



South Asia

WHY IT'S IMPORTANT—

Many of the countries of South Asia have earned their independence relatively recently, but they have their roots in very ancient civilizations. The rich culture, minerals, and spices of the area have attracted foreign invaders for hundreds of years. Since the subcontinent shook off the cloak of British colonial rule in the 20th century, political and religious rivalries within the region have threatened its peace and stability. The governments of South Asia are struggling to overcome their differences and increase the region's role in trade and technological development.



World Regions Video

To learn more about South Asia and its impact on your world, view the World Regions video "South Asia."

*Monk in front of dome of
Buddhist shrine, Nepal*

What Makes South Asia a Region?

Like a giant pointed tooth, South Asia juts out of the Asian continent and into the salty waters of the Arabian Sea, the Indian Ocean, and the Bay of Bengal. Towering mountains separate this region from the rest of Asia. The greatest of these are the mountains of the Himalaya, which include Mount Everest—the tallest peak on Earth.

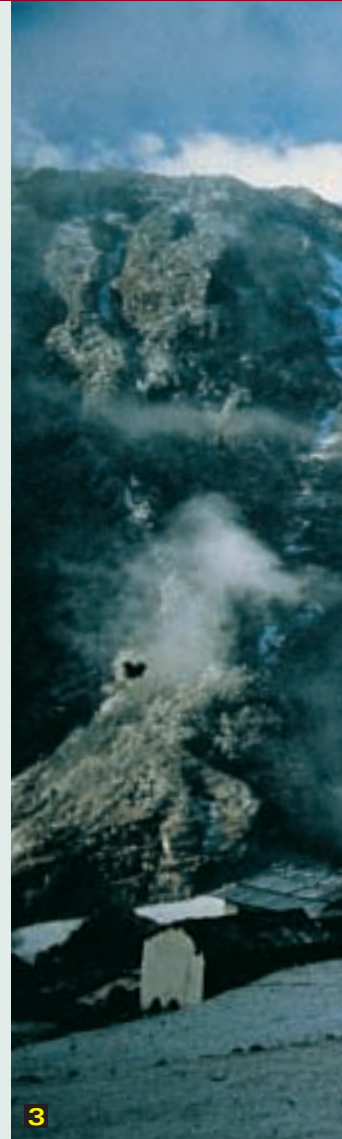
South of the Himalaya, the land descends to fertile lowlands that are watered by the Indus, Brahmaputra, and Ganges River systems. South Asia's southern tip is outlined by the Eastern and Western Ghats, ranges of low mountains that frame an arid tableland called the Deccan Plateau.

From snowy highlands to sun-scorched deserts, South Asia has a variety of climate zones. The climate is greatly affected by monsoons—seasonal winds that bring cycles of wet and dry weather to the region.



1

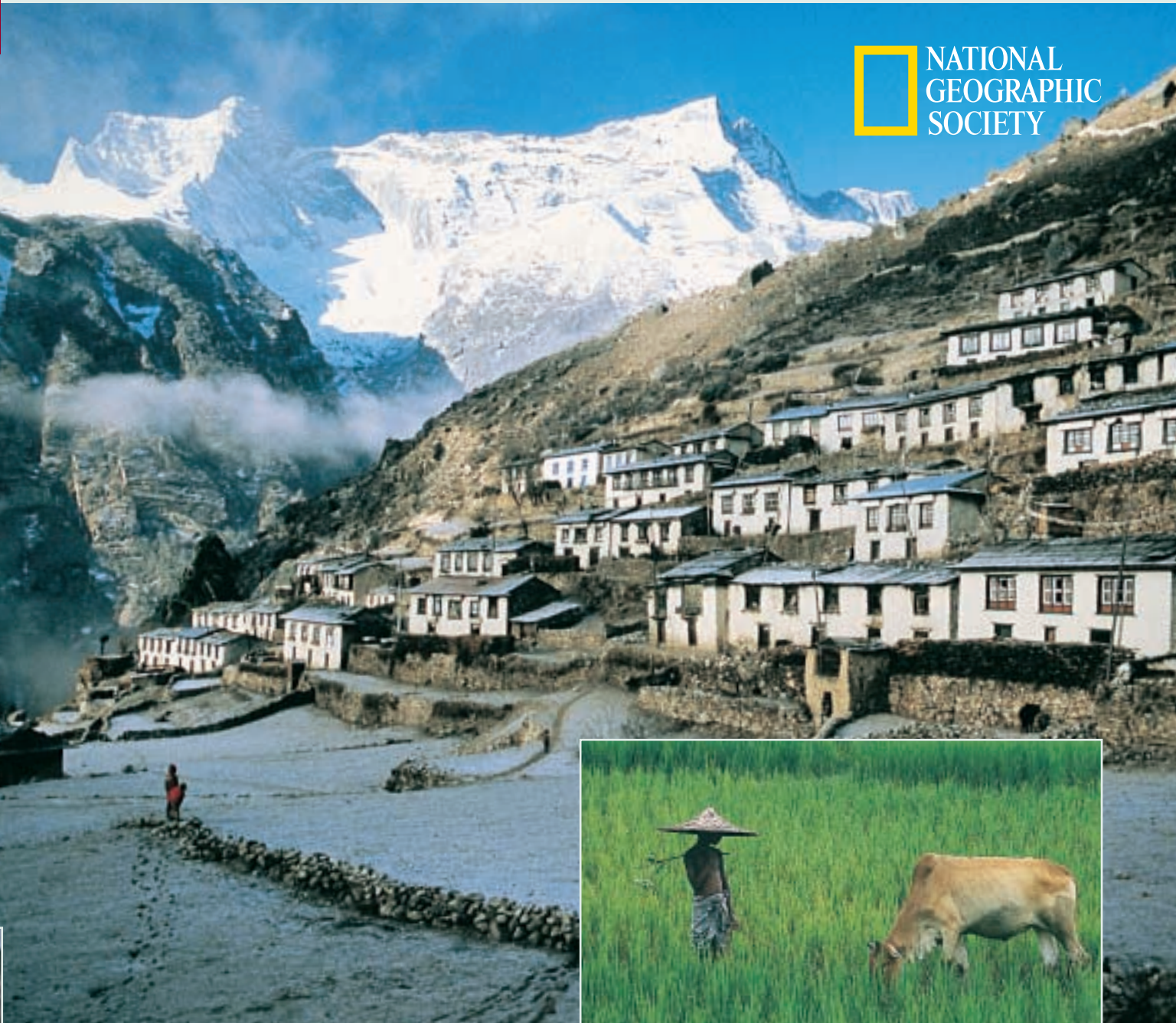
- 1** Bright bridles and nose rings adorn a camel in the Thar, or Great Indian, Desert. Straddling northwestern India and eastern Pakistan, the desert lies beyond the reach of heavy monsoon rains. Camels are a traditional means of transportation in this arid part of South Asia.



3



2



2 **Water swirls down a street** in Delhi during India's wet monsoon season. Each year as summer approaches, wind patterns shift and moist air from the Indian Ocean sweeps over the subcontinent. Once the rains begin, they may continue for 60 days or more.

3 **Whitewashed walls** echo the brilliance of snow-covered peaks in Namche Bazaar, a Sherpa village in Nepal. Sherpas are a people who live mainly among the mountains of the Himalaya, where they have won fame as guides on climbing expeditions.

4 **Up to their knees** in green shoots, a farmer and his cow pause in a paddy in Bangladesh. The rich soil of the Ganges River delta spreads across much of Bangladesh, helping to make this tiny country one of the world's leading producers of rice.

Population Giant

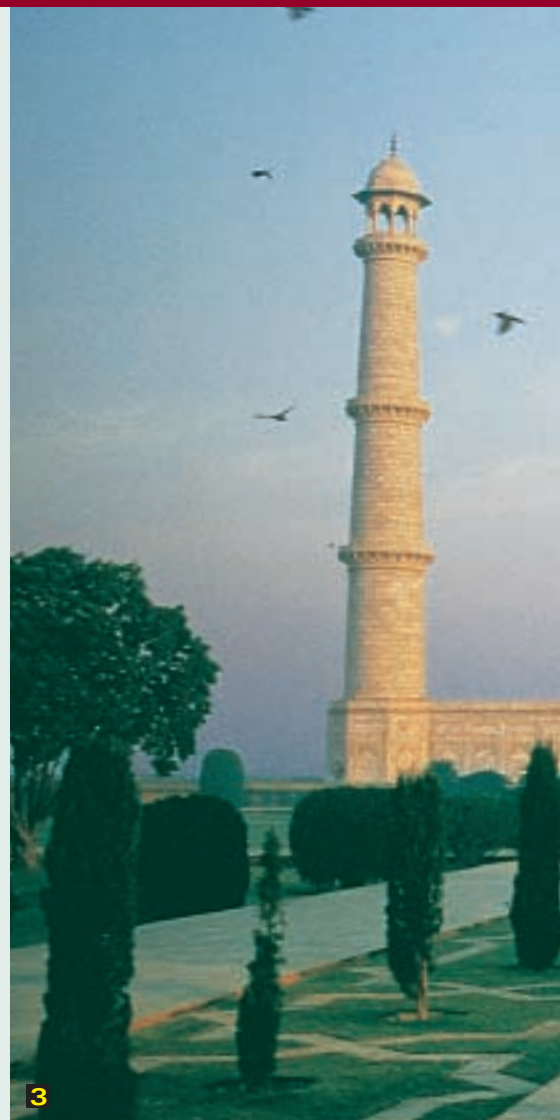
Over the centuries, the fertile floodplains of the Indus and Ganges Rivers have attracted many immigrants and invaders to South Asia, giving the region great diversity in peoples, languages, customs, and religious beliefs.

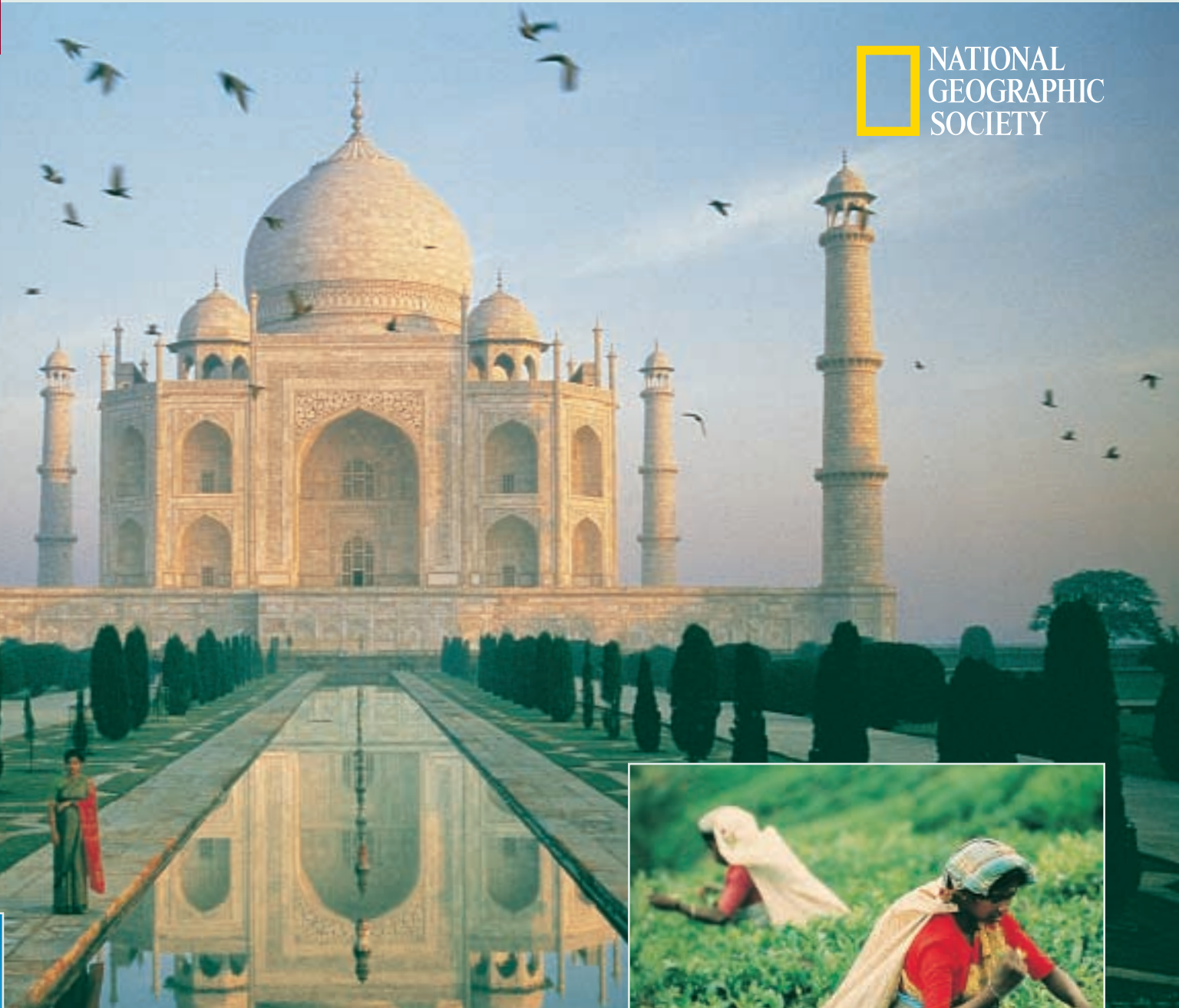
Hinduism and Buddhism both originated in South Asia, whereas Islam arrived from the west. The British brought colonial rule, which lasted for nearly two centuries. The region won its independence in the mid-1900s, but not without political, religious, and economic upheaval.

South Asia remains culturally rich, but its burgeoning population—over one billion in India alone—struggles with a low standard of living. Subsistence farming and labor-intensive traditional industries form the basis of the region's economy.



- 1** **Red powder** coats the face of an Indian boy during the festival of Ganesh Chaturthi. The festival celebrates the birth of Ganesh, an elephant-headed Hindu god. Hinduism is the most widespread religion in South Asia today.





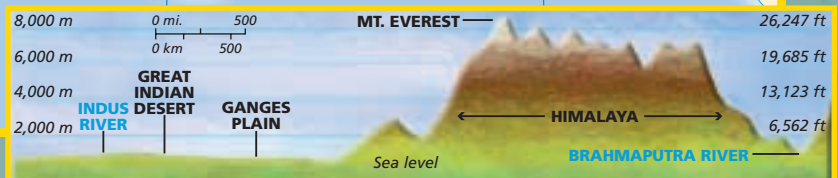
2 Filled to overflowing, a gaily painted city bus takes on passengers in a crowded street in Dhaka, the capital of Bangladesh. With a population of about 134 million, Bangladesh is one of the most densely populated countries in the world—and also one of the poorest and least developed.

3 Mirrored in still water, the Taj Mahal stands serenely outside the city of Agra, in northern India. The Taj Mahal was built in the 1600s by a Muslim ruler as a tomb for his favorite wife. Constructed of white marble, the building is decorated with verses from the Quran, the holy book of Islam.

4 Tender tea leaves are plucked by hand on a plantation in Sri Lanka, formerly called Ceylon. A legacy of British colonial rule, plantations produce much of the famous Ceylon tea that is a major product of this island nation. Sri Lanka gained its independence from Britain in 1948.

South Asia

PHYSICAL



Elevation Profile

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POLITICAL

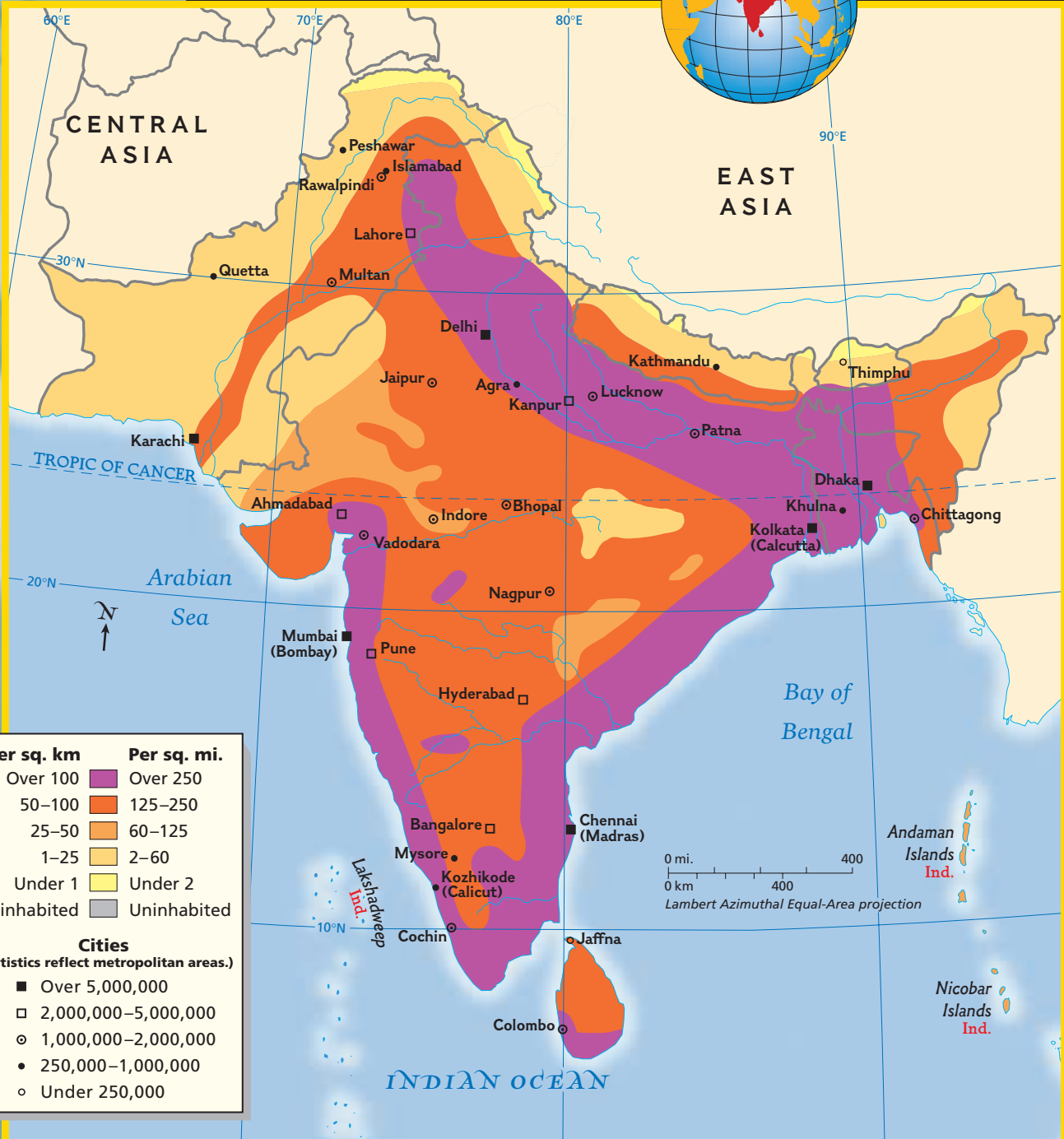


MAP Study

1. Which capital city in South Asia do you think has the highest elevation?
2. What rivers join to form the Ganges River delta?

South Asia

POPULATION DENSITY































ECONOMIC ACTIVITY



South Asia

COUNTRY PROFILES

COUNTRY * AND CAPITAL	FLAG AND LANGUAGE	POPULATION AND DENSITY	LANDMASS	MAJOR EXPORT	MAJOR IMPORT	CURRENCY	GOVERNMENT
BANGLADESH  Dhaka	 Bengali	133,500,000 2,401 per sq.mi. 927 per sq.km	55,598 sq.mi. 143,998 sq.km	 Clothing	 Machinery	Taka	Republic
BHUTAN  Thimphu	 Dzongkha, Local Languages	900,000 50 per sq.mi. 19 per sq.km	18,147 sq.mi. 47,001 sq.km	 Cardamom	 Fuels	Ngultrum	Constitutional Monarchy
INDIA  New Delhi	 Hindi, English, Local Languages	1,033,000,000 814 per sq.mi. 314 per sq.km	1,269,340 sq.mi. 3,287,606 sq.km	 Gems & Jewelry	 Crude Oil	Rupee	Federal Republic
MALDIVES  Male	 Maldivian Divehi, English	300,000 2,495 per sq.mi. 963 per sq.km	116 sq.mi. 300 sq.km	 Fish	 Machinery	Maldivian Rufiyaa	Republic
NEPAL  Kathmandu	 Nepali	23,500,000 413 per sq.mi. 159 per sq.km	56,826 sq.mi. 147,179 sq.km	 Clothing	 Petroleum Products	Nepalese Rupee	Constitutional Monarchy
PAKISTAN  Islamabad	 Urdu, English, Punjabi, Sindhi	145,000,000 472 per sq.mi. 182 per sq.km	307,375 sq.mi. 796,101 sq.km	 Cotton	 Petroleum	Pakistan Rupee	Federal Republic
SRI LANKA  Colombo	 Sinhalese, Tamil, English	19,500,000 771 per sq.mi. 298 per sq.km	25,332 sq.mi. 65,610 sq.km	 Textiles	 Machinery	Sri Lanka Rupee	Republic

* COUNTRIES AND FLAGS NOT DRAWN TO SCALE

FOR AN ONLINE UPDATE OF THIS INFORMATION, VISIT GEOGRAPHY.GLENCOE.COM AND CLICK ON "TEXTBOOK UPDATES."

CLICK HERE 

► Boarding school students in Nepalganj, Nepal, study a computer.



GLOBAL
CONNECTION

SOUTH ASIA AND THE UNITED STATES

TEXTILES



There are few things more comfortable than a pair of well-worn blue jeans. Denim—that soft, strong cotton fabric with the rich blue color—has become an integral part of modern life. But “indigo-dyed” textiles are nothing new—they were being produced in India many centuries ago. In fact, the word *indigo* comes from the name “India”!

South Asia has been a world center of textile production for thousands of years. As long ago as 2700 B.C., people in the Indus River valley were cultivating cotton plants and weaving cotton fibers into cloth. Ancient Indian artisans elevated spinning and weaving to art forms. They were among the first in the world to master techniques for dyeing cotton and other types of fabric. Using extracts from more than 300 different native plants, along with other natural substances, the artisans created beautiful, brilliant fabric dyes. The dark blue dye known as indigo, for example, came from the indigo plant.

Indian textile makers pioneered another important technique—making dyes



▲ Freshly printed fabric drying in Jodhpur, India



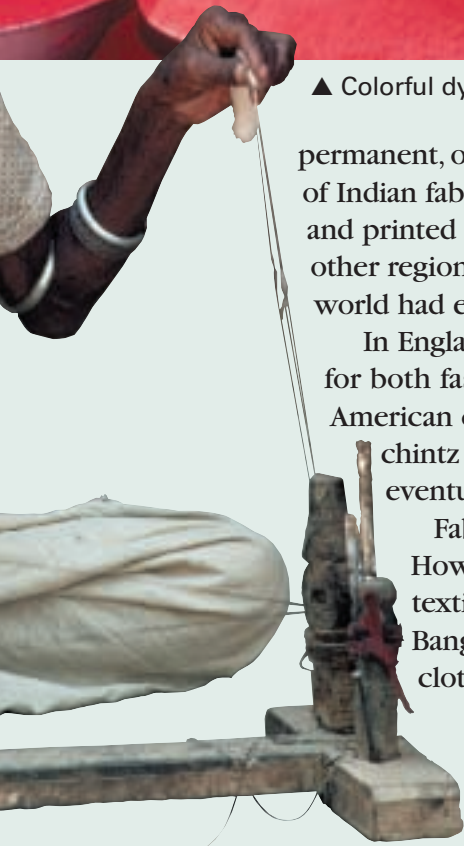


▲ Colorful dyes for sale on a street stand in Bangalore, India

permanent, or “colorfast,” so they would not wash out. The colorfastness of Indian fabrics, combined with their vivid colors and intricate woven and printed patterns, made these fabrics highly prized in Europe, Asia, and other regions. By the 1700s, India was the greatest exporter of textiles the world had ever known.

In England, printed Indian fabrics known as calico and chintz became wildly popular for both fashions and furnishings. Eventually, such fabrics made their way to the American colonies. So precious were these imported textiles that scraps of calico and chintz were saved and made into patchwork quilts—a thrifty gesture that would eventually become an American craft tradition.

Fabrics and patterns that originated in South Asia are now made in other places. However, India is still one of the world’s leading producers of cotton, and the textile industry remains India’s most important industry. India’s eastern neighbor, Bangladesh, also has a thriving garment industry. Check the labels in your cotton clothes—chances are some were made in South Asian countries.

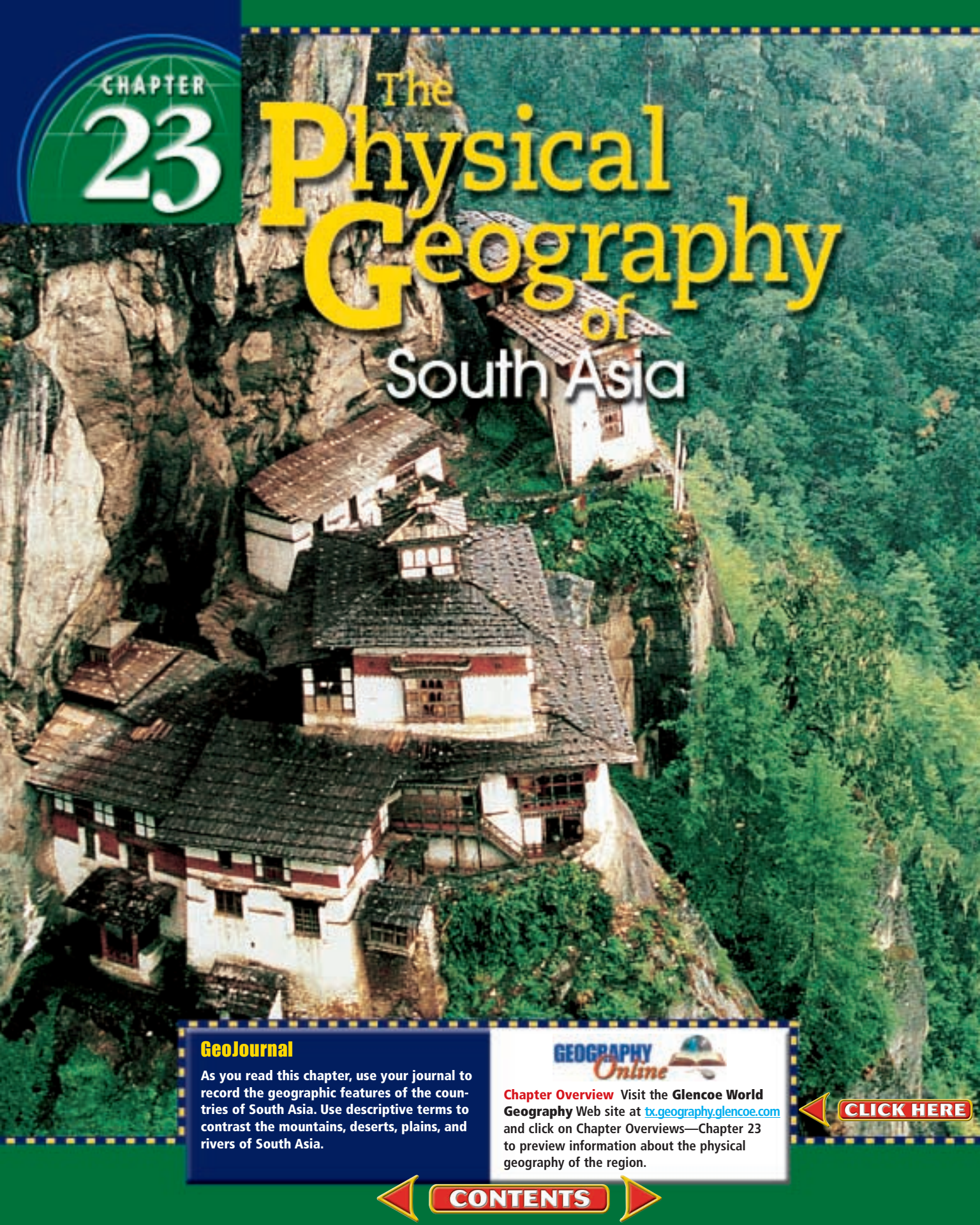


◀ Indian woman spinning cotton thread

CHAPTER

23

The Physical Geography of South Asia



GeoJournal

As you read this chapter, use your journal to record the geographic features of the countries of South Asia. Use descriptive terms to contrast the mountains, deserts, plains, and rivers of South Asia.



Chapter Overview Visit the **Glencoe World Geography** Web site at tx.geography.glencoe.com and click on Chapter Overviews—Chapter 23 to preview information about the physical geography of the region.

CLICK HERE

CONTENTS

Guide to Reading

Consider What You Know

Mount Everest in the Himalaya is the world's highest peak. You may often read or hear reports of climbers on Mount Everest and the difficulties they face. What features of high mountain ranges do you think contribute to the climbers' hardships?

Read to Find Out

- What landforms exist in South Asia?
- What are the three great river systems on which life in South Asia depends?
- How do the peoples of South Asia use the region's natural resources?

Terms to Know

- subcontinent
- alluvial plain
- mica

Places to Locate

- Himalaya
- Ganges Plain
- Vindhya Range
- Deccan Plateau
- Indus River
- Brahmaputra River
- Ganges River

◀ Buddhist monastery in Bhutan

The Land

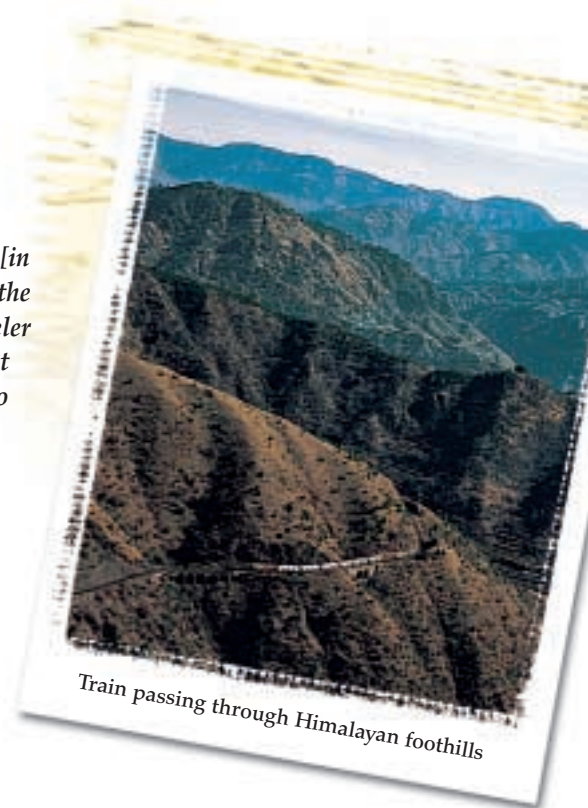
NATIONAL GEOGRAPHIC

A Geographic View

India by Train

The valleys and these hillsides [in the north of India] are open to the distant plains, and so the traveler on the toy train has a view that seems almost unnatural, it is so dramatic. At Sonada it is like standing at the heights of a gigantic outdoor amphitheater and looking down and seeing the plains and the rivers, roads and crops printed upon it and flattened by the yellow heat.

—Paul Theroux, "By Rail Across the Indian Subcontinent,"
National Geographic, June 1984



Train passing through Himalayan foothills

Novelist Paul Theroux described the varied and dramatic landscapes he saw while traveling South Asia by train. In this section you will explore the physical geography of South Asia—its majestic mountains, mighty rivers, and fertile plains.

A Separate Land

The seven countries that make up South Asia are separated from the rest of Asia by mountains. As a result, South Asia is called a **subcontinent**, a large, distinct landmass that is joined to a continent. In geologic terms South Asia contains some of the oldest and some of the youngest landforms on Earth.

Most of South Asia forms a peninsula of about 1.7 million square miles (4.4 million sq. km) touched by three bodies of water—the Arabian Sea to the west, the Indian Ocean to the south, and the Bay of Bengal to the east. The region also includes many small islands and the large island country of Sri Lanka, which lies off India's southern tip.

A Land of Great Variety

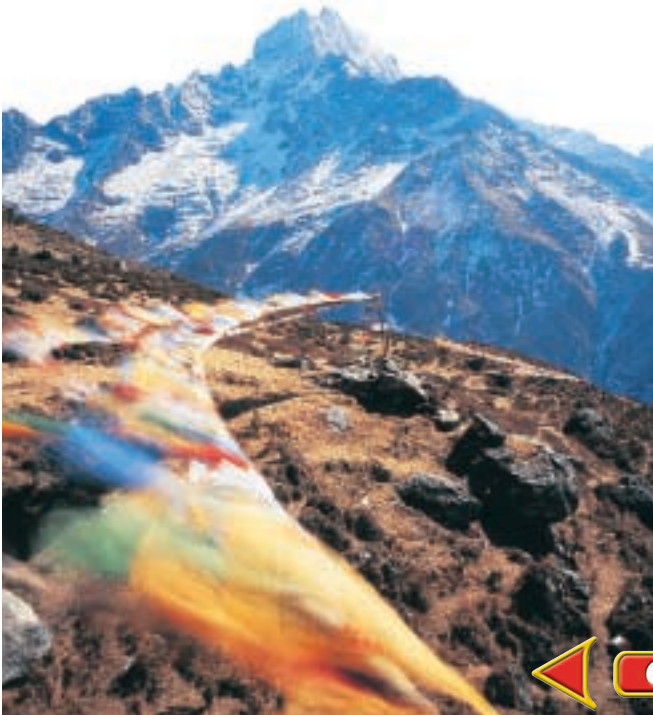
South Asia reveals a varied landscape. In the far north, some of the world's highest mountain ranges raise sharp, icy peaks above terraced foothills, high desert plateaus, and rich valleys. The older southern lands include eroded mountains and flat plateaus.

The Himalaya

According to the theory of continental drift, about 60 million years ago the Indian subcontinent was part of the same large landmass as Africa. After the subcontinent broke away, it collided with the southern edge of Asia. The force of this collision thrust up new mountain ranges, the **Himalaya**. These ranges spread more than 1,000 miles (1,609 km) across the northern edge of the peninsula and are hundreds of miles wide. Mount Everest, the world's highest peak, rises to 29,035 feet (8,850 m) above sea level in the Himalaya. A teenager describes climbing in the Himalaya:

“... I'm standing alone on a portion of the summit. . . . On very clear days like this, some from Everest have claimed to see the curvature of the earth; others say they can see the Indian Ocean, hundreds of miles away. . . . [I]t makes me feel very small. . . .”

Mark Phetzer, *Within Reach: My Everest Story*, 1998



Other Northern Landforms

The Himalaya meet the Karakoram Mountains in the northernmost part of South Asia. Farther west, the Hindu Kush range completes the chain. Together, they create a high wall of mountains between the subcontinent and the rest of Asia. In the past, invaders from the north could only enter the region through a few narrow crossing places, such as the famous **Khyber Pass** between Pakistan and Afghanistan. The Himalaya also protected Nepal and Bhutan from outside influence until the 1900s.

At the foot of the Himalaya ranges, wide fertile plains are watered by the region's great rivers—the Indus, the Ganges (GAN•JEEZ), and the Brahmaputra. One-tenth of the world's people live in this crowded northern area referred to as the **Ganges Plain** (or Indo-Gangetic Plain). In the northeast of India lies the Chota Nogpur Plateau, a high tableland of forests.

Culture

Central Landforms

The collision between the Indian subcontinent and Asia also pushed up a mountain range in central India. Not as tall as the Himalaya, the **Vindhya Range** divides India into northern and southern regions. This physical division separates the two distinct cultures that have developed in India. The cuisine, architecture, and religious practices of the peoples of northern and southern India differ markedly, as you will read in the next chapter.

Southern Landforms

The southern regions of South Asia contrast with those of the north. At the base of the subcontinent, two chains of eroded mountains—the Eastern

◀ Fierce winds blow Buddhist prayer flags in Nepal.



South Asia: Physical-Political



Geography

Skills for Life

- 1. Interpreting Maps** What ranges extend along the coast of southern India?
- 2. Applying Geography Skills** Why does most of South Asia's population live on the northern plains?

Find NGS online map resources @ www.nationalgeographic.com/maps

Ghats and Western Ghats—form a triangle of rugged hills. Between them lies the **Deccan Plateau**. This plateau was part of the landmass from which the subcontinent broke away and is hundreds of millions of years old. Once covered with lava, the Deccan Plateau today has rich, black soil. The Western Ghats, however, prevent yearly rainy winds from reaching the plateau, leaving it arid, or extremely dry. The Karnataka Plateau south of the Deccan Plateau receives these rains instead, so hills there are lush and green. Spices

growing on plantations in this area scent the air, and wild elephants move through the foliage of the plateau's dense rain forests.

Sri Lanka (SREE LAHN•kuh) is a teardrop-shaped island that broke away from the original Indian landmass. Maldives (MAWL•DEEVZ), the southernmost country in South Asia, is a chain of tiny coral atolls and volcanic outcroppings. Although Maldives covers 38,000 square miles (98,420 sq. km) of ocean, its land area totals only 115 square miles (298 sq. km).

Major River Systems

Rivers are the key to life in South Asia. From sources high in the Himalaya, three major river systems—the Indus, the Brahmaputra, and the Ganges—fan out across the northern part of the Indian subcontinent. All three rivers carry fertile soil from mountain slopes onto their floodplains as the rivers swell with seasonal rains.

Indus and Brahmaputra Rivers

The **Indus River** flows mainly through Pakistan, watering orchards of peaches and apples before emptying into the Arabian Sea. It also serves as an important transportation route. Historically, the Indus River valley is known as the cradle of ancient India, which, with Mesopotamia and Egypt, was one of the world's earliest civilizations.

The **Brahmaputra River** flows east through the Himalaya and then west into India and Bangladesh. There it joins the Ganges—to form a delta before emptying into the Bay of Bengal. The Brahmaputra is a major inland waterway. Ships can navigate the river from the the Bay of Bengal as far inland as Dibrugarh in the Indian state of Assam, about 800 miles (about 1,290 km) from the sea. The Brahma-

putra also provides Bangladesh with 50 percent of its power through hydroelectricity.

Ganges River

The **Ganges River** flows east from the Himalaya. It is the most important river of South Asia, drawing waters from a basin covering about 400,000 square miles (about 1 million sq. km). Fed by water from snowcapped peaks, the Ganges retains its size throughout the year, even during the hot, dry season from April to June. During the summer monsoon period, heavy rains can cause devastating floods along the Ganges. Named for the Hindu goddess Ganga, the Ganges is revered by Hindus, who consider its waters to be sacred.

The land area through which the Ganges flows is known as the Ganges Plain. Almost all of the plain has been cleared of grasslands and forests to make way for crops, such as rice, sesame, sugarcane, jute, and beans. As India's most agriculturally productive area, the Ganges Plain is the world's longest **alluvial plain**, an area of fertile soil deposited by river flood waters. The Ganges Plain also is India's most densely populated area.

NATIONAL
GEOGRAPHIC

World Explorer



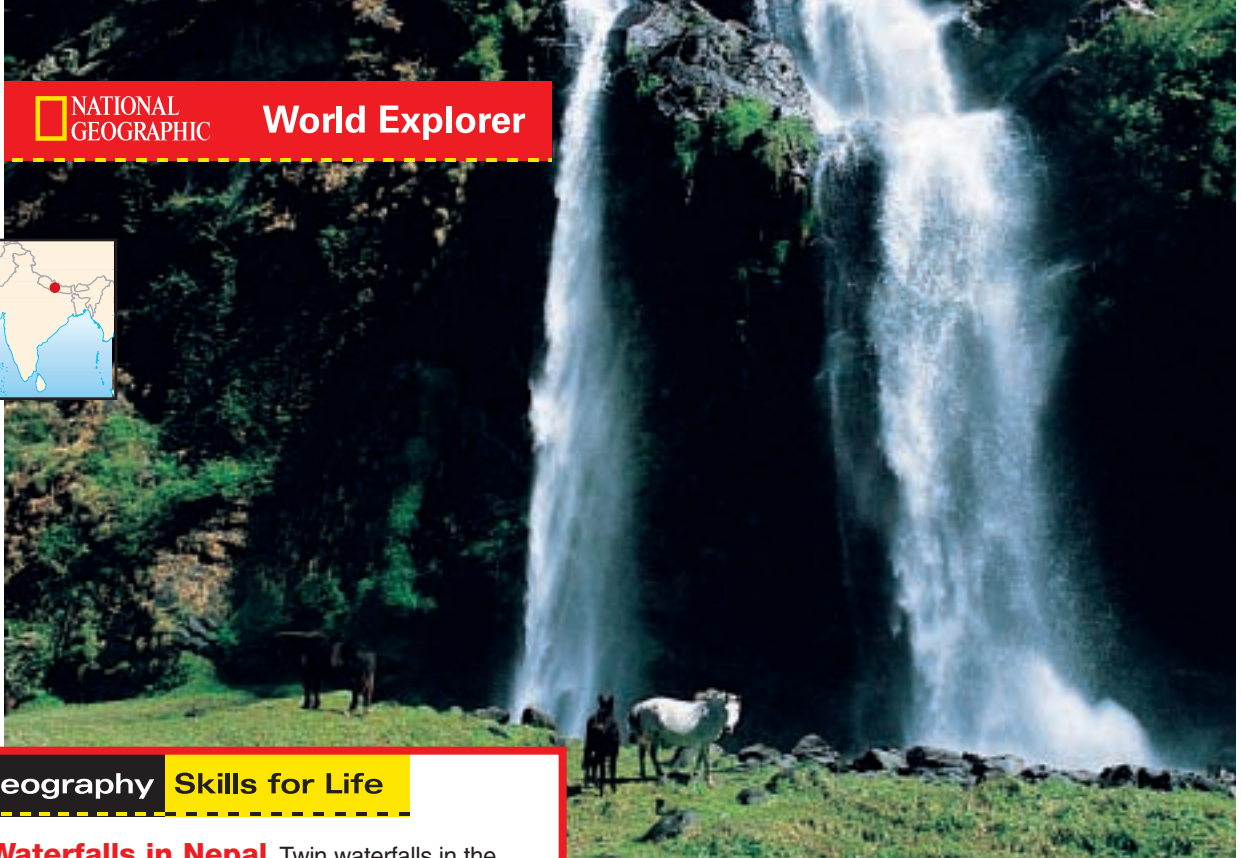
Geography Skills for Life

The Holy River

The Ganges River is important to fishing, commerce, and agriculture. Millions of Hindus visit the river for ritual bathing (inset).

Human-Environment Interaction What crops are grown on the Ganges Plain?

CONTENTS



Geography Skills for Life

Waterfalls in Nepal Twin waterfalls in the Annapurna region of Nepal cut through the sheer rock face of a Himalayan peak.

Human-Environment Interaction How might waterfalls benefit Nepal's economy?

Natural Resources

South Asia has a variety of natural resources. Dependent on these resources for their livelihood, South Asia's large populations and the fragile nature of some of their environments are ongoing challenges.

Water

The rivers of South Asia provide alluvial soil, drinking water, transportation, and hydroelectric power to the region's large, growing population. They also provide fish for local use and export.

Water resource management challenges South Asia because rivers cross national boundaries. Still, countries in the region sometimes work together on various projects. For example, India funded the Chhukha Hydel hydroelectric project in Bhutan. In return, India receives some of the energy generated there. Countries in the region also build dams to provide hydroelectric power and to open up

new farmlands by ensuring consistent levels of water for irrigation. Mountainous Nepal, with its many waterfalls, has the potential for creating large amounts of hydroelectricity.

Such massive projects, however, often have drawbacks as well as benefits. Dam projects in India meet with resistance when they threaten to flood existing settlements. In Pakistan one of the largest dams in the world, the Tarbela Dam, will soon be unusable, choked with built-up silt from the Indus River.

Energy Resources

Petroleum reserves are known to lie along India's northwest coast, near the Ganges Delta, and in northern Pakistan. Offshore exploration in the Arabian Sea may eventually yield oil. Overall, though, South Asia depends on imported oil.



Student Web Activity Visit the **Glencoe World Geography** Web site at tx.geography.glencoe.com and click on Student Web Activities—Chapter 23 for an activity on the formation of the Himalaya and attempts to reach the summit of Mount Everest.

Natural gas fields are found in southern Pakistan, in India's Ganges Delta, and in Bangladesh. India has a major uranium deposit north of the Eastern Ghats. Most South Asians, however, rely on energy from hydroelectricity, fuel wood, and coal.

Minerals

South Asia's mineral resources are rich, diverse, and widespread. India is a leading exporter of iron ore, and supplies 90 percent of the world's **mica**, a layered rock used in making electrical equipment. Deposits of manganese, chromite, and gypsum still await development. Nepal produces mica and small amounts of copper. Sri Lanka is one of the world's largest producers of graphite, the material used for the "lead" in pencils. Sri Lanka's other major mineral resources include sapphires, rubies, and about 40 other varieties of precious and semiprecious stones.

Timber

Timber is important to South Asia. The forests of Nepal and Bhutan contain conifers, including silver fir, and hardwoods such as oak, magnolia, beech, and birch. Severe overcutting threatens Nepal's timber, however, and could result in massive soil

erosion. To preserve the fragile Himalayan environment, the government of Nepal is implementing conservation plans.

Timber resources also include India's prized sandalwood. Rain forests in southwest India yield sal and teak woods for export. To protect its rain forests, Sri Lanka since 1977 has banned timber exports.



Geography

Skills for Life

Timber

Plantation In Bhutan, 90 percent of the workforce makes its living in agriculture and forestry.

Human-Environment Interaction How does overcutting impact the environment?

TAKS Practice

SECTION 1 ASSESSMENT

Checking for Understanding

- 1. Define** subcontinent, alluvial plain, mica.
- 2. Main Ideas** On a table like the one below show examples of the physical features and natural resources of South Asia.

Country	Physical Features	Natural Resources

Critical Thinking

- 3. Making Comparisons** How does the landscape of the Himalaya differ from that of the Deccan Plateau? How do these differences affect people's lives?
- 4. Identifying Cause and Effect** Why are population densities so high on the Ganges Plain?
- 5. Problem Solving** How would you address the problem of overcutting trees in Nepal? How does your solution affect the timber industry?

Analyzing Maps

- 6. Region** Study the physical-political map on page 571. What areas of South Asia would you expect to be most agriculturally productive? Why?

Applying Geography

- 7. Managing Resources** Think about the physical geography of South Asia. Create a sketch map highlighting potential sites of conflict over water management among the countries of South Asia.

Guide to Reading

Consider What You Know

The countries of South Asia often are affected by natural disasters of some kind. For example, in 1998 Bangladesh suffered the effects of a terrible flood. What problems can flooding cause?

Read to Find Out

- What are the five major climate regions of South Asia?
- How do seasonal weather patterns present challenges to the region's economy?
- How do elevation and rainfall affect South Asia's vegetation?

Terms to Know

- monsoon
- cyclone

Places to Locate

- Bay of Bengal
- Great Indian Desert

Climate and Vegetation

NATIONAL GEOGRAPHIC

A Geographic View

The Breath of Life

The eagle soared even higher in the updraft as I picked my way along the dark rocks beside the Arabian Sea. The winds shifted with promise, deepening the resonance of the surf, muffling even the crows that cackled and lurched along the seawalls. The water grew choppy, and the black thorns of fishermen's sails scratched the horizon. Surely the time [of the monsoon] was at hand.

—Preet J. Vesilind, "Monsoons: Life Breath of Half the World,"
National Geographic, December 1984



Rain-swollen Mahandi River, India

Journalist Preet Vesilind captures in words the tension of waiting for South Asia's seasonal rains. The region, with its hot climates, comes alive when the rain-bearing winds sweep in.

South Asia's Climates

South Asia's climate and vegetation regions are a study in contrasts. Much of the subcontinent lies south of the Tropic of Cancer and has tropical climates with diverse vegetation. In the north and the west, however, the climate varies widely, from the highlands of the Himalaya to the deserts around the Indus River, where little vegetation grows.

Tropical and Subtropical Climates

Tropical rain forest climates, with a variety of vegetation, are located along the western coast of India, near the Ganges Delta in Bangladesh,



South Asia: Climate Region

South Asia: Natural Vegetation



Tropical	Mid-Latitude
Tropical rain forest	Humid subtropical
Tropical savanna	Highlands (climate varies with elevation)
Dry	
Steppe	
Desert	

Tropical forest	Temperate grassland
Desert scrub and desert waste	Highlands (vegetation varies with elevation)

Geography Skills for Life

1. **Interpreting Maps** Where are tropical rain forest climates located in South Asia?

2. **Applying Geography Skills** How is vegetation related to climate in the northern part of South Asia?

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and in southern Sri Lanka. In the path of seasonal rains from the southwest, South Asia's rain forests absorb great quantities of moisture. The rain forests in western Sri Lanka, in southwest India, and in areas north of the **Bay of Bengal** have ebony trees, lush vines, and orchids. Tropical coniferous and deciduous trees surround the rain forests near the Western Ghats. In hot, damp Bangladesh, tropical forests of bamboo, mango, and palm trees thrive. The Sundarbans, a swampy area in southwestern Bangladesh, has the world's largest protected mangrove forest.

A tropical savanna climate surrounds the central Indian steppe and also is found in eastern Sri Lanka. The grasslands and tropical-moist deciduous forests of the savanna experience wet and dry seasons. In Sri Lanka dry evergreen forests and moist

deciduous forests give way to drier grasslands at higher elevations.

A band of humid subtropical climate extends across Nepal, Bhutan, Bangladesh, and the north-eastern part of India. Temperate mixed forests stretch across the borders of these countries in this area.

Highlands Climates

The coldest climate region of South Asia lies along its northern edge. In the Himalayan highlands and Karakoram peaks, snow never disappears. At the highest elevations, little vegetation can survive. Farther down these slopes, however, the climate turns milder and more temperate. In the upper area of this more temperate zone, coniferous and hardwood trees flourish. Grasslands and stands of bamboo cover the lower Himalayan foothills.



Dry Climates

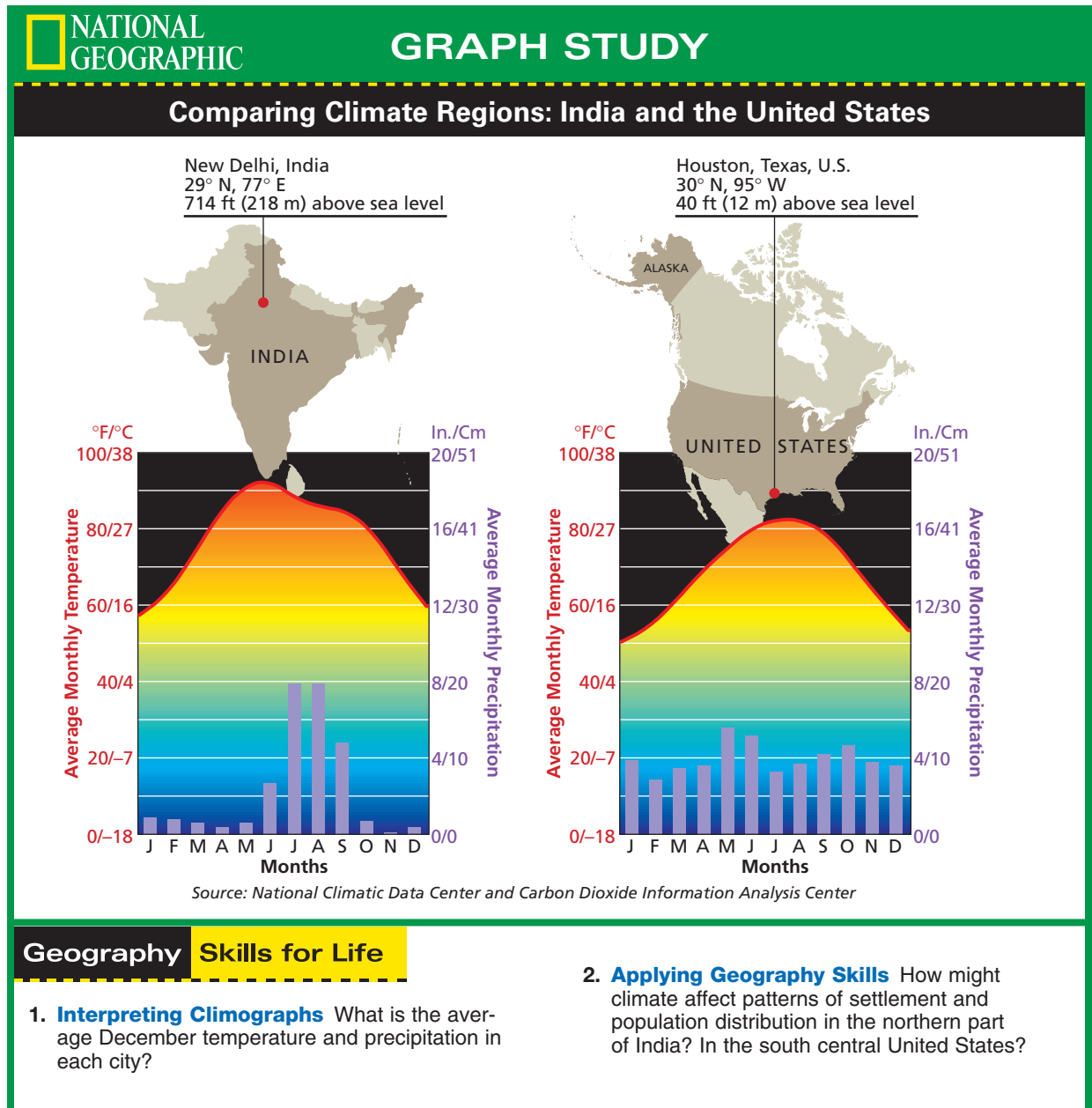
Along the lower Indus River, a desert climate keeps the land arid and windswept. The **Great Indian Desert** (Thar Desert) lies to the east of the Indus. The vegetation here is desert scrub, low, thorny trees, and grasses. Livestock graze in some areas, and irrigation makes it possible to grow wheat near the Indus River. Much of this area, however, remains wasteland.

Surrounding this desert, except on the coast, is a steppe. Few trees grow in this semiarid grassland.

In northwestern India annual rainfall averages less than 20 inches (51 cm). Another steppe area runs through the center of the Deccan Plateau between the Eastern and Western Ghats. The Ghats block rainfall here, making the area relatively arid. Dry, deciduous forests cover vast stretches of India's interior.

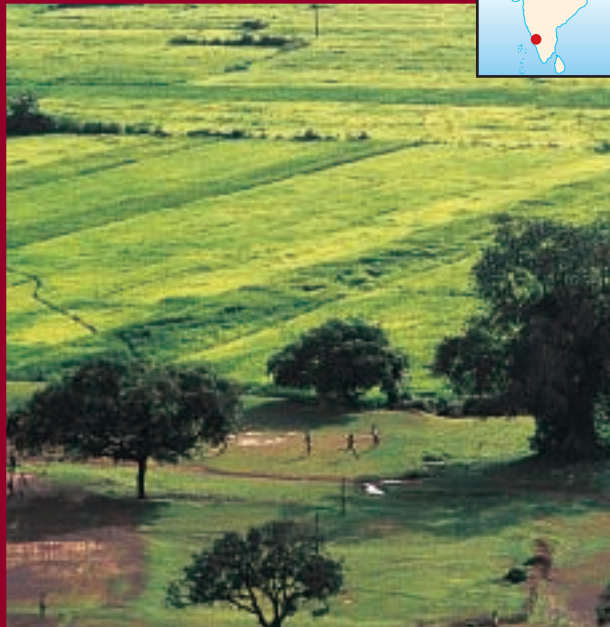
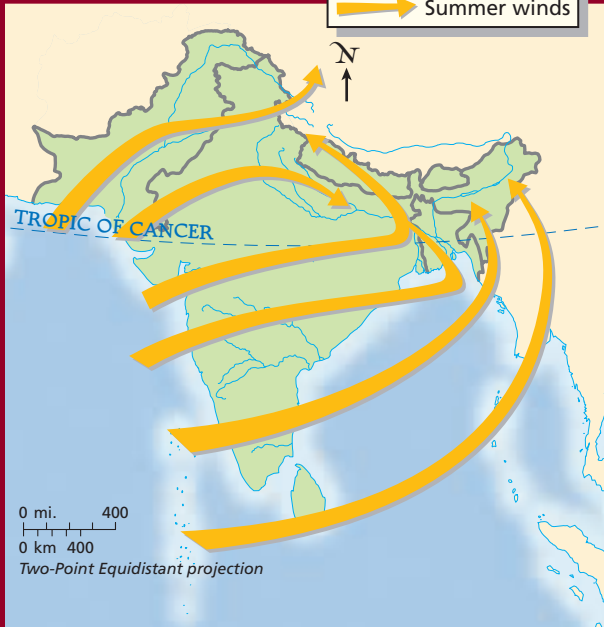
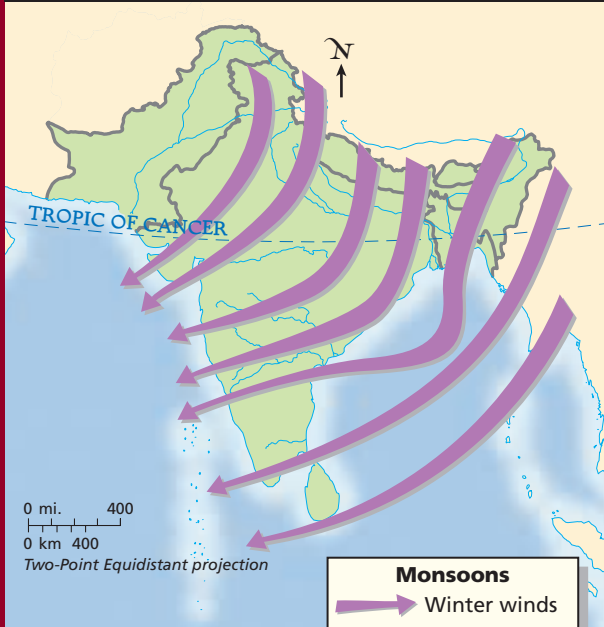
Monsoons

Much of South Asia experiences three distinct seasons—hot (from late February to June), wet (from June or July until September), and cool (from





South Asia: Monsoons



Geography Skills for Life

The same fields in west central India before (top right) and after (bottom right) the arrival of the monsoon rains reveal a stunning contrast between the dry and wet seasons.

- Interpreting Maps** From what direction do the winter monsoon winds come? What kind of weather do they bring?
- Applying Geography Skills** Describe the impact of the summer monsoon winds on South Asia.

Find NGS online map resources @ www.nationalgeographic.com/maps

October to late February). These periods depend on seasonal winds called **monsoons**. During the cool season, dry monsoon winds blow from the north and northeast. In the hot season, warm temperatures heat the air, which rises and triggers a change in wind direction. Moist ocean air then moves in from the south and southwest, bringing monsoon rains.

Monsoon Rains

The monsoon rains are heaviest in eastern South Asia. When the rains sweep over the Ganges-Brahmaputra delta, the Himalaya block them from moving north. As a result, the rains move west to the Ganges Plain, bringing rainfall needed for crops. It is no wonder, then, that people celebrate the monsoon rains, as an Indian writer describes:

“Kulfi [a woman shopping] watched with unbelieving elation as the approaching smell of rain spiked the air like a flower, as the clouds shifted in from the east. . . . Outside, she could hear the sound of cheering from the bazaar. ‘Rain, rain, rain, rain.’ And in the streets, she watched the children leap like frogs, unable to keep still in their excitement.”

Kiran Desai, *Hullabaloo in the Guava Orchard*, 1997

Economics

Natural Disasters

Both the high temperatures of the hot season and the heavy rains of the wet season are mixed blessings in South Asia. High temperatures allow farmers to produce crops, including the rice that many in Bangladesh and India depend on, year-round as long as water supplies are good. The extreme heat can result in evaporation and dried-out, nutrient-poor soils, however.

The monsoon winds also have benefits and drawbacks. Rainfall waters crops, but areas outside the path of the monsoon, such as the Deccan Plateau and western Pakistan, may receive little or no rainfall during the year. When the people of Bangladesh are planting rice, and those on the Ganges Plain are planting their winter crops, other areas are scorched by drought.

Too much rain also can be a problem. In the low-lying delta country of Bangladesh, monsoons may cause flooding that kills people and livestock, leaves thousands homeless, and ruins crops.

Another kind of weather catastrophe sometimes strikes South Asia. A **cyclone** is a storm with high winds and heavy rains. A 1999 cyclone struck Orissa, India, with winds of more than 160 miles per hour (257 km per hour) and waves over 20 feet (6 m) high. The storm killed nearly 10,000 people and caused more than \$20 million in damages.

TAKS Practice

SECTION 2 ASSESSMENT

Checking for Understanding

- Define** monsoon, cyclone.
- Main Ideas** On a chart like the one below, fill in the names of different areas of South Asia, and then write in the type of climate and vegetation found in each area.

Location	Climate	Vegetation

Critical Thinking

- Analyzing Information** Analyze the reaction of South Asia’s environment to the monsoons.
- Decision Making** Suppose that you wanted to establish a lumber business in South Asia. Where would you locate it? Why?
- Comparing and Contrasting** Are the effects of the very hot temperatures in much of South Asia more positive or more negative? Explain.

Analyzing Maps

- Region** Compare the maps of South Asia’s climate and vegetation on page 576. Explain how climate and vegetation are related in the region.

Applying Geography

- Visiting Sri Lanka** Think about the attractions of Sri Lanka’s climate and vegetation. Write a descriptive paragraph urging people to visit and enjoy Sri Lanka’s natural features.



Reading an Elevation Profile

If you were planning a long-distance cycling expedition, you might want to check elevations of places along your route. Elevation, the vertical distance above sea level of a place or landform, can be shown in a number of ways. An elevation profile gives you elevation information in a visual form.

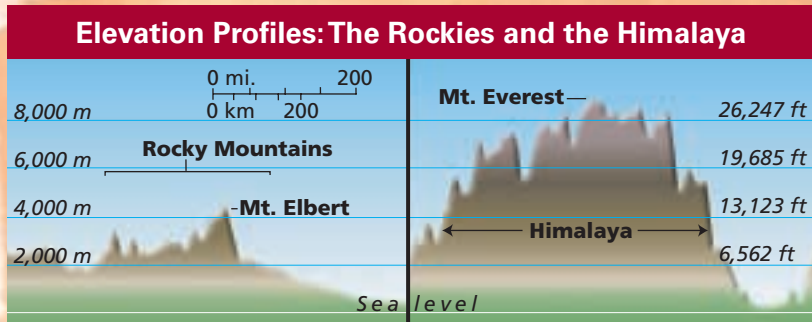
Learning the Skill

An elevation profile presents visual information about the elevation of a particular area, route, or landform in a two-dimensional way. The base of an elevation profile is sea level, the point from which land elevation is measured. A vertical scale measures elevation above sea level.

Reading an elevation profile is similar to reading a line graph. The vertical scale corresponds to the y-axis. In some elevation profiles, a horizontal scale, corresponding to the x-axis, measures the length of the route, area, or landform in miles or kilometers. The profile, or top edge of the landscape shown, corresponds to the line in a line graph. This line shows elevation at specific points. Some elevation profiles provide information on more than one route, area, or landform, using different colors or patterns to distinguish each profile.

Follow these steps to read an elevation profile:

- **Look at the landscape profile as a whole.** This will give you a general sense of the variations in elevation shown.
- **Find the highest and lowest points.** Use the vertical scale to find their elevations. Calculate the approximate difference in elevation between the highest and lowest points.



- **Use your finger to trace the profile.** If your finger must jump up and down to follow the profile, the area has dramatic differences in elevation.
- **If more than one area or landform is profiled, follow the procedure for each profile.** Then use the information to compare the profiled areas.

the highest point in the Himalaya?

- Which range contains the greater variation in elevation?
- Which range stretches over a greater distance?
- What does the elevation profile reveal about the relative elevations of these mountain ranges?

Practicing the Skill

Study the elevation profile contrasting the Rocky Mountains with the Himalaya. Then answer these questions.

- What is the highest peak in the Rocky Mountains? About how many feet above sea level does it rise?
- What is the approximate elevation of the highest peak in the Himalaya?
- What is the approximate difference in elevation between the highest point in the Rocky Mountains and

Applying the Skill

Use a map to choose a bicycle route across your state. Identify several key points along your route, and check the elevations for each one. Then create an elevation profile of your route. Note the highest and lowest points on your profile. Where would your bike ride be easiest? Most difficult?



The **Glencoe Skillbuilder Interactive Workbook, Level 2** provides instruction and practice in key social studies skills.



SECTION 1

The Land (pp. 569–574)

Terms to Know

- subcontinent
- alluvial plain
- mica

Key Points

- The landforms of South Asia include mountains, plateaus, plains, and islands.
- South Asia has three great river systems—the Indus, Brahmaputra, and Ganges—and the world’s longest alluvial plain.
- South Asia has few significant oil reserves, but has substantial mineral deposits, including iron ore and mica.

Organizing Your Notes

Create an outline using the format below to help you organize your notes for this section.

South Asia’s Land	
I.	A Separate Land
II.	A Land of Great Variety
	A. The Himalaya
	B. Other Northern Landforms

SECTION 2

Climate and Vegetation (pp. 575–579)

Terms to Know

- monsoon
- cyclone

Key Points

- South Asia has highlands, tropical, and desert climates.
- The monsoon is a seasonal change in wind direction that brings heavy rainfall to much of South Asia from June to September.
- South Asia’s vegetation is affected by elevation, rainfall, and human activity.

Organizing Your Notes

Use a table like the one below to help you organize the notes you took as you read this section.

Climate Region	Vegetation	Country or Area
tropical rain forest	ebony trees, lush vines, orchids	



Along the Ganges, Varanasi, India

Reviewing Key Terms

Write the letter of the key term that best matches each definition below.

- | | |
|-------------------|-------------|
| a. subcontinent | d. monsoons |
| b. alluvial plain | e. cyclone |
| c. mica | |

- seasonal winds
- a storm with high winds and heavy rains
- a layered mineral used to make electrical components
- a very large, distinct landmass that is part of a continent
- an area of rich, fertile soil found along a river

Reviewing Facts

SECTION 1

- Why might the region of South Asia be referred to as “a land of great variety”?
- How have the mountains of the Vindhya Range affected the people of India?
- Why is the management of water resources important in South Asia?

SECTION 2

- Where can you find a steppe climate region in South Asia?
- When do the three seasons found in much of South Asia occur, and how would you describe each?
- What factors enable South Asia's rain forests to thrive?

Critical Thinking

1. Identifying Cause and Effect

In what way are the Himalaya responsible for the richness of the soil in the northern plains of the Indian subcontinent?

2. Comparing and Contrasting What are the advantages and disadvantages of the monsoons to South Asia?

3. Predicting Consequences Using a web diagram like the one below, show the consequences to the people of South Asia of possible weather conditions. Then choose one consequence and describe it in detail.



Locating Places

South Asia: Physical-Political Geography

Match the letters on the map with the places and physical features of South Asia. Write your answers on a sheet of paper.

- | | | |
|-------------------|----------------------|------------------------|
| 1. Arabian Sea | 5. Sri Lanka | 8. Great Indian Desert |
| 2. Bay of Bengal | 6. Himalaya | 9. Pakistan |
| 3. Ganges River | 7. Brahmaputra River | 10. Indus River |
| 4. Deccan Plateau | | |



Self-Check Quiz Visit the **Glencoe World Geography** Web site at tx.geography.glencoe.com and click on Self-Check Quizzes—Chapter 23 to prepare for the Chapter Test.

CLICK HERE

Using the Regional Atlas

Refer to the Regional Atlas on pages 560–563.

- 1. Location** What mountains form the border between East Asia and South Asia?
- 2. Place** Compare the political map with the population density map. Where is the area of lowest average population density along the India-Pakistan border?

Thinking Like a Geographer

Analyze the effects of physical geographic patterns on population in South Asia. What patterns favor high population density? Low population density?

Problem-Solving Activity

Contemporary Issues Case Study When natural disasters strike populated areas, their impact is worse in areas of high population density. In a group, research a recent natural disaster in South Asia, such as the 1999 cyclone in Orissa or the 1998 flood in Bangladesh. Find out the causes of the disaster and how it affected the area's population and natural resources. What efforts were taken following the disaster? Then, focusing on one of these efforts, present your group's findings to the class.

GeoJournal

Descriptive Writing Using your GeoJournal, write a description about the ways South Asians have adapted to or modified their environment. Then compare human-environment interaction in South Asia with that in your state and local community.



Technology Activity

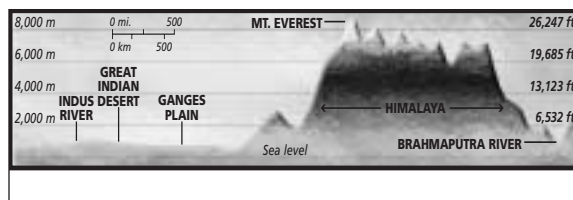
Using an Electronic Spreadsheet

Use a spreadsheet program to organize information about elevations in South Asia. List at least six South Asian countries in the left column of a spreadsheet. Use a world atlas to find the highest point in each country. Then list the heights in the second column of the spreadsheet. Use the graphics feature of the program to make a bar graph to compare heights.



TAKS Test Practice

Study the elevation profile. Then choose the best answer for the following multiple-choice questions. If you have trouble answering the questions, use the process of elimination to narrow your choices.



- 1. About how much higher is Mt. Everest than the Indus River?**

- A 2,500 feet C 25,000 feet
B 19,000 feet D 1,900 feet



Note that the question asks for the difference in height between the two locations. You can arrive at the answer by subtracting.

- 2. Based on elevation, which locations on the profile would be unsuited for farming?**

- F Ganges Plain
G Great Indian Desert
H Mt. Everest and the Great Indian Desert
J Mt. Everest



Read the question carefully. The phrase *based on elevation* is important. The Great Indian Desert is unsuited to farming, but not because of its elevation. Once you apply the standard asked for in the question, it is easy to eliminate wrong answers.

Geography Lab Activity

River and Stream Speed



▲ *Flow calculations help people make effective use of river systems.*

Measuring the speed of a river or stream is the first step in determining the river's flow—the volume of water discharged over a period of time. Flow is calculated by multiplying the velocity, or speed, of a river (measured in feet or meters per second) by the area of the cross section of the river (a cutting made across, measured in square feet or square meters). Further calculations will yield the average flow in cubic feet per second or in gallons per day. Why measure the flow of a river or stream?

This information can help

water management engineers plan for emergencies such as drought or flooding.

Natural flow varies throughout the year, especially in South Asia, where seasonal weather patterns and human interaction with the environment affect the great river systems.

1 Materials

- Tape measure
- Ball of string or twine
- 4 wooden dowels or sticks
- Several medium-sized oranges or large craft sticks painted in bright colors
- Stopwatch
- Writing materials

2 Procedures

In this activity, you will use a simple method to measure the approximate speed (velocity) at which water moves in a stream.

1. Take all materials to a local stream that is no more than a few yards wide and is relatively free from vegetation and rocks.
2. Set up the measuring marks. Fix a dowel or stick in the ground, and tie one end of the string to it. Then toss the ball of string to a student on the opposite bank of the stream. Have the second student pull the string taut, tie it to another dowel fixed in the ground, and cut the end of the string. This will be Mark 1.
3. Use the tape measure to determine a point 10 feet (3 m) downstream from Mark 1. Insert another dowel at this point, and repeat the process of stringing a line across the stream, parallel to Mark 1. This will be Mark 2. If the stream you are measuring is very shallow or slow-moving, set the two lines only 5 (1.5 m) feet apart. If the stream is very fast, set the two lines 15 (4.6 m) feet apart.

4. Position an observer at Mark 1. Position another observer with the stopwatch at Mark 2. Have a third student go to a point several feet upstream and toss an orange or a painted craft stick into the water.
5. When the object crosses under the string at Mark 1, the first observer stationed there yells "Go!" and the second observer starts the stopwatch. When the object crosses under the string at Mark 2, the second observer stops the stopwatch.
6. Record the time, in seconds, that it took the object to pass from Mark 1 to Mark 2.
7. Repeat the process several times, recording the elapsed seconds. Calculate the average elapsed time in seconds. Then divide the distance in feet or meters between Mark 1 and Mark 2 by the average elapsed time. The result is the average stream speed, measured in feet or meters per second.
8. Note the weather for the days preceding your measurements. Did it rain, or were the days sunny? Why might this information be important?

3

Lab Report

1. Did you expect to find a faster or slower average stream speed, or were your findings consistent with what you expected?
2. How much variation in elapsed time did you observe when taking repeated measurements at the same site?
3. If you were asked to measure the speed of a river 100 yards (91 m) wide, how would you adapt this activity?
4. **Predicting Consequences** How might your measurement change if you dammed off the right half of the stream in the 10-foot (3-m) span you measured?

4

Find Out More

Contact a public works department for information on how flow calculations are used in your area (possibilities include environmental management, flood control, recreational use, agricultural irrigation, and urban water resource management). Choose one of these uses to research. Share your findings with the class.

Did You Know?

Scientists have used the Acoustic Doppler Current Profiler (ADCP) to measure the flow of the Brahmaputra River in Bangladesh. The Brahmaputra often has severe floods. The ADCP allows scientists to measure river flow safely and accurately during flood conditions. The ADCP attaches to a boat and is connected to a computer that computes the river's flow, using data about depth, current, and direction.

◀ Flow calculations are used to help design the irrigation systems that make South Asian desert lands able to be farmed.