.

Below is a list of the program’s chapters. Using these chapters, teachers can create a lesson plan to cover the specific issues, themes and the historical figures mentioned.

California Geography – Coastline, Mountain Ranges and Valleys

- Open
- Coastline
- Cascades and Klamath Mountain Ranges
- California’s Coastal Mountain Ranges
- California’s Mediterranean Climate

- Sierra Nevada Mountain Range
- Transverse Mountain Ranges
- California's Peninsular Mountain Ranges
- Modoc Plateau
- Central Valley
- The Sonoma and Napa Valleys
- Salinas Valley

Chapter One: Open

Student Goals: In this *California Geography – Coastline, Mountain Ranges and Valleys* chapter the students will learn:

- California's physical geography is dominated by north–south running mountain ranges, separated by valleys or low areas
- Geographically, California is often divided into Northern California and Southern California at a point above the city of San Francisco
- Most of California's major landforms are a product of fairly recent tectonic activity
 - Volcanic action
 - Collision of tectonic plates

Chapter Two: Coastline

Student Goals: In this *California Geography – Coastline, Mountain Ranges and Valleys* chapter the students will learn:

- California has over 1200 miles of coastline shaped by the Pacific Ocean
 - The coast has dramatic landforms such as bluffs, vertical cliffs, haystack formations and off shore islands
 - Islands include the northern Farallon Islands and the southern Channel Islands
- California's ocean waters support abundant fisheries and are home to some large sea mammals, including sea lions, dolphins and the gray whale
- California has some of the finest beaches in the world
- Between the beaches are numerous rocky intertidal regions
 - The ecosystem that occupies this niche contains many plants and animals such as anemones, barnacles, clams and kelp
- California's coast contains two of the world's great harbors: San Francisco Bay in the north and San Diego harbor in the south
- The majority of Californians live along the coast

Chapter Three: Cascades and Klamath Mountain Ranges

Student Goals: In this *California Geography – Coastline, Mountain Ranges and Valleys* chapter the students will learn:

- California has a complex network of distinct mountain ranges
 - The mountain ranges affect weather, provide water for California's industries and people and provide unique ecosystems
- The northern part of California is made up of two geologically distinct mountain regions: the Cascades and the Klamath Mountains

- The Klamath Mountains are made up of metamorphic rocks of serpentine and marble
 - The northern part of this range is often called the Siskiyou
 - These rugged mountains support an unusual forest ecosystem of Port Orford cedar and spruce trees
- To the east of the Klamath Mountains lie the southern reaches of the Cascade Mountain Range
 - This mountain range extends from British Columbia to California
 - It has beautiful snow capped volcanic peaks
 - These volcanoes are caused by subduction
- The best known of the Cascade volcanoes in California are Mount Shasta and Lassen Peak

Chapter Four: California's Coastal Mountain Ranges

Student Goals: In this *California Geography – Coastline, Mountain Ranges and Valleys* chapter the students will learn:

- California's coastal mountain ranges extend from the Klamath Mountains in the north to the transverse mountains near Santa Barbara in the south
- The different rocks of these mountains have widely varying geologic ages
 - The rocks were first deposited on the sea bottom as sediments
 - The rocks eventually became sedimentary dolomites and limestone
- All of these ranges have been folded and faulted over time by tectonic activity
- California's northern coastal mountain ranges have a hilly appearance, which can be experienced by driving the streets of San Francisco

Chapter Five: California's Mediterranean Climate

Student Goals: In this *California Geography – Coastline, Mountain Ranges and Valleys* chapter the students will learn:

- San Francisco's climate is characteristic of California's Mediterranean climate along the coastal ranges
- It is marked by mild, wet winters and dry summers
- These mountain ranges are home to the spectacular coastal redwood forests
- The understory of the redwood forest supports a rich variety of mosses and ferns and the second-largest slug in the world; the banana slug
- Tule elk are also found here

Chapter Six: Sierra Nevada Mountain Range

Student Goals: In this *California Geography – Coastline, Mountain Ranges and Valleys* chapter the students will learn:

- The Sierra Nevada Mountain Range is over 400 miles long
- The Range divides California's Central Valley from the Great Basin
- This range is where gold was discovered at Sutter's Mill in 1848
- How the Sierra Nevadas were formed
 - Hundreds of millions of years ago a mountain range of volcanoes and lava flows began to rise up

- Underneath these volcanoes, a giant mass of magma cooled forming the massive granitic Salinas Block
- After these early Sierras eroded away, this granitic block began rising up again around twenty million years ago
- About 4 million years ago, the Sierra Nevadas started to further uplift and tilt to the west
- Later, erosional processes cut deep canyons on both sides of the range
- During the last Ice Age glaciers carved out characteristic U-shaped canyons and sharply jagged peaks throughout the Sierras
- Today the Sierras have dramatic features such as waterfalls, domes, steep canyons and snowcapped peaks
- These snow packed peaks are the primary water reservoir for Northern California
- The Sierras contain Yosemite National Park’s Half Dome and El Capitan monoliths
- The Sierras are populated by a variety of old-growth forest ecosystems, including the giant sequoia forests
- The Sierras create a rain shadow resulting in the dry and arid deserts to the east, isolating California from the rest of the country

Chapter Seven: Transverse Mountain Ranges

Student Goals: In this *California Geography – Coastline, Mountain Ranges and Valleys* chapter the students will learn:

- California’s Transverse Mountain Ranges are in Southern California
- As a result of a bend in the San Andreas Fault these mountain ranges run east-west
- The Transverse Ranges include the San Rafael Mountains, the Sierra Madre Mountains, the Simi Hills, the Santa Monica Mountains, the steep San Gabriel Mountains and the San Bernardino Mountains
- These ranges are part of the California chaparral and woodlands ecosystem
- Plant types include coastal sage scrub, chaparral, oak savanna, pinion pine, and ponderosa pine forests
- These Transverse Range ecosystems are subject to frequent fires

Chapter Eight: California’s Peninsular Mountain Ranges

Student Goals: In this *California Geography – Coastline, Mountain Ranges and Valleys* chapter the students will learn:

- The Peninsular Ranges stretch 900 miles from Southern California to the southern tip of Mexico’s Baja California Peninsula
 - Rocks in the ranges are dominated by Mesozoic granitic rocks
 - They are part of a geologic province known as the Salinian Block
 - They are as old as the San Andreas Fault and Gulf of California
 - The Peninsular Mountains are home to coniferous and mixed forests
 - On the coastal side of the ranges, ecosystems of California chaparral and mixed oak/pine forests can be found
- San Diego is located on the western edge of the Peninsular Mountain Range
- San Diego’s natural harbor is the base for America’s largest naval fleet

Chapter Nine: Modoc Plateau

Student Goals: In this *California Geography – Coastline, Mountain Ranges and Valleys* chapter the students will learn:

- The Modoc Plateau is characterized by expansive lava flows, old cinder cones and ancient lakes
- It is named for one of the American Indian tribes that occupied this region
- Located on this plateau is the Medicine Lake Volcano, the largest volcano in the entire Cascade Range
- The Medicine Lake Volcano and its lava flows are independent of other Cascade volcanoes
- Geologically speaking, this region is an “extensional environment” – tectonic forces are slowly stretching the earth's crust, a process which continues today
- the Modoc Plateau is hot and dry in the summer and cold in the winter
- The Plateau contains sagebrush, junipers and pine forests
- The Modoc Plateau supports mule deer, the American pronghorn, and its lakes are stopover spots for migrating waterfowl

Chapter Ten: Central Valley

Student Goals: In this *California Geography – Coastline, Mountain Ranges and Valleys* chapter the students will learn:

- Geologically, the Central Valley lies within the California Trough
- The valley’s climate ranges from Mediterranean in the north to near desert in the south
- 200 years ago, the Central Valley was dominated by an ecosystem consisting of grasslands and oak savannas in the north and chaparral in south
- Today agriculture replaces the older ecosystems
- The Sacramento and San Joaquin River systems have transformed the Central Valley into one of the most productive agricultural regions in the world
- It is the primary source for a number of food products throughout the United States, including rice, nuts, grapes and olives
- Overall, in the Central Valley of California, there are 7 million acres of irrigated land giving it the nickname, the fruit basket of the world

Chapter Eleven: The Sonoma and Napa Valleys

Student Goals: In this *California Geography – Coastline, Mountain Ranges and Valleys* chapter the students will learn:

- Sonoma Valley is the birthplace of California’s wine industry
- The gentle hills surrounding the flat valley floors are a product of earlier volcanoes and the slipping of the land northward along the San Andreas Fault
- The climate and soil make it a perfect place for growing the grapes
- Napa Valley runs parallel along the eastern edge of Sonoma Valley
- In 1976, the Napa Valley wine industry got a boost by winning an international wine tasting competition

Chapter Twelve: Salinas Valley

Student Goals: In this *California Geography – Coastline, Mountain Ranges and Valleys* chapter the students will learn:

- The Salinas Valley, south of San Francisco is known as the salad bowl of the nation for its production of lettuce
- At its core is the Salinian Block which is part of the same granitic batholith which forms the Sierra Nevada Mountain Range to the east
- Like the Central Valley, the Salinas Valley's agriculture is dependent upon extensive irrigation

Answers to Blackline Master 1A Quiz

1 - a; 2 - b; 3 - c; 4 - a; 5 - d; 6 - b; 7 - c; 8 - a; 9 - c