Teaching Guide

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Secondary Social Studies for PAKISTAN

Revised Edition

With Lesson Plans and Worksheets

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Introduction

Long, long ago the world was a much simpler place. People rarely moved far beyond the place where they had been born, and met only those they had known all their lives. They were scarcely conscious of the next village, much less the wider world 'out there'. They made rules which suited their own little community and grew crops and reared animals for self-sufficiency in food. The land, the water, the winds and the sun were their gods.

Then, gradually, the horizons broadened out as people began to move beyond their home base. They now belonged to a larger community, conquering and being conquered, and the rules of law had to be enforced so that people could exist together. Widening horizons brought trade—exchanging goods they had for those they did not: widening trade brought new demands, new restrictions and, also, new liberties. Slowly the world expanded, first to nations and later to international units until today when it is a complex mass of interconnected cultures and economies.

This series, *Secondary Social Studies for Pakistan*, tries to look at the situation, starting in the first book, with our own country, its geography, history, and outside influences that have shaped it over the years. The second book deals with the wider Muslim world in general—the geography, economy, history and political growth—and the movements for independence of Pakistan, and its achievements and national events from 1947 to 2008. The final book deals with the Earth and its place in the universe, global economies and their problems. It also deals with international institutions, problems that have been created by globalization and what democracy, citizenship, and human rights really mean. In addition to these, this series also includes environmental concerns in the developing world as populations, industries, and consumption of goods have grown, and need to be managed.

The accompanying Teaching Guides aim to facilitate teachers by providing background information and teaching strategies. The importance of planning out the teaching schedule and preparing lesson plans cannot be underestimated so that the course is covered and the teaching time allows activities, projects as well as end of month/term assessments. This revised edition of the Teaching Guides incorporates extensive lesson plans and worksheets for each chapter as well as assessment papers for the geography and history sections, along with answer keys to worksheets and the assessment papers. The lesson plans cover at least two periods per chapter so that explanation, understanding and reinforcement are covered satisfactorily. In case of a longer chapter, up to four sessions are suggested. However, schools are advised to adjust these according to their term break-up and time available.

Social Studies is an interesting subject and can be made more so through lessons that are creative, challenge students' thinking skills, and allow learning through practice. Critical thinking leads to problem-solving skills and a lesson well-planned and well taught will inculcate these skills in your students for their studies as well as in real life.

Note: In marking dates in history BC (Before Christ) and AD (Anno Domini: the year of our Lord) are now expressed as BCE (Before Common Era) and CE (Common Era), respectively. The Common Era begins with the period following the birth of the prophet Jesus (AS).

CHAPTER ONE

OUR COUNTRY IN THE WORLD

Text pages 1–8

Arabia is located almost in the centre of the block of Islamic countries. Thus Islam gradually spread to the neighbouring countries and was then taken further east, towards Indonesia, by Muslim traders. However, the spread of Islam beyond the areas shown was halted (a) by strongly entrenched Christianity in the west and north-west, (b) by wild, largely uninhabited land to the north—Siberia, (c) by fiercely independent and expansionist China (it controlled Kabul and Kashmir)—here the Muslim armies fought the battle of Talas (751CE) on the borders of China. Though they were successful and gained control of Central Asia, their lines of communication were stretched too far and they decided not to invade Tang China itself, and (d) southwards—the expansion was stopped provisionally by the great deserts and dense jungles of North and Central Africa, but later the religion was taken to these regions by Muslim merchants. America, Australia, and New Zealand had not been discovered at this time.

Throughout history the largely fertile subcontinent attracted people from the drier, less fertile Central Asia. A list of the main invaders is given later in the textbook on page 62. The majority poured in through the passes at Khyber and, to a lesser extent, Bolan, which were of vital strategic importance.

The main countries—Pakistan, India, Bangladesh, and Sri Lanka will probably be fairly familiar to the pupils, and more will be learned about them in these books, but the border countries of Nepal and Bhutan, if not of great economic significance, are interesting.

Bhutan, until the 19th century, had a religious leader (Dharma) and a temporal one (Deb Raja). These were nominally elective, but the governors of Paro and Tongsa were more often chosen. In 1907, under British influence, the governor of Tongsa became hereditary ruler, at first as Maharajah and then from 1920 as king. The primitive state was independent internally but its foreign policy was controlled by Britain. After the departure of the British, Bhutan became a fully independent country, although it is under the influence of its larger and stronger neighbour.

Nepal, until the 18th century, was a collection of small principalities. Britain allowed its independence in return for the recruitment of Gurkha soldiers—still a very important and much-feared element of the British army. In 1951, the king promulgated constitutional monarchy. In 2001, virtually all of the royal family was assassinated by the crown prince who then committed suicide. The reason is thought to have been the king's refusal to let him marry the woman he wanted. The throne was taken over by the king's brother. There is a strong communist rebel movement almost paralysing Nepal today.

Maldives is an archipelago of nearly 1200 small islands. They became independent from Britain in 1967 and a republic in 1968. The highest point in the whole of the country is less than TWO METRES above sea level, so that in view of global warming, the melting of the ice caps and the rise in sea levels, the majority of the land will literally disappear beneath the waves, possibly before the end of the century. Maldives currently enjoys considerable prosperity through tourism.

INFO BOX

Population data of the South Asian countries:			
Country	**Population (approx)**	**Density per sq km**	**Annual growth rate**
India	1,130, 900 000	373 persons	1.60%
Bangladesh	150,500,000	1200 persons	2.06%
Bhutan	2,330,000	148 persons	2.08%
Maldives	370,000	1001 persons	2.73%
Nepal	19,000,000	193 persons	2.13%
Pakistan	165,000,000	206 persons	1.83%
Sri Lanka	21,000,000	308 persons	0.9%

Perhaps a few general interest oral questions can be asked, such as: What explains the relatively low density in some countries? (Much inhospitable territory in Pakistan, Nepal, and Bhutan)

Compare with the rate of increase in population in the West: USA 0.8%; France: 0.5%; Italy: 0.0%; Spain: 0.1%; Poland: FALLING 0.05%; Russia: FALLING 0.5%.

Ask pupils why there is a difference?

Mainly tradition—developing countries have been largely agrarian and need large families to supply workers for the family land. The death rates in the past were very high, hence more children to make up. Today more people are living longer. Automation—industrial societies no longer need so many workers as machinery does the work. Ignorance—family planning is universal in West, even in Catholic countries. Education is the vital factor in understanding issues related to overpopulation.

Pupils could draw a pie chart of the areas of the countries making up the subcontinent. In degrees, they are:

India—252.3; Pakistan—66.2; Nepal—13.6; Bangladesh—12.1; Sri Lanka—11.8; Bhutan—3.8; Maldives 0.2.

MARGIN TEXT EXPLANATION

'Sub' is a Latin word meaning 'smaller part of', 'lesser', or 'under'. 'Sub' also means under or below, in a physical sense. Why do you think the Indian subcontinent is called thus? It is because it is a smaller part of the continent of Asia. Subcontinent thus means that this land mass is located below the Asian continent, on the map.

Perhaps ask pupils to find other 'sub' words meaning 'lesser' or 'under'; for example, submarine (a boat for under the sea); subway (a tunnel or passage under the ground); subject (someone who is below or under the rule of, another); submerge (to go under the water); subnormal (something which is below the expected normal); subsonic (below the speed of sound), etc.

ADDITIONAL QUESTIONS

1. Find at least three other words with 'sub' and say what they have to do with 'under' or 'below'.

2. Here are some more Latin prefixes. Find three words which contain each of them and say what they have to do with the meaning.

   (i) octo—meaning eight (ii) cent—meaning hundred (iii) super—meaning above or beyond

SAMPLE ANSWERS

(a) octo—eight (octopus, octagon, October—originally the eighth month, octave—eight notes in the musical scale).

(b) cent—a hundred (century, centigrade—100 degrees between freezing and boiling; centipede—an insect believed to have 100 legs; centenary—the 100th anniversary of an event).

(c) super—above, beyond (superior, supertanker, supersonic, supermarket, supervision, superhuman).

The maps on pages 3 and 4 highlight the relief features of the subcontinent and Pakistan as explained in the text. The diagrams on pages 5–8 and the accompanying definitions help to further understand these landforms.

ANSWERS TO QUESTIONS IN MARGIN TEXT, PAGE 5:

i) The Indus moves very slowly because of the gradual fall in the land from Panjnad—a difference of only 75 metres over a distance of 560 km.

ii) The very shallow fall of the river means that the water flow is sluggish and much silt is deposited as the water can no longer carry the mud it has brought down when it was flowing more swiftly. The river broadens and floods—at the right season a benefit, of course, but needs to be controlled at other times. It becomes more shallow and wider and is of little use for navigation or transport except by small local fishing boats. Compare the Amazon in Brazil, which is so deep that ocean-going ships can sail up to 1600 km inland.

GEOGRAPHICAL TERMS

The Himalaya and Karakoram ranges were originally the bed of the Tethys Sea, so that fossils of animals are found high in the mountains. The main uplift of the mountains, caused by the collision of the tectonic plates, was 12–65 million years ago. In geographical terms, these are young mountains. They are still being pushed upwards at the rate of about 10 cm a year (the same rate as the average annual growth of human hair). Nine of the 14 highest peaks on Earth are located in these ranges.

The Himalayas are still growing: to demonstrate this, get two stacks of newspaper about 1 cm thick and place them edge to edge. With a hand on each, to steady, push the two together—where they touch, they will rise up to form a 'mountain'. The sheets of paper represent the two great plates—the Euro-Asian plate and Indian plate. The Indian plate is still moving northwards and is pushing upwards, at the rate of about 10 cm per year.

Deserts…many people think of deserts as flat areas of sand. In reality, sandy deserts are more like the drawing with the sand blown into these strange shapes by the wind. The blunt (blue) end faces the prevailing winds.

Deserts are created by climatic conditions: extreme heat or cold; no rain; infertile soil. Consequently, there is no plant life to bind the soil together to prevent its movement. Deserts are constantly changing as dunes can move 30–40 metres a year. Dunes can be vast, up to 400 metres high, and tend to form in crescent shapes with 'horns' pointing in the direction of the wind. Man-made deserts, mostly due to

overgrazing so that there is no vegetation left to protect the soil, are more difficult to recover. Deforestation also results in desertification. North Africa was once the bread basket for the Roman Empire, but in a period of 2000+ years most of it has turned into the Sahara Desert.

Reclaiming deserts is difficult and expensive, but it is being done successfully in parts of Pakistan. Wells and 'karez' in Balochistan have created oases, and canal irrigation in the Thal Desert has made parts of it arable. More difficult than providing water is the restoration of the desert soil, to make it fertile.

Delta: The word is derived from the name of the ancient Greek letter for 'D'. It was written and pronounced as 'delta'. Show the similarity in the shape and formation of the letter D and the river delta. Students may be interested to learn that the word 'alphabet' is made up from the first two letters of the Greek alphabet, ∂and ß, called 'alpha' and 'beta'.

Delta is the fourth letter in the Greek alphabet (alpha, beta, gamma, delta…) and in Greek writing was shaped like a triangle, hence where a river broadens out when it enters the sea in a triangle shape, it is called a delta.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 8:

1. a) Most Islamic countries are in the Middle East, Southern Asia, and Northern Africa.

   The home of Islam is in Saudi Arabia and it spread outwards from here. Its progress was halted by the solid barriers of Christianity in Europe and western Russia; by the virtually empty steppes of central Asia; by the firmly established society in China; and the deserts of North Africa.

   b) There are no Islamic countries in the Americas, Europe (apart from the tiny state of Albania where there are a few million Muslims), and in Australia.

2. In Pakistan, deserts (hot) are located in the east and south-east, in the centre, and in the west. Cold deserts are found in the high mountains of the north.

3. Punjab is the most populous as it is generally the most fertile and has a very extensive system of canals supplying water for agriculture, which is the main occupation of the people.

4. Students to refer to the atlas for the answer.

5. Finding these features in the subcontinent on the atlas:

   Mountains—obvious in the north and west

   Plateau—the Potwar region

   Plains—all of the green coloured areas on the map

   Deserts—Thal and Thar deserts; parts of Balochistan

   Rivers—the lifeblood of Pakistan; rising in the north and merging with the Indus to flow down to the Arabian Sea

   Lakes—relatively few natural ones: Saiful Muluk in Kaghan, Manchar in Sindh, and often artificial where created by dams for hydroelectric power or as reservoirs—Hab, Rawal, Mangla, and Warsak.

   Estuary—no good example in Pakistan

   Delta—Indus, in the south-east

LESSON PLAN 1

Topics: The geographical spread of Islam; Pakistan's location and features

Duration: Two periods (40 minutes x 2)

Objectives: To know geographical extent of Islam; importance of Pakistan's location; its geographical features

Resources: Text book, *Oxford School Atlas for Pakistan*, encyclopedia or Internet, newspapers

Introduction: Prepare ahead by reading through pages 1–5 of the textbook. The students have a fair knowledge of the creation of Pakistan; the following questions may be asked for quick answers:

(i) What is the full name of our country?

(ii) When did it come into being?

(iii) In which continent is it situated?

Refer to the map given on page 1; ask students to identify the continents shown. What do they observe about this map? Discuss responses; explain that this is a political map which shows countries and their boundaries.

Explanation: Ask students what the colour green indicates—Islamic countries. Green is the traditional colour of Islam; it reflects the green colour of the dome of Masjid-e-Nabvi in Madina.

Point out the spread of Islamic countries (i.e. countries with a Muslim majority population and Islamic laws) across North Africa, the Middle East, West, Central, South and South-east Asia.

Discuss the reasons for this—land routes, and mainly trade, also invasions. Ask why there are no Islamic countries in North and South America: no trade routes to the west, decline of Muslim power in Spain, expansion mainly to Central and South-east Asia. Also explain that there are countries like India and China with large Muslim populations, especially India, but they are not Islamic countries.

The location of Pakistan: ask students to see the first map on textbook page 2. It shows where our country is located. What lies to the east, west, north and south of Pakistan? The second map shows South Asia and the SAARC countries; SAARC stands for South Asian Association for Regional Cooperation.

Explain that Pakistan is like the hinge between two panels—it connects the Western and Central Asian blocs (note this word which means a group of countries) with the South Asian and further, South-east Asian countries. Hence Pakistan has a strategic i.e. important location as an Islamic country in South Asia.

Explain why India and Pakistan together are called a subcontinent. 'Sub' means lesser or a smaller part. A continent is a huge mass of land. India and Pakistan though they cover a big area, are smaller than the other continents.

Geographical features: it is vital to refer to the *Oxford School Atlas for Pakistan*, page 7, to better understand relief maps with the help of the key. Also point to the map on page 3; explain that this is a relief map which shows the geographical features of a region. Refer to the key in the left-hand margin—this helps to understand what the colours represent.

The diagrams on page 5, showing the cross-sections of land areas from the map on page 4, help to understand the term 'relief'. The main geographical features of the subcontinent are the mountain ranges which act like a wall in the north, north-east and north-west, and the mountain passes; the main river

systems of Indus and Ganga; plains and valleys; plateaus; deserts. Use the maps on page 4 of the textbook and page 7 of the atlas to point out and name the mountain ranges in Pakistan.

Define the term 'mountain pass' and explain the usefulness and importance of mountain passes. They are natural routes through the mountain ranges and link one region with another.

Ask students to look at the map of South Asia on pages 42-43 of the atlas and name some of the passes that join Pakistan to other countries. These passes also have historic importance e.g. the Aryans, Alexander the Great, Mahmud of Ghazni, the Mughal king Babur, and Timur entered the subcontinent through these passes.

The following table will help students to know and understand the location and routes of some major passes in Pakistan (from page 8, *Oxford School Atlas for Pakistan*).

Pass	Range	Links
Khunjerab	Karakoram	Pakistan to China
Karakoram	Karakoram	Pakistan to China
Parpik	Karakoram	Pakistan to China
Baroghil	Hindu Kush	Pakistan to Afghanistan (north)
Dorah	Hindu Kush	Pakistan to Afghanistan (north)
Shui	Hindu Kush	Pakistan to Afghanistan (north)
Khyber	Safed Koh	Pakistan to Afghanistan (north-west)
Pelwar	Safed Koh	Pakistan to Afghanistan (north-west)
Gomal	Toba Kakar	Pakistan to Afghanistan (west)
Khand	Toba Kakar	Pakistan to Afghanistan (west)

Extended information: Some tourist attractions

Here are some of the mountain valleys that attract tourists.

Valleys	Mountain ranges
1) Swat, Chitral, Dir	Hindu Kush
2) Gilgit, Hunza, Baltistan	Karakoram
3) Murree, Gallies, Kaghan	Himalayas

Conclusion: A quick reference to the important facts covered—ask students 'What did we learn today?' and note the responses on the board. i) Pakistan's location and its importance, ii) the spread of Islamic countries, iii) main geographical features of the subcontinent, especially Pakistan.

Homework:

a) Students should draw a table as shown below to name the mountain ranges and their location, according to direction. The first one has been done as a sample.

Name	Location
Himalayas	North-east

b) Group project: Using the information about valleys given above, select one per group and make a tourist brochure or poster about it. Search for information from newspapers, travel magazines and the Internet.

LESSON PLAN 2

Topic: Geographical terms and features

Duration: Two periods (40 minutes x 2)

Objective: To inform students about the physical features of the subcontinent with special reference to Pakistan

Resources: Textbook, *Oxford School Atlas for Pakistan*, Internet

Introduction: Begin with recap of the previous lesson; refer to the text, map and diagrams on pages 4 and 5 of the textbook.

Why do invitation cards sometimes have a map with them? Note responses (to show route or location). Now ask them to suggest the use of a geographical map.

Explanation: Draw their attention to the atlas—review pages 6, 7, 8, and 9, and also look at the maps on the following pages. Tell the students that these maps provide the information as shown in the titles. They serve a special purpose i.e. they show the physical features of a country or administrative divisions or the climate or agriculture, etc.

Define a relief map. Ask the students to see the relief maps on pages 3 and 4 of the textbook, and page 7 of the atlas.

Briefly discuss the physical features shown in the map, explaining them with reference to the key and point out on the map the features mentioned in the textbook.

Students should be able to locate the mountain ranges in the north, north-east, north-west and west of Pakistan; the two main river systems of the subcontinent; the Deccan plateau.

Geographical terms, pages 6 to 8: these are important to understand, learn and remember as this knowledge will be useful at higher levels too. Use the *Oxford School Atlas* (pages 7 to 10) to pinpoint the examples.

Examples of these features from Pakistan are:

a. Mountains – Himalayas, Karakoram, Hindu Kush

b. Hills – Waziristan Hills, Kirthar Hills

c. Plateaus – Potwar Plateau, Balochistan Plateau

d. Plains – Indus plain, Vale of Peshawar

e. Deserts – Kharan, Thar, Thal, Cholistan

f. Lakes – Saiful Muluk, Manchar

g. Rivers – Rivers Indus, Gomal, Kurram, Swat

h. Estuary – there is no estuary in Pakistan

i. Delta – River Indus forms a delta before falling into the Arabian Sea

Conclusion : Repeat the main points of the lesson, using short questions to assess understanding e.g. what is the difference between mountains and hills?

SECOND PERIOD

Prepare for class work by having the required number of photocopies of Worksheet 1 at hand. Begin the lesson by giving students further information, given below. Elicit information and responses from them by asking what more they know about their country (spend 5 to 7 minutes on this).

Extended Knowledge

1. The Karakoram Highway is the highest road in the world. It has been built for the movement of goods and people between Pakistan and China.
2. Pakistan has 108 peaks above 7000 metres. The world's second highest mountain, K2 (Mt Godwin Austen) is in the Karakoram range; it is 8611 metres in height.

Recap main points covered in previous class.

Distribute worksheets. At the end of 20 minutes ask students to exchange their worksheets with their partners for peer checking. Read out the answers given on page 169 for cross-checking (spend 5 minutes for peer checking). Applaud high scorers.

Homework: Students to do questions 4 and 5 from the textbook in their notebooks. (Provide outline map of South Asia)

List examples from Pakistan for each geographical term.

Group project: Students to prepare posters by (i) collecting photographs that highlight these geographical features; give appropriate captions; (ii) draw and colour these features for display or make models of them, with the teacher's guidance.

1. Complete this statement: Pakistan's location is strategic because _____

_____

2. Name any ten countries of the Islamic bloc.

3. Match these countries with their locations from Pakistan.

Name	**Location**
Afghanistan	East
China	North-east
India	West
Iran	North-west

4. Fill in the blanks.

   a) The natural route through a mountain range is called a _____.

   b) An area of high flat land is known as a _____.

   c) Mountains with sharp peaks are _____ mountains.

   d) The _____ and _____ passes connect Pakistan with China.

   e) The _____ Pass is also historically important.

   f) Mountains are usually above _____ to _____ metres or more in height.

5. The areas of South Asian countries are given below. Rearrange them in the right-hand column in descending order, from the biggest to smallest.

	Country	**Area ('000 sq km)**		
A	Bangladesh	144	1	
B	Bhutan	47	2	
C	India	3288	3	
D	Maldives	0.3	4	
E	Nepal	147	5	
F	Pakistan	796	6	
G	Sri Lanka	66	7	

6. Complete the sentences by selecting the correct words from the brackets.

a) Mountains are the _____ lands. (flat, sandy, highest)

b) Hills are not as _____ as the mountains. (dry, high, sharp)

c) An _____ makes a good harbour for ships. (lake, estuary, delta)

d) Areas of flat land at sea level are called _____. (valleys, deserts, plains)

e) A hot, dry place with hardly any plants is called a _____. (plain, desert, plateau)

f) Lakes are bodies of water, surrounded by _____. (land, rivers, seas)

g) Rivers are bodies of _____ water. (frozen, flowing, salty)

h) Where a river splits into smaller streams before falling into the sea, it is known as _____. (an estuary, a lake, a delta)

i) A tundra is a cold, dry desert found in _____ regions. (damp, polar, low-lying)

Text pages 9–11

Emphasize the difference between weather and climate.

Temperature: It is affected by distance from the equator. The heat from the Sun falls directly on land within the tropics, whereas because of the curvature of the Earth the same amount is spread over larger and larger areas as one approaches the poles, thus decreasing the temperature.

The Earth's atmosphere up to 200–300 kilometres is filled with dust particles and other matter, which reflect back some of the Sun's heat. For example, hold a piece of cardboard or cloth in front of a fire and then notice the difference when it is taken away. Towards the poles, the Sun's heat has to travel through a longer distance of dust-laden air so that more heat is reflected away.

Altitude: Temperature decreases naturally about 6.5 degrees C for every 1000 metres vertically upwards. Mt Everest at 8848 metres would be about 57 degrees colder on the summit than the sea level temperature on the same latitude.

Proximity (nearness) to the sea: The temperature of large bodies of water such as seas and oceans does not vary very much as currents, winds, tides, and general movements of water keep them stirred up and do not change the temperature—3 to 5 degrees C at most. For places near the coast, the land heats up rapidly in summer and air above it rises, pulling in cooler air from over the sea. In winter, the sea moderates the temperature—compare Karachi and Lahore in the table on page 10. Siberia is, of course, much further north and in the centre of a great land mass, which cools down very rapidly.

Pupils might be interested by the fact that the city of Verkhoyansk in Siberia often has a winter temperature of MINUS 70° C and a summer one of PLUS 34° C. The Siberian mining city of Novilsk (pop. 200,000) is said to be even colder.

ANSWER TO QUESTION IN TEXT, PAGE 10:

Karachi has a warmer winter and a cooler summer as compared to Lahore and Siberia because Karachi is near the moderating effects of the sea. Siberia and Lahore are in the centre of a great land mass, and much further north. Land heats up and cools much more rapidly than water.

Ocean currents: These are far more complex than the two mentioned in the text. There are maps of the main ocean currents on page 76 of the *Oxford School Atlas for Pakistan*. The main one that affects Pakistan is the Equatorial Counter Current, a warm stream which starts near the Equator and sweeps northwards along the coast of Pakistan before going round the tip of the subcontinent into the Bay of Bengal and then southwards to the Equator again where it is re-warmed and starts the cycle again.

The effect of currents is shown for the Humboldt Current (cooling). The Gulf Stream (warm) is about 80 km wide and 640m deep; by the time it reaches Western Europe, the temperature is 5–6 degrees above the natural ambient temperature. This keeps

the land at about 7° C in January, while Newfoundland on the same latitude, but untouched by the Gulf Stream, is minus 3° C.

Rainfall: The record rainfall at Cherrapunji at 22.9 metres would cover most skyscrapers if it had all remained on the ground but, of course, it soaked into the soil or ran off. Rainfall is perhaps the most critical factor in determining the crops of a place, provided there are no extremes of height above sea level or differences in latitude north or south of the Equator.

Get pupils to work out how high the water would have come at Cherrapunji if it had all stayed on the ground. Over 22 metres rain—get them to compare this with the school or some other building they know.

To illustrate a point about aridity: the Atacama Desert in Chile is believed to be the driest place on earth. The author has visited places in the Atacama Desert to see a remote hillside studded with pits—the burial places of the Incas who lived here 400–500 years ago. Desperately poor local people had dug up the graves hoping to find gold objects sometimes buried with the corpses. The climate is so dry that hair still clings to the corpses' skulls and the burial clothes are still wrapped round the bodies left there centuries ago.

Air pressure: Like temperature, air pressure decreases with height. The air pressure determines the boiling point of liquids, water especially. The boiling point of water decreases one degree C for every 300 metres vertically, so that on the top of Mt Everest water would boil at about 71° C instead of 100° C at sea level. It would be impossible to boil an egg there, as the highest temperature that water in an open saucepan would reach would be well below that at which the egg white sets. If you boiled it for an hour, the egg would still be liquid. The water would not even be hot enough to make a cup of tea.

Explain that the weight of the air does not crush us because the same pressure is inside us as well as outside. The mouth and nose take in the air pressure. You can explain this by getting a sheet of tissue paper and holding it firmly by two edges with both hands, get someone to push with the extended forefinger on it. Naturally, the finger goes straight through. Now get them to put the forefingers of both hands on the opposite sides of the paper at the same spot. If the same pressure is put on both fingers, the paper will not tear.

What happens when there is no counterbalancing pressure?

Get a plastic bottle with a secure airtight cap, a quarter filled with rapidly boiling water with plenty of steam. Quickly screw on the lid and leave until it cools. The stream condenses leaving a partial vacuum, i.e. much less air pressure inside, and the bottle collapses.

Direction of wind: This influences climate as winds, which blow for most of the year (in the northern hemisphere) from the north, mean cool climates, while those from the south usually mean warm climates. Winds blowing mostly from across oceans or seas normally mean a wet climate, while those that blow over land masses cause a dry climate. Winds can cause micro-climates: land on the lee side of mountains, sheltered from prevailing winds, may have a dry climate if the winds are normally rain-bearing. Land on the lee side of mountains with prevailing northerly winds may have a much milder climate.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 11:

1. Rainfall is important in determining the climate of a place as less rainfall can make a land dry and more rain affects the temperature of that place.

   Crops and plants are also grown according to temperature of a place—rice, bananas, pineapples grown in hot countries, and wheat, maize, and barley in cooler ones. But in the absence of water,

either natural precipitation or irrigation, nothing will grow at all. Some crops need more water than others—rice and sugar cane need large amounts, while grass (for stock raising), barley, and oats need less.

2. The rainfall in Cherrapunji was nearly 23 metres, enough to go over the tops of some buildings.
3. Location on the lee side of high ground, i.e. in the rain shadow; urban areas (towns, cities) have higher temperature (1–3 degrees) as compared to rural areas which have open spaces and more vegetation; size of a place: a small island has a different climate as compared to a land mass.
4. Parts of the country showing low air pressure will also show stormy or wet weather, while high air pressure brings fine and dry weather.
5. Students to first find out about the location, altitude, climate, houses, dress, and food particular to these cities and then discuss the differences.

LESSON PLAN 3

Topic: Weather and climate

Duration: Two periods (40 minutes x 2)

Objective: To recognize difference between weather and climate

Resources: Textbook, *Oxford School Atlas*, globe, newspapers, Internet

Introduction: Brainstorm with the students. Ask the following questions for quick answers.

1. What is the weather like today? Is it hot, cold or pleasant?
2. Does the temperature remain the same every day or does it vary?
3. Name some of the countries that are cold.
4. Name some countries with a hot climate.
5. How would you classify Pakistan? Is it a hot country or cold? Or neither too hot nor too cold?

Note the responses on the board, such as: Hot countries: Saudi Arabia, Gulf countries, African countries like Sudan, Libya, Congo, Kenya. Cold countries: Canada, France, Germany, some parts of USA, England, Norway, Russia, polar regions, etc.

Explanation: Begin with Pakistan: Pakistan enjoys different climates in different regions. Northern Pakistan is cold in winter, and warm in summer; the rest of the country has cool winters and hot summers. The coastal areas have a mild climate. There's snowfall in the mountainous areas, rainfall in some parts of the country and no rain in other parts.

Explain the difference between weather and climate. Weather means the daily climatic conditions i.e. sunny, cloudy, windy, rainy, hot, cold, etc. Climate is the average of the weather conditions over a whole year, observed and recorded for several, usually 30, years.

Write the definition on the board.

There are seven factors that generally affect the climate [points a) to g) on textbook pages 9, 10, 11]. Read through these and explain each point, one by one. Refer to the explanations in the Teaching Guide.

Temperature is an important factor and this depends on the other factors that are given.

1. Distance from equator: Draw a diagram to show how distance from the equator affects the Earth's climate. The tilt of the Earth's axis and its revolution affect the amount of heat any place receives from the Sun. Regions within the tropics get direct rays from the Sun, while towards polar regions, the rays are spread over a bigger area. When the rays pass though dust-laden air this also affects temperature.

2. Altitude: the height of a place above the sea level. Temperature decreases with height, hence mountain regions have a cool atmosphere even in summer. This is why people visit hill stations like Murree, Nathiagali, Kaghan, etc. in summer.

3. Proximity (nearness) to the sea: large bodies of water keep the atmosphere cool in summer and warm in winter. Karachi is a coastal city; ask students if they have visited the beach/Karachi in different seasons. How was the weather? Compared to Lahore, Islamabad, Peshawar or Quetta, which are generally very cold in winter and very hot in summer, Karachi has a moderate (mild) climate.

4. Ocean currents: Define ocean currents. When waters move about in the ocean in streams, these are called currents. Explain that currents are hot or cold, depending on where they begin and the direction in which they flow. Their temperature affects the climate of the lands that are nearby. Use the atlas to show the locations of the places given on page 10 of the textbook.

5. Rainfall: Explain how rainfall affects us—a rain shower on a hot day cools down the weather. Discuss the importance of rain—rains are a source of fresh water; we need rain to grow crops, otherwise there would be famine. But if there's heavy rainfall, it causes floods. Give the recent example of floods and the disaster they caused in Pakistan.

6. Air pressure: explain that the air all around us has weight—we call it pressure. This pressure decreases with height from sea level—higher places have lower pressure while places on lower height have higher air pressure. Explain how air pressure affects climate: when the pressure is high the weather is usually dry and fine; low pressure causes rain or storms. Discuss with examples how air pressure affects our daily lives. Show students the weather forecast diagram from a newspaper which also shows air pressure detail.

7. Direction of the winds: Ask the students how they feel when hot winds blow in summer, or when cold winds blow in winter, like the Quetta winds that affect Karachi. Explain that the direction of the winds affects climate. Winds blowing over long stretches of land bring dry weather, while winds blowing over the oceans pick up moisture and bring rainfall and cool weather. Areas in the shadow of high mountains in the winds' path are affected, depending on the wind direction. In the northern hemisphere, winds from the north are cool while winds from the south are warm. It is the other way round in the southern hemisphere. Use a globe to explain this clearly. Ask short questions to elicit response and ensure understanding.

Conclusion: Recap the difference between the weather and climate. Mention briefly the factors affecting climate.

Homework: Questions 1, 3 and 5 to be done in their notebooks.

Project work: Divide the class into groups, and ask them to select one of the factors of their choice and study how it affects climate of a place and the life of people living there.

Activities: Refer to suggested activities in the Teaching Guide.

Extended knowledge: Mount Kilimanjaro is a dormant (inactive) volcano in Tanzania near the Kenya border. It has three cone-shaped peaks, Kibo (5895 m), Mawenzi (5149 m) and Shira (3962 m). Kibo, the highest peak was renamed 'Uhuru', meaning freedom in the Swahili language, when Tanzania became an independent country. Although Mt Kilimanjaro is located only 3 degrees south of the equator, its highest

peak is covered with snow and ice throughout the year. However, global climate change is affecting and reducing the snow-cover. Kilimanjaro is popular with tourists and trekkers; there is a national park on its slopes, and there is a diversity of wildlife and vegetation.

Ernest Hemingway, the famous novelist wrote a story 'The Snows of Kilimanjaro' which was also made into a popular film.

A weather map

A weather map shows the weather conditions expected across the country on a particular day. It also predicts high and low temperature for the day in various cities.

The sample symbols below show the weather conditions.

Newspapers and television channels use symbols like these to report and predict the weather.

Rain 	Wind direction 	Snow 
Clear sky 	High pressure 	Partly cloudy 
Low pressure 	Cloudy 	35/25°C high and low daily temperature (Maximum/ Minimum) **25/35°C**

1. Choose the correct answer.

   a. Climate is the average of the weather condition of _____.
   (i) any one day (ii) few weeks (iii) whole year

   b. The closer we are to the _____, the warmer and wetter it will be.
   (i) mountains (ii) equator (iii) desert

   c. _____ shows the height of a place from the sea level.
   (i) Latitude (ii) Altitude (iii) A mountain

   d. Places near the sea are _____ in summer and _____ in winter.
   (i) hotter, wetter (ii) cooler, milder (iii) warmer, drier

   e. Lahore is hotter than Karachi in summer because _____.
   (i) it has mountains (ii) it is near the equator (iii) it is very far from the sea

   f. When the air pressure is high the weather is usually _____ and dry.
   (i) hot (ii) wet (iii) fine

2. Define ocean currents.

_____

3. Give an example to show that ocean currents affect climate.

_____

4. Briefly explain how climate affects agriculture.

_____

5. Which is the driest place on Earth and where is it located?

_____

6. Where is Cherrapunji? What is so special about this place?

_____

7. Why are winds that blow from the north cold?

_____

8. Why do winds blowing across a large area of sea bring rainfall?

_____

9. Mark the following places in the given outline map of the world.
(i) Karachi (ii) Lahore (iii) Antarctic Circle (iv) Siberia (v) Atlantic Ocean (vi) Gulf of Mexico
(vii) Atacama (ix) Cherrapunji (x) Mount Kilimanjaro

WINDS AND CYCLONES

Text pages 12–14

Look at some weather maps in the newspapers or on television, that show the movement of winds and high/low pressure zones. Air pressure is measured in bars. Isobars ('iso' = Greek for 'same') are lines on a map joining places with the same air pressure at a particular time. Note how they are close together in cyclones and, in anticyclones, further apart.

A tip for remembering the air circulation in cyclones and anticyclones is to think of a screw and a piece of wood. To drive the screw into the wood you turn it clockwise and it goes further and further in, pressing down. So is the air in an anticyclone. To unscrew and lift the pressure off you turn the screw in an anticlockwise direction—cyclone.

Tornadoes tend to occur in predictable places—southeastern USA, for example—where people in areas subject to such storms often have hurricane shelters, rather like bomb shelters. If a tornado strikes a house, the walls fall outwards: the centre of the storm is a mild vacuum, and sucks air from the building with such violence that the walls are literally blown outwards. There are reports from a number of places of a shower of fish—or sometimes frogs—falling from the sky, much to the terror of people in the past who saw this as a sign of divine displeasure. The truth is that they had been sucked up from the sea or swamp in a twister, carried high into the sky and then dropped, as the tornado was blown out.

The Caribbean and southern states of the USA, especially Louisiana, are subject to tornadoes each year. In 2007 Hurricane Katrina killed over 1500 people in a country which expected tornadoes and was prepared for them. Much of the great city of New Orleans was destroyed. In the subcontinent, Bangladesh suffers most from hurricanes and storms.

ANSWER TO QUESTION IN MARGIN BOX, PAGE 14:

The word 'typhoon' which means storm may have come from the word 'toofan', which means the same.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 14:

1. Students can find related information from various sources e.g. the Internet, newspapers, etc. and then present it in class.

2. In an anticyclone, the air moves in a clockwise direction. This means that the pressure on the ground is high. An anticyclone normally means fine/warm/dry weather. The winds in an anticyclone are light.

In a cyclone the winds move in an anticlockwise direction. The pressure on the ground is low and brings bad/wet/stormy weather. The winds in a cyclone are strong/fierce. The only part where they are different is in the centre/eye. Here the winds are calm.

Cyclones are dangerous because they cause great damage. Other names for storms are hurricanes, typhoons, and tornadoes.

LESSON PLAN 4

Topic: Winds and cyclones

Duration: Two periods (40 minutes x 2)

Objectives: To understand how winds are generated, their effects; how cyclones are caused

Resources: Textbook, *Oxford School Atlas*, globe, newspapers, Internet

Introduction: Begin with a quick brainstorming talk on weather:

a. What is a thunderstorm?
b. What happens when winds blow at a very high speed?
c. What is a tsunami? Do they know about the tsunami in the Indian Ocean in 2004, and the one in Japan in 2011?
d. Who can tell the class about Hurricane Katrina in New Orleans, USA?

Explanation: Move on to the definition of wind. Students already know that wind is moving air. Ask what a gentle wind is called; what a strong wind is called.

A gentle wind is called a breeze. Its speed is very low, perhaps 5kph (km per hour). A very strong wind is called a gale. Its speed is very fast, perhaps 200kph or more.

Explain that winds generally blow in one direction but sometimes they spin around in a spiral movement. The aerial photograph of the cyclone on page 12 and the top drawing on page 13 explain this very clearly.

In a cyclone the winds move at high speed in anti-clockwise direction, around a central point called an eye. The wind speed is very low in the centre or eye of the cyclone. Discuss the damage caused by cyclones. Point to the lower drawing on page 13; explain that when spiral winds blow in a clockwise direction, this is called an anti-cyclone. Anti-cyclone winds are gentle and bring fine weather.

Now divide the board in two columns, under the headings Cyclone and Anti-cyclone. Ask the students to call out the differences between these and note them as shown below.

Cyclone	Anti-cyclone
1. Spins around anti-clockwise in Northern hemisphere. 2. Clockwise in the Southern hemisphere. 3. Air pressure on the Earth is low. 4. Covers a smaller area. 5. Wind speed is stronger. 6. Bad weather with a lot of rain. 7. A medium-strength cyclone has the power of 500,000 nuclear bombs.	1. Spins around clockwise in the Northern hemisphere. 2. Anti-clockwise in the Southern hemisphere 3. Air pressure on the Earth is high. 4. Covers a bigger area. 5. Wind speed is fairly gentle. 6. Fine warm and dry weather. 7. Anti-cyclones winds are fairly gentle. The atmosphere is calm.

Define a tornado or a hurricane. Explain their characteristics; explain what a twister or water spout is, and how destructive it can be. Tell the students how they are known in Pakistan.

Explain what is meant by 'dust devil'.

Conclusion: Recap the main points.

- A thunderstorm brings lightning, thunder and rain, and can cause much damage.
- A tornado is a destructive, spinning funnel-shaped cloud which destroys everything in its way.
- A hurricane is a violent storm with strong winds.
- A twister or waterspout is a swirling column of water sucked up by winds from the sea.
- A winter storm can be a cold, blind snowstorm.

Reinforcement: Ask the students to collect information from an encyclopedia or the Internet, and newspapers about cyclones, tornado, twister and water spout. Tell students about the tornado that struck Sialkot district on 19 March 2011.

1. Imagine that you were caught in a cyclone or a tornado. What happened to you and how did you escape?

Extended knowledge: What is a tsunami?

Tsunami is the Japanese name for storm wave. A tsunami is a tidal wave that sweeps from the ocean like a huge tide. It has immense destructive power. It is caused by undersea earthquakes, or by hurricanes in the oceans. Scientists can forecast exactly about a tsunami. In 1970 a cyclone and tidal wave struck East Pakistan (now Bangladesh) killing about 266,000 people.

MEASURING THE WEATHER

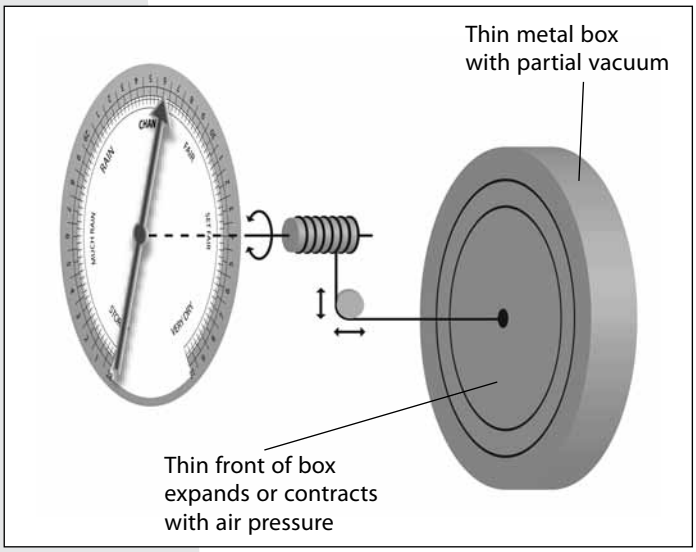
Text pages 15–16

Rain gauge: Pupils can make one of these easily with a plastic funnel, a large tin, and a jar. The water collected is perhaps better measured in a measuring jar, borrowed from the lab. Calibrating is a problem because the catchment area—the size of the funnel—will differ from that in the measuring jar. If the funnel is the same size as the tin container, the collected water can be poured into the tin and the height measured. It could be worked out mathematically, with the help of the maths teacher—so many ccs of water in the jar, spread over the area of the funnel.

Wind vane: This is perhaps not as important in countries like Pakistan where winds are more consistent, but in Europe the direction varies from day to day. The tail fin keeps the arrow pointing in the direction of the wind. Many schools in UK keep a wind chart, entering the direction each day.

One another important piece of equipment for measuring the weather is the wind-speed indicator. This looks rather like a weather vane (page 15) but the arms of which will spin around. Instead of the N, S, E, W signs at the ends of the arms there are vertical metal cups, all pointing the same way. When the wind blows the arms spin around; the stronger the wind the faster they spin. There is a meter for measuring this and showing how fast the wind is blowing.

Thermometer: For weather studies, the ordinary domestic thermometer is not of much use as the temperature varies frequently. The maximum/minimum thermometer is used to record daily temperature. The working of the max/min thermometers is clearly explained in the textbook. It would help if teachers had access to a sample to demonstrate the working. The pointers in the thermometer are reset by a magnet or by a good shake, though modern max/min thermometers often have a button, which resets the markers.



Aneroid Barometer

Barometer: The barometer is the vital instrument in weather forecasting. The mercury barometer is rather clumsy and fragile, and is rarely seen outside meteorological departments, or in private houses, where it is often in an elaborate and decorative frame.

The aneroid barometer is tough and is the more generally used. Point out that it is used for measuring heights in mountaineering and until recently as an altimeter in aircraft. Smaller aircraft still use an especially calibrated barometer for giving heights—it does have to be set, of course, at ground level because of the varying air pressure. Actually it 'weights' the column of air above it, which diminishes and the higher one rises, and so gives the height.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 16:

1. The measuring cylinder in the rain gauge is inside a container to prevent evaporation, as far as possible, which would give an incorrect reading.
2. The wind direction is important because it is a powerful factor in predicting the weather. Northerly winds generally mean cold and dry weather, winds from southerly direction, generally bring precipitation. The tail on the weather vane is to keep the arrow pointing in the direction from which the wind is blowing.
3. The only instrument used in cooking and candle making is the thermometer.
4. Measuring weather and keeping records can help in many ways e.g. weather warnings can help to protect life and property, day-to-day plans can be amended in the light of the forecast, and farmers can also benefit from this and plant their crops accordingly. Other possible answers can be discussed.

LESSON PLAN 5

Topic: Measuring the weather

Duration: One period (40 minutes)

Objective: To show how and why weather is measured and recorded

Resources: Textbook, school lab, newspapers, Internet, encyclopedia

Introduction: Begin with brainstorming. Ask the following questions for a quick response.

1. What does a vegetable vendor use to weigh onions, potatoes, etc.? (a pan balance)
2. What does your mother use in the kitchen to measure liquids e.g. milk or oil? (a calibrated glass jar, i.e. with mm/cm markings)
3. How does a cloth merchant measure the cloth? (a metre rod)

Measuring weather is a bit complicated. We have to use special apparatus designed to measure the amount of rain, direction of the wind, minimum and maximum temperature and air pressure. They are: i) rain gauge ii) wind vane iii) thermometer iv) barometer.

Use the available instruments from the school lab and show them to the students. The use of these instruments is explained clearly in the textbook and in further detail in the Teaching Guide. However, you may need to elaborate on how the maximum-minimum thermometer and the barometers work. Explain the difference between the aneroid and mercury barometers and the structure and working of each. Emphasize that the aneroid barometer is more practical. Discuss its use and importance.

Now focus on the need for measuring, recording and forecasting the weather, and why these processes are important. Remind students of what has been studied in Chapters 2 and 3: how did we know about the rainfall in Cherrapunji? Because it was measured and recorded. How do we know at what speed the wind is blowing? The Meteorological Department measures and records all weather features. How can we tell what the weather will be like the next day/week? Why is it important to know these facts? The Meteorological Department studies the conditions to forecast the weather—this is useful for travellers, farmers, pilots, etc.

Conclusion: Recap the main points: how weather is measured, recorded and forecast.

Reinforcement: Divide students into groups and assign them the tasks of making a rain gauge, and a wind vane, and collecting weather data from a newspaper and a television channel for one week.

Extended knowledge

- The mercury barometer was invented in 1643 by an Italian physicist Evangelista Torricelli.
- The word aneroid means 'non-liquid'. The aneroid barometer uses air pressure instead of mercury.
- Petrol stations use a type of aneroid barometer to measure the air pressure in a vehicle tyre.

WORKSHEET 3 Chapter 3 and Chapter 4

1. Complete the definitions of the following in a single sentence.

   a. A thunderstorm _____.

   b. A tornado _____.

   c. A hurricane _____.

   d. A twister or water spout _____.

2. Draw two figures to show the movement of wind in (i) a cyclone (ii) an anti-cyclone. Label them accordingly.

3. Fill in the blanks with appropriate words:

   a. A _____ measures the amount of rain that has fallen.

   b. A _____ is used to know the direction of the wind.

   c. A _____ is used to measure the air pressure by weight of the air.

   d. A _____ is used to measure the minimum and maximum temperature of a place.

4. Why is it important to know wind direction and speed?

   _____

   _____

5. Draw the diagram of a rain gauge in the space below, and label it.

CHAPTER FIVE

THE LAND AND AGRICULTURE OF PAKISTAN AND SOUTH ASIA

Text pages 17–23

Pakistan is not very fortunate in both land types and natural resources. Two fifths of the land is virtually unusable for agricultural purposes because of poor soil, cold, and dryness. Fortunately, there is a wonderful river system providing water for irrigation as three quarters of the agricultural land has to be irrigated to get crops.

Irrigation: In the past, the annual flooding of the land with the melting snows and monsoons was erratic and largely uncontrollable. However, while at Partition in 1947 there were only about 33 million people altogether, there are now about 165 million. While the land could cope then with 33 million, now with a population five times as many, the old ways are just insufficient. However, the land under cultivation has risen from 13 million hectares in 1950 to 24 million hectares in 2007—almost doubled.

Pakistan was not blessed with many rich mineral resources either: virtually no oil, and little coal but, of course, the relatively recent discovery of natural gas has been a blessing. There was no possibility of Pakistan emulating Saudi Arabia and other infertile Gulf states by selling vast quantities of oil to import most of its food.

The dams were vital as an answer by blocking the upper reaches of the rivers and releasing water throughout the season. As a valuable addition they produce hydroelectric power—a third of all Pakistan's needs.

The Rawal Dam photograph shows the overspill: the lake created by the dam is up to its working level and any more water flowing down the river to feed the lake, spills over to feed the river below. The height of the barrier can be adjusted to let more, or less, water escape.

More water is obtained from shallow wells, often brought to the surface by the very ancient Persian wheel. These can raise water from the well up to about 25 metres. There's also the primitive 'shaduf' which is desperately labour intensive and can at best irrigate about one tenth of a hectare daily.

Ask pupils about the disadvantages of the Persian wheel—very limited supplies of water; shallow surface wells often dry up in the hot months; water can get polluted and if toxic, it is very harmful.

The demand for water is one of Pakistan's great problems.

(a) In the past the annual flooding and irrigation was sufficient, especially when modern dams and canals were built.

(b) Today scientists predict that owing to global warming and climate change, the snowfall in the Himalayas will decrease, and that more water will be used up than is replaced by the winter snows.

(c) The demand for water increases every year—the growing population, with the need for more and more food, and the dramatic increase in crops such as cotton which demand a great deal of water

(d) Surface wells are completely inadequate, so deeper sources of water which will not fail are essential.

Tube wells. Mention the increasing use of tube wells for irrigation: this is water from deep underground and not associated with the river systems. This supply from deep-water sources has been available only since the introduction of electricity to pump it to the surface. Ordinary pumps, whether simple hand pumps or the most efficient electricity-powered ones cannot raise water more than 10 metres—they depend on the pressure of the air, which will support only about 10 metres of water. Water from below this level has to be drawn up in buckets—impossible for large-scale irrigation. The only practical way this can be done is by putting electric pumps at the bottom, 200m or more below the surface so that they can PUSH water to any practical height. This means a constant efficient electricity supply is essential—and so the need for widespread electrification of the countryside. Attempts have been made to power the tube-well motors with solar-generated electricity, but it is expensive and not very efficient; it will also not, of course, work in darkness.

Forests: Probably this was once the natural vegetation of much of Pakistan, but now forms only a very small part of land use. This is a pity, because trees stabilize the soil and prevent it from being washed away in heavy rain. About 4 per cent of Pakistan is forest—mainly in the north—whereas for a balanced economy there should be 20–25 per cent. The timber has been used for building and heating, of course, and though the government has a reforestation programme, this is slow and expensive: young forests are labour intensive. The dry nature of the climate makes the growth of new trees difficult, and there has been—unique to Pakistan—some irrigated forest, but only on a small scale. Trees, even small ones, are still being cut for fuel by villagers, and the wandering goats often destroy young shooting seedlings. It is estimated that about 15,000 hectares of Pakistan are becoming deserts because of deforestation each year.

It is important to create awareness among the local people about the value of forests and trees, and how these should be preserved. Reforestation is an important part of government strategy. It hopes to have 6 per cent of the country planted with forests by 2015. In 2007, almost 100 million young trees were planted.

Pakistan set a world record in July 2009, for planting the most number of trees in a single day and made it to the Guinness World Record for tree planting, contributing to preserving fragile and endangered forests. With 541,176 young mangroves trees planted by 300 volunteers from the local fishermen communities just in one day, the country broke the previous 447,874 record held by historical rival India.

Deserts and mountains: As mentioned above, deserts and mountains, which are totally unsuitable for any sort of agriculture, form about two fifths of Pakistan's land area. These are too hot, too dry, too cold, too mountainous, and have infertile soil.

Waste and scrub land: In a more fertile country with higher rainfall such land would probably be left untouched, but in Pakistan every possible hectare has to be made arable, if it is at all possible. The tough goats and sheep manage to get enough to live on from the tough plants growing there. They are also very surefooted and can survive in inhospitable hilly/mountainous regions—especially goats. Goats and sheep are valuable for providing meat, as well as wool (sheep) and leather (goats). The hair of the nomadic herds is naturally tough and strong to protect the animals in the harsh environment. The wool from these hardy animals is of low quality but is ideal for making rugs and carpets, where its hard-wearing properties are sought.

The number of the animals has increased quite rapidly, though the government discourages rearing of goats as they are indiscriminate feeders and will devour anything, turning the scrub land into virtual desert. The Pakistan government wants to prevent this. Also, when people are settled in a community

they are much more easily governed and controlled. A settled life means a higher standard of living for the people, with schools, medical care, and perhaps electricity.

Farmland: This is the cultivated area that forms 37 per cent of the land in Pakistan, irrigated by one of the largest canal networks in the world. Farming accounts for the main source of Pakistan's wealth—its agricultural products. About half the employed people work on the land.

India: India is a much larger country area-wise so that a much smaller proportion of its territory is mountainous. It also has a much larger geographical range so that its climate too, is bound to be more varied than that of Pakistan. Its proportion of agricultural land is much greater than that of Pakistan too, so that as well as the staple crops of wheat, rice, other grains, cotton and sugar cane, there are crops such as coffee, tea, coconuts and jute which are not suitable for growing in Pakistan.

Perhaps the main problem with India is its soaring population: at the present rate of increase it should exceed the population of China by the 2040s. About 60 per cent of its people are involved in agriculture, which provides about a quarter of the GDP. India produces a very modest amount of oil—322.5 million barrels/year. (Kuwait produces 955 million, Iran 1472.5 million, and Saudi Arabia 3740 million barrels/year.) India also has coal and iron, and a steadily growing industrial base; its GDP (2006) was $2762 per capita compared with Pakistan's $2730 (Japan's GDP is $34,100, but most European countries have a GDP in the range of $20-24,000). Unlike Pakistan, tourism is a very important factor in Indian economy: there were about 527 million internal tourists and 5 million from overseas in 2008, generating an income of US$ 100 billion. Tourism is the largest service industry in India.

While India is still mainly an agricultural country, it might be worth mentioning the frantic industrialization it is attempting, as well as a rapid increase in outsourced white-collar work—for example, much of Europe's banking is dealt with in Mumbai.

Bangladesh: With fertile soil and adequate water, the country is self-sufficient in foodstuffs, especially rice, but apart from some natural gas it has very few minerals. Because it is a deltaic area, it is very subject to flooding in the relatively frequent hurricanes.

The wet, but well-drained hills in the north are ideal for growing tea. Jute is grown in the central plains and the delta region. A considerable part of Bangladesh's economy comes from remittances from overseas workers. In the event—almost certain—of global warming raising the height of the seas, Bangladesh will be very seriously threatened and parts of the south will almost certainly disappear.

Nepal and Bhutan: These Himalayan states have little industry but produce large amounts of valuable timber, especially teak. Bhutan particularly, is very sensibly conserving this resource by insisting on a tree being planted when one is cut down. Both countries have a large proportion of subsistence farmers. In Nepal, tourism, especially mountaineering, is a flourishing source of income, but Bhutan strictly restricts the number of visitors entering the country as the ruler wishes to preserve the culture. Both landlocked countries are very dependent on India, particularly for trade and foreign policy.

Sri Lanka: This is perhaps the most prosperous country of the subcontinent, despite its prolonged civil war, with a GDP of about US$ 4500 (2007). It is fertile, well watered, and grows large amounts of tea, rubber, copra (coconut products), spices, sugar, citrus fruits, and cotton. Jewels, both raw and crafted into jewellery are a major export item. Another factor most important to Sri Lanka's success is its exceptionally high literacy rate.

Once known as the Island of Serendip, it has given rise to the word 'serendipity'—a place of peace and happiness, which has been discovered accidentally.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 23:

1. Due to the indiscriminate cutting down of trees for fuel and construction, the forests which were once natural vegetation for Pakistan have shrunk in size and are only 5.2 per cent of ground cover; as a result, deforestation and desertification is taking place. The soil is damaged and washed away by rains and floods. Trees, if planted to replace those cut down, take many years to grow and mature.

2. Firewood is vital in many rural areas for fuel, for cooking, and heating because there is no electricity or gas available. People used to cooking outdoors find it difficult to adapt to a new method. Also firewood is 'free'—it just has to be cut down or collected.

   The government is trying to solve this problem through electrification, provision of gas pipelines, education, and creating awareness about the importance of forests and how to preserve them.

3. Pakistan is not rich in mineral resources and most of its land is not suitable for agriculture. However, because of the river system, which provides irrigation, agriculture is possible. Agriculture is important because of the increase in the population and it also reduces import of food crop.

   Sources of water for agriculture are flood water which is stored in dams and barrages, rivers, tube wells, rain water (but this is not sufficient), and irrigation.

4. a) Major rivers in India are: Ganges (Ganga), source: northern Himalayas; Yamuna, source: northern Himalayas; Narmada, source: Maikala Range, Central India; Mahanadi, source: Maikala Range; Godavari, source: Western Ghats; Krishna, source: Western Ghats.

      Major rivers in Bangladesh are: Brahmaputra, source: Eastern Himalayas; Padma, source: Ganges/ Yamuna (Padma is the name given to these rivers as they flow through this country).

   b) The highest peak in Sri Lanka is Mt Pidurutalagala, 2518m.

   c) The capital of Nepal is Kathmandu and the capital of Bhutan is Thimphu.

5. This task can be done as projects by groups of students, supervised by the teacher.

LESSON PLAN 6

Note: this chapter will be taught in four units: i) Pakistan ii) India iii) Bangladesh iv) Sri Lanka, Nepal, Bhutan and Maldives

Topic: Land and agriculture in Pakistan

Duration: Two periods (40 minutes x 2)

Objective: To study the important land features, and farming in Pakistan

Resources: Textbook, *Oxford School Atlas*, newspapers, Internet, encyclopedia

Introduction: Motivate the students and introduce the topic by asking the following questions.

1. Why is agriculture important for a country? (it is a source of food supply)

2. Why is Pakistan called an agriculture-based country? (the majority of the population lives in the countryside and villages and their occupation is agriculture)

3. What are the basic requirements for better agriculture? (fertile and level land, enough rainfall, suitable climate and irrigation)

Mention that in this chapter we will study the land composition and agriculture of the South Asian countries. We will start with our country – Pakistan.

Before you start explaining about the agriculture of Pakistan ask the students to see pages 18, 19, 24, 25, 26 and 27 of the *Oxford School Atlas for Pakistan*. The teacher should very briefly explain each map in a single sentence. Follow the pattern as given below.

Page 18 shows the vegetation and type of soil.

Page 19 shows irrigation facilities e.g. canals, dams and barrages.

Page 24 shows the areas under different crops e.g. wheat, pulses and edible oil seeds.

Page 25 shows areas for sugar cane, cotton, tobacco, and total cultivated area.

Page 26 shows where fruits are grown in Pakistan.

Page 27 shows where livestock i.e. cattle are reared in Pakistan.

These maps give an overall idea of Pakistan's agricultural regions and output.

Explanation: The climate of Pakistan: students are fairly familiar with this. Recap and mention the main points that Pakistan has a warm and hot climate with fairly little rain. Nearly 60 per cent of the country is dry and/or mountainous, thus not helpful for agricultural activities. Because of inadequate rainfall irrigation facilities are needed. Tell the students that Pakistan has one of the best systems of canal irrigation in the world. However, in the last two years, 2010 and 2011, Pakistan has suffered badly because of floods caused by global warming and climate change. This has damaged thousands of acres of farmland and crops, and killed hundreds of thousands of farm animals, besides loss of human life and property.

Land composition: the textbook gives data about land composition. Ask the students to see page 17 and answer the following questions:

1. How much is the area covered by forests? (5%)
2. How much is the area covered by scrub and wasteland? (16%)

   Clarify scrub land; it is land area with poor soil, covered by bushes and stunted trees.
3. How much is the area covered by irrigated and not irrigated agricultural land? (37%)
4. How much is the area covered by mountains and deserts? (42%)

Irrigation in Pakistan: Explain that Pakistan, being a fairly dry country, needs irrigation facilities which are provided mainly through the canal system of River Indus and its tributaries, and by dams and barrages on other smaller rivers.

Explain how floods damage agriculture and the steps taken to control flooding and conserve water e.g. construction of dams and barrages. Water is released throughout the year to the provinces according to their needs. But sometimes there is a shortage when there is less snowfall/ rainfall. Also explain that large dams are not only reservoirs but are also used to generate power i.e. electricity. Tell them about other sources of irrigation: Persian wheels and tube wells.

Conclusion: Recap the main points: (i) climate (ii) land composition (iii) irrigation.

Reinforcement: Ask the students to find out the tributaries of River Indus. (Jhelum, Ravi, Sutlej, Chenab) Ask the students to refer to page 19 of the Atlas and note down the names of some big and small dams, and barrages (two of each) in Pakistan and the rivers they are built on.

LESSON PLAN 7

Topic: Land composition in Pakistan

Duration: Two periods (40 minutes x 2)

Objective: To explain land composition (forest and farmland) in Pakistan

Resources: Textbook, *Oxford School Atlas*, newspapers, Internet, encyclopedia

Introduction: Since this lesson is in continuation, recap main points of the previous lesson. Ask the students to name the tributaries of River Indus and some known dams and barrages. Ask whether they have ever visited any of the dams.

Explanation: Forests: Refer to page 18 of the *Oxford School Atlas* (vegetation and soil). These maps show the type of vegetation and soil found across the country. Page 19 of the textbook elaborates on the types of forests in Pakistan, their importance and use, and the need for conservation as well as reforestation. The forested area of Pakistan is only 5% while the desired world standard is 25%. This shows that a lot has to be done to increase the area under forests. Emphasize the importance of forests and encourage students to give examples, such as the role of forests in keeping the environment balanced, attracting rainfall, stopping soil erosion, preserving animal and plant habitat, etc. It is a pity that much of the forests have been cut down in Pakistan and this continues even today. Also refer to the Teaching Guide, and discuss the reasons why trees are cut down—for fuel, for construction and furniture, and the illegal logging that takes place. Ask how the forest area can be increased. What is the purpose of tree plantation and why is tree plantation day is held every year? Mention some of the steps taken by the government and other bodies, e.g. IUCN— International Union for Conservation of Nature—in this regard.

Share this news item from Dawn, 30 September 2010, about tree plantation: On 29 September 2010, Lance Naik Mian Yousaf Jamil of Pakistan Army set a new world record by planting 20,101 saplings in 24 hours and qualified for the Guinness Book of World Record. Jamil travelled over 35 kilometres in a knee-bent position, and he achieved this feat in the presence of Guinness Book officials at Mangla. Jamil was highly appreciated by his superiors for this accomplishment and was promoted to the rank of Havaldar.

Also see the Teaching Guide for news item on mangrove planting in Pakistan which made it to the Guiness Book of Records in July 2009.

Deserts and mountains: Ask the students how much of Pakistan's area is covered by deserts and mountains. (42%) Ask them to refer to Chapter 1 and the atlas and name some of the mountains and deserts.

Can agricultural activities be carried out in such areas and if not, why? It is because the land is infertile and sandy in the deserts; it is hard and rocky in some parts of the mountainous areas; moreover the climate is extreme i.e. very hot (deserts) or very cold (high mountains in the north). However, some farming is possible on the lower slopes; explain that terrace farming is done on narrow flat land cut in the mountains to grow crops.

In parts of the deserts in Sindh and Punjab, steps are being taken by the government to reclaim desert land through irrigation but it is very expensive.

Waste and scrubland: 16% of Pakistan's area is covered by waste and scrubland where only tough grass or shrubs can grow in the poor soil.

Agriculture is not possible but this region can support herds of sheep and goats and this is the main occupation of people living here.

Farmland: Explain that 37% of the land area, mainly in the Punjab and the Indus Valley in Sindh, is covered by farmland. Refer to pages 24, 25 and 26 of the *Oxford School Atlas* which show the crops grown here. Two thirds of the country's population lives in the countryside and their main occupation is agriculture. Explain that Pakistan exports raw material obtained from farming, such as cotton which is our largest export. Agriculture accounts for 85% of Pakistan's total exports. Ask the students if they have seen or visited any farms; discuss some of the crops—grains, vegetables, fruits.

The lessons based on this chapter need to be taught with reference to the Atlas maps on pages 18, 19, 24, 25, 26, and 27, so that the students can understand where in Pakistan these land features and forests can be found, what agriculture is possible and how this affects the distribution of population, occupations and life styles of the people.

Conclusion: Recap the main points.

Reinforcement: Questions 1, 2 and 3, page 23 of textbook.

Activity: Divide the class into four groups. Provide each student an outline map of Pakistan, showing provincial boundaries. Each group should be assigned one of pages 24, 25, 26, and 27, and should complete the maps by filling in and colouring the crops/livestock details from the given atlas page. They should also make the key. This activity will reinforce their learning as well as comprehension of the topic.

LESSON PLAN 8

Topic: Land composition in India and Bangladesh

Duration: Two periods (40 minutes x 2)

Objective: To explain land composition (forest and farmland) in India and Bangladesh

Resources: Textbook, *Oxford School Atlas*, newspapers, Internet, encyclopedia

Introduction: Ask the following questions for motivation:

1. Which country is our Eastern neighbour? (India).
2. Where was the final cricket match for World Cup 2011 held? (India)
3. Name the other South Asian countries. (Nepal, Bhutan, Sri Lanka, Maldives)

India: begin with the land use chart of India on page 21. Compare this with the chart for Pakistan on page 17. Ask the students what differences they see. Explain the physical features of India in general with reference to pages 42 – 43 of the Atlas, and then the features of different regions of India (Himalayan peaks, foothills, Ganga-Jamuna Basin and plains, Western Ghats, Deccan Plateau, coastal areas, Ganga Delta).

The Himalayan slopes are heavily forested; explain what 'deciduous forests' are: the trees shed their leaves every year. Ask if they know about 'evergreen forests'. As the name implies, the trees in these forests do not lose their leaves in winter.

Explain that India is also a mainly agricultural country as 57% of its area is farmland; there is adequate fresh water from monsoon rainfall, rivers and also from the dams and barrages. Farming takes place mainly in the plains of northern India, the eastern delta and the fertile eastern, western, and southern coastal regions. Tea and coffee are grown in the hilly areas.

Ask the students to find out about the Ganga Delta in India. Why is this area so fertile? Compare it with the Indus Delta in Pakistan. Sources of irrigation in India are the same as in Pakistan i.e. dams, canals, tube wells.

Discuss the Deccan Plateau in India's south. Compare it with the Balochistan Plateau. Students have already studied plateaus in Pakistan. Revive their memory by asking a few questions.

Compare the main crops of India with Pakistan. Mention the similarities and differences, e. g. tea, jute and coffee are not grown in Pakistan; other crops are almost the same in both the countries. Coconut grows in abundance in the coastal areas of India.

Reinforcement: Compare the land use chart of India with that of Pakistan in the textbook. Make a table on the board as shown below.

	Land use in:	**India**	**Pakistan**
a.	Forest	23%	5%
b.	Pasture grass land	4%	16% (scrub and wasteland)
c.	Arable or agricultural land	57%	37%
d.	Deserts and mountains	16%	42%

Conclude that India has more forested area, more agricultural land, fewer deserts and less mountainous area as compared to Pakistan, and is also industrially advanced, which puts it in a better economic position. Point out that India is a much larger country than Pakistan (go back to Info box on textbook page 2) and has a huge population of 1.2+ billion as compared to Pakistan' estimated population of 180 million.

Bangladesh: Do the students know its previous name? (East Pakistan)

When did it become an independent country? (17th December 1971)

Give them a brief background of its history, 1947 to 1971—Muslim population in both wings of Pakistan but separated by nearly 2000 km. of Indian territory at the widest point; difference of language and script. Deep differences after 1970 elections, followed by military action from West Pakistan and Indian intervention, led to separation and independence.

Ask the students to locate Bangladesh in the atlas. Point out that northern India borders Bangladesh on three sides—west, north and east, and to the south is the Bay of Bengal.

Climate and physical features: Hot and humid with high rainfall, especially during the monsoon season. Heavy vegetation cover, thickly forested; abundant water resources as it is the delta region of the Ganga as well as Brahmaputra rivers, with many streams and small rivers which deposit fertile soil. Best for growing rice and jute in the centre and south; Himalayan foothills in the north are ideal for tea plantations.

Problems: low-lying land prone to cyclones that arise in the Bay of Bengal; result in flooding and devastation; affect population, life, property and crops. Explain its main crops and compare with India and Pakistan. Mention that Bangladesh is the highest jute producer in the world. Compare the delta regions of Bangladesh, Pakistan and India.

Conclusion: Recap the main points regarding Bangladesh. The capital is Dhaka, and other main cities are Chittagong, Sylhet, Khulna and Rajshahi. Refer to the map on page 22 of the textbook and page 43 of the *Oxford School Atlas* for more information. Point out the physical and climatic similarities and differences among Pakistan, India, and Bangladesh.

Reinforcement: Question 4 a) from textbook, page 23. Also mark on the outline map of South Asia the capitals of India, Pakistan and Bangladesh. (The main river systems in the three countries are River Indus and its tributaries, Rivers Ganga and Jamuna, and Rivers Karnafuli, Padma and Meghna.)

LESSON PLAN 9

Topic: Land and climate in Nepal, Bhutan, Sri Lanka and Maldives

Duration: Three periods (40 minutes x 3)

Objective: To explain physical and climatic features of these four countries

Resources: Textbook, *Oxford School Atlas*, newspapers, Internet, encyclopedia

Note: two periods are for teaching the details of the four countries above; the third period is for class work based on the worksheet.

Introduction:

Recap the main points of the previous lessons. Ask the students to name the remaining South Asian countries. Write the names on the board.

Explain that all these countries together form the South Asian block, and are members of the organization called SAARC—South Asian Association for Regional Cooperation.

Explanation: Nepal and Bhutan: Ask the students to locate these countries on the atlas map. Point out that they are land-locked in the Himalayan range, i.e. that they are surrounded by land on all sides and they do not have any access to the sea. Their height above sea-level is a notable feature as their northern regions are around 5000 metres or higher, and even the southern regions bordering India are at 2000 to 3000m high. The highest mountain in the world, Mount Everest (8848m), is in Nepal. Both countries are thickly forested; the eastern Himalayas have been identified as a major bio-diversity location, and Bhutan in particular is recognized for its conservation efforts. If one tree is cut then one new tree is planted. Both countries produce large quantities of timber; however, the main occupation of the people is agriculture. Nepal is a popular tourist spot, but not Bhutan.

Did you know? Bhutan is the only country in the world to have banned the sale of tobacco under its Tobacco Act, 2010. The government of Bhutan is quite strict about preserving its culture. The Bhutanese are required, by law, to wear only the national dress in public places and on formal occasions.

Sri Lanka: Locate the country on the map. Define the term peninsula: a stretch of land surrounded by water on three sides and connected to a landmass on one side. Point out that Sri Lanka lies off the south-eastern coast of the Indian peninsula. It is very close to the equator and has a hot and humid climate, high rainfall, and luxuriant vegetation.

Explain the topography of Sri Lanka. Its highest point is at 2524 metres.

Define the term 'cash crop'—crops that are exported to earn foreign exchange. Rubber and tea are Sri Lanka's main cash crops. Coconut grows around the coastal areas.

Sri Lanka was severely affected by the Indian Ocean tsunami on 26 December 2004. Colombo is the commercial capital of Sri Lanka while the seat government is at Sri Jayawardenapura Kotte, located close to the east of Colombo.

Maldives: This is the smallest independent South Asian country. It comprises 1200 small coral islands to the south-west of India and Sri Lanka. Only 200 of its islands are inhabited; the population is about 314,000, over 100,000 of which is in the capital Male. The land in Maldives is at average height of only 1.5 metres above sea level; the highest point is 2.3 metres, the lowest in the world. To highlight the threat of its sinking, due to global warming and rising sea levels the Maldives president Nasheed held an underwater cabinet meeting in 2010.

Conclusion: First recap the main points of the lesson. Then wind up by asking brief questions about what they have learnt about the South Asian countries.

Exercise: Students should work in pairs and prepare a chart to show similarities and differences between the seven South Asian countries under the following headings: physical features, climate, occupation, main source of earnings. Guide the students to compile these facts from their textbooks and your notes.

Activities: To reinforce learning, assign and extend Q 5 from the textbook. Divide the class into groups and assign them one South Asian country each. Ask students to research about the assigned country and make tourist brochures which have information about the population, language/s spoken, cultural activities etc. They should also mention what travel routes should be taken, how long it takes and what it possibly costs.

This activity should be given a week to complete; display the results on the class/school board.

Extended Knowledge

Rubber is obtained from the sap of the para rubber tree by tapping, i.e. making cuts in the bark of the trunk and collecting the sap. This tree is originally from South America which was the main source of rubber till the 19th century. Samples of rubber were introduced to Europe in the 18th century and when these samples first arrived in England, it was observed that they were extremely good for rubbing off pencil marks on paper, hence the name *rubber*.

In 1876, Henry Wickham gathered thousands of para rubber tree seeds from Brazil, and these were germinated in Kew Gardens, England. The seedlings were then sent to Ceylon (Sri Lanka), Indonesia, Singapore and British Malaya. Malaya (now Malaysia) was later to become the biggest producer of rubber. Rubber was commercially cultivated in India by British planters; in the 19th and early 20th century, it was often called 'India rubber'. Today 94 per cent of the world's natural rubber comes from Malaysia, Indonesia, Thailand, Sri Lanka and India.

Manufacturers make between 40,000 to 50,000 rubber products as it is elastic, airtight, water-resistant, shock-absorbent, and also has surgical uses, besides the extensive use in transport. It is impossible to think of our life without rubber products. The manufacture and use of synthetic rubber increased during the Second World War when the USA, Germany and Russia did not have access to South and South-east Asia.

Tea is perhaps the most popular beverage in the world. Tea is an evergreen plant which grows at low altitudes in tropical and sub-tropical climate though the best tea is grown at a height of around 1500 metres (5000 ft). India and China are the largest tea producing countries besides Bangladesh, Indonesia, Japan, and Kenya.

The tea plant matures for harvesting in three to five years; the topmost leaves and buds, known as 'flushes', are picked by hand and new ones grow every 10 to 15 days. The "flush" is then processed in factories into different types of tea such as black and green teas, most commonly used in South Asia. Tea has many beneficial properties: it is anti-oxidant, and has theanine and theophylline which help control respiratory problems, and low caffeine. It has no fats, proteins or carbohydrates.

The word 'tea' comes from the Chinese language. In some parts of China it is pronounced as 'tu', which became 'tea' in mainly European countries; in other parts of China it was known as 'cha', which became 'chai' and similar variants in other South, West and Central Asian countries and African countries.

1. Here are the names of some countries jumbled together. Circle the countries of South Asia.

Pakistan	Malaysia	Indonesia	India
Singapore	China	Bangladesh	Saudi Arabia
Sri Lanka	Congo	Egypt	Bhutan
Libya	Nepal	Hawaii	Maldives

2. Which of the South Asian countries are islands? _____

_____

3. Name the two land-locked countries of South Asia. _____

_____

4. What is a Persian wheel? _____

_____

_____

5. Name the tributaries of River Indus in Pakistan. _____

_____

6. Name the river system against each country.

   a. Pakistan: _____

   b. India: _____

   c. Bangladesh: _____

Q1. Underline the correct answers.

i) Mount Everest is in (a) Pakistan (b) Nepal (c) Bangladesh (d) Bhutan

ii) Rubber is grown in (a) Sri Lanka (b) Nepal (c) Pakistan (d) Sri Lanka

iii) The highest jute producer in the world is (a) Sri Lanka (b) India (c) Bangladesh (d) India

iv) Agricultural land in Pakistan is (a) 57% (b) 67% (c)27% (d) 37%

v) Forested area in Pakistan is (a) 23% (b) 14% (c) 16% (d) 5%

vi) Coconut trees are grown in (a) deserts (b) mountains (c) coastal areas (d) plateaus

vii) River Indus drains into the (a) Atlantic Ocean (b) Pacific Ocean (c) Arabian Sea (d) Bay of Bengal

viii) Rivers Ganga and Brahmaputra drain into the (a) Atlantic Ocean (b) Pacific Ocean (c) Arabian Sea (d) Bay of Bengal

ix) This country is a delta region, crisscrossed by rivers:
(a) Maldives (b) Bangladesh (c) Sri Lanka (d) Bhutan

x) Mangla Dam is in (a) Sri Lanka (b) Pakistan (c) Nepal (d) India

2. On the given outline map of South Asia label all the eight countries with their capitals (except Malé), and mark them with their national flags.

THE CLIMATE OF SOUTH ASIA

Text pages 24–28

As with minerals and fertile soils, Pakistan has had a poor deal in precipitation. Of the total of land suitable for commercial agriculture, three quarters needs irrigation to supplement the water supply from rain. True, some of the main crops such as cotton and sugar cane are 'greedy' with water, but it is still on the edge. And the precipitation seems to be decreasing: more snow is melting in the mountains to the north than is being replaced by the winter falls. Eventually if the present trend continues there may be no spring floods—but that is probably centuries into the future. Geographically, the shape of the land masses forces some of the rain-bearing winds away from depositing their full load on Pakistan—or rather, they cause the moisture in the winds to fall before they reach Pakistan.

Cyclones: They are not a major problem in Pakistan, but very definitely a danger in Bangladesh, where the low-lying flat coastal estuaries are regularly flooded with great loss of life, and houses and infrastructure destroyed. Cyclones are caused by the interaction of hot tropical air and cold air from the polar regions.

Thunderstorms and dust storms: In a large cloud the water droplets rise upwards as there is a temperature difference. In so doing they bump against one another, losing an electron. The top of the cloud becomes very highly charged positively and the base negatively. When the potential gets very high, the electricity flashes across to another point—90 per cent of the time to another cloud. Only 10 per cent of lightning clashes reach each other. They flash along a zigzag path taking the line of best conductivity at immense speed (270,000 khp) and reach a temperature of 28,000 degrees C. It is this intense heat that causes a sudden and violent expansion of the air which causes the thunderclap. One of the safest places to be in a thunderstorm is inside a car or other metal object, or a house. To find out how far away a lightning flash is, count the time between seeing the flash and hearing the rumble in seconds; dividing this by 3 will give the approximate distance in kilometres. As lightning normally strikes the highest point in the area, one should never stand under a tree in a storm. If lightning strikes a tree it frequently turns the sap to boiling liquid, which bursts the tree apart.

Perhaps, get pupils to look for lightning conductors on tall buildings. These are usually a spike sticking out at the highest point with a thick band of copper running down the side of the building to a metal plate buried deep in the ground. Normally, if lightning strikes it runs down the building, blasting the structure apart (the heat turns any water in the building to steam which more or less explodes). The heat often causes fire. The lightning conductor offers an easier path to the earth along a copper conductor than along stone or brick, and so the lightning takes the line of least resistance without causing any damage.

Dust storms: These are dry wind storms, which normally occur during daylight. On dry agricultural land where crops have been harvested, the wind can sweep dust hundreds of kilometres. The dust driven by the wind is like sandpaper and scours glass and motor bodies. It penetrates shut rooms and even locked cupboards. In desert areas it becomes sandstorms which erode rocks—grinding them down into more sand—and

moves dunes and hills of sand. It is interesting that the sand moved naturally falls into huge crescent shapes, with the points in the direction from which the wind is coming.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 28:

1. Pakistan receives only a small amount of rainfall in the summer monsoon because much of the rain-bearing winds are forced round the south of the subcontinent and reach Pakistan only after having crossed India where they deposit much of their moisture.
2. The centre of Asia is bitterly cold and the air sinks. Over the sea the temperature is much warmer and the air rises. This draws the cold air in from Central Asia. If the Earth were stationary, the winds would be from due north, but the rotation of the world drags them to a north-easterly direction.
3. Rain determines the vegetation and crops, though not as much in Pakistan as in many other countries. Except the northern and western regions which are forested, there is generally insufficient precipitation to support agriculture in the absence of rain—75 per cent of the land is irrigated.

   The bulk of crops are grown in Punjab in the north and east of the country where the rainfall is heaviest. See page 16 of the *Oxford School Atlas for Pakistan* (Pakistan rainfall and climatic regions). Even here, however, there has to be intense irrigation.
4. The coastal areas of South Asia, mainly Bangladesh, the east coast of India, and occasionally Sri Lanka can be affected by tropical cyclones which originate in the Bay of Bengal and the Indian Ocean.
5. This question is to be answered with reference to newspapers and weather reports.
6. Refer to the map and its key on page 28 and, if required, to the climatic zones map in the atlas.
7. As above, to be answered with reference to the textbook, atlas, and weather charts in the newspaper.

LESSON PLAN 10

Topic: Climatic conditions in South Asia

Duration: Two periods (40 minutes x 2)

Objective: To explain the climatic features of this region

Resources: Textbook, *Oxford School Atlas*, globe, newspapers, Internet, encyclopedia

Introduction:

The factors affecting climate have been discussed in Chapter 2, Weather and climate. Jog their memory about these factors.

How does it affect the environment of a region and people's lives? How does climate affect agriculture and occupation of the people?

Expected answers: people live and work according to the climatic needs, e.g. a cold place requires heating systems for homes and work places; high rainfall means having good drainage systems. People dress according to the climate where they live. Crops and livestock that thrive well in a particular climate are cultivated and reared; where agriculture is not possible then other means of income such as industry, tourism, etc. are opted for.

Conclude that since climate affects people's life and their economy, let us first study how the wind system affects the climate of South Asia. Three wind systems work in South Asia, namely:

1. South-west Monsoon (from June to September)
2. Western Depression (from December to March)
3. North-easterly winds from Central Asia (December to March)

The South-west monsoon: the map on page 24 and the text on page 25 clearly explain how the monsoon winds arise, where and when the rainfall takes place, and in what volume (quantity). Explain the water cycle: winds moving over the oceans and seas carry moisture from their surface, which forms rain-bearing clouds. However, the topography of the land also determines the amount of rainfall in different parts of a country or region.

(The students should always remember the reason for air movement: that the land warms up faster than the sea because of the Sun's direct rays. The hot air above the land rises and cool, moisture-laden air from the sea is drawn in.)

Explain, using the map on page 24, that the South-west monsoons bring rains to South Asia. The west-coast of India, Bangladesh and Assam get heavy rainfall. Pakistan gets less rainfall—why? It is because the winds have already dropped their moisture on the Indian peninsula and when they turn north towards Pakistan they bring less rainfall. These are known as the retreating monsoon and bring rain to the north-western part of the subcontinent, mainly from October to December. However, there are changes in weather patterns all over the world, and Pakistan received unusually high rainfall in summer 2010 and early autumn 2011, resulting in flooding across the country and Sindh, respectively.

The Western depressions (from December to March): these winds originate from the Mediterranean region to the west of Asia. They bring rain and, at higher altitudes, snow to Turkey, Iraq, Iran and parts of Afghanistan, hence the rainfall in Pakistan is less and is mainly in the western highlands. However, there are chilly winds during this season.

North-easterly winds: explain that these winds blow from Central Asia to Pakistan and India in winter. These winds are dry—why? It is because they blow across the Central Asian landmass to the subcontinent and carry no moisture.

Rainfall in Pakistan: The maps given on page 15 of the *Oxford School Atlas*, along with the table shown below will help students to understand the pattern of rainfall in Pakistan. Draw the following table on the board.

Summer Rains: July to September

Upper Punjab, eastern Khyber Pakhtunkhwa: 500+mm

Central Punjab, north and central Khyber Pakhtunkhwa: 250–500 mm

Central FATA, lower Khyber Pakhtunkhwa, central Punjab, south-eastern Sindh: 125–250 mm

Other regions receive 25–125mm rain, except for the dry west of Balochistan along the Pak-Iran border.

Winter Rains: December to March

Upper Khyber Pakhtunkhwa and FATA: 500+ mm

North and central Khyber Pakhtunkhwa and FATA: 250–500 mm

Further north Khyber Pakhtunkhwa, upper Punjab, western Balochistan: 125–250mm

Southern Punjab, most of Balochistan: 50–125 mm

Other regions receive 25–50mm rainfall, except for Sindh which remains dry.

This table shows that upper Punjab, Khyber Pakhtunkhwa and FATA get most of the rainfall both in summer and winter.

Climatic regions: use the maps on page 25 of the text book and page 16 of the atlas to explain how a country or an area is divided into climatic regions on the basis of temperature and rainfall. Pakistan has four climatic regions according to annual rainfall and temperature.

a. Arid—dry climate; hot summer, mild winter

b. Semi-arid—partly dry climate; warm summer, cool winter

c. Humid—wet, rainy climate; warm summer, cool winter

d. Highlands—cool summer, cold winter, rain in the valleys and snow on the mountains

Exercise: Ask the students to make a list of the cities in each climatic region with the help of the map on top left of page 16, *Oxford School Atlas for Pakistan*.

Homework: Questions 1, 2, 3 on page 28 of textbook to be done in their note books.

SECOND PERIOD

Introduction:

Cyclones: Students have already learnt about cyclones in Chapter 3. Ask them why cyclones occur. (This happens when cold air from the polar region meets warmer, wet air from the tropics.) Pakistan is not prone to cyclones, although in 1945 a cyclone over the Arabian Sea hit the Makran coast and caused considerable damage. Discuss the cyclone warnings in Pakistan in the recent past.

Bangladesh suffers loss of life and property and severe flooding, annually from tropical cyclones that hit the Bay of Bengal in May – June before the monsoon or in September–October after the monsoon.

Thunderstorms and dust storms: refer to the maps on page 15 of the *Oxford School Atlas*). Thunderstorms also occur before and after the monsoons, like the cyclones but the difference is that cyclones arise from the sea and hit the land area while thunderstorms originate on land. Strong winds—gales—are followed by rain and lightning. These storms occur mostly in northern Punjab and northern Pakistan.

Dust storms are common in upper Sindh and adjoining parts of Balochistan.

Temperature: this topic is well explained in the textbook too (pages 27–28). Explain that Pakistan is divided into five temperature zones with reference to the table and map, on the basis of which the temperature zones are classified.

Draw the following chart on the board to show the temperature zones.

A: Warm to cool summer and cold winter: mainly the mountainous northern region

Summer temperature: 0°C to 20°C

Winter temperature: 9°C to –0°C

B: Warm summer to cool winter: Most of the western highlands

Summer temperature: 21°C to 31°C

Winter temperature: 0°C to 9°C

C: Hot summer and mild winter: Most of the Indus plain, Punjab, Sindh, and south-western Balochistan

Summer temperature: 35°C upwards (Sibi and Jacobabad go up to 50°C)

Winter temperature: 20°C to 10°C

D: Warm summer and mild winter: narrow coastal strip along Arabian Sea, eastward

Summer temperature: 21°C to 31°C

Winter temperature: 20°C to 10°C

Conclusion: Recap the main points i.e. the wind systems, climatic and temperature zones, cyclone and thunderstorms.

Reinforcement: The students should be asked to locate the following places on a world map: Pakistan, India, Sri Lanka, Bangladesh Mediterranean sea, Turkey, Iran, Iraq

Class work: Questions 1, 2, and 4 to be distributed over the teaching periods.

Homework: Questions 4 and 6 from page 28 of textbook. For Q 6, trace, colour and label the maps of rainfall and thunderstorms from page 15 of the *Oxford School Atlas*.

Activity: Work in groups to carry out tasks in Questions 5 and 8, page 28. Teacher to organize groups and guide.

1. Fill in the blanks with appropriate words from the list given below.

   Indian Ocean; three; South-west; Western depression; snowfall; Arabian Sea; Pakistan; Turkey; North-eastern; dry

   a) There are _____ main wind systems in South Asia.

   b) The Indian Peninsula is surrounded by the _____.

   c) The _____ is a part of the Indian Ocean.

   d) The _____ monsoon blows from the Indian Ocean.

   e) _____receives less rainfall from the _____ monsoons.

   f) The _____ comes from the Mediterranean region and Western Asia.

   g) _____, Iraq and Iran receive rain from the Western depression.

   h) _____ in Pakistan is caused by the Western depression

   i) _____ winds blow from Central Asia to Pakistan and India.

   j) North-eastern winds are _____ because they blow from the land mass.

2. Which of the following statements are true/false?

   (i) Upper Punjab and lower northern areas receive up to 250–500 mm rainfall.

   True False

   (ii) Highlands in Gilgit-Baltistan and Khyber Pakhtunkhwa receive the highest winter rainfall in the country.

   True False

   (iii) Southern Punjab receives more rainfall throughout the year than Upper Punjab.

   True False

   (iv) Pakistan has three main regions on the basis of vegetation and rainfall.

   True False

3. Fill in the blanks:

   a. _____ generally begin from the sea.

   b. Strong gales followed by heavy rain result in _____.

   c. Pakistan gets most of its rainfall from the _____.

d. _____ is frequently hit by cyclones.

e. _____ are common in upper Sindh and parts of Balochistan.

4. Classify the following temperatures into Hot, Warm, Mild, Cool and Cold zones.

a. 0°C to 9°C

b. 21°C to 31°C

c. Below 0°

d. 10°C to 20°C

e. 32°C or more

5. Match the zones in Column A with the weather conditions in Column B.

A		B	
i)	Eastern coastal strip along Arabian Sea	a)	over 50°
ii)	Western Highlands	b)	hot summer, mild winter
iii)	Indus plain	c)	warm summer, cool winter
iv)	Northern mountainous region	d)	warm summer, mild winter
v)	Jacobabad and Sibi	e)	warm to cool summer, cold winter

MAIN CROPS

Text pages 29–35

Wheat: Ask pupils why it is so important and what is made from it—bread, cakes, flour, pasta, breakfast cereals. Some varieties are used for cattle food, and in the West for industrial alcohol. It is even roasted and used for coffee substitute—more often nowadays, as an adulterant.

Wheat developed from wild grasses around the 7th century BCE, and probably earlier. Prior to this wild grass seeds were used. There is constant experimenting to breed new varieties for increased yield and disease resistance.

Crop yields in different countries vary widely. In Pakistan, the yield has increased from 2054 kg per hectare in 1996–7 to 2519 kg per hectare in 2005–6—an increase of about 26 per cent. Ask pupils why they think this has come about. Possible answers: better strains of seed, better farming techniques, wider use of fertilizer; amalgamation of farming land—larger farms are more effective. But the output of US farms is more than twice as much. Ask why? There are huge fields and extensive technical equipment—half a dozen giant combine harvesters can work in echelon, i.e. in parallel rows.

The **cotton** industry employs 35 per cent of the total workforce. Cotton seed oil provides 55 per cent of the country's cooking oil.

Basmati rice: Pakistan and India are the only producers; it grows mainly in the Punjab on both sides of the border and in the foothills of the Himalayas. The current price (2008) in the UK is £3.50/kilo (Rs 425/kg). Compare this with prices in countries where the cereal is grown.

Gram, pulses, beans, and **peas** are a vital source of body-building proteins. The other, and main source of protein for much of the world's population, is meat, but this is far more expensive than vegetable protein. Legumes, as these pulses, peas, and beans are called technically, can be grown in almost any climate and any reasonable soil, so that they are absolutely essential in developing countries. In developed countries, too, more and more people are turning to them rather than meat. Vegetarian restaurants can be found in any small town.

Sugar cane: There are many types of sugar, some more sweet than others. The cane is crushed and passed between rollers—up to 9 or 10 pairs—to extract the juice. Hot water is sprayed on to dilute the sugary liquid. This is called 'maceration'. Lime milk is added to the juice and water, and the mixture boiled. Undesirable chemicals such as acids adhere to the lime and are filtered out. The filtered juice is then heated again until it is thick. It is then whirled in a centrifuge—a metal cylinder with holes all over the surface, which revolves at up to 1500 rpm*. The molasses and what will be the refined sugar crystals are separated, and the molasses removed.

Molasses is brown sugar and thick brown sugar syrup. This is widely used in cooking, food flavouring and industrially, in the manufacture of spirits such as ethanol (car fuel), in tobacco manufacture, and as animal food.

Maize is native to Central America where it has been known for more than 5000 years. It was revered as a god by the Aztecs as it was so central to their diet. It was much

improved by plant breeding in the 1930s, and today it is controversial as the main crop used in genetic engineering. This means manipulating the genes to make it more resistant to pests and diseases, but many people are very worried about changing the genes. They do not know what else it might be doing as well as making it disease resistant. Many countries refused to allow genetically modified (GM) maize to be planted, even though it yields bigger crops.

Maize is low in proteins and nutritional value. It is occasionally used in cooking as corn flour, and sometimes in poorer communities for making bread. It is however, much used for making breakfast cereals and other processed foods. The breakfast cereal corn flakes are cooked maize. In the West, corn is a very popular ingredient for salads and sold either in tins or cut off the cob with a special ring-shaped knife.

Corn oil, made by pressing the seeds, is widely used for domestic purposes—cooking, salad creams and in the manufacture of margarine mainly because of its low cholesterol content. It is also used in cosmetics, paint, soap, and linoleum.

Bajra and **jowar** are varieties of millet, a grain that can grow in harsh conditions—poor soil, inadequate water. Their production has declined over the last decade as the crops are used more as animal feed, and wheat and rice are available as staples.

The fall in bajra and jowar consumption is owing to the rising standards of living—people want finer grains. These are very primitive grains, introduced to the subcontinent from Africa at least as early as 2000BCE. They are tough and hardy, and grow in virtually any soil—needing only warmth—which is why they have survived.

Oil seeds are increasingly being used for cooking all over the world as their oil is low in unsaturated fats. Saturated fats are high in animal products such as butter and cream and are a serious cause of heart problems, high cholesterol, and blocked blood vessels. In any case, in hot countries, it is difficult to transport butter over long distances, and also to store. The use of oil for cooking is now universal in western countries, especially sunflower, corn, and peanut, with the expensive olive oil used largely for salad dressing.

Fruits: Note the increasing amount of fruits grown. Perhaps get pupils to bring along a sample of fruits—as many and as varied as possible—and mount an exhibition.

The top chart on page 33 may confuse pupils: make sure they are aware that the crops (taken from the latest Pakistan Economic Survey) are given in tonnes. Sugar, given as 55,000 tonnes cannot be compared directly with cotton at 2000 tonnes because cotton is so much lighter than sugar, which is a heavy commodity. The same is true for wheat, which on the face of it is less than half the sugar, but is of course, much lighter.

**rpm stands for Revolutions Per Minute.*

ANSWERS TO QUESTIONS IN TEXT, PAGE 33:

Pupils could work out crop increases for themselves by dividing the 2007 figures by those of 1961 to show how many times the output has increased. The population increase from 1961–2000 was 3.2 times (approx).

For teachers, the figures are: wheat 5.43 times; rice 6.3 times; maize 3.2 times; cotton 6.1 times; sugar 3.9 times; citrus fruits 3.9 times; apples 28.8 times; apricots 9.6 times; mangoes 4.3 times; guavas 9.2 times.

Talk about which commodities outstripped the population growth—all except maize.

- The increase in food production is due to the export market and also steadily rising standards of living in Pakistan.
- The increase in fruit is notable, as this is a high-value commodity, especially for export.

Table showing comparative crop growth: Actually Pakistan vis á vis population, produces much larger amounts of sugar, wheat, and cotton. Pakistan produces a disproportionately large amount of sugar compared with India and Bangladesh. The area under cultivation of sugar cane has increased about four times since 1961, and Pakistan has a very sweet tooth—it eats more sugar per head than almost any other country in Asia, though still well behind some western countries. The climate is ideal for these crops and irrigation is available. Cotton is traditional in this region, as shown by evidence from Mohenjo Daro. It is also the basis of the export trade, as yarn and finished products. Wheat: Pakistan is self-sufficient in this basic grain, whereas India and Bangladesh have rice as a staple. Pakistan does not have many areas suitable for large rice paddies, whereas both India and Bangladesh have the great delta regions.

Livestock: These are used as working animals in rural areas, and for food—meat and dairy products—and raw materials such as wool, skins, bones (for fertilizer). Despite mechanization, the number of animals continues to increase, especially goats. Only horses and donkeys show a (small) decrease. 30–35 million people in rural areas are engaged in livestock rearing, with an average family having 2–3 cattle/buffaloes, 5–6 sheep or goats and an unknown number of poultry. Commercial farms have an estimated 700 million poultry, while domestic numbers are probably equal. In 2008 the consumption of eggs was 10,000,000,000 plus as well as 600,000 tons of chicken meat.

The great effort at the moment is to improve the breed of livestock. Bullocks/oxen have traditionally been bred for their strength to pull ploughs, but attention is being focused more and more on breeding for meat and dairy products. The native Zebu cattle are not of very good quality: Red Sindhi and Sahiwal breeds are improved animals for meat and milk. Crosses with some European and American breeds are being experimented with.

Make sure pupils know what 'cooperative' (para 5) means. Explain that the word cooperative means, as it says, working together. At its simplest it can be lending to a neighbour farmer, tools, or an ox for some job, or helping with emergency work such as repairing irrigation channels. At a more sophisticated level, it means close involvement and membership of a group which organizes such aspects as sharing marketing facilities, buying materials in bulk at a lower price, buying a more expensive piece of equipment or better seed which is shared among the members of the cooperative.

Farms, while usually still under their former owners, agree to 'cooperate' on certain aspects of agriculture such as sharing equipment and marketing and buying seeds, etc. If a group of farmers gets together they can buy in much larger quantities—and so get better prices—than if each did it individually. Together they could buy some mechanized equipment, which an individual could not afford. There are problems, of course, about its use: everyone, for example, would need a mechanical harvester at the same time. Combining for selling purposes means that they offer larger quantities of their products and can use their pressure for higher prices.

Fishing: In the extensive coastal regions of the Indian peninsula and in Bangladesh and Pakistan, this is an important occupation and industry. Fish is an important source of protein, it is part of the local people's diet, and a sizeable quantity is also exported. Fishing provides livelihood to the coastal population.

In 2005, the total catch in Pakistan was 572.8 thousand tonnes and Pakistan exported fish worth Rs 11,624,500.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 35:

1. Students can research for further information and share it in class.
2. This question can generate a good class discussion.

3. Butter, as an animal product, has a short life under normal conditions. It melts in hot climates, and quickly goes 'rancid' (bad). It is better kept in a fridge, which is not always possible. Vegetable and seed oils, from the cheapest to the expensive olive oil, are much more stable in hot climates, and in any case are healthier than butter, which as an animal fat is said to produce heart and circulatory problems.

   Students can find out more about the dairy products made in Pakistan and the names of different companies.

4. As compared to India, Pakistan produces more sugar. Pakistan grows enough sugar not only to meet consumption demands but also in excess which is exported.

LESSON PLAN 11

Topic: Agriculture in Pakistan and South Asia

Duration: Two/three periods (40 minutes x 2/3)

Objective: To inform students about agricultural practice and products

Resources: Textbook, *Oxford School Atlas*, newspapers, Internet, encyclopedia

Note: this chapter may require three periods for proper coverage as well as classwork, i.e. two periods for explanation and oral questions and answers, and one period for the worksheet.

The content of this chapter is also ideal for activities and extended group project work.

Introduction: Begin with brainstorming—what did you eat for breakfast, dinner, and lunch? Answers: bread, egg, butter, jam, milk, meat, vegetables, rice, daal, chicken, chapati/naan, etc.

Where do the main ingredients of these foods come from? Answers: from grains/cereals, dairy products, fruit, vegetables, poultry, livestock i.e. cattle and sheep.

Now discuss the main crops grown in Pakistan. Refer to the textbook for detail and to pages 24–26 of the *Oxford School Atlas* for maps specific to Pakistan. (The teacher is advised to study the Teaching Guide text for Chapter 7 and prepare brief notes for the class.)

Wheat is grown in Pakistan and South Asia (East Punjab, India). Refer to the atlas map (page 24) for Pakistan—wheat is grown mainly in Punjab and upper Sindh, but also in parts of Khyber Pakhtunkhwa, Balochistan and lower Sindh.

Wheat is the staple, i.e. main part of our diet not only in Pakistan but throughout the world. Not only bread but many bakery items are made of wheat. Wheat products like bread, pasta, etc. are eaten by hundred and millions of people throughout the world, thus wheat is grown on a large part of the Earth's surface. The top ten wheat producers are (1st to 10th) China, India, USA, Russia, France, Canada, Germany, Ukraine, Australia, Pakistan [FAO, 2008].

Wheat grows best in dry and mild climatic regions. It is a Rabi crop, planted or sown in winter and harvested in April. In Pakistan, the crop is watered mainly by canal irrigation. Pakistan produces adequate wheat for its own needs, but in some years due to various climatic and other reasons, we have had to import wheat to meet our needs.

In India it is the main crop in east Punjab but is also widely grown in the upper Indian states.

Cotton is the other main crop in Pakistan. Refer to the map on page 25 of the *Oxford School Atlas for Pakistan* to see the main areas of cotton cultivation—again, Punjab and Sindh. In South Asia, Pakistan and India are the main cotton countries. Worldwide, Pakistan is at no. 4, after China, USA and India (no. 1, 2, 3) among the top ten producers.

Climate and land suitable for cotton: cotton grows best in dry tropical/sub-tropical climates, with fertile land, well-drained soil and adequate moisture during the growing season, but a dry climate is preferable when the bolls open because wet cotton is of little value. (Mention here that 2010 and 2011 floods have affected Pakistan's cotton crop and its export.)

Uses: cotton has been in use for thousands of years and has many uses in different forms. (Talk about this—as fibre, textile, canvas, fabrics, finished products, household items & medical use e.g. bandages, surgical cotton, etc.). Cotton seed, obtained after the ginning process, is used for extracting oil which is used for cooking and frying.

Importance of cotton for Pakistan's economy: Cotton is a cash crop i.e. it is grown to earn foreign exchange through export as raw material and more as finished products. Cotton is Pakistan's top-most income earning export.

Rice: Ask the students to see the map on page 24 of the *Oxford School Atlas*, which shows the rice region in Pakistan, in northern Punjab and part of Sindh.

Question students about which quality of rice is considered the best—it is Basmati, the long-grained rice with an aroma. Although many varieties of rice are grown across the world, but Basmati is preferred above the rest. Basmati rice is grown mainly in Pakistan and India. It is the 3rd largest export of Pakistan. For more details see the textbook and also find out the latest export figures and value from the business section of newspapers and also the Internet.

Rice is eaten across the world, especially in South (Bangladesh, Nepal, Bhutan, Sri Lanka besides India and Pakistan) and South-east Asia; it needs heavy, wet soil and a warm climate with adequate supply of water, naturally (rainfall) and by irrigation. Rice is a hard labour crop as it needs to be planted and transplanted manually. In most Asian countries it is also harvested manually. Harvested rice is then dried to reduce moisture in order to process it for the market.

Did you know? The International Rice Research Institute (IRRI) is an NGO located in the Philippines, a major rice-growing country, with offices in 16 countries. IRRI was set up in 1960 and its aim is to find manageable ways to improve the well-being of poor rice farmers and consumers, as well as the environment; it has also worked on producing better breeds and varieties of rice.

Compare the proportionate export of rice and cotton: in 2009–10, cotton accounted for an average 50% while rice was only 11% of the total exports. (Source: Economic Survey of Pakistan, 2009–10)

Gram, pulses, beans, peas, etc. are important because they are a good, easily available source of protein for a healthy diet; they are also cheaper than meat, poultry and fish, and can be stored, unlike the latter.

Ask the students if they have heard the Urdu saying about living on daal (pulses) and roti as a sufficient diet—which shows that vegetables, pulses and bread (wheat) are the staple diet of the low income majority, and also vegetarians. It is also a healthy diet!

The map on page 24 of the *Oxford School Atlas* shows areas where pulses are grown, mainly in the upper parts of Punjab and Sindh. Ask the students to name a few pulses that are part of our daily food—chana (gram), moong, masoor and maash, chickpeas, etc. Some of these are also eaten fresh, such as peas and chana.

Did you know? The story goes that when the Mughal emperor Shah Jahan was put under house arrest by his son Aurangzeb, he was restricted to choosing only one kind of grain for his food. Shah Jahan's experienced chef (cook) advised him to select gram (chana) as it could be made into a variety of sweet and savoury dishes as compare to other grains.

Sugar cane: Ask the students to name some of the sources used to produce sugar. The probable answer will be sugar cane and beet root. Refer to the map on page 25 of the *Oxford School Atlas* which shows the sugar cane region—mainly Punjab and Sindh but also a small area of Khyber Pakhtunkhwa. The soil and climate of these regions are suitable for the cultivation of sugar cane which grows best in tropical and sub-tropical climates with average annual rainfall of 60cm.

The text on page 31 of the book explains and shows in detail how sugar cane is processed into sugar and other useful by-products.

Additional information: Sugar cane belongs to the grass family of plants that also includes maize, wheat, and rice. It was a crop found in South Asia and South-east Asia and crystallized sugar was used 5000 years ago in the Indus Valley Civilization. Around 8th century CE Arab traders introduced sugar from South Asia to the other parts of the Abbasid Caliphate in the Mediterranean, present-day Iraq, Egypt, North Africa, and Spain. The Arabic word for sugar is 'sakar' and in Urdu we call it 'shakar'—do you see the similarity? Sugar cane is believed to have been brought to the Caribbean region by Christopher Columbus in the 15th century.

Maize: the Teaching Guide gives very interesting information about the history of maize or corn as we know it. The Central American region where maize was originally grown has landforms, soil and climate similar to the highlands of Khyber Pakhtunkhwa. This is where maize is cultivated in Pakistan (see page 24, *Oxford School Atlas*). It grows best in a temperate climate and needs plenty of water. Maize is also grown in Afghanistan as well as across India, in areas where the conditions are favorable.

Talk about maize/corn products. Maize is 'makai' in Urdu—in the villages, 'makai ki roti' and 'sarsoon ka saag' (mustard leaf curry) are very popular in season. In Central and South American cuisine, maize/corn flour is used to make 'tacos' and 'tortilla'—flat bread like our chapatti—which is eaten with delicious filling. Ask students to name some other foods and snacks which use corn or corn flour, such as corn flakes, popcorn, processed snacks, etc. The other important use of corn is for extracting oil from the kernels. Corn oil is very healthy as compared to cotton seed oil; it is also more expensive.

Bajra and *jowar:* These are coarse cereals which grow in hardy conditions (little water, even poor soil) and are used mainly for animal food; *bajra* is also used as bird feed e.g. for pigeons. In the countryside, people also eat food products made from these grains, especially in winter. Ask students if they have ever eaten any product made from *bajra* or *jowar.*

(Refer to the Teaching Guide for further information on these grains.)

Oil seeds: The map on page 24 of the *Oxford School Atlas* shows the oil-seed growing regions—mainly upper and central Punjab and parts of Sindh. Explain the importance of using oil extracted from various seeds in foods as compared to using animal fat products. Butter and clarified butter—ghee—are dairy products and should not be confused with fat taken from meat of livestock. Ask the students to name the various seeds/kernels used for producing edible oil—e.g. sunflower seeds, safflower, cotton seed, mustard seed, sesame seed, corn, soya beans, peanuts, olives, and palm as well as coconuts. Oil from some of these sources is called vegetable oil and some oils are also used for medicinal (such as linseed and almond oil) as well as industrial purposes (to make biofuel).

Pakistan is not self-sufficient in edible oil production. In 2009–10, the total production was 680,000 tons, which is only 25 per cent of the country's needs. Pakistan thus has to import edible oil. In 2009–10, the

edible oil import bill was about Rs 78 billion (78,000,000,000)! To improve this situation and save valuable foreign exchange, the government is supporting cultivation of oil seeds by providing high quality seeds (canola) and fertilizers at low costs to farmers particularly in Sindh, and also increasing the cultivation area to almost double.

Fruit: Talk about the fruit in season; ask the students about their favourite fruits. What fruits grow in abundance in Pakistan? Which ones are typical of certain regions? Fruits are an important part of a healthy diet. Pakistan is fortunate in having a large variety of fruits growing across the country—the four maps on page 26 of the *Oxford School Atlas* show the regions where various fruits are grown.

Make the following chart on the board for students to copy in their notebooks.

a) citrus fruit (*kinnoo*, *malta*)—upper and lower Punjab

b) apricot—upper and eastern Balochistan, and Khyber Pakhtunkhwa

c) apple—Balochistan and Khyber Pakhtunkhwa

d) banana—Sindh

e) grapes—upper Balochistan

f) mangoes—central and lower Punjab, Sindh

g) dates—lower Punjab, Sindh and Balochistan

h) almonds—Balochistan

Pakistan grows and exports mangoes and citrus fruit of excellent quality. Other fruits are also grown for local consumption, in season, such as peach, pear, leechi, cherry, plum, melon, etc. Point out that other than Punjab and Sindh, fruit is mostly grown in the western part of the country where other agricultural activity does not take place.

Comparative study of some important agricultural crops, page 33 of textbook: the first table compares production in 1961 and then 2007 i.e. after 46 years. Ask the students to calculate how many times the output has grown. The population of the country has grown 3.2 times, in comparison.

The next table compares crop growth in three South Asian countries, Pakistan, India and Bangladesh. We must keep in mind that India and Bangladesh have much larger populations than Pakistan. Wheat is the staple (main, basic) food in Pakistan while it is rice in India and Bangladesh. Pakistan leads in sugar cane production and cotton. For further details see the Teaching Guide.

The answers to the questions about these two tables on page 33 are also given in the Teaching Guide.

Livestock, poultry, and fishing: prepare for lesson by reading through the explanatory text in the Teaching Guide. Explain that the other aspect of agriculture is rearing/raising livestock, i.e. cattle, sheep and goats; and poultry farming. The other important occupation is fishing.

Livestock means farm animals including those used for food and transport, beasts of burden, poultry, etc. Page 27 of the *Oxford School Atlas* shows maps of the different regions for cattle, buffalo, goat and sheep rearing. Camels are also reared in parts of Sindh and Balochistan.

Refer to the textbook, pages 34–35 for information on the topic with reference to Pakistan, how cattle are used on farms, meat and dairy products, and further detail on livestock and cooperative farming in India and other South Asian countries.

You and the class may have noted that Maldives is not mentioned in terms of agriculture and livestock—why is this so? Maldives is a group of islands with low height above sea level and because of its land and soil, is unsuitable for extensive farming. They import almost all their food needs, but their most important occupation is fishing. More fish is eaten per person in Maldives than in other South Asian countries. (See margin Info on page 57 of the textbook.)

Fishing: Since ancient times, this has been a source of food as well as income in coastal regions, island countries and regions that have rivers and lakes. Tell the students about the Chinese proverb: If you give a man a fish, you feed him for one day; if you teach him how to fish, he can feed himself for life.

There are two types of fish—fresh water fish found in lakes and rivers, like trout, carp, and the palla fish of Sindh; and fish and other marine animals found in the seas and oceans. Except for the land-locked countries of South Asia, the other countries have access to marine as well as fresh water fish.

Talk to the students about their like/dislike for seafood, e.g. fried fish, prawn dishes, etc. Ask them to name and identify some species, such as pomfret. Explain that fish is a rich and abundant source of proteins. Besides fish-meal is also used as poultry feed.

Ask students which countries of South Asia have fishing as an occupation; they should look at the map of South Asia for an answer—coastal areas of Pakistan India, Bangladesh, and Sri Lanka as they are not only surrounded by seas and oceans but have many lakes and rivers; Maldives' islands are surrounded by the Indian Ocean.

Conclusion: Recap the main points of the lessons, separately, as taught.

Reinforcement: Besides the questions on pages 33 and 35 as homework, after class discussion, students should do the work sheet tasks as class work. Question 1on page 35 is suitable for the project work suggested below. Questions 2 and 3 are for class discussion and question 2 for homework.

Further homework task: Name the products that can be obtained from sugar cane and say how they are used.

Activities: Organize group projects to research one crop each and prepare illustrated posters/wall charts with information on nature of crop, cultivating regions, images showing some stage of cultivation, figures for production output, etc.

Students can also be directed to do a project on the history of various cereals/grains and crops such as rice, maize, wheat, sugar cane and cotton.

According to season, have a fruit and vegetable day with samples of the products—fresh as well as processed or cooked.

Extended Knowledge:

- Scientists believe that wheat was first cultivated in Asia c. 6700BCE, between the Tigris and Euphrates rivers in what is now known as Iraq. About 3000 varieties of wheat are grown throughout the world.
- Rice was probably grown in South-east Asia thousands of years ago. China and India lead the world in rice production.
- Sugar cane grew widely in ancient India and is mentioned by Alexander the Great in 325BCE. The refining/crystallization of sugar is reported to have first begun in India in 350CE.
- Greeks and Romans described cotton plants as the fleece of lambs growing on trees! This belief continued in Europe—the German word for cotton is 'baumwolle' which means tree-wool.

1. Choose the correct answers to fill in the blanks.

   i) In Pakistan, wheat is produced mainly in _____.
   (Sindh, Balochistan, Punjab)

   ii) Cotton and cotton goods make up more than _____ per cent of all Pakistan's exports. (40, 90, 60)

   iii) Basmati rice is grown only in _____ and _____.
   (Maldives, India; Sri Lanka, Nepal; Pakistan, India)

   iv) Rice needs _____ climate for its growth.
   (dry and cold; wet and warm; dry and warm)

   v) Pakistan needs to import a very large quantity of _____ because of inadequate local production. (dairy products, edible oil, cotton goods)

   vi) The thick, sweet residue obtained after boiling sugar cane juice is called _____.
   (gur, molasses, canola)

   vii) Corn oil is produced from _____. (sesame, sunflower, maize)

   viii) Pakistan's fruit exports are mainly _____ and _____.
   (banana, dates; mango, kinnoo; cherry, apricot)

2. Match crops in Column A with the regions in Column B.

A	B
a) citrus fruit (*kinnoo*, *malta*)	upper Balochistan
b) apricot	central and lower Punjab, Sindh
c) apple	lower Punjab, Sindh and Balochistan
d) banana	Balochistan
e) grape	upper and lower Punjab
f) mango	upper and eastern Balochistan, Khyber Pakhtunkhwa
g) date	Balochistan and Khyber Pakhtunkhwa
h) almond	Sindh

3. Complete the following sentences with correct facts.

i) Livestock farming is an important part of _____ in Pakistan and India.

_____

ii) Livestock consists of _____, _____ and _____.

_____

iii) In Sindh and adjoining areas of Balochistan _____ are used for _____.

_____

iv) Besides providing milk and meat, _____ and _____ are also used for farming and pulling carts.

_____

v) Mountain goats and sheep in _____ and _____ are valued for their wool which is used for _____.

_____

vi) Fishing is the main occupation in the Maldives because _____.

_____

vii) Fresh water and marine fishing is common in countries which have _____.

_____

vii) Leather from cattle is used for making _____.

_____

viii) Poultry farming is common in many parts of the world because it provides

_____.

FARMING PROBLEMS IN PAKISTAN

Text pages 36–39

Unfortunately, the official statistical yearbook for 2007, instead of giving current data, gives the breakdown of farms by area, dated year 2000. Of the total number of farms shown, 85.5 per cent cover five hectares or less; of these 67 per cent are in units of less than 2 hectares, and these are often made up of small plots scattered round the villages. Talk about this with pupils: ask why these small farms are inefficient.

The reasons are given below:

a) A waste of time travelling from plot to plot.

b) Small plots: This is the fundamental weakness of the Pakistani agricultural system. Not only is the average size of a peasant holding less than 2 hectares, but because of the law of inheritance—land shared out equally among children—the 'farm' becomes fragmented into a series of small plots scattered round the village. These are too small to use anything but hand tools or at best a simple ox-plough—slow and inefficient.

Again, small plots mean that mechanization is difficult even if the owner could afford it. It is easier to turn round an ox-drawn plough at the end of a furrow than a tractor. So animal-drawn equipment is used, which is slow and relatively inefficient. There's also much hand labour involved.

c) Small units mean low profits—often little more than subsistence farming—so that there is little capital to put back into the holding in the form of better animals, seed, fertilizer, and pesticides.

d) The whole thing is cumulative…inefficient farming…poor crops…subsistence farming and no spare cash to buy better stock or seed. It is grossly inefficient use of manpower.

In the author's village is a 250 hectare farm which is run by two men with immense and expensive machinery. Except at sowing and harvesting time, they spend most of their day in the farm office. In the USA, it is even more extreme, with the great wheat farms on the prairies extending to thousands of hectares. At the crucial time of harvesting, five or six giant combine harvesters—each cutting a swathe ten metres wide sweep across the vast fields in echelon formation. The combine harvesters not only cut the grain, but thresh it as well, so that trucks alongside just fill up with crops ready for storing.

ANSWERS TO QUESTIONS IN TEXT, PAGE 36:

i) Increase in wheat production per hectare has occurred because of more fertilizer, mechanization, larger farm units, and better strains of seed being used on larger, more commercial farms; a steady movement to combined land holdings; improved seeds; improved water supply from rapid increase of tube wells. The wheat output has increased over five times from 1960–2007.

ii) The US output is six times that of Pakistan because of the latest high-yield seeds, more efficient farming, intensive fertilization; Pakistan has on the whole fairly poor soil and needs a great deal of fertilizer. In the old days, the manure of the animals—and humans—was probably enough, but today the land needs so much more as extra crops are being forced from it. In 2007, Pakistan had to import almost 800,000 tonnes of expensive fertilizer as well as 30,000 tonnes of the even more expensive insecticide. Higher output is also due to immense capital investment—machines costing more than Rs 2 million or more are common for harvesting. Large tractors can cost almost as much. Huge fields of many hundreds of hectares without any boundary markers, allow as many as five or six of the giant combine harvesters to work in echelon at one time. Investment in fertilizers and the latest high-yielding seeds; extensive use of pesticides and insecticides also increase crop output. There is highly specialized transportation for agricultural products—road, rail, and a good system of internal waterways in many areas. The USA is so huge (9.3 million hectares against 0.9 million for Pakistan—more than ten times the size) and with so many varied climates and soils that crops can be concentrated on the most favourable areas: the Mid-west for grain, the warm, damp south-east for cotton, the Great Plains for animal rearing. The land unsuitable for agriculture in the USA—deserts, mountains—is proportionally much less than it is in Pakistan.

Water: Pakistan is naturally, by geographical whim, a dry land, with about two thirds of the world's average precipitation. The traditional flooding irrigation from the rivers is at its maximum, and in the mountains in the north more snow is melting each year than what falls. Eventually, this supply will run out…though it will last for a few more centuries yet. Tube wells for deep water supplies are an answer, and that is why the government is pursuing the policy of widespread electrification (see p45 of the textbook). Concreting the bed and sides of the irrigation canals to prevent seepage into the soil is also a priority. Some of Pakistan's most important crops—cotton and sugar—are 'greedy' for water and need steady and plentiful supplies to produce good crops.

Fertilizers: The land is generally not particularly fertile apart from a few places, and with the extensive cropping and constantly increasing demands for more and more output, fertilizers have to be employed heavily. In 1996–7 imports of fertilizers cost Rs 15,337,764,000; this rose to Rs 42,229,549,000 in 2005–6. Apart from the imports, there is also local manufacture as Pakistan has some of the main raw materials required.

Pesticides are more difficult to manufacture locally, and the import figures have risen from an average of Rs 12.5 billion from 1996 to 2003–4, to Rs 30 billion from 2004–5 to the present times. The higher import figures are also due to the falling exchange rate of the rupee vs US dollar. A problem a farmer has to face is value for value: will the use of say Rs 10,000 worth of pesticide or fertilizer give him more, or less than Rs 10,000 worth of extra crop? Cotton, for example, loses about 25 per cent of the crop through pests.

Salinity: Students could perhaps grow a pot of some quick-growing seeds—grass, beans, etc.—and when well sprouted and growing, water with salt water or sprinkle salt on the soil before watering. See how long it is before the plants collapse and die. The author was told in Azerbaijan, Russia's main cotton growing region that all the soil has to be washed at least twice from deep reservoirs, in the spring, before the cotton is planted. However, this is not an easy option where fresh water is scarce.

Water logging: Water is essential for growth, but too much of it kills plants because the soil cannot get any air. It is the result of constant water supply, and did not occur when there was inundation (flooding). Now with canals full of water throughout the year, some of it seeps through, raising the water table. To control water logging, the following steps can be taken:

- Lining the canals with concrete—an expensive process
- Lowering water level in canals and ditches
- Pumping out the water through tube wells
- Planting eucalyptus trees to absorb groundwater.

FARMING PROBLEMS IN SOUTH ASIA

India has tried to meet the demand for water for agriculture through construction of dams and reservoirs, although it does receive fairly heavy rains during the monsoons.

Bangladesh is self-sufficient in its staple grain, rice, and its main cash crops, jute and tea. However, the cyclones are a great threat to agriculture in its coastal region.

Sri Lanka, Nepal, and Bhutan are self-sufficient in agriculture for their food needs.

Maldives being an archipelago, the total area of its 1190 islands is only 298 sq km. It has hardly any large tracts of farming land, so it has to import all its food needs.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 39:

1. Large-scale mechanization is impractical on small plots because of such problems as turning the equipment round, getting from tiny plot to tiny plot. The headland (the land at each end where the equipment turns) is wasted as machines take considerable space to turn round—impossible on the small plots.
2. More fertilizer is needed as heavier crops are grown which are expected to feed increasing population. More 'greedy' crops such as cotton being grown. Soil, generally not very rich, is exhausted by constant heavy cropping. Natural fertilizers from animals and plants are not adequate.
3. Sindh needs more fertilizer than the other provinces because of the greater use of land for farming—depleting it of its natural goodness—and because of the water logging and salinity that have affected the soil, especially in the Indus Delta, where the sea has replaced the receding river.
4. Main problems that Pakistan faces with regard to agriculture are: a) small farms, b) low quality seeds, c) water shortage, d) water logging and salinity.

LESSON PLAN 12

Topic: What problems do farmers face in Pakistan?

Duration: Two periods (40 minutes x2)

Objective: To know the reasons and effects of farming problems in Pakistan

Resources: Textbook, atlas, newspapers, encyclopedia and Internet

Introduction: Start with short questions as given below; elicit answers.

1. Where does the majority of our population live? (Rural areas, villages)
2. What is their occupation? (Farming; they cultivate land; have livestock.)

3. Are most farmers prosperous in Pakistan? If not, why? (They are poor because they do not earn enough income from their farms.)

4. Why is agriculture underdeveloped in Pakistan? (small farms, unscientific methods, poor soil and seed quality, inadequate water/irrigation, water logging and salinity)

Explanation: Discuss how these problems are interlinked. Tell students that 50 per cent of the farms are of 2.5 to 3 acres owned by individual farmers who grow crops and vegetables for their own use, and they use manual and animal labour because the farm size is too small for using machinery. (See the pictures on textbook page 36.) Talk about how the farms are further divided and scattered around villages which results in waste of time and energy.

Only rich landowners have large farms covering hundreds of acres with access to irrigation, and money to buy fertilizers, farm machinery and pay for farm labour.

Compare this to the farms in other developed countries e.g. USA, European countries, China, etc. where farms spread over thousands of acres.

Unscientific methods of cultivation: Ask about the mode of cultivation in our country. The answer will be they still use bullocks to plough their land and manual labour for harvesting. Reasons why use of latest machinery like tractors, combines and harvesters is not common, like in other developed nations, are lack of funds as well as small farm size so that there's inadequate space to manouvre large machines. Secondly, farm animals used in the fields need to be looked after, fed properly and treated if sick, but veterinary (animal medicine) facilities are seldom easily available.

Most rich landowners, however, invest in farm machinery and train their labour to use it.

Poor quality of seeds is the other factor that affects crop output. Compare Pakistan with USA: high-yield variety of seed results in better quality and larger quantity of crops. (See chart on page 36, textbook, for comparison.) Most poor farmers cannot afford to buy better quality seeds; even the wealthy landowners, especially those whose farms are managed by others, take little interest in improving the quality of their crops. However, as a basically agricultural economy, Pakistan has taken some steps to increase its yield of wheat, rice and cotton e.g. Mexi-Pak wheat, IRRI-Pak rice and Nayab 78 cotton.

Quality of soil, use of fertilizers and pesticides: Because of the uncontrolled growth in population and rising demand for food, farming takes place continuously and this depletes the soil of nutrients. (Students may have noticed that soil in the garden or even for potted plants is changed annually so that plants can grow better in new soil.) Where the soil is of poor quality, fertilizer is needed for better crop production. Pakistan produces as well as imports fertilizers and also other chemicals to get rid of weeds (herbicide) and pests (pesticide). Poor landowners may not be able to afford these; for example, they generally use manure which may not be adequate as a fertilizer. Sometimes there's an outbreak of various farm pests that damage the crops; in that case pesticides are used. However, their use must be carefully monitored as they not only kill bugs that are harmful but also kill off other insects which are useful and have a negative effect on the environment; moreover, the plants can also carry the harmful effects of pesticides and pass them on to the consumer. Traditional and natural methods such as the planting of neem trees at measured distances across the fields is effective as its fruit and leaves contain natural pesticide which does not harm the crops or other useful insects, and it is also good for the environment.

Water and irrigation facilities: water is the basic need for cultivation. All life on Earth needs water to survive and grow. In Pakistan, the problem is inadequate and unequal distribution of rain: the Indus River plains in the Punjab receive rain at the end of the summer monsoon and then some rain during the winter.

Other regions require irrigation facilities. Pakistan inherited a very efficient canal irrigation system laid by the British before Independence. However, with population growth there's greater need for water—for domestic use, agriculture, industry and power generation—but the facilities have not been increased proportionately. There's a need for more dams and reservoirs and better and fair distribution of water. Existing canals and barrages need to be properly maintained by de-silting of dams and barrages so that their capacity is not reduced, and lining of canals so that water does not seep into the soil.

Salinity: This topic is well-explained in the textbook. Continuous cultivation and irrigation result in salinity because when the water evaporates, salts present in the soil are left on the surface. This makes the land unfit for further cultivation. The problem can be solved by 'washing' the soil with fresh water from tube-wells or use of special chemicals. Both the methods are expensive as Pakistan is not a water-rich country and poor farmers cannot afford the chemical treatment. One third of our farmland is affected by salinity and a third of this is damaged so badly that it has turned into deserts. Have you ever noticed white patches of land while traveling from Karachi to Hyderabad or any other place? These lands are damaged by salinity.

Additional information: the land and water sources in Badin, Sindh, have been so badly damaged by high salt content and the seawater coming further inland, that the tube-wells have salty water that is unfit for drinking.

Water logging: Explain what water logging is: water from irrigation canals seeps into the soil and makes it so wet that plants cannot grow in such soil, because the roots need air. Ask the students to experiment it themselves by over-watering a plant in their homes; the plant will die in a few days as its roots will not be able to breathe. Inform students of the steps taken by the government in this regard. Canals are lined with concrete to stop seepage in the soil. Agricultural universities in Punjab and Sindh are working to solve these problems. This is a good point to impress on students that scientists in these universities and various departments of the government are working to solve problems faced by the people in rural areas.

Discuss with the students the problems that have been caused by the devastating floods in 2010 and 2011 which have destroyed thousands of villages, homes and acres of farmland, as well as animals and crops.

Farming problems in South Asia

Ask the students to name the remaining countries of South Asia: India, Bangladesh, Sri Lanka, Nepal, Bhutan and Maldives. Except for Maldives, these are all agriculture-based countries which face more or less the same problems but with a little difference.

India faces the problems of deforestation and soil erosion. Explain these terms. Deforestation is cutting of forests and soil erosion is the washing away of soil because of deforestation. Other problems are over-grazing of pastures and mismanagement of water.

Bangladesh also faces similar problems plus the damages regularly caused by floods and cyclones.

Sri Lanka, Nepal and Bhutan also face similar problems but with lower populations, they can manage their food needs.

Maldives has no farmland as it is a country that consists of 1190 islands, only 300 of which are inhabited. It has to import all its food needs.

Conclusion: Recap the main points of this lesson.

Reinforcement: The map on page 25 of the *Oxford School Atlas* shows the cultivated area of Pakistan in 2000. Students to trace and colour the map; add a labelled key. With reference to the map, they should answer the following questions in their notebooks.

a) Which three provinces have more cultivated area?

b) Which province has much less cultivated area? What is its percentage?

c) Which province has the largest cultivated area?

Answers: a) Punjab, Sindh, Khyber Pakhtunkhwa; b) Balochistan, under 5% c) Punjab, 65—80%

Homework: apart from the reinforcement task above, students to write out answers to questions on page 39, after class discussion.

1. Match the terms for farming problems in column A with their descriptions in Column B.

A		B	
a)	soil erosion	i)	removing soil and silt
b)	deforestation	ii)	excessive salt content in soil
c)	water logging	iii)	soil is washed away
d)	salinity	iv)	clearing Earth's surface of forests
e)	de-silting	v)	excessive water content in the soil

2. Write short answers to the following questions.

   i) What was the value of Pakistan's fertilizer imports in 2007?

   _____

   _____

   ii) How is India's agriculture affected by deforestation?

   _____

   _____

   iii) Why does Maldives need to import grains?

   _____

   _____

   iv) How can seepage from canals be stopped?

   _____

   _____

   v) Why are herbicides and pesticides used by farmers?

   _____

   _____

   vi) What is the most serious problem for Bangladeshi farmers?

   _____

   _____

   vii) Name three South Asian countries which are almost self-sufficient in their food needs.

   _____

   _____

MINERALS AND ENERGY RESOURCES

Text pages 40–43

Oil, natural gas, and coal: These minerals, the location of their sources and methods of exploitation, and their uses have been covered in fair detail in the textbook.

Iron: This mineral is crucial to industrial development as it forms the basis for engineering, construction, and a host of other uses, including military use in the form of weapons. Countries rich in metallic ores and energy resources are in the forefront of industrial development.

NON-METALLIC MINERALS

Gypsum is usually found in volcanic regions. Its main uses are for making plaster of Paris for houses, and for moulds for ceramics, statues, medical instruments, and dental plates—not these objects themselves but moulds for the metal in making them. In Pakistan, particularly, it is a valuable fertilizer for dry alkaline soils (much of Pakistan). An interesting use is as a retarder for cement: ordinary cement dries hard fairly quickly, and in many buildings applications need to be shaped. Gypsum is added to the cement, which slows down its setting time.

Mica is a strange mineral which comes in thin sheets. At one time it was extensively used in cooking stoves powered by kerosene. It is transparent and does not burn, and so people could see what the flame was doing inside the stove. Today it is used more for electrical insulation.

Diamonds: Chemically, diamonds are identical with coal—pure carbon—but under immense heat and pressure under the ground, carbon turns into diamond. Diamonds were formed between 660 and 3300 million years ago. India was the original source of diamonds: Golconda, in the Deccan, was the main world source until the 17th century. Diamonds are the hardest substance known—the only thing that will scratch a diamond is another diamond. Diamonds are measured in carats—about 200 milligrams to a carat. The usual diamonds in jewellery are rarely above 10 carats. The largest known is the Star of Africa, found in South Africa in 1905, which is now in the British crown jewels. In its cut form it weighed 530 carats—its value inestimable. Perhaps the most famous diamond is the Koh-i-noor from India. No one knows its original weight as it vanished in the 17th century, but the diamond in the Queen of England's crown (105 carats) is thought to be part of it.

By far the greater part of diamonds today are used in industry: diamonds are often used on drills used for oil wells, and for many processes that demand extreme hardness such as making very fine wires. Powdered diamonds are used as an abrasive in industrial processes. Diamonds can now be made synthetically, but the process produces only small stones normally of poor quality and not used for jewellery.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 43:

1. Natural gas is Pakistan's most useful mineral resource.
2. As compared to oil, natural gas is easier to transport and store especially for domestic use; it is also cheaper than oil. Oil has more by-products in its refining.

3. Pakistan has to import oil in large quantities.

   Oil is used in industries and transportation. However, oil is also used in many products. Students can be asked to find out and this can lead to interesting discussion in class.

4. Pakistan's own coal is not very important in industry because it is of very low quality and it produces a lot of polluting sulphur gas and ash when it is burned and also does not give out much heat. At present Pakistan's coal is about one third combustible—and can be used only for crude industrial processes such as brick-making. Coal may become important in future as high-quality coal has been discovered in Thar.

5. Students can research and collect information and data on different gemstones.

6. Mica is a mineral which contains silicon. It is used in electrical industries, in cosmetics, etc. and also as a substitute for glass. Students can be encouraged to collect further information.

LESSON PLAN 13

Topic: Minerals and energy resources in Pakistan and South Asia

Duration: Two periods (40 minutes x 2)

Objective: To impart extent and importance of minerals and energy resources

Resources: Textbook, atlas, newspaper, encyclopedia, Internet

Introduction: Begin with short questions for brain storming.

1. Name a few things at home and in school that are made of different metals. (Probable answers: from automobiles to kitchen utensils, electricity cables, window grills, gates, etc.)

2. Do you know the names of some materials that are obtained from the Earth? What is the process called? (E.g. gold, silver, precious stones, coal, iron, oil, etc. The process of getting matter from within the Earth, deep underground, is called mining.)

3. What is the importance of these materials? (Probable answer: we use them to manufacture things which are essential for our daily life; some things like gold, silver, and gemstones have high value; oil and coal are used for transport and energy.)

Explanation: Materials obtained from underground are called minerals; they are substances naturally present in the Earth. They are both metallic and non-metallic, e.g. gold is a metal while salt is non-metallic.

Ask the students to name a few minerals which are used to produce energy or electricity, such as oil, gas and coal. (Water is also a source of producing power; it produces hydro-electricity, but we will study this at a later stage.)

Explain how minerals are obtained from mines and quarries. Differentiate between a mine and a quarry. Mines are deep holes under the ground to dig out iron ore, gold, silver, oil, coal, gas, etc.

A quarry is an open or surface excavation from which usually building material is dug out, e.g. marble, sandstone, granite limestone, etc.

Explain that some mineral are valuable while others are less valuable. Ask the students to give some examples of extremely valuable minerals (such as gold, silver, platinum, uranium, diamonds, etc.) and some minerals that are less valuable (such as iron, coal, marble, salt, limestone, etc.)

Explain that Pakistan does not possess large quantities of valuable minerals but it produces a sufficient amount of less valuable minerals.

Refer to page 29 of the *Oxford School Atlas* for the location of various mineral deposits—metallic and non-metallic—in Pakistan.

The next topic in this chapter is minerals which are used for transport and energy, i.e. oil, gas and coal which are valuable for their usefulness. See page 28 of the atlas for map showing where sources of oil, gas and coal are found in Pakistan. Explain that these minerals were formed by the thousands of years' old layers of plants and trees buried underground.

Oil: Pakistan's location and its geological structure are similar to that of its neighbouring oil-rich countries, like Iran, the Gulf States, and Saudi Arabia, but so far its oil reserves are very low in comparison. The search for oil, however, continues. To meet its requirements Pakistan must import oil. Why is oil important? How is it used? (For transport: to power automobiles, aeroplanes, ships, public transport; for use in factories, farm equipment, tractors, etc. You may add that many electricity generators also run on petrol or diesel.)

Explain that oil obtained from the wells is in crude form so it has to be processed in oil refineries where it is turned into petroleum and other by-products. The students will be surprised to know the range of petroleum by-products: these include the items of daily use from cosmetics and tooth paste, detergents, plastic toys, and even perfume to lubricants, grease, tyres, etc. So when oil prices rise, there is also an increase in the prices of these products as well as in the cost of transport across the country.

Did you know?

- Petroleum comes from two Latin words: *petra* meaning rock and *oleum* meaning oil.
- Oil is also known as 'black gold'. Can you think of a reason why?

Coal: Ask the students what comes to their mind with the word 'coal'. They may reply 'barbecue'! Coal and iron ore are two very important minerals in the development of industry in the past as well as today, in countries with large coal deposits. Pakistan's coalfields are mainly in the western (Balochistan) and north-western (Khyber Pakhtunkhwa) parts of the country. However, these do not produce high quality coal. Explain the difference between high and low quality coal: low grade coal does not produce enough heat unless high grade imported coal is added; secondly, it gives out sulphur gas and ash which pollute the air and are also dangerous for the miners.

Because of its poor quality it cannot be used in factories, but is used in simple industries e.g. brick-making. Recently, high grade coal has been discovered in Thar, Sindh, but has yet to be developed. It is hoped that in future Thar coal will be used to generate electricity.

Natural gas: Many students will be well aware of the domestic use of gas, in their kitchens and geysers, and also for room heaters in winter. This is natural gas, popularly known as Sui gas because it was first discovered in Sui, Balochistan. Pakistan is fortunate to have considerably large reserves of natural gas that is supplied to many main cities by pipeline and to distant places by gas cylinders. The textbook covers this topic in detail. The reasons why gas is more convenient to use than petroleum are: a) it is cheaper that petroleum; b) it is more convenient to handle as petroleum needs huge tankers for its transport while gas can be taken through pipelines.

Natural gas is very valuable in for its industrial use; it is a raw material for the fertilizer industry, hence very important for agriculture. (Raw material is something which is used to manufacture something else; e.g. cotton is a raw material for making fabrics.) Encourage the students to give a few more examples of raw materials to give them a clear concept.

Ask what CNG is (compressed natural gas) is and why it is used in cars. It is cheaper than petroleum. Students should refer to the maps on textbook page 41 and atlas page 28 to see where gas fields have been discovered.

Impress on the students that all natural energy reserves have a limited life—they cannot go on forever. Such natural resources are very useful and valuable, so they must not be wasted. We should use petrol and diesel carefully as the country pays a huge amount of money to import oil. We should not waste gas by leaving the stove or geysers on when not in use. Even lights, fans and other electrical appliances should not be left switched on when not in use because the power that is being wasted is being provided through imported oil.

Iron ore: We began the lesson by asking about the use of metal items in our daily life—cutlery, utensils, pots and pans, tools, automobile bodies and engines, heavy machinery used in industries, etc. The most common and cheapest metal for all items is steel: it is used to make things from common pins, nuts and bolts to cars, trucks, railway engines and tracks, and much more. Iron is not found as blocks of metal but is obtained from rocks or earth, and therefore, it is called an ore. Steel is made from iron ore by heating it in huge furnaces and adding some other chemicals. Explain how stainless steel was discovered. See the Teaching Guide for details.

Explain that Pakistan does not produce high quality iron ore so it has to be imported. Huge iron ore deposits have been discovered in the northern areas of Pakistan but it is a mountainous region where mining is very difficult. Moreover, transportation will also be a problem.

Non-metallic minerals: (Before explanation of this topic, teachers are advised to refer to the Teaching Guide which covers this topic in detail with interesting information.) As the name suggests non-metallic minerals are not metals, like iron, gold or silver. Refer to the textbook page 42 and page 29 of the *Oxford School Atlas for Pakistan* for details of non-metallic minerals, their uses and where they are found in Pakistan. It is important for students to know that good quality emeralds are mined in Swat; besides, the onyx and marble mined in Khyber Pakhtunkhwa and FATA are used for construction and decorative items which are also exported.

Mineral resources of South Asia: Among the other South Asian countries India and Sri Lanka are rich in mineral resources. India has abundant reserves of coal as well as iron ore, which have boosted its industrial development. India has other mineral deposits of industrial value and also has the world's oldest diamond mines (see Teaching Guide), and precious gemstones used in jewellery. Precious and semi-precious gemstones are also mined in Sri Lanka.

Bangladesh, by comparison, has very small reserves and limited output as shown in the chart on textbook page 43.

Explain the chart and ask the students to read and arrange the countries in order of production of minerals starting from highest to lowest.

India tops in coal production – the fourth largest in the world. Pakistan tops in the production of natural gas. India leads in iron ore and oil.

Conclusion: Recap the main points.

Reinforcement: Discuss questions 5 and 6, page 43 in class. These can also be given for pair or group work for research.

Ask the students to prepare a chart as suggested below to show the location and uses of the following non-metallic minerals in Pakistan: rock salt, marble, limestone, fire clay, fuller's earth, china clay, gypsum, and gemstones.

Serial no.	Non-metallic minerals 1	Location 2	Uses 3
1			
2			
3			
4			
5			
6			
7			
8			

Homework: Students to answer questions 1, 2, 3 and 4 from page 43 in their notebooks.

1. Choose the correct answer.

   a. Pakistan has _____ reserves of oil. (huge, little, no)

   b. High quality coal has been discovered in _____. (Sui, Thar, Badin)

   c. Natural gas is used as a raw material to make _____. (bricks, pottery, fertilizer)

   d. India has the _____ largest reserves of coal in the world. (2^{nd}, 3^{rd}, 4^{th})

   e. _____ has the largest reservoirs of oil in the world. (Venezuela, Saudi Arabia, Pakistan)

   f. Pakistan produced _____ cubic metres of gas in 2007. (21 million, 15 million, 41 million)

   g. Natural gas turns into _____ under pressure. (liquid, gas, solid)

   h. The Salt Range in _____ has huge deposits of rock salt. (Sindh, Balochistan, Punjab)

   i. Beryl is a non-metallic mineral used in _____. (construction, jewellery, oil refining)

   j. Pakistan produces more _____ than India. (oil, coal, natural gas)

2. State the unit of measurement for each of the following:

   a. Oil is measured in _____.

   b. Natural gas is measured in _____.

   c. Coal is measured in _____.

   d. Diamonds are measured in _____.

3. In the three columns Oil, Coal and Natural gas below write the names of the places where these are found in Pakistan. Refer to atlas page 28 for information. (Please note correction for the key: the inverted green triangle refers to gas, and the red triangle to oil. The hexagon refers to locations where both oil and gas are found.)

Oil	Coal	Natural gas

CHAPTER TEN

POWER RESOURCES OF PAKISTAN AND SOUTH ASIA

Text pages 44–46

The increase in power consumption in Pakistan has been dramatic—almost 800 per cent since 1971. Ask pupils where they think all this extra power was used. Certainly there is a massive increase in domestic use, not only in more electrical equipment being used, but also in the dramatic extension of electric power to villages. But this represents (2002) about 48 per cent of the total output—the rest is industrial, commercial etc.

Percentage of power output in Pakistan, 2006: hydel—12.7 per cent; thermal—85.8 per cent (gas: 50.4; oil: 28.4; coal: 7); nuclear—1.5 per cent. (Economic Survey of Pakistan, 2006–07)

Kilowatt = 1000 watts. A watt is a unit of power; a 40 watt electric bulb consumes 40 watts of power. A gigawatt is 1,000,000,000 watts—this would light 25,000,000, 40 watt bulbs. A typical nuclear power station produces one gigawatt of power. Nuclear power provides about 2 per cent of Pakistan's energy.

Diagram on p44: Point out to pupils that the drawings on this page are not to scale: the dam is obviously much larger than the machinery would imply. The major dams are over 150 metres high, and the dynamos and turbines (there are many of them) no more than 3–4 metres in height.

Photograph, p45: the water pouring from the Tarbela Dam is the overflow. When the lake behind the dam rises too high, the surplus pours over in these 'waterfalls'. Ask pupils why this overspill is necessary: if the water kept rising, as during heavy rains, it would eventually flow over the top of the dam where there is usually a road, and the danger of the water pressure could cause the collapse of the wall.

Nuclear power: It is expensive, needs great technical skill, and can be dangerous—though the French, who make 80 per cent of their power from nuclear installations, have never had a serious problem. In less technical countries—as in Russia—there have been disasters such as Chernobyl. Here part of the station exploded, killing 31 workers, and 100,000 people had to be evacuated because the land was contaminated with radioactivity. No one can estimate how many more people will die prematurely because of the damaging after-effects. The nuclear fallout was carried all over Europe, and cows eating grass in Ireland, over a thousand miles away, were affected.

Other forms of electric generation: Small diesel engines can provide power for a village, but these of course use valuable petroleum products, and involve the transportation of fuel oil, often to difficult sites.

Solar power: Point to the window in the pupils' calculators. This is a small solar electricity generator, but it will produce only a fraction of a volt. If they cover the window with a finger to cut out the light, the power disappears and the figures vanish. The problem with solar power (enough energy from the Sun falls on every square metre to power a small electric fire) is that the cells increase rapidly in size, to several square metres to be practically useful. Some are used to power radios and very large ones to run tube-well motors. In Australia and also in Pakistan, solar powered cars were built and exhibited, but are obviously not practical. Ask pupils what other

disadvantages there could be—no power at night of course, and storing electricity in batteries as in cars, is a clumsy and inefficient way. Secondly, this cannot be used universally as not all parts of the world experience the same intensity or duration of sunlight.

Wind power is another possibility and the UK hopes to have 10 per cent of its electricity from wind by 2010. Windmills are huge with blades more than 100 metres across. They are, of course, subject to a fairly consistent flow of wind, which is why they are not universally practical. In Western Europe, however, there are fairly consistent winds from the Atlantic all the year and wind-powered generators are in use.

Ask pupils about the disadvantages: visual pollution as they are unsightly, have to be in prominent positions to get the wind, and are grouped in considerable numbers; noise: they make a constant sound. The UK is putting some offshore, only just visible from land, but this involves problems of cabling.

Waves: Billions of GWH of power are going to waste every minute in waves and tides, and though scientists have struggled to find ways to harness this power, nothing really practical has yet been achieved. One of the reasons is the inconsistency of natural conditions.

Biomass: Using renewable vegetative material such as residue of corn or sugar cane, to power stations and heat turbines. This is possible, and is used, but needs vast amounts of labour and fuel supplies. Oil or gas are more flexible and coal burns for much longer.

Methane is a combustible gas which comes from decomposing organic matter, as in rubbish dumps. Experiments are being made with this to drive small turbines.

FURTHER INFORMATION

- Pakistan has the lowest output from nuclear sources because there are only two nuclear power plants—one at KANUPP, in Karachi and the other at Chashma in the north. Secondly, such plants require highly skilled staff to operate them effectively and safely.
- Natural gas is important to Pakistan as it is the only practical fuel it has in any quantity. As well as providing the power for electrical stations, for making cement and for general industrial uses, it is the raw material for a number of important chemical products, especially fertilizer.
- The great advantage about gas is that it is a home product. It is also flexible in delivery through pipelines, and is suitable for domestic use either as town gas or in steel 'bottles'. Oil is more useful in transport—cars, trucks, rail, where gas as a fuel is cumbersome.
- Pakistan's coal is not important for its industry at present because it is low-grade. The cost of developing the higher grade coal mines is not economical and also requires long-term investment. It can be considered for the future when other energy sources decrease.
- Pakistan's coal is low grade (about 1/3 usable carbon) and produces a great deal of unwanted by-products such as polluting gases and ash. It can be used generally for crude industrial processes, as in brick kilns, where these factors are not so important and where the amount used is not limited. The pollution is of course still a problem. New sources of higher-grade coal have been found in Thar, but funding is needed for exploitation. Chinese help is being sought for this purpose.
- The output of electricity increased by 36.3 per cent between 1996 and 2006: the amount produced by hydel sources has reduced while power generated by thermal plants has increased. The reason for the proportional fall in hydel power is because of the increase in thermal power especially gas. The hydel projects are all in the upper north of Pakistan so that distribution of power demands very long power lines. The majority of thermal stations are in the south, closer to the gas and oil fields.

Big cities in the north and centre—Islamabad, Lahore, Faisalabad, Multan, and Sukkur—have thermal power plants because of their economic importance and great demand for power.

- Hydel power is very expensive and long term—it takes 15 years to get from drawing board to actual power production power. Thermal power is a quicker solution…even if it does rely on diminishing sources of fuel.

  The hydroelectric dams, of course, are invaluable in flood control and supplying year-round irrigation water.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 46:

1. Power produced by hydroelectric stations is decreasing due to various reasons, such as decrease in rainfall and snowfall, global warming, dam failure. Hydroelelectric schemes are vastly expensive to construct; they have to be built in remote regions for geographical reasons, which means costly power lines down to settled areas.
2. Purposes of dams other than generation of hydroelectricity are irrigation, reservoirs for water supply, habitat for wild life, and to control flooding.
3. Thermal power stations are located mainly in southern Pakistan so that they can be near the gas and oil fields.
4. Nuclear power is fantastically expensive to set up, demands high technical skills from its work people and above all, can be extremely dangerous unless highly responsible and qualified technical staff is available. Unfortunately, Pakistan does not have many such qualified people at the moment—a considerable number who have the skills, seek employment in developed countries where they are more highly rewarded. The great advantage of nuclear power is that once in operation it provides electricity at very low running costs; the initial set-up is of course vastly expensive.
5. Sun and wind as power sources need a great deal more work to be done. Sun is the obvious choice in Pakistan, but the technology is at present very inefficient everywhere. Wind and sunlight produce electricity on a very small scale—especially sunlight. A wind turbine is said to produce 80 times as much in the value of electricity as it does to build and dismantle the equipment. Unfortunately, winds are so fickle. The great wind turbines used extensively in Europe are extremely expensive to build and produce limited but commercial—amounts of power. However, once installed a wind turbine is said to produce electricity at low cost. Wind turbines are very unsightly – visual pollution. To get the advantage of steady wind they are often on hilltops where they are visible for many miles. They are very noisy and work only when there is wind, though careful designs allow them to work in very light breezes too.
6. These dams can be found on page 19 of the *Oxford School Atlas for Pakistan*.

   Warsak Dam is built on River Kabul, Tarbela on River Indus, and Mangla on River Jhelum. These dams are located at points before the fast flowing rivers enter the plains and are at an average height of 1000–1500 metres above sea level.
7. Some of the obvious changes due to electrification in the villages would be better agricultural output because of tube wells, access to telecommunication and electronic media, and improvement in living standards, with electricity for domestic use.

LESSON PLAN 14

Topic: Power resources of Pakistan and South Asia

Duration: Two periods (40 minutes x2)

Objective: To know the main sources of power, their extent and importance in Pakistan and South Asia

Resources: Textbook, atlas, newspaper, encyclopedia, Internet

Introduction: Ask the following questions to brainstorm.

1. Can you imagine how our forefathers lived when there was no electricity?
2. Can you imagine your life without electricity? If not, why?
3. What is the importance of electricity for a country? It is important for agriculture and industry; heavy machinery needs electricity to operate.
4. Does Pakistan have enough power and power resources to meet its domestic, commercial and industrial needs? The first paragraph on page 44 discusses the increasing demand for power in Pakistan from 1971 to 2007.

(Teachers are advised to read through the Teaching Guide for the useful information provided to support this chapter.)

Explanation: The students have already learned about oil, gas and coal that generate power or energy. Tell them there are other sources too to produce electricity.

a. Thermal plants which use heat from oil or gas to generate power

b. Hydroelectric (hydel) plants which use water from rivers and dams

c. Nuclear plants which use atomic reactors to generate power

Diagrams on page 44 show the working of thermal and hydel plants. The next important point is the location of these power plants.

Thermal power plants are located mainly in Balochistan and Sindh: go back to the map showing energy resources—Sindh and Balochistan have natural gas, oil and coal to run these plants. The coal mined in these regions is of inferior quality, but the findings at Thar are more encouraging and need to be exploited to meet Pakistan's power needs.

Hydroelectric (hydel) power is generated from water. Dams are constructed on rivers to store water which is then released with force to turn the turbines which generate electricity. Hydel power projects are located mainly in the north, close to the fast-flowing upper river sources. The three big projects in Pakistan are the Mangla Dam on River Jhelum in Punjab, the Tarbela Dam on River Indus and Warsak Dam on River Kabul in Khyber Pakhtunkhwa. However, the steady demand for more electricity can be met only if these dams are properly maintained (Warsak Dam has lost most of its storage capacity) and new dams are built.

Nuclear or atomic power plants generate power through atomic energy. The water is heated by nuclear power to turn the turbines. There are two nuclear power plants in Pakistan: Chashma in Mianwali, Punjab and Kanupp at Hawke's Bay (also Hawkesbay) near Karachi. These plants are very expensive to set up and need great technical skill to operate; they can be dangerous as they emit radioactive rays. In France, 80% of its power is from nuclear installations without any problems so far. However, the Chernobyl disaster in

Russia had widespread impact. Mention here that natural disaster can also affect nuclear power plants and result in wide-spread, long-lasting damage as witnessed at Fukushima in Japan after the March 2011 earthquake and tsunami.

Other methods of producing electricity are through diesel engines/ generators, solar power and windmills. Diesel engines are not practical because they operate on expensive imported fuel, often difficult to transport to far off places. They are suitable only for domestic use.

Solar energy could be a good source for Pakistan which has abundant sunshine. But the solar panels are very expensive to produce unless made in huge quantities. There have been successful experiments on a small scale but this is not a practical option at present because of the cost.

Water and wind power have been in use in Europe, the Middle East and the subcontinent, even before electricity was discovered, to pump out water and run flour mills. Currently, many countries in Europe utilize wind energy through windmills to generate power. In Pakistan, however, the problem with windmills to produce power is similar to that of solar energy. Windmills are subject to the direction and movement of the wind and have to be grouped together to produce adequate energy. They also create much noise pollution apart from being unsightly. Windmills have been set up on experimental basis in lower Sindh and Balochistan's coastal areas which are wide open areas and have steady wind.

Why does Pakistan need more electricity day by day? It is because of increasing population and their domestic, commercial, agricultural and industrial needs. What role does electricity play in agriculture? Revisit the chapter on agriculture—to power tube-wells, draw and pump water for irrigation, operate machinery to make fertilizer, and to run food processing industry.

The growth in demand is because of increase in the use of electrical gadgets i.e. kitchen appliances, air-conditioners, T.V, radio, computers, and growth in the number of hospitals, educational facilities, etc.

Power Production in Pakistan:

- In 1971, the electricity output was 5532 giga watts hours (gwh); in 2005, the electricity output was 88420 gwh.
- From 1991 to 2007 (almost sixteen years) the annual consumption increased from 31500 gwh to 97000 gwh—a rise of over 300%.

Present situation: Pakistan is facing an acute shortage of electricity due to fuel shortages; more dams are also needed. The government is trying to solve the problem. Do you think nuclear energy is a solution? (This question can lead to an interesting class discussion supported by valid arguments.)

How is Electricity Measured?

The students are aware that electricity is measured in watts. Explain the terms megawatt and gigawatt. For details see the Info box on textbook page 45.

Power projects in South Asian countries: This has been briefly discussed in the textbook pages 45–46. India, being a larger country by area and population, has higher power needs for domestic, agricultural, commercial and industrial use. About 70% of its energy supply comes from fossil fuels, of which 40% is from its coal resources and the rest from imported oil and only 6% from natural gas; hydel projects supply the remaining needs. India is looking towards alternate sources—wind, solar and nuclear—to meet its growing demands.

Brief information about energy sources of other South Asian countries is given on page 46. Maldives has a unique problem for generating power as the islands have no fossil fuel or hydel resources and electricity cannot be transported by cables. Hence every inhabited island depends on generators using imported diesel. The other option available to them is wind energy—yet to be developed.

Conclusion: Recap the main points.

Reinforcement: Ask the students to see the pie chart showing energy supply by source (2005) on page 28 of the *Oxford School Atlas*. Draw the chart on the board and show the percentage of electricity obtained.

a. Energy generated through thermal power plants:

(i)	gas	=	50.4 %
(ii)	oil	=	29.4 %
(iii)	coal	=	7.6 %
	Total	=	87.4 %

b.	What is the percentage of hydroelectricity?		11.0	%
c.	Electricity generated by the nuclear power plant:		1.2	%
d.	Electricity produced by LPG (Liquefied Petroleum Gas)		0.4	%
		Total	12.6	%
e.	Which is the highest source?	Thermal	87.4	%
f.	Which is the lowest?	LPG	0.4	%

Homework: Questions 1, 2, 3, 4 and 6 on page 46 to be answered in writing.

Activity: Class discussion on questions 5 and 7.

Group activity: How can you save energy? Discuss and prepare a proposal for energy conservation.

1. Name the three main sources of power generation in Pakistan and India.

   i) _____

   ii) _____

   iii) _____

2. Complete the following statements.

   a. In 1971 Pakistan generated _____ gigawatts hours of electricity.

   b. From 1991 to 2007 the use of electricity in Pakistan increased by _____ per cent.

   c. Hydroelectricity is generated by building huge _____.

   d. Thermal power is generated by burning _____, _____ and _____.

   e. By 2007, _____ villages in Pakistan had electricity.

   f. Where are the following dams constructed?

      i) Warsak: _____ ii) Tarbela: _____ iii) Mangla: _____

   g. The two nuclear power plants in Pakistan are _____ and _____.

   h. One megawatt is equal to _____ watts and one gigawatt is equal to _____ watts.

   i. The other natural sources for power are _____ and _____ energy.

3. Briefly describe how a nuclear power plant produces electricity.

   _____

   _____

   _____

4. Link the places in Column A with their locations in Column B.

	A		B
a	Arun hydel power project	i)	India
b	Maan Dam	ii)	Sri Lanka
c	Bhakra-Nangal Dam	iii)	Nepal
d	Upper Komale	iv)	Bangladesh
e	Karnafuli River	v)	River Narmada
f	Hirakud Dam	vi)	Mahanadi River

INDUSTRY IN PAKISTAN

Text pages 47–54

Make sure pupils have at least some idea of balance of payments. Give the example of a family. If wages are Rs 10,000 a week but bills for living, rent, food, travel, etc. are Rs 11,500, the result is misery, debt, borrowing. But if wages are Rs 11,000 and expenditure is Rs 10,000, the result is contentment, saving for holidays, special treats, etc. The concept of balance of payments is, of course, more complicated, but the principle is the same.

The problem for Pakistan is that many of her exports are relatively low-value agricultural products, unlike say Japan, whose exports are largely very high-value motor cars, electronic equipment. On the other hand, most of Pakistan's imports are from the high-value list—transport, oil, chemicals, electronics, machinery.

ANSWERS TO QUESTIONS IN TEXT, PAGE 48:

Related to picture on page 47:

a) pure agricultural goods are raw cotton, rice, fish, skins/hides.

b) processed agricultural goods are leather and its products, carpets, cotton products, sports goods.

c) industrial products are surgical instruments, steel goods, synthetic fibre and products, chemicals, and plastic ware.

Ask pupils what high-value goods are exported—carpets, some sports goods, surgical instruments.

BASED ON THE CHART GIVEN ON PAGE 48:

1. Cement, chemicals, and electricity are vital to a developing country; these are the lifeblood of industry, essential for a country to expand. This increase also indicates rising living standards and mobility.

2. All of these items except, perhaps, bicycles are the basic needs of a developing country as industry and agriculture expand.

3. Increase in production: cement—13.75 times; chemicals—6.25 times; fertilizer—16.7 times; electricity—140.5 times; bikes—4.77 times.

Industry: Ask pupils what raw materials Pakistan produces for its growing industry—limestone, natural gas, and salt are the main ones.

Cotton: Cotton grows best in well-watered and fertile soil—using water from rain or irrigation—and a warm to hot climate.

Cement: Ask pupils what is needed…..limestone…cheap source of heat. Using the atlas (page 29), find sources of limestone (mainly northern Pakistan) and cheap gas (again, northern Pakistan) set against this is the cost of transport—cement is heavy

and bulky. Discuss whether it is better to move the raw materials to a suitable place or to move the final product.

Fertilizers: Pakistan's leading crops, sugar cane, and cotton, are greedy for fertilizer and water. In the past, the manure from the farm animals kept some sort of fertility in the soil, but with the much more intensive farming, and the decline of animals, this is woefully inadequate so that artificial fertilizers have to be used. While much of this comes from indigenous raw materials, 170 million dollars worth still has to be imported. This sum would buy many new schools and hospitals…but it has to be purchased to keep up the exports.

Metals: Metallic ores are relatively scarce in Pakistan, apart from some modest amount of copper and a good supply of bauxite, the ore from which aluminium is made. This is a valuable industrial resource.

Steel: It is said that modern civilization is built on steel and cement. Very large amounts of steel have to be imported. Iron ore is imported from Australia, Brazil, Canada, India, and Liberia, and the special (coking) coal to process it, from Australia. Obviously, the steel industry is based in Karachi where the raw materials can be shipped. The Pakistan Steel Mill, set up near Port Qasim in 1973 with Russian expertise, covers 7500 hectares. The Pakistan Machine Tool Factory, also in Karachi, was set up in 1966, in collaboration with a Swiss firm. The Heavy Mechanical Complex in Taxila has been set up in 1968, with Chinese support.

Iron ore is melted and produces pig iron. This is very brittle and can be used only for low grade, very solid items such as heavy weights and bases for machinery. The pig iron is remelted and goes through a process which makes it into wrought iron. This is more useful and can be made into different shapes. Wrought iron is the basis of much industry, though not machinery, most of which is now made of steel.

Wrought iron contains many chemicals, especially sulphur, which limits its use to fairly large, crude items. The wrought iron is melted again in a blast furnace, and when white hot, a blast of air is blown through it, burning out the impurities in a great sheet of flame, dozens of metres long, leaving behind more or less pure iron. The chemicals which are needed to turn the iron into steel are now added, and the molten metal run off for processing.

It might be of interest to know that during World War I, frantic experiments were being made with steel, for the armaments industry. The engineers added all kinds of chemicals to get the steel they needed. One experiment was a failure, and the resulting metal was thrown on a scrap heap. Many months later, the engineers noticed that while most of the scrap had rusted, the result of their failed experiment was still bright and shiny… it was stainless steel, and of course, a remarkable discovery.

Stainless steel products, cutlery and surgical instruments, perhaps an unexpected product, are manufactured in the Punjab, around Sialkot and Lahore. These goods brought in Rs 9,770,000 in earnings in 2006–7.

Sports equipment, mainly for those sports in which Pakistan excels—hockey, cricket, racquet games, and table tennis—is produced in the Sialkot region. The woods used are mulberry, shisham, babul, poplar, eucalyptus, and willow. Sports goods are also exported.

Cottage industries are small-scale industries with an investment of rupees two million or less, run mostly by family or community, employing not more than 50 workers (not hired labour), and it provides opportunity and employment to people with no formal training or skills. As mentioned in the textbook, some of the cottage industries eventually graduate into full-fledged industrial concerns.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 54:

1. Developing industry is so much more profitable than agriculture as industrial products are far more valuable as exports.
2. Using home-produced raw materials (limestone, sulphur, leather, etc.) is much more economical than importing them—oil, steel, machinery, transport.
3. Answer in textbook page 49.
4. The sulphur mines are located in Koh-i-Sultan range in Balochistan. (A good exercise to find a place in the atlas, using the index.)
5. Cement: students to locate main plants on page 31 of the *Oxford School Atlas for Pakistan*.
6. Small-scale and cottage industries (a) provide an income in areas where there is little except subsistence agriculture and (b) try to prevent migration to the cities, where there is little accommodation or work.
7. Processing of cotton needs balance of being near to industry and transport, especially by sea, as cotton is such a major export item. Karachi and Hyderabad are outside the main cotton growing areas, but both have industrial and communication potential, and large workforce makes them central to cotton manufacture. Faisalabad is in the cotton belt. As said in the text, there are many smaller areas of cotton processing and manufacturing, largely to supply local needs.
8. Hockey, cricket, squash, tennis, and table tennis. Students can name some famous players.

LESSON PLAN 15

Topic: Industry in Pakistan

Duration: Two periods (40 minutes x2)

Objective: To inform students about industry in Pakistan; identify factors that support and/or hinder industrial growth

Resources: Textbook, atlas, newspapers, Internet, (Teaching Guide for teachers)

Introduction: Begin by a quick brainstorming on industry by referring to manufactured objects in the classroom, including personal belongings—where were these made? Are they local or imported? What are the materials used? What is the source? Note the important points on the class board.

Explanation: Imports and exports are discussed here to show firstly that manufacture and export help a country to earn foreign exchange while importing manufactured goods means spending foreign exchange; secondly, export of raw material brings in less money than the export of manufactured goods. Hence a country should have a strong industrial base. However, countries do need to import what they cannot produce for various reasons. But a balance should be maintained so that the economy is not affected badly.

Move on to talk about local vs. imported goods, price and quality differences: discuss the impact of industry on a country's economy. Note that tourism is also an industry, as is film-making. Explain what is needed for a strong industrial foundation—natural resources for raw materials, skilled manpower, educated people to plan, design, and manage, and financial resources to fund the industry. Talk about

the benefits to the country—exports bring in foreign exchange; industry provides employment and the income boosts the economy; people learn marketable skills.

Pakistan being an agricultural economy, its exports are mainly from its crops and products, such as raw cotton, cotton yarn, fabrics, canvas, textiles, towelling and garments which make up the bulk of its exports. Pakistan also exports high quality rice and fruit, leather goods, wool and carpets. Synthetic textiles i.e. nylon, rayon, artificial silk are also high export earners from Pakistan.

Explain the chart on page 48 which shows increase in the production of some items between 1964 and 2007. Follow the instruction in the Teaching Guide.

As the text on page 48 shows, Pakistan has to import heavy industrial and agricultural machinery and equipment, electronic goods, fuel for transport and energy—why is this so?

Pages 48–49 describe how cotton is processed. You may compare this to the processing of sugar cane in Chapter 7, Main crops. Pages 50–54 provide information on other industries in Pakistan, including cottage industries. Explain how a cottage industry is defined. Discuss various industrial products with the students.

Cotton industry: reasons for importance:

- Provides employment to 50% of the industrial workers
- Accounts for 40% of Pakistan's exports

Cotton is processed all over Pakistan but the main centres are Karachi, Hyderabad and Faisalabad. See page 30 of the *Oxford School Atlas* which shows the textile industries in Pakistan. Why is Karachi the largest centre?

1. It is a seaport which makes it easier to export various items.
2. It has a large work force.
3. Karachi is a business hub.

Chemical industry: Chemicals form the base of many things that we use—from cosmetics and toiletries to medicine, industry, construction and agriculture. Minerals form the base of many chemicals, and Pakistan is rich in minerals used in industry and agriculture. Pages 50–51 provide details of such minerals and how they are used, along with the process of cement manufacture. Explain the process of cement making with the help of the diagram.

Fertilizer industry: The importance of fertilizers has been discussed extensively in previous chapters on farming and agriculture. With growth in population and food needs, agriculture has expanded along with need for fertilizers. Pakistan is fortunate to have the raw materials for the fertilizer industry—gypsum gas, and coal—and manufactures the bulk of its needs, but it still has to import more fertilizer.

Steel industry: Begin with a little background to steel—difference between iron ore and steel, when it was first made, etc. Steel is not found in its natural form but is an alloy (a mixture of two or more metals with other minerals) of iron and carbon. Steel has been known since thousands of years; the earliest piece excavated is from Anatolia in Turkey and dates back to 4000 years. It is said that weapon quality steel originated from South India in the era before Christ and was exported to Europe and the Middle East, where it became famous as Damascus steel and was used for making swords and daggers. Steel was also manufactured in China, southern Europe and East Africa in the same period. After Renaissance, steel-making methods were more refined, especially after the 17th century.

Explain that steel and cement are the two most important industries on which depends the development of other industries. Iron ore for steel is imported from Australia, Brazil, Canada, India and Liberia as Pakistan does not have good sources. The largest steel mill in Pakistan is located in Karachi and another one is in Taxila, while there are other smaller privately owned units in Punjab.

Discuss the uses of steel—in construction, for machinery, etc. Stainless steel is used for cutlery, kitchen utensils and surgical instruments, all of which are manufactured in Pakistan. (Textbook page 52 gives the detail as does the Teaching Guide explanation for this chapter.)

Location of major industries: The location of industries is also an important factor for steady supply of power, availability of water (for steel, textiles, tanneries, chemicals), access to ports and transport facilities, and security. Industries that may spread pollution, like the cement and fertilizer industries, should be located at a safe distance from habitation. Review the atlas maps on pages 30 and 31 in the light of these factors. Karachi, being a seaport, is a good choice for industry as it is convenient for shipment of heavy material. Question 7 on textbook page 54 is also linked to this topic.

Carpet industry: Broadly speaking there are two types of carpets—hand-made and machine-made. Hand-made carpets in traditional designs are very valuable and popular abroad as well as locally. They are even used as wall-hangings, and are Pakistan's eighth largest export.

Sports equipment: Surely an item of interest for students—ask them to name their favourite sport and the equipment used for it. Pakistan is known for its sports goods. Discuss what materials are used and where these goods are manufactured in Pakistan. Sialkot is well known for its sports goods which are exported to other countries e.g. footballs, cricket bats, etc. One of the reasons for Sialkot being a choice location is that the wood used for bats, hockey sticks, etc. comes from the mulberry trees which grow in this region in abundance.

Cottage industries: This topic has been covered well in the textbook, pages 53–54. Small units in every province provide opportunities for the local people to produce ethnic woven and/or embroidered cloth as well as stitched items, jewellery, leather, wood and onyx goods, and carpets. There is a lot of talent in the country and these products attract tourists and are also exported.

The maps on pages 30–31 of the *Oxford School Atlas* provide locations and details of various industries across the country.

Conclusion: Recap the main points of this chapter.

Reinforcement: Refer to the questions and chart on page 48 and the answers provided in the Teaching Guide. Briefly discuss the questions on page 54.

Homework: Questions 1, 2, 4 and 5 require short written answers, while questions 3 and 6 require more detail. Question 6 can be given as a group research activity and question 7 as a display project.

1. Define the following

   a. Exports _____

   _____

   b. Imports _____

   _____

   c. Cottage industry _____

   _____

2. Why do you think a country must export more than it imports?

   _____

   _____

3. Choose the correct answer.

   i) More than _____ of Pakistan's exports are agricultural products.

   a) 50% b) 75% c) 90%

   ii) _____ are a non-agricultural but high-earning export product from Pakistan.

   a) plastic goods b) pharmaceuticals c) synthetic fabrics

   iii) The raw material for caustic soda and soda ash is _____.

   a) white cement b) salt c) gypsum

   iv) Limestone is the main raw material for _____ manufacture.

   a) cement b) fertilizer c) explosives

   v) _____ is the base for many industries like paints, oil refining, dyes, etc.

   a) clay b) tin c) sulphur

4. Here is a jumbled list of (a) agricultural products (b) processed agricultural products (c) industrial products. Separate and list them under the relevant heading.

   Raw cotton, cotton yarn, leather, sports goods, carved wood, fish, paint, synthetic fiber, carpets, fertilizer, wheat, sugar, chemicals, electronic items, rice, hides, wool, flour, paints

INDUSTRY IN SOUTH ASIA

Text pages 55–57

India: Although India has more resources than Pakistan and has considerable industry for a developing country, her GDP at US$ 2762 per capita per year, is close to that of Pakistan's US$ 2730 (2007 figures). An important development is the movement of electronic, banking, and other services to India from the western world. Call centres, electronic clerical, accounting, and banking services, especially, have moved in large numbers to Bangalore, Mumbai, Hyderabad, and other Indian cities. One reason is the large number of graduates, fairly fluent in English and the other of course is that it is much cheaper than it would be in the West. Some industries from the UK are also relocating in India, but the majority of these go to Malaysia, where there is a strong industrial tradition.

Bangladesh: From the Himalayan foothills in the north to the Bay of Bengal in the south, Bangladesh stretches across a deltaic region. (Bangladesh was the East wing of Pakistan till December 1971, when it gained independence.) Bangladesh has a hot and humid climate; it receives high rainfall and is prone to storms and floods. Basically, it is an agrarian economy based on rice, tea, jute and coconuts; it also has industries based on textiles, ready-made garments and paper products.

Bhutan: It is a 'hermit' kingdom, more or less self-sufficient in basic foods. Electricity, generated by water power, is exported to India. There is some logging industry, but the very valuable teak forests are extremely carefully managed, unlike many other South-east Asian countries which have exploited the demand for this rare and very slow-growing wood.

Calcium carbide is an artificial chemical which when moistened with water gives off the highly inflammable gas, acetylene. This burns with a brilliant white light and is sometimes used for illumination. But more usually it is stored in cylinders and as it burns with an intense heat, is used for welding steel.

To prevent visitors from destroying the archaic lifestyle of Bhutan, the number of tourists is limited to a few thousand a year.

Nepal: As we read earlier, Nepal is more or less self-sufficient in basic foods. 80 per cent of the population is employed in agriculture, growing rice, maize, wheat, sugar, potatoes, and millet. It has only minimal minerals, limestone being the most important. Tourism is the main income earner, with about 450,000 visitors spending $150 million (late 1990s); the current figures would be much higher. Many of these come to see Mount Everest, which is, of course, partly situated in Nepal.

Sri Lanka: This is another agrarian country with 75 per cent of the population living in rural areas. It has a favourable climate with plenty of water and heat, which produces rice, rubber, and coconuts and, on the steep slopes, large quantities of tea. Sri Lanka also produces from its mines, graphite a black 'rock' that is used in electrical engineering (in electric motors) and precious and semi-precious stones for jewellery, which is also a viable industry in Sri Lanka. However, Sri Lanka has been affected by several years of civil war and conflict, which finally came to an end in early 2009. Sri Lanka is notable for its high literacy rate—92 per cent—the highest in South Asia.

Maldives is an archipelago in the Indian Ocean, to the south-west of India. It is a popular tourist spot known for its beautiful beaches.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 57:

1. South Asia is a popular destination for tourists, especially from the West, because it is exotic, the climate in many countries is excellent; these countries are by western standards very cheap; people enjoy the food, the scenic spots and the beaches, as well as the antiquities.
2. The low land height puts Maldives in danger of submersion in case of storms. The threat of global warming and rising sea levels are a very real danger to Maldives which is only 1.5 metres above sea level.
3. Students to research and share collected data in class.
4. Answer with reference to atlas.
5. Students can be asked to work in groups to collect information on any one country and then present it in class.

LESSON PLAN 16

Topic: Industry in South Asia

Duration: One period (40 minutes)

Objective: To know and compare industries in South Asia with Pakistan

Resources: Textbook, Atlas, newspaper, encyclopedia, Internet

Introduction: Students have already studied different aspects of South Asian countries in the previous chapters. Brainstorm with some questions to refresh their memory.

1. Which South Asian country is the biggest according to its area? (India)
2. Which is the smallest country in this region? (Maldives, which is a collection of islands)
3. Where does Pakistan stand according to its area? (second after India)
4. Which is the biggest country according to population in this region? (India)
5. Which country in South Asia leads in coal production? (India)

Explanation: South Asian countries other than Pakistan are covered well in the textbook with additional information in the Teaching Guide.

India is basically an agricultural country but it has a strong industrial base as well. Discuss the reasons: India expanded the base of inherited and established industries at Independence; it has abundant raw materials like iron ore and coal; it has trained man-power. Because of lower production costs, some foreign manufacturers have outsourced their work to India. India has gone fast-forward in IT and service industry (e.g. call centres) because of the high number of educated and skilled people. India ranks the largest among the South Asian countries and the 2nd largest nation after China in the world, according to its population, so it has a large economy and a strong industrial base to support the economy; 40% of its population works in industries.

Which cities of India are known for their expertise in Information Technology? Bengaluru (Bangalore) is known as the Silicon Valley of India; it has been joined by Hyderabad—now referred to as Cyberabad—and Chennai. These and other cities, Delhi, Mumbai, Jaipur, etc. are home to the offices of all the top names in IT, such as IBM, Microsoft, Infosys, Wipro, etc. They provide a range of services to the world

round the clock and have a large number of call centres which deal in banking, insurance, accounting etc. The IT industry employs 25% of the workforce, and accounts for 40% of the GDP and 30% of exports.

There are many call centres in Pakistan as well that provide similar services to consumers all over the world, albeit on a smaller scale.

Tourism is another big industry in India. Why? Students are aware to some extent—historical monuments such as the Taj Mahal in Agra, the largest tourist attraction, and the Red Fort in Delhi, Jaipur—the Pink City, the Ajanta and Ellora caves, etc. Basically, tourism in India is based on nature—wildlife sanctuaries, mountains, beaches—and history, both Ancient Indian and Mughal. India is visited by millions of people from across the world and earns close to $300 billion from tourism.

Additional information: India has also produced Tata-Nano the smallest and cheapest car to operate and the $35 Aakash tablet based on Android technology.

Bhutan: Ask the students to point out Bhutan on the map of South Asia. Among the South Asian countries, it ranks 6th in terms of area as well as population. Talk about the topography (physical features) of Bhutan: it is a mountainous country and is self-sufficient in agricultural output. Its industry is based mainly on export of electricity, timber (in monitored amount), calcium carbide and cement. Its imports consist of fuel and machinery.

The natural scenic beauty of Bhutan invites visitors but the government discourages it, especially foreigners other than its immediate neighbours, mainly to preserve the local culture and values. Television programmes and foreign channels are discouraged. Bhutan has a strict code of dress and behaviour for tourists and its people. (This can be a topic of lively discussion.)

Nepal is a landlocked country like Bhutan. Discuss its topography. Ask about the location of Mount Everest, the highest mountain of the world. It is in Nepal, which is home to seven more peaks higher than 8000 metres (see table below, which can be copied for the students). Nepal attracts mountaineers, trekkers and tourists for its scenic beauty. Nepal is self-sufficient in its agricultural output. Tourism is the main source of income as it also generates a market for Nepal's cottage industry. For details on Nepal's exports and imports, see the text book.

World's 14 highest mountain peaks—eight-thousanders

Rank	Name	Height (metres)	Range/Country
1	Everest	8848	Himalaya, Nepal
2	K-2	8611	Karakoram, Pakistan
3	Kanchenjunga	8586	Himalaya, Nepal
4	Llohtse	8516	Himalaya, Nepal
5	Makalu	8462	Himalaya, Nepal
6	Cho Oyu	8201	Himalaya, Nepal
7	Dhaulagiri I	8167	Himalaya, Nepal
8	Manaslu	8156	Himalaya, Nepal
9	Nanga Parbat	8125	Karakoram, Pakistan
10	Annapurna	8091	Himalaya, Nepal
11	Gasherbrum I	8080	Karakoram, Pakistan
12	Broad Peak	8051	Karakoram, Pakistan
13	Gasherbrum II	8034	Karakoram, Pakistan
14	Shishapangma	8027	Himalaya, Nepal

Sri Lanka: Students have already read about this country in Chapter 5. Revive their memory. Ask about the shape of this island: it is pear-shaped. Sri Lanka is an agriculture-based economy; it exports mainly rubber, tea, and coconut products as well as graphite and semi-precious stones. The imports consist mainly of consumer goods, machinery, transport goods and petroleum. For a number of years tourism had declined here because of civil war and security issues, but now many tourists visit this island for its beaches and hill resorts. In December 2004, Sri Lanka's coastal areas were badly damaged by the Indian Ocean tsunami. Sri Lanka has 92% literacy which gives its people better employment opportunities. Refer to further information from the Teaching Guide.

Bangladesh: Students are familiar with Bangladesh. Ask about its chief products (rice, jute, fish and tea). Give further information about industry in Bangladesh. It is basically an agricultural country; it has a few large scale industries based on its main products jute, rice, tea, fish and wood. Jute is spun into fibre which is then used to make string, rope and sacks. Bangladesh has thick forests; bamboo, mango, coconut palms and tamarind grow throughout the country. It also has mangrove forests. The wood from the forests is used to make matches, paper and paper products. The jute and paper mills on the Karnafuli River are known for their products. Bangladesh is also famous for its Sundarbans tiger reserve once home to man-eating tigers.

Bangladesh exports jute items, skins, hides and tea, and ready-made garments. Leading imports include building material, coal, electrical appliances, machinery, and food products.

Maldives is the smallest South Asian country. It is a collection of coral islands. Explain what coral is and how it is formed; corals are limestone formations made by millions of tiny animals. When these animals die, their skeletons are left behind. They have different shades of tan, orange, yellow, purple and green and look like lovely sea gardens. The main occupations in Maldives are fishing, tourism and the garment industry. Ask students what major problem is faced by Maldives. The country is in danger of sinking because of its low height above sea level, and the rising sea levels across the Earth.

Conclusion: Recap the main points of this lesson. Discuss question 2, page 57. The list of South Asia's highest peaks in the table above will help answer question 4. Ask students to locate as many of these as possible in the atlas.

Reinforcement: Questions 1 and 3 are to be done for homework. (By their nature, these questions encourage research and enquiry.)

Project work: Divide students into groups of 4–5 and assign tasks in Question 5 for completion in a week's time. Add Nepal, Bhutan and Bangladesh to the list of countries to be researched.

1. Answer the following questions.

   a) Name the main centres for computers and information technology in India.

   b) What is the percentage of India's workforce employed in industry and services?

   _____

   _____

   c) Why does Bhutan discourage tourism and television?

   _____

   _____

   d) What is the main industry in Nepal?

   _____

   _____

   e) List the main exports from Bangladesh.

   _____

   _____

   f) What threat does Maldives face?

   _____

   _____

   g) Which two countries have all the world's highest peaks between them?

   _____

   _____

2. Mark the following statements as True or False.

   i) Sri Lanka's main agricultural product is wheat.

   ii) The economy of Maldives is based on farming.

   iii) Tourism in Sri Lanka had been affected by civil war.

   iv) Agriculture in Nepal takes place mainly in the Tarai region.

   v) Tea plantations are cultivated in India and Sri Lanka.

   vi) Bhutan has a wide range of industrial products.

THE ENVIRONMENT OF SOUTH ASIA

Text pages 58–61

Environmental pollution: the two great issues are industrialization and overpopulation.

Air pollution: This can be in solid particles such as soot and industrial/vehicular exhausts, and gaseous, such as poisonous nitrous gases emitted from vehicles and factories. The particulate (solid) pollution can be drawn into the lungs where it causes damage, as well as making the environment dirty. The gaseous elements—nitrogen, sulphur, and carbon gases also damage the body, but more importantly affect the whole atmosphere of the world by forming a 'blanket' high in the air. Normally, much of the heat from the sun dissipates at night, by radiating back from the surface into space. The layer of gases prevents much of this so that the earth warms up steadily. Also some gases destroy the ozone layer (a layer of special oxygen) high above the earth, which absorbs the dangerous ultraviolet radiation from the sun. An increase of UV radiation causes skin complaints, especially cancer. Atmospheric pollution is caused by motor vehicles; industrial pollution from factory chimneys, domestic fires and thermal power plants.

ANSWER TO QUESTION IN TEXT, PAGE 58:

Main impact of air pollution on Pakistan is the decrease in snowfall in the mountains which is causing a steady decline in the amount of water available for irrigation. Coupled with this is an increase in temperature. As a result, land becomes non-viable for agriculture. Pollution also has a terrific impact on health and may also cause respiratory diseases.

Global warming: This is a good topic for oral work. General warming will decrease rainfall as well as steadily increasing the temperature—current estimates suggest 2° C higher by 2100, which by global standards is a terrific increase. There will be melting of the ice caps at the Polar Regions and on mountains. Ask pupils to suggest what might happen. The rise in sea levels will inundate low-lying areas such as Bangladesh and the Maldives.

The snow on the mountains to the north of Pakistan, where already more snow is melting than is being replaced by the winter storms, will initially melt faster and then decrease, causing major problems of irrigation.

The rise in temperature may make some areas unsuitable for the crops that are grown now; but conversely, other areas now temperate or cool, may be able to grow warmer-climate crops. The decrease in rainfall will add to the problem for countries like Pakistan, already on the fringe of viability for water resources.

Diseases such as malaria and other tropical infections will spread more widely. The milder winters may reduce the number of deaths from colds, pneumonia, and other diseases in temperate regions, but this may well be offset by the increase in deaths from hot-weather conditions.

There will be desertification, especially in those areas that are already marginal, and Pakistan has its share of these. Scientists think that the pattern of the major currents will change, especially El Nino in the Pacific, and the North Atlantic drift: both of these will cause major climatic differences.

Although some of this is a direct result of pollutant gases, there may also be a natural cyclic pattern—the climate goes in smaller cycles than the Ice Ages. Two hundred years ago in the UK, for example, the River Thames froze over fairly regularly and great Frost Fairs were held, with banquets, entertainments, sports, and other activities on the ice for weeks.

Waste products: Rising living standards, increasing prosperity, and urban living all result in more waste. Households want products/appliances to make life easier and more pleasant. Many of these are relatively short-lived—the average piece of domestic equipment such as a fridge, television, washing machine, etc. in the UK has a life of not more than 10 years. As there is hardly any second-hand market for most of these, they have to be dumped. Plastic is a serious problem: unlike paper and wood it is not bio-degradable—that is, it does not rot down, but will exist almost unchanged for perhaps centuries. And plastics of all kind form such a major part of our lifestyle, especially packaging. At one time most foods were bought loose and put into paper bags: today the supermarkets have them inside elaborate packaging of card, paper or plastic. Many of these packaged goods are much larger than they need be. Get pupils to bring some to school and see how much wasted space there is inside the packaging. Ask why—obviously to make customers think they are getting more than they actually are, as the boxes inside the sealed packaging are often only three quarters or even half full.

Around many towns and cities, the refuse just accumulates in dumps or pits, breeding all kinds of vermin and germs. Some cities have giant incinerators to burn the rubbish, but these add more poisonous gases to the atmosphere. Get pupils to bring items to school to make a display of packaging.

Industrial pollution: Factories produce vast quantities of pollution, often from the chemicals used in the industrial processes and waste by-products. Try to find out more about the Minimoto disaster in Japan: Minimoto, a fishing town in Japan in the 1980s, had a factory making some products in which mercury was used. The toxic effluent was poured into the sea. It was absorbed by the fish, which in turn was consumed by the people. Soon terrible conditions began to appear—hundreds of people died, and perhaps even more frighteningly, babies born were horribly deformed, before the authorities realized that the people were being poisoned by the toxic effluent.

Recycling: Waste in some city authorities is sorted either in the households or by workers in the refuse industry. Glass, tins, other metals are removed and sorted and are melted down to be reused. The residue, mainly of organic materials, is buried or sometimes burned or just poured into open pits. The problem is that the cost of sorting and recycling is often much more than the recycled material is worth.

Resources: In the interests of commercial gain, many of these are being over-exploited, most noticeably in forestry, where in many South-east Asian countries the valuable species such as teak have virtually vanished. Mineral resources are being sacrificed, too.

While many people are far better off than they used to be, there is much poverty among those less able to fight for a share of the resources. Crowding in cities increases the incidence of disease, especially when the risks are already enhanced by lack of sanitation and waste disposal. It would be worthwhile to discuss these issues in class, asking students for examples and encouraging research through newspapers and magazines.

Water resources can become polluted by industrial waste and also domestic waste, much of which finds its way back to the streams. People in parts of South-east Asia, especially outside the cities, are trying to live a 21st century lifestyle on a 17th century foundation: the lack of adequate facilities for drinking water and sewage disposal are an example.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 61:

1. a) Old equipment/appliances are dismantled to recover and reuse any usable parts.

   Wet or kitchen garbage can be made into compost.

   Tins can be melted and metal reused.

   Paper mashed down and made into more, but coarser paper; usually brown.

   Bottles can me melted down and reused for more bottles, but this is expensive and not usually worthwhile.

   Rags, cloth can be used to make better quality paper; other metals—melted for further use.

   b) Old paper, utensils, and glassware are bought by waste dealers who later sort and sell it as scrap.

   c) Smoke from factories, motor vehicle exhaust fumes, chemicals from factories, domestic fires.

2. Careless littering of beaches and dumping of waste products and trash into water sources is not only unsightly but it can also be toxic; it destroys marine life—both plants and animals—and disturbs the balance of the ecosystem.

   This can be stopped by creating awareness among people using these facilities and taking measures to clean up.

Answers to questions 3 and 4 are based on research work and discussion.

LESSON 17

Topic:

Environmental issues in South Asian countries

Duration:

One period (40 minutes)

Objective:

To inform about the importance of environment, issues and possible solutions

Resources:

Textbook, atlas, globe, newspapers and magazines, Internet (use the Teaching Guide data)

Introduction:

The students are aware of the environment problems in Pakistan. The pictures in this chapter show examples of various kinds of pollution. Ask direct questions to brainstorm.

- What do we mean by 'environment'?
- How do we pollute the environment?
- What are the different types of pollution?
- How does pollution affect our surroundings and health?
- How can you keep the environment clean?

Explanation: Define environment: it is our surroundings and includes land, water, and air around us. Pollution of land (garbage, salinity, industrial waste, chemical contamination) water (contamination, sewage, industrial waste—effluents) and air (smoke, fumes, release of harmful gases) all have very damaging and long-lasting effects on the environment and all living things in it. Explain different types of pollution and their effects. Ask what environment problems are faced by Pakistan. Start with air pollution.

Air pollution results from burning garbage, faulty vehicles emitting smoke on the roads, and fumes and gases from industry and air-conditioning. In Pakistan and the other South Asian countries most people do not maintain their cars; public transport vehicles' exhausts release poisonous fumes into the air. Factories also emit gases into the air. All these cause lung diseases, asthma, skin and eye problems too. When pollution is unchecked it leads to global warming, climate change and thinning of the ozone layer which protects the Earth, decrease in rainfall, and high temperature which melts the snow on mountains causing floods and landslides. The sea level rises, and low-lying countries like Maldives and Bangladesh are in danger. Air pollution also affects vegetation and trees which get stunted or die as a result.

Land pollution results from careless disposal of waste products, polythene bags, discarded old household goods, packing material, and domestic and commercial garbage thrown out in the open pollute the surroundings. Garbage heaps stink, are breeding places for germs, bacteria and insects, and a health hazard for the population as well as birds and animals. Chemical and industrial waste ruins the quality of the soil and the harmful effects also affect any food crops grown on it. In developed countries, radio-active waste is buried underground but sometimes the soil and water sources are dangerously affected.

Water pollution is caused by industrial waste, i.e. chemicals and acids, discharge of drains and sewage into lakes, rivers and seas. Marine life and plants are damaged. Humans, animals, birds and other living things are badly affected. Students may have heard or read of oil spillage into the sea from oil tankers. The oil spreads fast over a vast area and kills marine life including birds and plants.

All these forms of pollution affect the Earth's ecology and environment and upset the balance of nature.

Besides the types of pollution discussed above, there is also noise pollution caused by badly maintained transport, honking of horns, loud music, and noise from aeroplanes near airports, industrial machines, etc. Noise pollution affects hearing and people in high-level noise areas are in danger of going deaf.

How can we fight pollution? Ask for suggestions. This can lead to a healthy discussion; note the points on the board.

The Three R principle i.e. reduce, recycle and reuse.

How can we reduce? E.g. by using less packing material, by avoiding wasteful buying of things really not needed. We must reduce the use and waste of natural resources like water and food products, and gas and electricity. Ask students if they can give more examples.

Recycle means to put a used thing to a new use instead of throwing it away. Newspapers can be recycled into papier mache; used paper can be recycled into packing material; glass, tins and cans are recycled into new products. Students can do further research with the teacher's guidance.

Re-use: Don't throw away everything. We can use things for some other purpose e.g. an oil tin can be covered with used wrapping paper and used as a waste paper bin. Paper printed on one side should be used for writing or printing on the blank side.

Move on to South Asian countries. Their problems are more or less the same. Discuss each country separately.

Like Pakistan India also faces pollution by industrial wastes, seepage of canals, and deforestation. In India's Himalayan foothills, people started the *Chipko* movement to stop the cutting down of forests; each villager would go and hug a tree to prevent it from being cut down. Nepal and Bhutan are also trying to conserve their forests. Discuss why forests are important.

Maldives has banned coral mining to preserve its coral reefs and the marine life in them. Bangladesh and Sri Lanka face the same problems due to industrial growth, poverty and lack of education and poor health facilities.

The United Nations Environment Programme set up in 1973 is trying to solve these issues. Research more about local and international bodies working to save and improve environment across the world.

Conclusion: Recap the main points.

Reinforcement: Questions 1 and 2 on page 61 are to be done for homework. Guide students for question 2 by providing leads for Pakistan, e.g. pollution of River Indus, Manchhar Lake and Haleji Lake in Sindh, which has killed the fish, affected the poor fishermen, and destroyed the habitat of migratory birds that come here in winter.

Activity: Encourage the students to follow the Three R principle. Divide the class into groups and assign each a project of their choice based on this principle. Their projects can be displayed in the class and other classes can be invited to see them.

1. Fill in the blanks.

   a) The ozone layer is damaged by _____.

   b) The ozone layer acts as a filter against _____ from the Sun.

   c) Global warming causes rise in _____ and _____.

   d) _____ dumps become breeding places for _____.

   e) Pollution of coastal waters destroys _____ life.

   f) The Three R principle stands for _____, _____, and _____.

2. Choose the correct answers.

   i) Deforestation also causes _____ _____.
   (water pollution, soil erosion, animal diseases)

   ii) Maldives has banned _____ _____to protect the reefs.
   (deep-sea fishing, coconut plantations, coral mining)

   iii) The Chipko movement was launched to save _____ in India and Nepal.
   (trees, rivers, wildlife)

   iv) _____ _____ are harmful because they do not decompose and cannot be recycled.
   (green plants, plastic products, marine animals)

   v) The United Nations Environment Programme was set up to deal with _____ _____.
   (road building, environment issues, space exploration)

THE PEOPLE OF PAKISTAN AND SOUTH ASIA

Text pages 62–68

Do some simple work on statistics—say, measure heights of pupils in class and do a block graph (perhaps 2 cm groups). The same can be done with ages. This will help them understand how information can be given in figures, as statistics.

The people: The map and table on page 62 show the approximate periods when different races entered the subcontinent. Some common surnames (last names) still carry the traces of their origins, for example, Arain, Brohi, Choudhry, Beg, Khan. This is an interesting topic for discussion, to identify ethnic groups through names, but should be handled prudently with due respect to all. Students can also collect pictures of ethnic costumes.

Find out how many different languages are understood by the students and what languages are spoken at home. Talk about why it would be difficult for professional people in the modern world if they did not know English. Chinese is the most widely spoken language, but it is not the language of business and universal communication—it is too cumbersome, has too many characters/letters and is not easy to learn. One letter can be pronounced differently and can mean different things although it may be written in just one way. The Chinese characters shown here may help you to understand and explain this. For example, the characters which read as 'man ' can also mean 'filled', 'content' or 'reach the limit'. The pronunciation in Chinese is shown in brackets.

Spanish is the next most widely spoken language after English, and by the year 2040, it is expected to be overtaken by Arabic.

man (ren)

big (da)

heaven (tien)

woman (nii)

child (zi)

literacy (wen)

Population—births and deaths in rural areas: The death rates are higher in the rural areas in South Asia, generally, because of the social conditions, inadequate access to medical care, ignorance and low literacy, traditional methods of child-rearing, and a harder life in a physical sense. The difference in birth and death rates means a rapid increase in population. This is very evident in India which is expected to be the most populous country in the world by mid-21st century.

Some developed countries actually have a negative population change— the population is decreasing. Birth control, even in Catholic countries is universal, and people are wanting smaller families because their standards of living are rising—they demand more luxuries for the home, cars, foreign holidays, for example—which are not affordable if they have many children.

Overpopulation: In most developing countries it is the tradition to have many children (a) because of the high death rate and lack of medical care, and (b) to help with the family land. Today, far more of the children survive infancy, and more live on into old age. Thus the number of people increases rapidly. India and Pakistan have not tackled this problem seriously, but in China where the difficulty was even greater, the government has limited each family to just one child (there are exceptions, such as disabled children and some ethnic minorities). The effect has been dramatic, because if families do have more than one child, they are stopped many benefits from the government—schooling, for example. However, China is now considering two children per family because of recent natural calamities and mainly because it will have a larger ageing population in future. India is now expected to overtake China's population by the middle of the 21st century.

Pupils to draw a simple line graph of Pakistan's population:

1947—40 million; 1951—33.9; 1961—43 million; 1971—64.0 million; 1981—84.25 million; 1991—113.8 million; 2001—146.0 million; [NB: figures taken from the Pakistan Economic Survey, 1997 edition for 1947–1991, while the last figure for 2001 is from the 2001 edition, which does not have the earlier figures.] The teacher could do a large-scale graph for class display and discuss it.

ANSWERS TO QUESTIONS IN TEXT, PAGE 63:

1. Higher mortality in rural areas may be due to fewer services, hospitals, pre- and post-natal help; old-fashioned traditions especially on child rearing; food supplies can be intermittent, or not suitable for babies; lack of hygiene, sewage and waste disposal facilities.
2. The difference between birth and death rates means the population rapidly increasing—note increase of almost four times between 1947 and 2007. This is of course an exponential increase as the increased number of babies grows up to have children themselves.

Although longer life expectancy is a result of better healthcare and living standards, it is not a good sign for the country as the resources are limited and with more people to share them, it results in a lower standard for the majority over a period of time.

Literacy: The criteria can, of course, vary widely. Some authorities claim that a person who can write his/her name on documents is literate, whether he/she can read the contents or not. The official figure for Pakistan is 50 per cent but many people feel that this is not really a realistic figure of functional literacy. The disparity between female/male literacy is also a worrying factor—in the more remote regions it is in low single figures for women.

Discuss whether literacy is important in the rural areas where there is little to read. Why SHOULD one read?

The Pakistan Economic Survey 2006–7 gives the following male/female literacy percentages (over 15) for Pakistan:

Pakistan	58 / 32	(Total)
Punjab	57 / 36	
Sindh	60 / 31	
Khyber Pakhtunkhwa	57 / 20	
Balochistan	53 / 15	

ANSWERS TO QUESTIONS IN TEXT, PAGE 64:

1. A developing country needs a strong educational base, if it is to compete successfully in the world. Otherwise its people will be limited to doing low-skill, low-paid jobs. Also life is much more complex in a developing country where the ability to read in an industrial world is essential—how to operate equipment, obey instructions, read directions for a start.

2. Problems of illiteracy can be a good theme for class discussion. (If one could not read, one would lose out on knowledge, information, communication, instructions and use of computers, to name a few.)

3. Highest illiteracy in Balochistan especially among women; 1998 census 33 per cent of males, over 15, were nominally literate and 12 per cent of females.

   The average for all of Pakistan is 58 per cent males, over 15, and 32 per cent females. Aren't you lucky you can read this?

   Also the remote areas of the country that do not have access to educational institutions or programmes have the lowest literacy rates. However, in Gilgit-Baltistan, particularly in Hunza, Gilgit, and Chitral, the Aga Khan Education Foundation is doing a commendable task of educating the population as well as providing them with employable skills and further opportunities.

4. Education is important for all, but more so in the urban areas where all the industry, trade, government, institutions and offices are based. There is more diversity—people need to read for work, travel and shopping in general. Life is so much simpler in the countryside, where the routines of agriculture, tending animals, food is traditional and is passed on from parents to children orally.

TABLE, PAGE 64:

Population density is high in Maldives due to large number of holiday makers on tiny islands and there may be many workers to cater for the needs of these tourists.

TABLE, PAGE 65:

The under-15 population of all countries except India and Sri Lanka is nearly 40 per cent or more, which means more people competing for jobs and resources in future. The literacy rates are less than 50 per cent except for India and Sri Lanka, the latter being significantly higher. The urban population of all countries is low—about one third, but very low in Nepal and Bhutan, with corresponding figures for rural population.

Sri Lanka has the lowest birth rate (Maldives with its largely tourist population disregarded) and the highest literacy rate by far. It has a low urban population. This must be the result of stricter government upgrading society.

Sri Lanka's statistics are significant as it has the highest literacy rate, 92 per cent, and the lowest population growth: only 24 per cent are under 15 years. However, despite the literacy rate, 79 per cent live in the countryside.

ANALYSIS OF GRAPH ON PAGE 65:

The immediate deductions from the chart are:

1. Many more people under 15 in Pakistan—i.e. much higher birth rate in Pakistan than in Japan

2. Considerably more people aged 16 to 64 in Japan than in Pakistan
3. Most significant that far more people over 65 are alive in Japan than in Pakistan. 26.4 per cent of the population is over 65 in Japan, 5.9 per cent in Pakistan. Discuss why…..lifestyle, health services, etc.

INFANT MORTALITY: ANSWERS TO QUESTION IN TEXT, PAGE 66:

Possible causes (Sri Lanka and Malaysia excepted)

1. Poor medical facilities
2. Often poor diet
3. Climate conducive to many diseases.
4. Poor home conditions in many places
5. Traditional foods and methods of childrearing
6. Mothers often have to work on the land as well
7. Poor sanitation, if any at all
8. Sheer ignorance and lack of education

SAARC

This is an organization that was developed to solve regional problems, more in the socio-economic sector and to promote cooperation among the member states. Afghanistan was admitted as a member in April 2007.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 68:

1. Information regarding a country's population can be gathered from records kept and through a census.
2. More languages mean more variety in the composition of a country, but each group gives much importance to its own language, as it is a mark of its identity. In Pakistan, all languages though spoken differently, are written in the same script. In India, there is great diversity in the range of languages spoken and written and in the scripts also, north to south.

   Secondly, education and official communication may not be possible in all the languages in a country, so there is generally one official or state language.
3. A good theme for discussion.
4. A theme for general discussion.
5. Chinese is obviously the language most spoken in the world, because China has the highest population for any country on Earth.
6. The last SAARC meeting took place in Pakistan in January 2004.

LESSON PLAN 18

Topic: The population of South Asia

Duration: Two periods (40 minutes x 2)

Objective: To know the origins, statistics, rural/urban break-up of populations, mainly in Pakistan as well as South Asia

Resources: Textbook, Teaching Guide, atlas, encyclopedia, Internet

(Teachers are advised to read and make notes from the Teaching Guide for better explanation of this chapter which requires two periods for proper coverage.)

Introduction: Begin by brainstorming.

1. The population of Pakistan (approximately 180,000,000—18 crores)
2. The largest city of Pakistan according to population?

   (Karachi, approximately 18,000,000—18 lakhs)
3. The most populated province of Pakistan? (Punjab)
4. The least populated province? (Balochistan)
5. The most populated country of South Asia? (India)
6. The least populated country of South Asia? (Maldives)

Explanation: Ask the class how we can find out the number of students in a class: by counting. When we count the people living in a country it is called a 'census'. Explain by giving a proper definition. It is the official process of counting the population and recording some facts e.g. the number of people living in each house, the language they speak, their education level, occupation etc. In Pakistan census is done after every ten years. It is a major and time-consuming but very important exercise. The census staff visits each and every home across the country, and records the facts which are then compiled on a national level. This detail forms the data base.

Inform students that the last census in Pakistan was in 1998. Since 2010, an effort has been made to start another census and some data has been collected but it is not final. The data available to us today is based on formal and informal estimates.

Statistics is a way of giving information in numbers, charts and graphs. It helps to understand the data more clearly. Discuss why this information is important. It helps governments to plan ahead for the betterment of their countries and the people. E.g. how many homes, schools, colleges, and hospitals are needed in particular areas; what job opportunities can be provided; developing roads and transport for people, etc. What other reasons can students think of?

The people of Pakistan come from different ethnic and cultural backgrounds. They have come into the country at different points in time. The map on page 62 shows the list of different tribes who came into the subcontinent mainly from the north-west. Some of these travelled further inland into India but many settled in the fertile river basins of the Indus. One group that entered from a different direction is not mentioned here—do you know who it was? The Muslim Arabs came into Sindh in 712CE (also expressed as 712CE i.e. Common Era*) from the south, along the Makran coast and land routes.

*Explain the terms BC (Before Christ) and AD (Anno Domini i.e. in the year of our lord). These have now been replaced more commonly by BCE (Before Common Era instead of BC) and CE (Common Era instead of AD). The table with the map on page 62 shows the record of more than 3500 years—1500 years before the birth of Christ and 2012 (the year we are living in) years after Christ (i.e. 1500 + 2012 = 3512). The year of Christ's birth is marked because the Romans had carried out a census in their empire that year. The Islamic calendar begins with the year of the Holy Prophet's (PBUH) migration (*hijrat*) from Makka to Madina; this is also known as the Hijri calendar. Other religions and cultures like the Chinese and Indians have their own calendars like the ancient Aztecs and Persians had theirs.

The bar graph on page 62 gives the break-up of Pakistan's population in terms of ethnic groups. Because of their different backgrounds, people speak different languages too. Some of these are similar like Seraiki and Punjabi; some are different like Urdu and Pashtu. Refer to the pie chart on page 63 for the break-up of languages in Pakistan.

Which is the oldest language in present-day Pakistan? It is Brahvi, spoken in Balochistan.

The bulk or majority of Pakistan's population is Muslim but people of other faiths, Christians, Hindus, Sikhs, and Parsis, also live here and have been here for centuries.

The earliest to arrive in the subcontinent were the Aryans from Central Asia in c. 1500BCE and the last large group were the Mughals in 1526. Explain that after the Mughals, the next big migration took place in 1947 at Partition and the creation of Pakistan when Muslims from India migrated to Pakistan bringing with them their culture and languages. Move on to languages spoken in Pakistan. Ask the students to name the languages spoken here. Ask what the national language and official language are.

Rural and urban population: Explain the terms urban and rural; urban refers to the towns or cities (urbis=Latin for town) and rural refers to the countryside. This information is important because of the difference in urban and rural lifestyles, literacy, healthcare and occupations. Talk about this with the class. How is city life different from country life? What jobs do people do in cities, what jobs do they do in villages, the countryside? What are the facilities available in cities which are not available to people in rural areas? Talk about advantages and disadvantages of each.

Explain the chart (page 63) which shows ratio of infants' births and deaths in urban vs. rural areas. Ask the students to suggest reasons for high birth rate in rural areas (because of underage marriage, illiteracy, customs and traditions, no family planning); why it is slightly low in urban areas (later marriage, literacy and family planning). Among the poor class, more children mean more workers to add to the family's income. Sadly, they do not consider the problem of how to feed, clothe and educate the children or provide medical treatment for them if they fall ill.

The reasons for high death rates in rural areas are illiteracy, malnutrition, poor or no hygiene and health facilities. Same are the reasons for infants' death: no pre- and post-natal medical help, lack of hygiene, malnutrition, disease-prone climate, illiteracy, etc.

The infant mortality table for South Asia, on page 66, can be studied for comparison and the reasons for low rates discussed (education, better health facilities, better economy).

Explain how the high birth rate vs. low death rate affects the population: the population will grow beyond the planned facilities—overpopulation. Discuss the disadvantages of overpopulation.

1. More homes and space required for the people
2. More food and more jobs needed
3. Medical and recreational facilities are needed.

4. Unemployment, lack of proper planning result in poverty, social problems.

Population growth has been shown graphically. What do the bar graphs on page 64 tell us? Ask the students to calculate the growth in population from 1947 (when Pakistan was established) to 2007 i.e. after sixty years. The increase was fourfold (165 ÷ 40 = 4.1) which is very fast because food supplies and other necessities do not grow at the same rate. This is not good for a country as it results in growing poverty. Another fact is that nearly 50% of Pakistan's population today is under 30 years—are there enough schools and jobs for them?

What is the link between population growth and literacy i.e. the ability to read, write and understand basic language? Education is taking literacy further to increase one's knowledge and apply it to improve one's life. Discuss the importance of education. Literacy rates in Pakistan have increased from 1991 to 2007. See the textbook for detail. The literacy rate is higher in urban areas than in rural areas, and it is highest in Karachi. Educational facilities are far from satisfactory in rural areas. Point out that the literacy rate is higher in males than in females. Discuss the reasons—tradition, non-availability of schools within walking distance, early marriage, etc.

Population and density in South Asian countries

Explain the term 'density' i.e. the number of people in a defined space. To give a clear concept divide the class into two equal groups A and B. Group A will stand close to each other occupying less space e.g. ¼ of the classroom, while Group B will spread out in the remaining bigger area. The space between the students will be more. The space given to Group A will be called densely populated. The space for Group B will have sparse population.

In the light of facts studied for Pakistan, now consider other South Asian countries as well as a developed country (Japan). Besides over-population there are various reasons for population density: job opportunities are more in cities than in rural areas; a country like Maldives may have less land space; living conditions may be too harsh because of the climate and geography of an area. The population of Maldives is the lowest but the density is the highest! Only one fourth of the islands are inhabited and further more they are crowded by tourists.

The data in tables and graphs on pages 64 and 65 must be studied and explained to understand present and future population problems and how they can be dealt with. Which country has the lowest under-15 years' population? (Sri Lanka, 24%) It means there will be less people seeking jobs in future. Which countries have the highest percentage in this group? (Pakistan and Nepal, 38%) It means more jobs needed in future. Discuss the remaining countries.

Literacy percentage male/female: which country has the highest literacy rate? Maldives, 96% both for male and female. However, it is a very small country with a small population. Among the rest Sri Lanka has the highest literacy ratio for both male and female (92/89%) and the next is India (73/48%). The literacy ratio in Pakistan is 63/26, the lowest literacy rate in female population. What does this mean? Discuss the outcomes.

Study and discuss the implication of urban vs. rural population. All the countries have more rural population as they are all agricultural countries (except Maldives where fishing is the main occupation) In comparison, Bangladesh, Pakistan and India have higher urban population because of big cities and industry.

Move on to the graph showing the comparative study of Pakistan and Japan. Pakistan is an agricultural country while Japan is an industrialized nation. Explain the key which shows different age groups.

Compare the green bars (under 15 years): Pakistan has more people in this group than Japan—because the birth rate is higher in Pakistan.

Study the orange (16–64 years) and brown (65+ years) bars. In both these groups Pakistan has fewer people, one of the reasons being poor health facilities.

Age group 16–64 years means the working population. It is a serious problem for Pakistan because it is a developing country with a lower education rate and fewer job opportunities while Japan is an advanced country. Age group 65+ means older people, no longer working. Japan has to provide more social services to older people than Pakistan. Pakistan does not provide any such facility.

Infant mortality in Pakistan has been covered in detail on page 63; this topic may be linked with it and figures compared for South Asian countries and with Malaysia and Indonesia, also Islamic countries. Economic well-being has a positive effect as the data shows.

SAARC stands for South Asian Association for Regional Cooperation. All these countries belong to the same region; they are all agriculture-based, with many similarities, and are neighbouring countries. Cooperation will bring peace to this region. Now Afghanistan has also become a member of SAARC. For objectives and other details see the Teaching Guide and the textbook.

Main cities of South Asia: ask the students to locate the places mentioned in the table (page 67) in the *Oxford School Atlas*.

Study the flags on page 68 and find out what these flags depict about their nation.

Conclusion: Recap the main points of the content taught at the end of each period.

Reinforcement: Questions on page 68 should be discussed to ensure understanding and elicit answers. Questions 1, 3, 6 and 7 to be done for homework; Questions 2 and 4 are for discussion and individual response while Question 5 is one of general knowledge and common sense: Chinese is most widely spoken because China has the highest population in the world (soon to be overtaken by India!).

Activity: Divide the class into eight groups and assign each group to study one country and prepare a pictorial chart showing the people, their dresses, handicrafts and culture.

1. Match the races who entered the subcontinent, shown in Column A, with the dates of their entry shown in Column B.

	A		B
a)	Aryans	i)	300BCE
b)	Persians	ii)	1526CE
c)	Kushans	iii)	1500BCE
d)	Ghaznavids	iv)	1220CE
e)	Mughals	v)	990CE
f)	Greeks	vi)	50CE
g)	Mongols	vii)	500BCE
h)	Ghoris	viii)	1200CE

2. Fill in the blanks:-

   a) Life in towns and cities is called _____ life.

   b) Life in _____ is called rural life.

   c) Brahvi is an _____ language spoken in _____.

   d) _____ has the highest literacy rate excluding Maldives.

   e) The language most spoken in Pakistan is _____.

   f) The national language of Pakistan is _____.

   g) Presenting data in numbers, or as graphs, charts and tables is called _____.

   h) The largest migration in the subcontinent took place in the year _____.

   i) SAARC stands for _____.

   j) The language of education, technology and commerce in Pakistan is _____.

3. Choose the correct answers.

   a) The port city of Bangladesh is _____. (Khulna, Sylhet, Chittagong)

   b) The population density in Pakistan is _____ per sq. km. (33.5; 670; 212.9)

   c) Under-15 population in _____ is 24% of the total. (Bhutan, Bangladesh, Sri Lanka)

   d) The capital of Maldives is _____. (Moratuwa, Colombo, Male)

   e) Thimphu is the capital of _____. (Nepal, Bhutan, Kathmandu)

   f) The process of counting a country's population and compiling their details is called a _____. (database, census, record)

4. Draw a pie chart with coloured key and percentages to show the languages spoken in Pakistan. The languages are:

   Hindko, Balochi, Pashto, Punjabi, Urdu, Seraiki, Sindhi, other, Brahvi

Text pages 69–75

Discussion work is valuable here. Human rights are for the good of everyone, and if one person takes more than his/her share, others will have less. This is what laws, police, courts, and prisons are for—to ensure that people do not trespass the rights of others and do not fail in their own duties. Perhaps talk about what should happen to people convicted of

a) stealing (a) a 20-rupee bar of chocolate, (b) 1 million rupees worth of jewellery,

b) robbing with violence,

c) breaking the speed limit while driving a car: (a) 5 kph over the limit, (b) 70 kph over the limit,

d) telling lies about people—perhaps saying they are thieves or cheats. Does it make any difference if they write these things, or merely speak them? The first is libel and the second called slander, which is generally considered less serious than libel. Why?

Discuss the UN Charter of Human Rights. All rights are important of course, but these should be exercised and enjoyed, keeping in mind the right of others to do likewise. Also the right to live as one likes does not mean being a threat or a nuisance for others. Of the rights in the Charter, which six/ten do pupils consider the most vital for all? Which three do they consider most important for children?

Also discuss:

Laws are for everyone—people who are rich and powerful should obey them as much as anyone else; they must not use their power to get more than their due share.

A good citizen would be responsible, carry out his/her duties and obligations, respect the rights of others, take part in communal activities, and exercise his/her vote to be able to participate in the running of the country. Inculcate the spirit of nationalism: be proud of your country and its achievements; work to raise standards in your country. Point out the growth in the last thirty years.

Obedience—discuss rules/laws which pupils may think are misguided, if not altogether wrong.

Toleration—religious, political, social—is the mark of an enlightened and educated society. Emphasize that we must stand up for what we believe but not decry or mock others' ideas. They hold their beliefs as firmly and sincerely as we hold ours.

Values are the oil of society—they enable people to co-exist peacefully. Values common to the main religions are, for example, peace, love, respect for others; in Buddhism this extends to animals and all forms of life; forgiveness; acknowledgement of a Divine Being (not in strict Buddhism).

Respect for life: not to harm or take life. All religions uphold this. Perhaps with a good class this could be an interesting discussion. Are there any circumstances in which one human should take another's life? in war? in defence of one's beliefs? in self-defence? in defence of family, home, and property? This is likely to be controversial—almost

all western countries (except the USA) have done away with capital punishment. Why? It is uncertain: many cases have years later been found to be miscarriages of justice, and if the person is dead nothing can be done about it. If in prison (which is probably more feared than death, by many criminals) they can be released and compensated.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 75:

1. Values are essential to living a pleasant and beneficial life. This has been explained above. Some good values are respect for all, our elders, friends, siblings, teachers and the less fortunate; obeying the rules of our institutions and the laws of the land; being honest and truthful—this needs much courage at times; being caring and considerate.
2. Values common to Islam, Christianity, and Buddhism have been discussed above—helping the weak and oppressed; respecting difference of beliefs; valuing life and protecting it. This question is open to discussion as all major religions teach the same good values and morals.
3. Human rights are for the benefit of all. It helps the people to understand their rights and also serves as a reminder so that people do not trespass the rights of others.
4. A good topic for discussion.
5. Respect for life is valuing the life of all living things, not only a prohibition on taking life, but the protection and improvement of life for others; respect for law means obeying the laws of our faith, our country, our community, our school, our parents; respect for the environment is to protect the environment and make it sustainable for all and not to harm it.
6. Students to discuss and share their experiences with the class.

LESSON PLAN 19

Topic: Civic sense and duties

Duration: Two periods (40 minutes x 2)

Objective: To raise awareness of importance of civic rights and duties

Resources: Textbook, atlas, Internet, Teaching Guide

Introduction:

This is a very important chapter as it reinforces values, the importance of law and order in society, and the rights and responsibilities of citizens. Prepare by reading through the Teaching Guide text too. To introduce the topic ask questions such as:

- Do you know how many types of people make up the population of our country? What languages do they speak? (Refer to the last chapter—Pathans, Balochis, Sindhi, Punjabi, migrants, etc.)
- What different religions do you find in Pakistan? (Islam, Hindu, Christianity, Sikh, Zoroastrian (Parsi), etc.)

Now tell the class that whatever language the people may speak or religion they follow, whether they are rich or poor, educated, literate or illiterate, they are the citizens of Pakistan, and as such they have rights as well as duties.

Explanation: This chapter links with the last one which is about the population of Pakistan. Explain that every government has the duty and responsibility of ensuring the safety and security of the country and its people, and looking after their welfare i.e. ensuring that they have shelter (a place to live), food, education, access to health care, and job opportunities, and to ensure that there is law and order and justice in the country. The Constitution of Pakistan gives its citizens these rights.

In return, the people have certain duties which they must fulfil if they want to live well according to their means. These duties and laws are also defined in the constitution. Discuss what these duties are and note the responses on the board. Refer to the chapter text, pages 71 and 73. Some of the rights are discussed here, such as:

- All people are equal before the law.
- All people have the right to life and liberty (freedom).
- All people have the right to personal safety and security.
- All have the right to practise their religion.

These basic rights are recognized by the world community; after World War II the United Nations drew up the Charter of Fundamental Rights. Give a brief history of the UN (established in 1945) and the charter. Ask the students to read the rights given on page 72 of the textbook. Discuss and explain each point.

Now discuss what we must do as good citizens—obey and respect the laws of the country, be honest, respect our elders and each other too, help those who need support, pay our taxes, etc. and love our country and be proud to be a Pakistani! Stress the importance of doing our duties if we want to enjoy our rights. Also emphasize that our rights do not allow us to step on other people's rights and freedom.

Values: This is a very important topic. Explain what is meant by values—having the right attitude and habits so that we make ours and others' lives peaceful and worthwhile. Some basic values have been described on pages 73–74. Discuss these and brainstorm for more.

Respect: Ask how one can get respect. To get respect we have to respect others: it is a two-way deal. Talk about how to respect our elders, teachers, parents, and peers (friends and siblings).

Obedience: Define obedience—it means to do what we are told to do. Obey your religion and the law of the land because they are made for your good. We may not like some laws but we cannot ignore them. However, we can struggle to change them if we think they are unfair. With reference to the points on page 71, discuss how children can be good citizens.

Traffic laws: what do you see on the roads every day? Does everyone know and follow traffic rules? Discuss why these rules should be followed and what the result would be otherwise. Explain that obedience to the laws of the country is compulsory as it leads to a peaceful environment where people can live and work in security.

Tolerance means willingness to accept others' opinions, beliefs and behaviour, even if we disagree with them. Getting annoyed at the slightest provocation amounts to intolerance: people belong to different cultures and religions, and have different ways of doing things and expressing themselves. We should not make fun of people, dislike them or look down on them because they are different. Tolerance is the best way to peace and the mark of civiized society.

Peace and friendship: As human beings we are all members of one big family—humanity—and peace and friendship are the only way to make this world worth living in.

Children of South Asia: In the previous chapter we read that the under-15 population is growing in the South Asian countries as compared to western countries. Compare the lives of city children vs. village children in South Asia. Discuss the differences and similarities. Conclude that all the children have certain rights guaranteed by the United Nations International Children Education Fund (UNICEF) under the Convention on the Rights of the Child, i.e. anyone under the age of eighteen. This document came into force in 1990, and as of November 2009 it has been signed by 194 member countries of the UN. UNICEF is active in more than 100 countries, helping solve problems of children's health, hunger, security, and education. In 1965 UNICEF was awarded the Nobel Peace Prize for its work for the aid of children.

Conclusion: Recap the main points.

Reinforcement: Questions on page 75 to be discussed in class and done in writing for homework.

Activities:

1. The students may be encouraged to write a play covering rights and duties, tolerance, peace and friendship with the help of the teacher, and act it out. This will require at least a month for preparation and rehearsal and can be presented formally.
2. Organize a debate: 'Tolerance is the key to world peace'.
3. Collect more information on UNICEF.

1. Fill in the blanks keeping in view the United Nations Charter of Human Rights.

   a. The right to _____ and speak as one likes.

   b. The right to life, _____ and personal _____.

   c. The freedom from _____ laws.

   d. The right to a _____ trial.

   e. The right to be considered _____ until proven guilty.

   f. The right to follow one's _____.

   g. The right to have _____ gatherings.

   h. The right to acquire _____.

   i. The right to have a good _____ and a good _____.

   j. The right to own _____.

2. Write short answers to these questions.

   a. What are the basic requirements for peace and security in a country?

   _____

   _____

   b. Why should we follow traffic laws?

   _____

   _____

   c. How can we earn respect from others?

   _____

   _____

   d. How can we show tolerance to others?

   _____

   _____

   e. UNICEF is the acronym of _____.

   _____

f. How does UNICEF help children?

_____

_____

g. Which award was given to UNICEF? When and why?

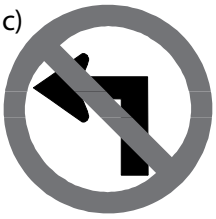
_____

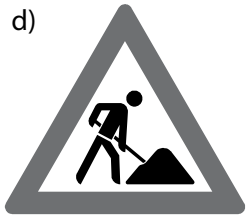
_____

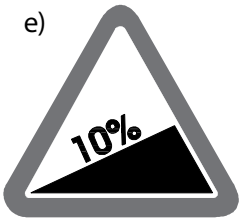
3. Write in words what these traffic signals show.

a) 

b) 

c) 

d) 

e) 

a) _____

b) _____

c) _____

d) _____

e) _____

CHAPTER SIXTEEN

EARLY PAKISTAN

Text pages 76–78

Refer back to the list of the main invaders of the subcontinent on page 62 of the textbook. Though most of these moved on to the more fertile areas of what is now India, many did settle in the present Pakistan. This gives the great diversity of ethnic groups, languages, customs that we have today.

Mohenjo Daro and the whole Indus Valley Civilization are something of a mystery. Mohenjo Daro was quite remarkable for such an ancient city, in its sophistication, despite the fact that the people had virtually no metals except a little bronze. Two-storey houses, bathrooms, toilets, drainage systems (however crude) were virtually unique in this era. The social structure seems equally sophisticated, with what appears to have been police/watchmen huts at intervals along the streets. There is no trace of palaces, hence it is believed that this was a theocracy—ruled by priests—and the whole of the Indus region seems to have been very similar. In the centre was an artificial hill of mud-dried bricks, topped with the temple and bath complex. The zigzag streets may have been to break the force of the winds. The aerial shot on page 76 shows a strange building on the left, which could have been a later Buddhist stupa (temple).

ANSWER TO QUESTION IN TEXT, PAGE 76:

The zigzag streets are thought to minimize the effect of winds, which funnelled along them.

ANSWER TO QUESTION IN TEXT, PAGE 77:

We know of the lives of the people from archaeological evidence—the fragments of cloth preserved in the dry atmosphere show they grew cotton and wove textiles. A few fragments of crude copper tools, gold and small bronze items, but no iron or other metal was discovered. The total absence of any form of coinage, usually the most durable of items, indicates they had no monetary system, but relied on barter or payment in kind. Fossilized peas, beans, lentils, and simple grains have been found in association with fires. They can become carbonized and will last for thousands of years.

At its peak, the Indus civilization seems to have been a peaceful, perhaps authoritarian, society employed in agriculture. The people—the Dravidians—were characterized by their conquerors, the Aryans, as 'the flat-nosed ones'. One of the few metal objects recovered from the site, a tiny bronze dancer wearing bangles and anklets, seems to bear this out. Her face certainly shows a broad, flat nose.

It seems strange that a society so advanced in many other ways did not develop metals, which were fairly widely known in the Fertile Crescent—Mesopotamia, Sumeria, and Babylon—or writing, apart from the undeciphered symbols on some seals, which as the text says, may be a merchant's name or cipher.

The priest's statue found at Mohenjo Daro bears a very strong resemblance to those of the Fertile Crescent, with the sky-symbol robe across one shoulder, the unusual beard pattern and the prayer amulet and headband. There seems to have been considerable contact, probably trade, with Sumeria and its surrounding regions.

There had been a steady decline in the Indus civilization for centuries before its final collapse in the onslaught of the Aryans. No one knows why—climate changes, an alteration in the course of the river bed, disease, exhaustion of the land through overcropping, stripping of tree cover, which left the soil exposed to erosion. The final onslaught was probably not well opposed. The water symbolism may well be incorporated in the present Hindu religion. The only traces left of the Dravidians in this region are in the physical features of some people in southern Balochistan and more so in the Brahvi language.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 78:

1. From the ruins it is assumed that Mohenjo Daro was a remarkable and sophisticated city. It was well planned and laid out symmetrically as can be seen from the ruins. Houses were made of mud and bricks; they had toilets and a good drainage system. The city also had a great bath and the remains of a great hall with pillars suggest that it may have been a parliament or government building.
2. A question for general discussion based on the possibilities given above and in the text.
3. Comparison of ancient and present-day bullock carts: wheels virtually identical; curved wooden chassis; two oxen power; pole sticking up from chassis to support load. These are present in the modern cart, but only the holes remain at the back of the ancient one; driver in same position.

LESSON PLAN 20

Topic: The early history of the Indus region

Duration: One period (40 minutes)

Objective: To build on students' knowledge of the Indus region

Resources: Textbook, *Oxford School Atlas*, encyclopedia, Internet, Teaching Guide

Introduction: In Chapter 14 the students have already learned about the ancient people of Pakistan. Revive their memory using pointers such as:

- Who were the first people to enter the subcontinent from the North-west? (The Aryans in 1500BCE through the Khyber Pass)
- Who followed them and settled here permanently? (See the table on textbook page 62)
- Why did they settle here? What attracted them in this region? (Pasture for their animals, scenic beauty, plenty of water and food, better opportunities)
- Who were the original inhabitants of the subcontinent? (The Dravidians)

Explain that since these invaders belonged to different races, religions, and cultures, the subcontinent and present-day Pakistan are a mixed bowl of people with a variety of languages, religions and culture.

This chapter tells us about the people of the ancient Indus region, who lived here thousands of years ago (Bronze Age, 3300–1600BCE, but mainly 2600– 1900BCE), and their religion and culture. Around the same time, three other great ancient civilizations flourished in (a) the Nile valley, Egypt (b) between the rivers Tigris and Euphrates in Mesopotamia (present-day Iraq) and (c) in the Huang Ho valley of China.

Ask whether the students have ever been to Mohenjo Daro, the most ancient city of Pakistan. Have they heard of Harappa? Mohenjo Daro is near Larkana, on the River Indus and Harappa is on River Ravi, a tributary of River Indus. The remains of deserted villages and towns of the Indus Valley Civilization were

discovered in the 1920s. The civilization extended along the River Indus from the foothills of Himalayas to the Arabian Sea (about 1000 miles). It covered the whole of Pakistan and also extended eastwards towards the Ganga-Jamuna rivers' basin. The people living here were known as Dravidians.

Discuss the main features of the Indus Valley Civilization: planned towns, construction, sewerage system, the huge central bath, granaries, but no palaces. The important buildings, possibly an assembly hall, were built on raised ground. Some form of writing has been discovered on the clay seal tablets but it has not been deciphered. Discuss what the shown seal could possibly mean.

Remains of grains, cotton cloth and basic tools show that farming was practised here. No coins have been discovered which means that payments and trade were carried out using grain and simple goods. However, pottery, clay toys, small bronze and copper statues, and jewellery using semi-precious stone beads, silver and also gold have been found; some of these are on display at the small museum near the Mohenjo Daro ruins.

Tell students that an even older site, at Mehrgarh in western Balochistan, near the Bolan Pass was discovered in 1974 by a French team led by Jean-Francois Jarrige; Mehrgarh dates back from 7000 to 2500 BCE and is the earliest farming and herding site found. Also inform students that these sites are protected under UN's World Heritage Act.

Ask them how this civilization vanished—was it due to some natural calamity—floods or earthquake—or climate change causing the rivers to change their course, or was it an invasion? Do they remember what had happened in the 2005 earthquake in northern Pakistan? More recently, how many villages have been devastated by the floods? We can only guess the reasons that led to the end of this civilization around 2000BCE.

Conclusion: Recap the main points.

Reinforcement: Questions 1, 2, and 3 on page 78 should be done for homework after class discussion.

Question 4 is a group activity to be done with the teacher's guidance.

Further activity: ask the students to do some research on the Indus Valley Civilization sites and compare their features to our present-day cities. What similarities and differences do they find? What amazes them most? Have an open discussion.

1. Who were the first people to enter present-day Pakistan? What was their route and when did they arrive here?

2. Modern Pakistan has a wide range of races, languages and customs. Why is this so?

3. Choose the correct answer.

   i) The cities of Mohenjo Daro and Harappa were discovered in

   a. 1820s b. 1920s c. 4500BCE d. 2000BCE

   ii) Construction in Mohenjo Daro and Harappa was done using

   a. wood b. cement c. mud bricks d. steel

   iii) The original inhabitants of the Indus Valley Civilization were

   a. Aryans b. Mughals c. Arabs d. Dravidians

   iv) The Indus Valley people were

   a. warriors b. invaders c. scholars d. farmers

4. Give reasons to explain the following statements.

   a. It is believed that the Indus Empire was ruled by priests.

   b. The people of Mohenjo Daro used grains or goods for payment or trade.

c. Archaeologists found fragments of cotton cloth during excavation in Mohenjo Daro; similar cloth pieces were also found in Mesopotamian excavations.

_____

_____

d. A huge bath with steps leading to it, a proper sewage system with drains, and houses with water-proofed floors were discovered.

_____

_____

THE ANCIENT INVADERS

Text pages 79–82

The Aryans: They are an important group of human beings along with the other two main groups, Negroid (dark complexion, long-legged, flat noses, crinkled black hair) and Mongoloid (China, Japan, Korea, Inuit, etc. short, very pale complexion, apparently slanting eyes, and straight black hair). The Aryans belong to the Indo-European group of people, which includes Hindus, westwards to Europe. They range from brown to white, hair from black to blonde and a wide variety of eye colours. Perhaps the main significance of the Aryans who originated in Central Asia, in the area of the Caspian Sea, is their language. This became Sanskrit, which is the basis of most modern European and West Asian speech. Look at the table on page 80: these are only a few of the words in which their origin can be seen. Many of these words are basic human relationships (mother, son, child, etc.) or very important objects (sun, fire, etc.).

Make sure the pupils know of the caste system—officially abolished in India, after Independence, but still existing in many covert ways. This may be a point of discussion as progressive cultures do not have any scope for this kind of discrimination against people—yet systems that have been entrenched for millennia are hard to dislodge. The outcastes were considered so low that if the shadow of one of them fell across the food a Brahmin was eating he would throw it all away.

The Persians: They were a highly cultured and developed people who encouraged the flow of ideas from east to west and vice versa. Taxila, the Persian capital of the subcontinent, later became a Buddhist centre of learning and the remains shown at the bottom of page 81 are actually of a Buddhist monastery. For many years, Taxila was the cultural capital of the known world. The extent of the Persian Empire, in the sixth century BCE, and its influence can be judged by the area that it covered (see map, page 81).

Alexander and the Greeks: He succeeded to the throne of Macedonia (northern Greece) in 336BC, aged only 20. His tutor was the great philosopher Aristotle. Tell the students the story of Alexander's meeting with the eccentric philosopher Diogenes, who lived in an empty barrel and had no possessions except his cloak and stick. 'I am Alexander the Great' said the emperor. 'And I am Diogenes, the Cynic,' replied the philosopher. The emperor asked if there was anything he could do for the philosopher. 'Yes,' said Diogenes. 'You can move a bit to one side, as you are blocking the sun's light from me….'

In the remaining 13 years of his short life, Alexander conquered the biggest empire ever known, from the Mediterranean, west of Egypt, to Asia Minor, Persia and up to River Indus, on the east; seven or eight cities were named Alexandria but only the one in Egypt now remains. After defeating Porus on the Jhelum, Alexander was forced to turn back towards Persia. He is believed to have sailed down the Indus and then marched along the Makran coast. He was taken seriously ill during this journey and died at the age of 33 years.

There's also the story of Alexander's meeting with the defeated Porus, who when asked, demanded to be treated as a king, and was treated with due accord.

Initially Alexander was a very sound ruler, inducting conquered men into his army. He appointed governors for the defeated countries, and allowed the latter to keep their

own laws and customs. In Persia, he married a Persian princess and encouraged many of his soldiers to many among the Persians. But in some conquered countries, he expected the people to bow down to him, just as they would before any powerful tyrant.

Alexander's great military device was the phalanx. A solid square of soldiers (10 or more men in each direction) armed with long spears, short swords and shields, stood facing the enemy. The spears were about 5 metres long and were held out in front at an angle. The butt end of the spear was stuck in the ground, held in place with the foot. (See the picture on page 82.) The phalanx was a kind of miniature fortress and any human or animal that approached was impaled on the spears. The weakness of the phalanx was that it was not very manoeuverable.

The importance of these invasions lies in the cultures and traditions they left behind, thus adding to the culture of the subcontinent.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 82:

1. Aryans were the nomads from Central Asia who came in to the subcontinent of Asia and settled here. The Aryans defeated the local people and soon took over most of India. They are the forefathers of the present Hindus and the Hindu religion is based on the beliefs of the Aryans.
2. The caste system was brought by the Aryans. This system, based on occupations, was very rigid and people could not change their caste.

   According to their occupation the people were divided in four castes as mentioned below in order of rank and importance:

   Brahmins or the priests who conducted all religious activities;

   Kshatriyas or the warriors i.e. the kings and their soldiers;

   Vaishyas who were the traders or businessmen and farmers;

   Shudras who were the lowest in rank comprising of the servants and labourers.
3. Sanskrit, the language of the Aryans is important as it is the basis of many other languages such as Hindi, Latin, French, and English.
4. The Greeks were able to defeat their opponents because of the fighting strategy that they used, which was the phalanx. A phalanx was a type of a miniature fortress of soldiers who attacked their opponents with spears.
5. Timeline to be made with reference to major invasions in the subcontinent.

LESSON PLAN 21

Topic: More about the people who came into the subcontinent

Duration: Two periods (40 minutes x 2)

Objectives: To inform students about Aryan society and religion; other invaders, i.e. Persians and Greeks

Resources: Textbook, atlas, encyclopedia, Internet, Teaching Guide

Introduction:

This chapter continues with the topic covered in Chapters 14 and 16. Here we will discuss the social and religious customs of the Aryans, who were the largest group of ancient people who came and settled in the subcontinent. Later peoples who followed also left their mark but Aryan influence lasts to this day on the subcontinent, especially in the Hindu religion.

Teachers are advised to read through the Teaching Guide for the comprehensive and useful notes provided by the author.

Begin by asking the students who the original inhabitants of the subcontinent were. (Dravidians) Who were the first people to invade the subcontinent? (Aryans) Where did they come from? (Central Asia, through the Khyber Pass) What did they do for a living? (They were nomads wandering with their flocks of animals.)

Discuss what happens if there is a war between two groups or communities: the weaker ones are defeated, the stronger ones are the conquerors. Mention that the Aryans were fiercer; they used weapons made of iron and bronze; they defeated the Dravidians who were peaceful farmers.

What happens to a defeated people? (Some are killed; some flee to other parts of the country and, in ancient times, some were enslaved.)

Explanation: When the Aryans defeated the local population, they took over their lands and farms. They moved from the Indus plains to the Ganga-Jamuna valleys where the land was fertile. They became farmers and later fought amongst themselves for the land.

What was the impact of the Aryan invasion? The most important effects were language, religion and the caste system.

The caste system: Mention that the Aryans are really the ancestors of modern Hindus. Explain how the caste system was developed by them; they divided the people mainly into four groups according to their occupations. These were: 1) Brahmins 2) Kshatriyas 3) Vaishyas and 4) Shudras. The details of their tasks are explained on page 79. The non-Aryans were even below the Shudras and were 'outcastes'. Discuss if this was a fair division; should people be divided this way? Later the Hindus made very strict religious laws for the castes.

Religion: Being close to Nature, as nomads, the Aryans worshipped the natural forces as their gods and goddesses. Among these the important ones are Brahma, the creator of the Universe; Vishnu, the peaceful sustainer of all life; Shiva, all powerful, who controls death; Durga, the mother goddess; Kali, the dark fearsome goddess; Sarawati, the goddess of knowledge; Lakshmi, the goddess of wealth; Krishna, who is linked with the Vedas, and Rama who is the hero of the Ramayana. Both Krishna and Rama are supposed to be different forms of Vishnu. Compare this with the monotheistic religions of the Jews, Christians, and Muslims who worship the one and only God.

Language: This is one of the most important impacts: the Aryans spoke Sanskrit, the most ancient language and base for the Indo-European languages. Some examples on page 80 show the similarity in the sounds and meanings of common words. (This can be the basis of an extended and interesting discussion linked to the English class.)

Persians: Go back to the timeline on page 62—who followed the Aryans? When did they come and from where? The Persians entered the subcontinent in 500BCE; they came from western Asia, through the Khyber Pass. Persia is now called Iran. The extent of their empire can be seen in the map on page 81. The Persians were a strong nation and had a fairly advanced civilization. Compare this map with the maps on pages 36-37 of the *Oxford School Atlas* to see what a large empire the Persians had. They conquered the Gandhara kingdom (now in Pakistan) and made Taxila their capital. Ask the students to look for Taxila on the map of Pakistan. It still exists and has historical importance.

Explain that when two cultures meet they influence each other. The Persians brought some new ideas with them: they introduced the use of money; new architectural style, irrigation schemes. From the Aryans, they learned about new medicines (to this day, Indian traditional medicine is called 'Ayurvedic' medicine) and the making of better steel for better weapons.(Why were better weapons important?)

The Greeks: The next major invasion whose effects have lasted in our part of the subcontinent was by the Greeks. They were led by the charismatic Alexander, who is known in Urdu as *Sikander-e-Azam* (Alexander the Great). Talk about Alexander's early training and why he was so famous. (The Teaching Guide provides good detail.) The illustration and its caption on page 82 highlight the Greeks successful war strategies. On the human side, discuss the encounter between Alexander and Porus, the ruler of the Punjab kingdom. Why did Alexander return the kingdom to Porus? What does it show about his character? Why didn't Alexander go further east into India? Explain what happened to his empire after his death.

Impact of the Greeks: besides the war strategies which the Aryans learned from them, the Greeks left behind their governors to rule the conquered lands in their name; many Greek soldiers also stayed behind. (The Kalash people of northern Pakistan are believed to be the descendants of these Greeks; many people in the north-west of Pakistan also have Greek features.) A new culture of art, architecture and learning led to the Gandhara civilization. What could have happened if Alexander had not died so young would be an interesting topic for discussion.

Conclusion: Recap the main points about the three early invasions.

Reinforcement: For homework, Questions 1 to 5 from the textbook to be done in their notebooks.

Activity: Divide the class into three groups to research and gather information about Aryans, Persians and Taxila, Alexander and Gandhara. Their findings may be presented as posters/charts along with illustrations for class display.

1. Match the castes shown in Column A with their occupations in Column B.

	A		B
a)	Brahmins	i)	traders, businessmen
b)	Kshatriyas	ii)	labourers, servants
c)	Vaishyas	iii)	priests
d)	Shudras	iv)	kings, soldiers

2. Name three languages which have Sanskrit as their base.

_____

_____

_____

3. Choose the correct answer.

a) Persia is modern-day _____.

i) Afghanistan ii) Tajikistan iii) Iran iv) Syria

b) Alexander was a _____ king.

i) Greek ii) Egyptian iii) Persian iv) Turkish

c) The Persians conquered the _____.

i) Mohenjo Daro empire ii) Gandhara kingdom iii) Greece iv) Mauryan kingdom

d) Porus was the king of _____.

i) Sindh ii) Balochistan iii) Punjab iv) Iran

e) Alexander defeated Raja Porus in a battle on River _____.

i) Jhelum ii) Ravi iii) Indus iv) Ganga

f) Alexander died at the age of _____.

i) 43 years ii) 53 years iii) 38 years iv) 33 years

BUDDHISM AND EARLY KINGDOMS

Text pages 83–86

Buddhism began in north-eastern India, in the sixth century BCE. The fundamental beliefs of Buddhism are the cycle of rebirth, according to one's deeds, moderation in life—the middle path—and the equal status of all people. Buddhism became a popular creed and was spread by missionaries beyond the subcontinent. Although it is not so common in India now, it is still practised in Myanmar (Burma), Thailand, Cambodia, Laos, Vietnam, and in parts of China, Korea, and Japan. Because of its belief in non-violence, it is now becoming popular among western youth.

From the sixth to the third centuries BCE, Buddhism was the main religion in the northern half of the subcontinent. Remains of Buddhist stupas, monasteries, and statues of the Buddha are found in north-west Pakistan in Gandhara, Taxila, and Swat as well as Afghanistan. (The famous statues in Bamiyan were blown up by the Taliban in 2001). The museums in Pakistan also have copies of 'The fasting Buddha' and in Karachi, a capital of one of the pillars. (The wheel of life can be seen in the picture on page 84 of the textbook.)

The Mauryas: Perhaps the most important ruler of this east Indian dynasty was Asoka. He was deeply moved by the carnage at the battle of Kalinga, and converted to Buddhism. He brought in many social reforms, well ahead of their time, but the idea of social equality was not welcomed by the upper-caste Hindus. After Asoka's death, the kingdom gradually reverted to Hinduism under the Gupta dynasty.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 86:

1 Some of Buddha's teachings are as follows:

Rebirth—people are reborn according to their 'karma' or deeds; good deeds result in better life and bad deeds result in being born in a lower state.

Importance of leading a moderate life

Equal status for all people

Non-violence

Working honestly and diligently

2. Asoka, the Mauryan emperor, became a Buddhist after the Battle of Kalinga, when he saw the death and sufferings of the soldiers and prisoners.

3. A general discussion on reforms in the twentieth century as compared to Asoka's reforms, with reference to the drawings and text on pages 85–86.

LESSON PLAN 22

Topic: Buddhism, its teachings and impact on the subcontinent

Duration: Two periods (40 minutes x 2)

Objectives: To know about Buddhism, its background and philosophy

Resources: Textbook, atlas, encyclopedia, Internet, Teaching Guide

Introduction: Ask the following questions for a brainstorming:

- Name different religions practised in the world.
- What do all the religions teach their followers? (probable answer: to follow the path of truth and love fellow humans)
- Who were the founders of Christianity and Islam?
- Who was the founder of Buddhism? (Gautama Buddha; the students are expected to know about him briefly.)

Explanation: Briefly recap Buddha's life: who he was, when and where he was born, and his early life; why he left his palace, how he was touched by human suffering and what he thought about lessening this suffering, and how he was guided to the truth. This is the main ideology of Buddhism. Explain his Four-fold Noble Truths, the Eight-Fold Path and abstaining from violence for a better life for all. (See the textbook and Teaching Guide for details.)

Explain what Buddhism means and why Prince Siddhartha was given the title of Buddha.

Explain the beliefs of Buddhism. The cycle of rebirth: explain *karma* which means that our actions determine our fate after death and in the next life; Nirvana means a state of peace, free from suffering, wants, worldly problems, when the mind/soul feels it is part of ultimate goodness. (See the textbook and the Teaching Guide for details.)

Explain the period of Buddhism's beginning and how far it flourished. Name the countries where Buddhism is still practised. (Sri Lanka, some parts of Nepal and northern India, Tibet, Myanmar, Thailand, Cambodia, Vietnam, in some parts of China, and in Korea and Japan.) Ask the students to look up these countries in the world map (*Oxford School Atlas for Pakistan*).

Buddhism left a strong and widespread impact. From the sixth to the third centuries BCE it was the main religion in the northern half of the subcontinent and ruins of Buddhist stupas, monasteries, and statues are still found here and are regarded as a part of the world's heritage. Travellers and followers from as far away as China came to the subcontinent for pilgrimage and have left informative accounts of life in this region.

The Mauryans: One of the most famous converts to Buddhism was Asoka, the Mauryan emperor. Unlike the invaders from the north-west, the Mauryas were a dynasty from eastern India who conquered a huge area of the subcontinent. The textbook briefly explains how the death-strewn battleground of Kalinga made Asoka realize his actions and he swore to non-violence and became a Buddhist.

Talk about how he spread Buddhist teachings. Discuss Asoka's reforms and how made his laws known to his people (through his edicts, carved on pillars, rock faces, etc. What was his most important reform? (Abolition of caste system and message of equality) Who did not agree with these laws? (It was the Brahmins and Kshatriyas as these edicts were against their interest and whose superiority was reduced.)

The weak rulers who followed Asoka could not tackle the powerful upper caste Hindus who returned to power after the collapse of the Mauryan Empire.

Some of Asoka's reforms are shown on page 86. Discuss these with the students for a reinforcement activity and for question 3, page 86.

Conclusion: Recap the main points.

Reinforcement: For homework, the students should do Questions 1, 2 and 3, page 86.

Activity: Divide the class into groups of four or five. They should choose any one country where Buddhism is practised, and study their culture and way of life for a class or assembly presentation.

1. Write brief answers to the questions below.

   a) When and where did Buddhism begin?

   _____

   b) Why did Siddhartha leave his palace? How old was he?

   _____

   c) Briefly explain what is meant by 'karma'.

   _____

   d) Which one of Asoka's reforms could have been most popular with the common people?

   _____

2. List Buddha's Four-Fold Noble truths.

   i) _____

   ii) _____

   iii) _____

   iv) _____

3. Choose the correct answer.

   a. The Mauryans invaded the subcontinent in about

      i) 500BCE ii) 100CE iii) 300CE iv) 300BCE

   b. The Mauryans invaded the subcontinent from

      i) Bihar in the east ii) Khyber Pass in the west

      iii) Khunjerab Pass in the north iv) Sri Lanka in the south

   c. Asoka's laws were known as the

      i) Eight-Fold Path ii) edicts iii) rock carvings iv) reforms

   d. The event that changed Asoka's beliefs was

      i) an earthquake ii) the birth of Siddhartha

      iii) the Battle of Kalinga iv) the death of the Buddha

4. Complete the following statements about Asoka's reforms.

   a. He abolished the _____ _____.

   b. _____ were opened for people and animals.

   c. There were rest homes for _____.

   d. The killing of wild animals was _____.

   e. _____ were made less severe.

   f. All _____ were treated alike.

CHAPTER NINETEEN

THE GANDHARA CIVILIZATION

Text pages 87–89

The Gandhara civilization, in the north-west of the subcontinent, was Buddhist by belief; however, this region was at the crossroads of various cultures and was strongly influenced by the Greeks after Alexander's conquest. This is evident from the style of art and architecture in this region. Till the arrival of the Bactrian Greeks, Buddha had always been represented by sculpted symbols, but then came the statues of Buddha, in the typical Gandhara style.

It is believed by some scholars that the Kafirs of the Kalash valley, in northern Pakistan, are the descendants of the Bactrians as their language, religion and way of life are very different from that of the subcontinent but quite similar to those of the Bactrians.

The Kushans (50–250CE) were invaders from a huge empire in Central Asia: the statue of their best known ruler Kanishka (page 88) shows the heavy clothing worn by the people of Central Asia, because of the cold, windy climate. The Kushans were Buddhists. The street scene shown on a carved lintel (page 88) reveals considerable prosperity and a horse-drawn vehicle that looks like a bus. Under Kanishka, Gandhara developed as a seat of culture and learning and the religion spread to China.

Page 88: Picture of street scene in the 2nd century—ask pupils what they find interesting and modern

Note the two-horse drawn bus, driver with a whip; people on horseback—no stirrups as these were invented much later.

The Gupta dynasty (350–650CE), founded by the famous Chandragupta, was a golden age for the subcontinent, with almost modern social facilities, in a simpler form. However, in 480CE, the Guptas were invaded by the Huns, a savage nomad race from Central Asia, whose barbarity was proverbial. They ruined the civilization and were finally defeated in 550CE after which Harsha, the last Buddhist ruler in the subcontinent, rebuilt the Gupta Empire.

We can see how enlightened rulers valued knowledge and appreciated the need to provide for their subjects, even if it was in an authoritarian way. The interaction between different cultures and peoples, as travel increased, may also have contributed to this progress. Accounts of the reigns of the well-known Gupta, Maurya, and Kushan rulers have been written by Chinese travellers and pilgrims who came to the subcontinent for trade and also to visit the sacred Buddhist sites.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 89:

1. Gandhara was an important state in the north-west Pakistan due to many reasons. Some are listed below:

   It was on the crossroad of trade routes.

   Because sculptors, artists, writers, and teachers settled here, it was a great place for learning.

   New styles of art were created here, especially sculpture.

Taxila, the capital city, was flourishing and prospering and had many monasteries and temples.

2. The Kushans came from Central Asia; they were Buddhists; their most famous ruler was Kanishka. Under the Kushans their empire in the subcontinent prospered. Buddhism spread into two branches during this period.

3. Harsha was a very forward-looking ruler who supported education and restored the Nalanda University; he rebuilt the Gupta Empire that had been destroyed by the Huns. He was also an accomplished writer in his own right. We know about Harsha from the accounts of Huien Tsang, the Chinese scholar.

LESSON PLAN 23

Topic: The impact of Greeks and Buddhism in the north-west

Duration: Two periods (40 minutes x 2)

Objectives: To study the effects of Greek invasion and Buddhism in this region

Resources: Textbook, atlas, encyclopedia, Internet, Teaching Guide

Introduction: This chapter is a continuation of the last chapter about Buddhism. Ask a few questions about Buddha and his teachings to recap previous lessons. Mention that Gandhara was one of the main centres of Buddhism. Define its boundaries; it was a state in the north-west of the subcontinent, covering the Vale of Peshawar and parts of the valleys of the Kabul and Swat rivers. Ask the students to see the map of Pakistan in the *Oxford School Atlas* to locate this region.

Explanation: The location of Gandhara was important at it was at the crossroads of the trade routes from India, China, Central and western Asia. Point out these places in the map of Asia (pages 32-33 of the *Oxford School Atlas for Pakistan*). Its capital, Taxila, was rediscovered in the latter half of the 19th century. Ask the students to locate Taxila on the map of Pakistan. Ask if anyone has visited the place. If yes, ask them to give their impressions. The other important city here was Purushapura (modern Peshawar). Explain Gandhara's importance as a centre of art and literature. Refer to the text on page 87; discuss the effects of the Greek invasion (on art, sculpture, architecture, language).

The famous Chinese scholar Fa-Hsien came here in the 5th century BCE to study Buddhism and was impressed by it. Another Chinese scholar who came to Taxila in the 7th century CE found the city in ruins. Who was this scholar? Why was the city in ruins? Refer to the textbook for answers. After the collapse of the Mauryan Empire, Greeks settled in Bactria (modern Afghanistan) invaded Gandhara once again. Their most famous ruler of this time was Menander (155–130BCE). They also extended trade routes into Europe.

The Kushans were from Central Asia (see the table on page 62 of the textbook). They invaded north-west of the subcontinent c.50CE and went as far east as Varanasi (Benares). At its peak, the Kushan Empire stretched from Ferghana in the north to Sindh and the Deccan in the south, and from Persia in the west to Bengal in the east, and up to China under Kanishka, their greatest ruler. He was a Buddhist and during his rule, Buddhism split into two branches. The major cities of the Kushan Empire were Peshawar, Bagram, Taxila, and Mathura. The Kushans linked the Silk Road trade route, through the Indus Valley, with the sea routes of the Indian Ocean. The Kushan kingdom broke up in 250CE.

The Gupta Empire: The next dynasty to have an impact was the Guptas whose founder was Chandragupta (not to be confused with Chandragupta Maurya, Asoka's grandfather). This dynasty came into power in 320CE but much of its empire was run over by the Huns in 480CE. Explain the background of the Huns and

when they were defeated. The other notable rulers were Samudragupta, known for the horse sacrifice and his son Chandragupta II (Vikramaditya). The Gupta dynasty came to an end in 550CE. The next important ruler of this region was Harsha, from Haryana in Punjab, who rebuilt the Gupta Empire.

Discuss why Harsha's rule is called the Golden Age—learning, education, good government, law and order. The Nalanda University became a centre of learning. Harsha himself was an accomplished writer with plays to his credit. Harsha was a Buddhist and he was very tolerant of other religions. The Chinese scholar Huien Tsang, who lived in his court for many years, wrote about life in his empire. As Harsha had no heirs, his kingdom collapsed after him.

Extended knowledge

Aryabhata, whose contributions to mathematics were the concept of zero and the value of *pi*, beside his other achievements in this field, lived during the closing years of the Gupta dynasty. He was also a brilliant astronomer who stated that the Earth turned on its axis during its revolution around the Sun. You can find out more about him from the Internet and from encyclopedias.

Conclusion: Recap the main points about the Gandhara civilization, the Kushans and the Gupta dynasty.

Reinforcement: For homework, students should do questions 1, 2, and 3 on page 89.

Activities: i) Students to work in groups to research and gather information about Fa Hsien and Huien Tsang, the Chinese scholars.

ii) Group activity: gather information about Taxila and the Gandhara civilization. Findings of both activities to be put up for class display.

1. Match the terms in column A with their details in column B

i) Gandhara civilization	a. modern Afghanistan and Tajikistan
ii) Fa-Hsien and Huien Tsang	b. Kanishka
iii) The greatest Kushan ruler	c. Chandragupta
iv) Gupta dynasty's founder	d. Chinese scholars
v) Bactria	e. in north-west Pakistan

2. Complete the statements.

a) The great Buddhist monastery and university at _____ became very important under Harsha.

b) Taxila was rediscovered in the second half of the _____ century.

c) Samples of Gandhara sculpture are found in _____ in Pakistan.

d) The Kushans were a people from _____ _____.

e) The forty years of Harsha's rule are known as the _____ _____.

f) The Gupta Empire was attacked by the _____ in _____.

CHAPTER TWENTY

THE BEGINNING AND SPREAD OF ISLAM

Text pages 90–93

The beginning of Islam and the historical background are explained in the textbook (page 90–91).

The speed and extent of the spread of Islam was incredible. The expansion northwards and westwards was the result of military campaigns, while towards the east, merchants and traders were responsible for much of this. The religion reached the subcontinent in the early eighth century, with the landing of Muhammad bin Qasim and his men, and subsequently through travellers, traders, and Sufi saints.

The map on page 93 shows the extent and direction of the spread of Islam in the seventh and eighth centuries.

Map showing the spread of Islam—the spread halted due to the following reasons:

- Eastwards—solidly entrenched Hinduism
- North-east—lines of communication stretched too far to take on the highly organized Chinese
- Northwards—the vast steppes of what is now Russia where orthodox Christianity was firmly entrenched
- Westwards—after the conquest of Spain (where they remained for almost 700 years) they were stopped by the combined armies of Europe, as lines of communication extended too far, and because of disease in the armies.

The catapult device—*manjaneeq*—shown on page 93 was adopted from the Byzantines. This drawing, taken from a contemporary picture, is not to scale: its left arm should be longer to give more impetus to the stone shot. The arm is pivoted on a very strong framework, with the triangular box on the right filled with heavy material or rocks. This weighted it downward when not in use, making the other arm vertical; to operate, it had to be pulled down and held in a horizontal position by means of a rope. When the stones were put in the sling and the arm released, they were hurled over the walls of the forts or towns. Sometimes the attackers would also hurl animal carcasses or dead bodies, causing death and disease as germs spread around.

Note the bow of the man in the right corner—this is a typical Asian re-curved bow, short and powerful, that could be used by warriors on horseback.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 93:

1. The significant event that took place in Arabia was the birth of the Holy Prophet (PBUH) in 570CE, the revelation of the Quran to the Prophet (PBUH) and the beginning of the religion Islam.
2. The early Muslims migrated to Abbyssinia to escape harassment of the leaders in Makka.

3. Islam spread in different directions as result of military campaigns, and traders and merchants also spread Islam when they travelled for trade purposes.

4. The significant event in the subcontinent in the eighth century was the arrival of Mohammad bin Qasim in Sindh. Sindh became a part of the Arab Umayyad Empire, and this event also foretold the establishment of Muslim rule in later centuries.

LESSON PLAN 24

Topic: When and where Islam began and how it spread outwards

Duration: Two periods (40 minutes x 2)

Objective: To inform students about the beginning of Islam, the early life of the Prophet (PBUH), and how the religion spread

Resources: Textbook, atlas, encyclopedia, Internet, Teaching Guide

Introduction: The previous chapter prepares us for the revolutionary changes of the 7th century: what could that event be? Let us go back to the past. Ask the following questions related to the previous chapters to refresh students' memory.

1. Who were the first three main invaders to enter the subcontinent from the 1500BC onwards? (Aryans, Persians and Greeks)

2. Which religion did the Aryans practise? (They worshipped the signs of nature: the Sun, the moon, fire, earth, etc.)

3. What was the religion of the Persians? (They were Zoroastrians, who believed in a good, wise god—Ahura Mazda—and an evil one, Ahriman.)

4. How did the Greeks influence the subcontinent? (The Greeks had their own philosophy, customs and laws which Alexander brought to the subcontinent.)

5. What were the religions practised in the Indus Valley and the Gandhara kingdoms? (Hinduism and, later, also Buddhism, but it was mainly the Hindu religion.)

Explanation: Now discuss the situation in Europe, Asia and North Africa in the 6th and 7th centuries CE. In Europe and the Middle East, to the north and west of Arabia, the main religion was Christianity. To the north-east, in Persia, it was Zoroastrianism. The remarkable event which affected the world was the beginning and spread of Islam in the short span of a century. The year 570CE marks the birth of Hazrat Muhammad (PBUH) and in the year 610, he received the first divine revelation marking the beginning of Islam. The textbook gives the background of Makka, and also of the Prophet's (PBUH) family, which held an important position in Makkan society. Use short questions to highlight the main points.

- Where is the birthplace of Islam? (Makka, Arabia)
- What was the condition of Arabs before Islam? (Pagans, headstrong, quarrelsome, vengeful—discuss the history of Arabia before Islam, which students are well aware of.)
- Who ruled over Makka in those days? (The powerful tribe of Quraish)
- When was our Holy Prophet (PBUH) born and where? (In 570CE, in Makka)

- When did he proclaim Islam? (In 610CE, with the revelation of the Quran)
- When did he migrate to Madina and why? (In 622CE, he left Makka because of the strong opposition of the Quraish.)

Students also study the early history of Islam in their Islamiyat classes. Refresh their memory by referring to the hard times faced by early Muslims, the Prophet's (PBUH) victorious return to Makka for the final Haj, by which time Islam had spread across Arabia, and his demise in 632CE. Now discuss the conditions around Arabia to the east, west and north. Draw a diagram showing these directions around Arabia. Refer to the map on page 93.

To the north was the Persian Empire whose religion was Zoroastrianism. To the east was the Indian subcontinent whose people were mainly Hindus and some were Buddhists. To the west and north-west were Europe and the Mediterranean region (Byzantine Empire) where the people were Christians. These were powerful empires but their people were suffering because of their wars.

Spread of Islam: The religion first spread when early Muslims migrated to Abyssinia in East Africa (before the Hijrat to Madina) to escape the persecution of the Quraish. When the Prophet (PBUH) and his followers went to Madina, the faith spread further, and after the Prophet's (PBUH) passing away, Islam was taken beyond Arabia during the governments of the Khulafa-e-Rashideen. Islam was not spread by armies alone but by traders, travellers, and Sufi saints who spread its message among the people of the lands they visited.

The Arabs and other Muslims of this time not only taught their faith to others but also learnt many useful things from them and brought new discoveries back to their countries.

With reference to the textbook, discuss the reasons for the success of the Arab armies—they moved in smaller numbers as compared to the huge, cumbersome armies of the empires which needed to be fed and maintained; they were tough men who travelled fast through the desert; they were superb horse and camel riders; they were great fighters. What did they learn from their enemies, especially the Byzantines? The art of building and using huge wooden machines – catapults – for hurling giant stones. The catapult is called 'manjaneeq' in Arabic. Discuss the other points mentioned in the textbook. It is important to inform the students that the Muslim Arabs had very strict rules of war defined by Islam and the holy Prophet (PBUH): they were not allowed to destroy any crops or trees or property; they were not allowed to kill or harm old people, women and children, and those who laid down arms; they were not allowed to fight for personal gains or revenge. Discuss what this means; also discuss if wars are still fought on principles.

Ask the students to see the map on page 93 of the textbook; it shows the rapid spread of Islam in the 7th and 8th centuries. Help students to compare this map with a political map of the world and note down the names of the countries that came under Muslim rule or government in this period. Note the eastward arrow which reads '711CE'—this shows the arrival of the Muslims in Sindh, which will be discussed in the next chapter.

Conclusion: Recap the main points by asking short questions about the content covered.

Reinforcement: For homework, the students should do questions 1, 2, 3, and 4 on page 93.

Activity: Make a timeline of events from the birth of the Holy Prophet (PBUH) to his demise. The important years are given below; the events should be placed alongside.

570CE; 610CE; 622CE; 632CE

1. Choose the correct answer.

   i) Arabia was a _____ land.

   a) fertile b) landlocked c) desert d) waterlogged

   ii) The Persian Empire was to the _____ of Arabia.

   a) north b) south c) east d) west

   iii) _____ was the good and wise god of the Zoroastrians.

   a) Ahura Mazda b) Ahriman c) Brahma d) Jehovah

   iv) The _____ were Eastern Orthodox Christians.

   a) Aryans b) Huns c) Turks d) Byzantines

2. Complete these statements.

   a. The _____ was built by _____ (AS) and his son Hazrat Ismail (AS).

   b. The first migration of the Muslims was from _____ to _____, led by _____.

   c. The Holy Prophet (PBUH) migrated from _____ to _____ in the year _____.

   d. The _____, who held an important position, were the _____ of Hazrat Muhammad (PBUH).

   e. _____ was the last year of Quranic revelation.

   f. Islam was taken to other lands by _____, _____, and _____.

3. Write short answers to the following questions.

   i) What was the religion of the Arabs before the advent of Islam?

   _____

   ii) Who was the ruler of Abyssinia and what was his religion?

   _____

   iii) Why was he impressed by the Muslim migrants?

   _____

   _____

   iv) What is a 'manjaneeq' and what is its use?

   _____

CHAPTER TWENTY-ONE

ISLAM FIRST REACHES THE SUBCONTINENT

Text pages 94–99

The background of Mohammad bin Qasim's arrival in Sindh is given on page 94. Hajjaj bin Yousuf, the powerful governor of Basra, had a fierce reputation; when Raja Dahir of Daibul showed reluctance to punish the pirates and expressed his inability to recover and return the looted cargo meant for the caliph in Damascus, Hajjaj sent his young nephew to the region to avenge the insult.

This was the age of youth: Mohammad bin Qasim was only 17 years old and already governor of an important region in Persia, and now, he had conquered Sindh. Tariq bin Ziyad, the youthful general had conquered Spain, while young Qutaiba had conquered Central Asia.

Talk about the reforms made by the Arabs for the people of Sindh: the students can show these as a chart, with two columns.

The discovery and use of a symbol for zero is a most important contribution to mathematics and science—before this, a full stop was used. Consider the confusion if a figure is expressed as 756.78 instead of 756078.

The photograph on page 95 shows the ruins of Bhambore today—this was supposed to be the site, Daibul, where the Arabs landed and fought Raja Dahir.

The following centuries saw the steady arrival of Muslims into the subcontinent, mainly overland, through the same passes in the north that had been used by the Aryans, thousands of years ago.

Among the early Muslims were the **Ghaznavids**, the most well-known being Sultan Mahmud, who made 17 raids over 30 years. The most famous of these was at the temple of Somnath in Gujarat, Kathiawar, 1600 km from his base in Ghazni. In a bitterly fought battle, the Hindus were defeated and Mahmud himself smashed the idol with a huge hammer. The famed treasures of the temple and its impressive doors were carried back intact to Afghanistan.

Get students to find out more about the Silk Road, the greatest trading route of antiquity, stretching from China to Europe, with a branch to the subcontinent. It not only provided goods—tea, silk, porcelain, gunpowder, and printing from China, and gems, spices, perfumes, sugar, and cotton from the subcontinent—but also a vast amount of revenue in taxes charged to the merchants using this route.

Another set of rulers from Afghanistan was the **Ghauris**, who captured Delhi and set up their sultanate. The Qutb Minar, outside Delhi, was built by the famous general Qutbuddin Aibak and named after the patron saint Khwaja Qutbuddin Kaki. The next ruler, Iltutmish, a clever and capable man, consolidated the Muslim empire in India. He was succeeded by his brilliant daughter, Razia, who eventually fell prey to a conspiracy against her by those who opposed a woman's rule (page 98).

Razia was a very competent ruler and military leader. She is shown in the picture on page 98, leading her men into battle and wearing male dress—ask the students why they think she did so.

THE MONGOLS AND CHANGEZ KHAN

The Mongols were a group of loosely associated tribes originally from Mongolia, who wandered the steppes with their horses and cattle. Originally named Temujin, Changez succeeded his father as the chief, at 13 years. He had to fight many enemies but eventually, he united the tribes and became their leader. He was given the title of Changez Khan, the Precious Lord. He rapidly forced the others to accept his supremacy and created an empire that stretched from the River Volga in Russia to the Pacific coast in China, west to east, and from the Persian Gulf to the Arctic circle, south to north. A brilliant general and administrator, he was also absolutely ruthless and merciless to his opponents—he did not allow them to live. It was said that one could travel the length and breadth of his empire, unharmed. Changez invaded the subcontinent but after an indecisive battle against Iltutmish's army, he retreated to Central Asia where he died in 1227.

The picture of Changez (page 97) is not a portrait from life, though it is as close as possible to the real man—the features are true Mongoloid, with heavy lidded eyes and high, flat cheekbones. A contemporary account described him at the age of 65 as 'a man of tall stature, of vigorous build, robust in body, the hair on his face scanty and turned white, with cat's eyes, possessing great energy, discernment, genius and understanding, awe-striking….'

The next noteworthy ruler of the Delhi Sultanate was Balban, a ruthless man in whose reign justice, though fair, was fearsome and cruel. Balban was successful in keeping the Mongols away as he had forts built along the northwestern borders and equipped them with troops.

Alauddin Khilji succeeded to the throne by getting rid of the king Feroz Shah, his uncle. However, Alauddin established himself as a brilliant general and administrator; he banned alcohol, fixed the prices of food and stopped profiteering by appointing approved grain dealers. He strengthened the Muslim rule in India.

The Khiljis were followed by the Tughlaq rulers, two of whom were well known. One of these was Muhammad Tughlaq, remarkable not only for the good works he did for his people but also for his eccentric personality. We know much about him from the account by Ibn Batuta, the famous Moroccan traveller who stayed at Tughlaq's court as the chief judge or Qazi. The other Tughlaq was Muhammad's son Firoz Shah who ruled with greater wisdom. There was, then, a succession of reasonable rulers, but the prosperity of the subcontinent attracted invaders and this came to an end with the savage invasion of Delhi by another Mongol, Timur—also known as *Timur-e-lang*, the lame—in 1398.

Timur later captured Damascus and then Baghdad; he died in 1401 and is buried in Samarkand. Despite his physical infirmity (a result of a battle injury), which in those times was more humiliating, he rose to be a feared and admired leader. Although such a cruel and almost barbaric ruler, he was a great patron of literature and fine arts. Timur's diary, *Tuzk-e-Timuri,* was discovered about 300 years after his death; it gives interesting insight into Timur, the man, the warrior, and the ruler.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 99:

1. The response to this would be based on students' knowledge of Mohammad bin Qasim's rule and reforms in the region he had conquered. He was popular because of his fair-mindedness, sense of justice, and his humane and tolerant approach.
2. The Ghaznavid ruler described in detail is Mahmud, obviously the most well known for his several invasions of the subcontinent which made him very rich and powerful, and the legacy he left behind.

3. Razia Sultana was far more capable and intelligent than her brothers and had won her father's confidence—he trained her to be his successor. However, her brothers and other nobles of her court did not like to obey a woman ruler.

4. Timeline to be drawn showing rulers and events from Mohammad bin Qasim to Timur.

LESSON PLAN 25

Topic: The arrival of Muslims in the subcontinent

Duration: Two periods (40 minutes x2)

Objective: To inform about the advent of Islam in this region and the consequences

Resources: Textbook, atlas, encyclopedia, Internet, Teaching Guide

Introduction: The arrival of Muslim Arabs in Sindh in the early 8th century was the beginning of a very important new chapter in the subcontinent's history. The rapid spread of Islam has been discussed in the last chapter. Give a brief background to Mohammad bin Qasim and the reasons for his entry into Sindh.

Explanation: Apart from trading along land routes, merchants also sailed with precious cargo along the Persian Gulf and the Makran Coast. Narrate the incident at Daibul where pirates seized the Arab ship sent by the king of Sri Lanka to Caliph Walid in Damascus (see page 94 of the textbook. Ask the students to look up Sri Lanka and Damascus in the atlas.) The Caliph demanded Raja Dahir of Sindh to return the ship with its crew and cargo, but the Raja expressed his inability. Hajjaj bin Yousuf, Governor of Basra then sent his 17-year-old nephew Mohammad bin Qasim to deal with Raja Dahir. Mohammad bin Qasim was a brilliant young man who was in command of a Persian province; he led his army to victory at Daibul. Now refer back to the textbook and read through the text, with reference to the map on page 94.

Consequences: the Arab armies marched along the Indus Valley and took Sehwan and Multan as well, adding these areas to the Arab territories. Mohammad Bin Qasim was recalled to Iraq but Sindh remained part of the Arab Empire for two centuries. Talk about Mohammad bin Qasim's tragic end—he was soon recalled to Basra and put to death by his enemies who were jealous of his success.

The administrative steps taken by the Arab Empire for the people of Sindh are important for their fairness to the local population. Study the given points on page 95, along with the pictures and their captions. Explain why *jizya* was collected from non-Muslims—this tax meant that they did not have to join the Muslim army and fight, but were provided protection by the state. Discuss these measures and their results.

The Muslim invaders: At the end of the 10th century, a new group of Muslims invaded the subcontinent—this time they came from the north-west through the Khyber Pass. They were the Ghaznavis, from the Afghan region of Ghazni. Their empire stretched from Afghanistan to Central Asia and their king Subuktagin had raided the subcontinent many times for treasure and slaves. His son Mahmud came further east and south into the subcontinent, but he always returned to his base at Ghazni. His raids continued for 30 years during which he collected large amounts of treasure. His most famous attack was on the Temple of Somnath in Gujarat, which was famous for its fabulous treasure. Why did he take architects and craftsmen back to Ghazni from the raided lands? Discuss along with the main points on page 96. The Ghaznavi Empire was very rich for reasons other than raids and invasions—they controlled the trade routes and taxed merchants and trade caravans; they also traded successfully themselves.

However, after Mahmud's death in 1030, his empire fell apart.

Ghoris and the Delhi Sultanate: Mention the state of Ghor in Afghanistan and its size; give its background. Muhammad Ghori not only invaded the subcontinent, but he went further east, so that his kingdom extended from Afghanistan to Bengal; his base, however, was in Ghor. Muhammad Ghori was murdered in 1206 and his capable general Qutb-uddin Aibak was chosen as the sultan. This was the beginning of the Delhi Sultanate. After Aibak's death his son-in-law Iltutmish became the sultan. He faced many problems, the most serious being the threat of Mongol invasion under their fearsome leader, Changez Khan.

The Mongols were nomadic tribes from Mongolia in northern China who travelled across Central Asia (look up this territory in the world map in the *Oxford School Atlas*). They were fierce warriors and Changez Khan united them into one community and became their leader. Read on page 97 about their successful invasions and attacks on neighbouring lands which they added to their empire. The wealth of the subcontinent had always attracted outsiders throughout the centuries—some invaded, plundered and went away, and some stayed on and ruled the land.

The Mongols invaded the subcontinent in 1221 and fought Iltutmish's army but no one won. The Mongols returned to Central Asia; as a leader Changez Khan set up many good rules of war and peacetime governance; he died in 1227. Towards the end of the13th century, the Mongols became Muslims following their ruler Ghazan. Two centuries later, they emerged in the history of the subcontinent as the Mughals, which is the Persian version of their name.

Briefly mention Changez's descendants, Hulagu who ravaged Baghdad in 1258 and Timur the Lame, who attacked Delhi in 1398.

Razia Sultana: She is the remarkable and capable daughter of Iltutmish, who was groomed by her father to succeed him. She ruled for four years but was murdered by the nobles who did not like to be ruled by a woman. Discuss her way of life (see the textbook and the Teaching Guide). Iltutmish's grandson Nasiruddin was made the ruler, but the powerful general Balban ruled the kingdom for 20 years on his behalf and succeeded Nasiruddin in 1266. The Mongols were a threat to Balban also but he managed to keep them away.

The next important ruler was Alauddin Khilji (1296-1316) who came to the throne by removing his uncle, yet proved to be a strict but capable ruler. Discuss reasons for his success—he banned alcohol, fixed food prices, appointed grain dealers to stop profiteering, was successful in driving Mongols out of India, and strengthened Islam in his kingdom.

The Khilji rule was brief—only 20 years—and the next dynasty was the Tughlaqs, the most remarkable of whom was Muhammad bin Tughlaq (1325-51). He appointed the famous Moroccan traveller and jurist Ibn Batuta as the chief Qazi at his court. Ibn Batuta stayed at Tughlaq's court for seven years and wrote his observations about the sultan and his government. Discuss the steps taken by Muhammad bin Tughlaq to improve his subjects' lives. On the other hand, he was also very eccentric and came up with impractical ideas far ahead of his time! A wrong decision was to shift his capital to Daulatabad (which had no water supply) and another was the appointment of incompetent people to high posts. Also refer to the map of the Delhi Sultanate on page 98 to appreciate the extent of its boundaries.

His son Feroz Shah Tughlaq, a wise ruler, followed him and ruled for 37 years.

The Mongol invasion of India under Timur in 1398 destroyed Delhi and killed hundreds of people along the way from Khyber to the heart of India. Timur also captured and took away many skilled people to build his capital, Samarkand. He died in 1401 and is buried in Samarkand. Tell the students why Timur was called 'the lame': he had been badly wounded in the leg during a battle, and walked with a limp.

Conclusion: Recap the main points of this chapter.

Reinforcement: The questions 1, 2, 3 on page 99 invite students' own opinion (critical thinking) and should be discussed before being done for homework.

Activity: Question 4, page 99.

2. Research and collect information about Razia Sultana, her rule and her life style.

3. Find out more about the invention of zero and its value in mathematics.

Extended knowledge: The invention of zero

The Mayans and the Olmecs of Central America are believed to have invented the concept of the zero in the first century BCE, while the Hindus and the Chinese developed the concept independently in the 4th century BCE. The use of the symbol 0 was made by the Greek Ptolemy in 130CE, while the value of zero and its placement are credited to the Indian mathematician, Aryabhata, in 498CE. Al-Khwarizmi, the Persian mathematician introduced the Indo-Arabic numerals in the 8th century and Europe learned the use of zero in the 12th century from the translation of Al-Khwarizmi's work into Latin.

1. Match the terms in Column A with their details in Column B.

A	B
i) Raja Dahir	a) remained part of the Arab territory for 200 years after fall of Daibul.
ii) Mohammad bin Qasim	b) crossed Central Asia from China to Europe.
iii) Sindh and southern Punjab	c) was the ruler of Daibul who was defeated by Mohammad bin Qasim.
iv) Sindhi	d) was Subuktagin's son; he invaded the subcontinent many times
v) The Silk Road	e) was the 17-year-old nephew of Hajjaj bin Yousuf.
vi) Mahmud Ghaznavi	f) was the first eastern language into which the Quran was translated.

2. Complete these statements.

i) The concept of zero was brought from the _____ by the _____.

ii) The Silk Road linked China to _____ and the _____.

iii) The Qutb Minar was begun by _____ but completed _____ later.

iv) _____ was the only female ruler of the Delhi Sultanate; she was _____ daughter.

v) Life at the Tughlaq court has been recorded by _____, the famous _____ traveller.

vi) _____, the Mongol leader, attacked _____ in 1398.

THE MUGHALS

Text pages 100–105

Babur: In the century after Timur's death, his empire disintegrated into smaller kingdoms, including the tiny state of Farghana, the ambition of whose ruler, Babur, was to regain Samarkand, the capital of Timur's empire. He won and lost it three times, and then turned to Afghanistan, where he captured Kabul. He now settled here, determined to make his empire to the east, in the subcontinent.

In 1526, at the invitation of Daulat Lodhi, he crossed into India to confront Ibrahim Lodhi. At the battle of Panipat, he defeated a vastly bigger army, mainly because he was using the new cannon. But Babur did not hand the kingdom to Daulat Lodhi. He now defeated the Rajputs, which he did in two main battles, and became the master of northern India. This was the beginning of the Mughal Empire.

Babur was a remarkable, cultured man, and brilliant as a military mind. He regularly recorded his impressions and thoughts in his diary, the *Baburnama*, just as his ancestor Timur had done. This narrative gives us a fascinating picture of Babur. His son, **Humayun** who succeeded him (1530) had to fight off his brothers, and then, the clever Sher Shah Suri, a former officer in Babur's army who was now ruling in the east of the country (Bihar). Humayun was defeated and forced to flee (1540–43). He married Hamida Bano, daughter of a local chief, and the baby who was to be Akbar, was born in exile at Umerkot in Sindh, in 1542.

Sher Shah Suri was a brilliant administrator and ruler, widely extending social services, and did more in the five years of his reign than most did in twenty. He revised the civil service, reformed the currency and army, and made strict but very fair laws. He built the Grand Trunk Road from Bengal to Peshawar and set up a postal service. His successors were weak and were defeated by the Mughal army led by Bairam Khan, who put Humayun back on the throne. Unfortunately, six months later, Humayun fell down the stairs of the great library at Agra and died. Bairam immediately declared the 13-year-old Akbar as emperor, with himself as regent.

Akbar had a brilliant mind, though he remained illiterate. (As we know more about learning problems now, he may have had one.) On accession, he was dominated by his ambitious foster-mother, Maham Anga, and her insolent son, Adham Khan. At eighteen, Akbar, resenting Bairam's power, dismissed the faithful old general and sent him under escort on a pilgrimage to Makkah. He was murdered at Surat and it was hinted that Akbar might have been behind the assassination. Maham Anga and her son were more difficult. Adham actually murdered one of Akbar's officials and then turned on Akbar himself, but the young emperor was powerful and soon floored Adham, who was killed by being thrown down a flight of steps. Akbar was now emperor in his own right.

There were the usual uprisings, especially by the Rajputs, but after defeating them, Akbar married two Rajput princesses. In a series of conquests, his armies won control of the whole of northern and central India as far south as Ahmadnagar and Golconda. Akbar successfully ruled a vast empire. He is famous as a military strategist who never lost a battle.

Akbar's reforms: Akbar carried out several reforms and set up systems of effective governance. He saw the need to reorganize the army and did so by the Mansabdari system: nobles had to provide their own armies, financed by the government. They were personally appointed and reviewed annually by Akbar: lesser nobles had to provide, equip, and train ten horsemen; other nobles in higher positions had to provide up to 10,000 troops.

Revenue: The land was divided into provinces and about one-third of the crop value taken as tax—high-value crops such as cotton were encouraged. At times of poor crops due to natural conditions, famines, and other calamities, he waived taxes on the peasants.

The legal system was revised: again, judges were appointed personally by Akbar. There were separate courts for Hindus, with Hindu judges.

The most dramatic reform was less successful: Akbar's 'universal' religious creed of *Din-i-Ilahi*, was supposed to embrace the basic tenets of all religions as he felt that all faiths were really trying to reach the same goal. In doing this, Akbar offended Muslims by breaking some of the fundamental ordinances: he declared himself the head of the faith, and expected believers to bow down before him, although he maintained his belief in Allah, the Prophet (PBUH), and the Quran. He was very lenient with Hindus, who in some parts of his empire began to persecute Muslims.

Akbar was keenly interested in expanding his knowledge and he supported scholars; he was widely cultured in all arts and his court boasted the famous 'Nau Ratan'—the nine jewels—nine men of exceptional talent in their fields.

His son, **Jahangir**, followed his father's policy, but with more justice for Muslims. He was known for his accessibility to his people and his just decisions. Jahangir was a wise and cultured ruler, whose reign was dominated by his beautiful but tough wife, Nur Jehan, who with her father and brother, really ruled the country. This was particularly evident towards the end of the Jahangir's reign, when he became an opium and alcohol addict. It was during Jahangir's reign that Sir Thomas Roe visited India.

Shah Jahan came to the throne after a power struggle with Nur Jehan. He faced rebellions by his brothers and their supporters on accession, with troubles especially in Deccan, Balkh, and Kandahar. But the empire was now at the height of its power and prosperity, and Shah Jahan was able to indulge in his massive architectural programmes—the Jama Masjid, the Red Fort, *Diwan-i-Khas* and *Diwan-i-Aam* in Delhi; the Pearl Mosque in Agra, and of course, the magnificent Taj Mahal, as his wife's tomb.

Certainly, the students would like the Mumtaz Mahal story. Shah Jahan married his beautiful cousin, Mumtaz Mahal, and adored her. She bore eight sons and six daughters before she died in childbirth, aged 39. Shah Jahan was inconsolable and built, as a tomb, the Taj Mahal which is still considered the most beautiful building in the world. Unfortunately, after nearly four centuries, it has deteriorated but it is preserved as best possible since it draws millions of tourist from home and abroad. The Taj Mahal was originally inlaid with semi-precious stones which were stripped off during later battles.

Aurangzeb: The youngest, most able, and most ambitious of Shah Jahan's sons, was on service in the Deccan when the serious illness of Shah Jahan was announced. In a series of bitter fratricidal battles, the other three brothers were defeated by Aurangzeb and executed with all of their families. Shah Jahan recovered but was imprisoned in the fort at Agra, where he spent the last eight years of his life, looked after by his daughter, Jahanara.

Perhaps as a reaction to his ancestor Akbar, Aurangzeb was fanatically devout and strict. He lived an austere life, copying out the Quran three times in his own handwriting and making prayer caps. He banished all musicians (except his own royal band) and dancers, and began a very strict regimen of war

and prayer—it is said that he needed no more than three hours sleep a night. Non-Muslims were particularly strictly treated later in his reign, when there had been so many uprisings against him organized by them. But within his beliefs, his brilliant mind, and sense of duty, he was a fair ruler and a fine scholar.

His entire reign of nearly fifty years was marked by constant battles, most led in person by Aurangzeb, and the Mughal Empire reached its greatest extent. But the endless war with the Marathas, which neither side could win—the Muslims winning the pitched battles, but the Marathas in their impregnable fortresses streaming out to win a guerrilla war—sapped the Empire. The quality of officers and soldiers fell, as each year tens of thousands were killed. The exchequer was exhausted, partly because with Aurangzeb away at war, the tax-collectors became very corrupt and mainly because of the colossal expenses on the wars. It is said that the whole empire had less wealth than a great noble.

In the hundred years after Aurangzeb's death, there were six weak Mughal rulers, and the provinces of the great empire rebelled and fell away.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 105:

1. The painting could not have been done from life as there are over two centuries between Timur and Jahangir. Perhaps Shah Jahan could merit a place, and certainly Aurangzeb.
2. Sher Shah Suri succeeded against Humayun because Humayun was a weak ruler and faced opposition from many nobles, plus Sher Shah Suri was a very good administrator and ruler. He achieved in five years what others may not achieve even in ten or more.

   Some of Sher Shah Suri's reforms were:

   - appointment of honest and efficient officials;
   - building the Grand Trunk Road from Peshawar to Bengal;
   - establishing an effective and mobile army;
   - reform of the state money system, setting up mints;
   - passing strict but fair laws;
   - setting up the first real postal service.
3. Students to express own opinion, giving valid reasons from the text for Akbar's popularity.
4. The famous Maratha leader, who fought Aurangzeb, was Shivaji; he was eventually captured by Aurangzeb, but escaped dramatically and continued the war which Aurungzeb never won.
5. Aurangzeb's empire collapsed after him because of the following reasons:

   There was continuous rebellion, due to which the state treasury was exhausted and the fighting forces had suffered.

   Shivaji was a strong contender who continuously fought with Aurangzeb and managed to conquer and hold on to most of the Deccan.

   Aurangzeb's reform policies upset many people.

   When Aurangzeb died, his sons were too old—in their seventies—and too weak to manage the empire.

6. This question can be the basis of an interesting discussion. Responses will be based on knowledge and understanding of the various Mughal rulers.

7. The Taj Mahal is considered the most beautiful building for three reasons, generally: the perfect symmetry and balance of its design, the choice of white marble for its construction which makes it look ethereal; and the use of semi-precious stones for the inlay work in it. The students can research for further information.

LESSON PLAN 26

Topic: The impact of the Mughals in the subcontinent

Duration:

Three periods (40 minutes x 3)

Objective: To inform about the Mughal era, the main rulers, their government, policies, contributions and impact

Resources: Textbook, atlas, encyclopedia, Internet, Historical Readers: Babarnama, Jehangirnama, etc., Teaching Guide

Note: This chapter may require three teaching periods with two rulers to each period.

Introduction: We have read about the Mongols in the last chapter—they were the ancestors of the Mughals who founded their famous empire in India. At its peak, the Mughal Empire was known beyond its boundaries for its size, wealth, architecture, art and culture.

A few short questions will help students to link and identify with this period.

- Who was the founder of the Mughal Empire? (Babur)
- Who was 'Mughal-e-Azam', the great Mughal? (Akbar)
- Who built the Taj Mahal? (Shah Jahan)
- Has anyone in the class visited Shalimar gardens or the Badshahi Masjid and the Fort in Lahore? (These are Mughal monuments; in addition there are the beautiful mosques built by the Mughals as well as their nobles—Badshahi Masjid by Aurangzeb; Shah Jahan Masjid in Thatta by Shah Jahan; Wazir Khan Masjid in Lahore by Wazir Khan; Mahabat Khan Masjid in Peshawar by Mahabat Khan.)

Explanation: In this chapter the focus is on the six main rulers of the Mughal Empire: Babur, the founder; Humayun, Akbar, Jehangir, Shah Jahan, and Aurangzeb. As studied in the last chapter, Delhi was raided in 1398 by Timur, the last of the Mongols. He died in 1401 and his empire broke up into smaller kingdoms, one of which was Farghana (see background on previous pages). The Mongols by then had become Muslims.

Zaheeruddin Babur was just 12 years old when he became ruler of Farghana in 1495 after his father's accidental death. Babur had dreams of conquering Samarkand, but instead he took over as ruler of Kabul in 1504. See page 100 of the textbook and the Teaching Guide for more information on Babur. Explain how in 1526, at the Battle of Panipat, Babur defeated Ibrahim Lodhi's huge army, using cannons and clever war tactics. He then won two battles against the fierce Rajputs, and conquered Delhi and Agra to become ruler of northern India. Mention that his Afghan army was unhappy to stay in India which was hot and humid, but Babur was successful in persuading them to stay on. He was a very generous ruler—he shared

the captured treasure and wealth of the defeated Indian rulers with his army and also sent a large sum of money to the holy cities of Makka and Madina in Arabia. Babur kept a record of his life, *Babur-nama*, which provides a very interesting account. He loved beautiful gardens and is buried in a garden in Kabul.

Nasir Uddin Humayun (1530-40; 1555-56) was the eldest son of Babur; he was skilled but not as brilliant as his father. There was infighting and rebellion during his rule, and finally Sher Shah Suri, an Afghan ruler settled in Bihar, defeated Humayun and ruled the empire. Humayun fled to Sindh and then to Kandahar and Persia.

Sher Shah Suri (1540-45): mention his background and his reforms (see the textbook and Teaching Guide).

Sher Shah's contributions to good government:

- appointment of honest, capable officers
- set up a mobile army
- reformed the state's financial system
- made strict laws against criminal offences
- construction of the Grand Trunk road from Peshawar to Bengal with shaded trees on both sides and rest houses for travellers
- real first postal service for official business

Sher Shah died in 1545 in a cannon explosion. His successors are listed in the textbook, and the last one, Adil Shah was defeated by Humayun in 1555.

(It is pertinent to mention here how some kings are brilliant and successful, while their sons or successors are weak, and lose the kingdom to some other stronger person.)

Humayun recaptured Delhi but he did not live long. In 1556, he fell to his death when coming down the library stairs in Agra Fort. Humayun had a gentle nature; he was scholarly and had a keen interest in astronomy. He was succeeded by his son Jalaluddin Akbar.

Akbar was born in Umerkot in 1543 when Humayun was in exile. Like his grandfather Babur, Akbar was only 13 years old when he became emperor. Humayun's trusted and capable general, Bairam Khan, was Akbar's guide till he turned 18. Read more about Akbar in the textbook, and read to the students from the Teaching Guide.

Akbar grew to be the most successful and popular of the Mughals. Though he was not formally educated—unlike other Mughal emperors—he was brilliant as a ruler and as a warrior. He is known for never having lost a battle and the boundaries of the Mughal Empire expanded during his reign. He also introduced reforms for his subjects' benefit. (Explain the reforms listed in the textbook and Teaching Guide.) However, his experiments with religion to bring the Muslims and non-Muslims together were not successful and he returned to mainstream Islam.

Akbar was also a great builder—as were his successors—and he built Humayun's tomb (outside Delhi), the Lahore Fort, and another fort at Attock, besides a new city at Fatehpur Sikri. (But it was not a wise decision to move the capital, so the court moved back to Agra after a few years.) Akbar also supported scholars and knowledge, and had highly learned men, the 'Nau Ratan' (nine jewels) at his court.

Nuruddin Jahangir succeeded as emperor on Akbar's death in 1605. Jahangir's reign is known for his just rule, his contribution to art and architecture, and for his brilliant queen, Nur Jehan. Talk about her

influence in running the empire and her role in the development of art and culture. She had a beautiful tomb built for her father, Itimad-ud-daula, in Delhi, and on Jahangir's death, she had a stately tomb built for him at Shahdara in Lahore. Sadly, her tomb close by is neglected and in a poor state. Ask the students to find the popular story about Jahangir's justice. It is said that a heavy golden chain with 60 bells stretched from the Agra Fort to the grounds beyond the moat, and Jahangir would personally meet whoever rang the bell for justice from the king. (Read from the textbook and Teaching Guide for further detail.) Jahangir and Nur Jehan were great patrons of art, literature and culture. The Mughal Empire attracted people from other countries. Sir Thomas Roe came to the Mughal court as the ambassador of England's Queen Elizabeth I. Jahangir died in 1627.

Prince Khurram took over after a power struggle with Nur Jehan. He took the title of Shah Jahan (1627-58). Shah Jahan had a talent for architecture and the means to build. (See the Teaching Guide for detail.) The most famous of Shah Jahan's monuments is the Taj Mahal in Agra, one of the wonders of the world and, arguably, the most beautiful. The Taj Mahal was built in memory of his beloved wife, Mumtaz Mahal. (For details refer to the Teaching Guide and the textbook.) In 1658 Shah Jahan fell seriously ill. Fights for succession broke out among his four sons, Dara Shikoh, Murad, Aurangzeb and Shuja, who were governors of different provinces. Aurangzeb, who was in the Deccan, headed back to Delhi, fought and defeated his brothers, imprisoned his father in the Agra Fort, and declared himself the emperor. Shah Jahan died eight years later in 1666, still under arrest.

Mohiuddin Aurangzeb (1658-1707): The extent of the Mughal Empire covered all of the subcontinent (except a small area in the south) and included Kabul and part of eastern Afghanistan. (See map on page 105.) However, Aurangzeb's continuous wars for 30 years and his long absences from his capital made his government weak, so much so that it never recovered. The movement and upkeep of his huge army nearly emptied his treasury. Aurangzeb was constantly under pressure throughout his reign; Marathas, under Shivaji with their guerilla war, were a constant threat. Explain the term 'guerilla' war; in a guerilla war small groups of soldiers encounter a regular army.

Explain Aurangzeb's place as a ruler and as a man. He died in 1707, at the age of 90, by which time his sons were too old to rule effectively and this led to the gradual collapse of the once-grand Mughal Empire. Eventually, 150 years after Aurangzeb, the Mughal Empire came to an end. The Europeans had started to enter the subcontinent, and gradually the East India Company began to interfere in the affairs of the Mughal Empire.

Impact of the Mughal Empire: It created a base for Muslims in the subcontinent where they stayed back and governed the country, giving it a system instead of being invaders and temporary rulers. They brought in the Mongol-Turkish-Persian culture and blended it with the local Indian culture. They developed the country and made it rich and fairly prosperous according to those times. The Mughals had a highly developed aesthetic sense (about art, literature, knowledge, architecture) and left behind a legacy of landmarks. However, Aurangzeb's extended rule and wars weakened the state.

Conclusion: Recap the main points one by one as this is a heavy chapter.

Reinforcement: Questions on page 105 should be discussed before being answered in writing. Question 1 is for class discussion, and question 4 has a very short answer: Shivaji. Questions 2, 3, 5, and 6 may be done for homework.

Activity: Question 7 is activity-based and may be extended by adding other monuments to the list, such as Badshahi Masjid, Delhi's Red Fort, Shalimar Gardens and Shahdara. Collect information about other historical buildings built by the Mughals in Lahore, Peshawar, Thatta, Agra and Delhi.

1. Choose the correct answer.

   i) The greatest Muslim empire in the subcontinent began under the Mughals in _____.

   a) 1426 b) 1526 c) 1600 d) 1625

   ii) The Mughal Empire was at its largest under _____.

   a) Humayun b) Akbar c) Aurangzeb d) Jehangir

   iii) Babur defeated _____ in the battle of Panipat.

   a) Sher Shah Suri b) Mahmud Ghaznavi c) Ibrahim Lodhi d) Islam Shah

   iv) The Grand Trunk Road was built by _____.

   a) Akbar b) Nur Jahan c) Shah Jahan d) Sher Shah Suri

   v) Akbar was born in 1543 at _____ in Sindh.

   a) Larkana b) Hyderabad c) Bhambore d) Umerkot

2. Answer these questions in complete sentences.

   i) Name the two furthest places connected by the Grand Trunk Road.

   _____

   ii) Who helped Akbar to rule his kingdom till he was 18 years of age?

   _____

   iii) What was the new faith introduced by Akbar? What was its purpose?

   _____

   _____

   iv) What happened to Shah Jahan in 1658?

   _____

   _____

   v) Who was Shivaji? What were his war tactics?

   _____

   _____

THE COMING OF THE EUROPEANS

Text pages 106–108

Emphasize the trade links between Europe (Rome especially) and the subcontinent, from 3rd–2nd century BCE. Textiles, mainly silks, highly prized among Roman women, and possibly, some jewels were imported. The Silk Route was not a specific road, but varied from time to time according to the political situation. Main areas of passage were these:

a) North of the Caspian Sea, north of the Black Sea, Byzantium and Rome;

b) Bukhara, Samarkand, south of the Black Sea to Europe;

c) Bactria, Syria, by sea from east Mediterranean ports to Europe;

d) Some routes from the subcontinent by sea to head of Gulf or Red Sea ports to the Mediterranean.

Journeys were long and tedious, so that only relatively high-value goods (especially silk) were carried, but high value was a temptation to bandits and pirates. Central Asian kingdoms controlled the majority of the routes and could demand payment of taxes from merchants for passing through. The southward expansion of the Seljuk Turks after the 11th century meant that they dominated the land routes, and could tax the traders or prohibit trade as they thought fit.

As the Middle Ages progressed, there was more wealth in Europe, among the small group of nobles, and also as the constant warfare declined a little, a demand for luxuries. The move towards peace was demonstrated in the decline of the great stone castles in favour of low-level manor houses with more rooms and comfort. There was also the expansion in tastes, with new foods, especially spices, being sought. The trickle along the Silk Routes could not supply the demand. At the same time shipping was being improved, and the belief in a spherical world steadily growing.

In the late 15th and 16th centuries came the great voyages of discovery from Europe, which culminated in the discovery of a sea route to the subcontinent.

Look at the chart on page 108 and discuss the great advantages of ship-borne trade rather than the land route. Apart from the economics, there was the facility to bring much larger and more fragile goods, as they did not need so many transfers. Furniture and ceramics became a great demand in Europe. An amusing sidelight is the amount of rhubarb which was carried on the ships—especially from China—as the root was a universal ingredient of medicines.

The discovery and development of the shipping routes and improvement in size and structure of ships altered the whole economy of Europe, which had been dominated by Venice and other north Italian cities. Now Portugal, Spain, France, England, and Holland became the great trading nations because of their access to the world's oceans.

At first, the countries were content to set up—with the local ruler's permission—trading stations, or 'factories'. Resident merchants traded goods (guns, cloth, gold, and silver) for the merchandise from Asia and stored these in godowns to await the

return of their fleet. The round journey now took about six months. Then growing greedy, they tried to force other countries out and get permanent land settlements. Following the Dutch, East India companies were formed in each country to organize their trade. In the subcontinent itself, the Portuguese were driven out by the Dutch except for Goa, which they kept until the mid-20th century. The Dutch then removed most of their trade to South-east Asia, which they held until after World War II. The subcontinent was left mainly to the British and French from the 17th century.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 108:

1. The advantages of sea trade are discussed above in detail. A greater volume of goods could be transferred in each voyage and fewer people were needed for this task. There was less threat of looting or excessive taxation, and although sea pirates appeared but they were much rarer. Fewer men were employed; there was lesser toll to pay for passing through different countries, and as a result, more profit for the merchants. As goods once on board were not touched until they arrived, there was little fear of damage and also fragile goods such as pottery, furniture, and other decorative items could be carried.
2. Textiles, especially silk, jewellery, and spices were traded between East and West.
3. Some factors that led to the discovery of America are given below:

   When the Turks captured Central and Eastern Asia, they started demanding taxes from merchants who were using the Silk Road. To avoid this, merchants began trying to find alternate routes. Scientists had started declaring that the Earth was like a sphere and not flat. So Columbus thought of reaching China or India by the sea route. And when Columbus started sailing westwards thinking that he would eventually reach India or China, he did not know that there was another continent in the middle.
4. In 1492 Columbus started on his journey across the Atlantic Ocean towards the West, thinking that he would eventually reach China or India. After a terrible voyage he reached some islands which he presumed to be near India and he named them West Indies. Thus West Indies got its name.
5. Students can research and find out details of Vasco da Gama's voyage to India. Vasco da Gama and his sailors discovered the ocean route from Europe to the subcontinent and South-east Asia as they sailed southwards and around the Horn of Africa.

LESSON PLAN 27

Topic: Europeans begin coming to the subcontinent

Objectives: To know what attracted Europeans to this region; their mode of travel, and impact on the subcontinent

Resources: Textbook, atlas, library, Internet, Teaching Guide

Introduction: Begin with simple questions.

- What do we know about Europe in the 15th, 16th and 17th centuries? (Portuguese and Spanish explorers had sailed across the Atlantic—Amerigo Vespucci, Columbus—and southwards around Africa to the Indian Ocean—Bartolomeo Dias, Vasco da Gama—to search for new routes to the rich East. The British, French and Portuguese came to India for trade.)

- Why do countries need trade? (Because they cannot manufacture everything they need. Another motive – to earn profit.)
- What do you think are the basic requirements to develop trade? (Goods for trading; land and sea routes; peace, law and order)
- Which was the more advantageous route for trade: land route or the sea route? (Sea routes because ships could transport huge cargoes and crew; land routes were also unsafe; goods were taken by animal—usually camel—caravans but in smaller quantities.)

Explanation: As noted above, it was the fame of the 'treasures of the East' that drew the Europeans to this region. Spices, used for medicine and food, were not common to Europe; they were very expensive and those who traded in spices became very rich. Besides, there were beautiful silk and cotton textiles, gemstones, jewellery and various other goods to be had. Talk about trading between the Central Asian countries and the subcontinent, especially China from the ancient times. Refer to the textbook, page 106. Though trade between East Asia and Europe existed since 300BCE but until the 14th and 15th centuries very few Europeans had been to East Asia. Mention the items of trade through land routes. Discuss the dangers faced on land and sea routes; are these routes any better today? (Somali pirates in the Indian Ocean!) The time taken to transport goods was too long: it took almost two years from East Asia to Europe and back; they had to pay heavy taxes to the states they passed through or the trade would be stopped.

Explain that people began to search for safer and shorter routes for trade. The concept of the Earth being a sphere was becoming common, so explorers thought they could reach East Asia by sailing around from the west too, over the Atlantic. What they did not know then was about the existence of two huge landmasses—continents of North and South America—and the vast ocean that lay beyond them, the Pacific. In the 15th and 16th century began the great voyages of discovery from Europe to reach the East, which also resulted in the discovery of America. (For more details beside the textbook, see the Teaching Guide. The photograph, illustrations and maps in the textbook provide visual explanation to the chapter text.)

Give a brief background to Christopher Columbus—his family, early life and his voyages. He was born in Genoa, Italy in 1451. He convinced the Spanish monarchs, Ferdinand and Isabella, to support his expedition, and started his voyage from Spain in August 1492. See the world map and locate Italy and Spain. Columbus sailed westward through Atlantic Ocean and on 12 October 1492, he came upon a new land which he named West Indies. (The islands to the east of India were then known as East Indies.) Even to the end of his days he did not know that this was a new continent. Columbus made four voyages between 1492 and 1504. He explored the coast of Cuba, Hispaniola, Jamaica and Puerto Rico on the first two voyages. He discovered Central America and South America during his next two voyages.

The next explorer was Vasco da Gama, a Portuguese sailor. Locate Portugal on the world map. What is common among Italy, Spain and Portugal? They are all countries with long coast lines and access to the Mediterranean (Italy and Spain) and the Atlantic (Spain and Portugal). Da Gama set off in 1497; he sailed southwards, keeping close to the African shore in 1498, went round the tip of Africa (the Cape of Good Hope), then sailed northwards to Kenya, and then eastwards to India in 1499. Thus, he discovered the route from Europe to India and East Asia. Compare the routes of the two explorers as shown overleaf by making two columns on the board.

Columbus	Vasco da Gama
Born in 1451 in Genoa Italy Set sail from Spain in August 1492; went westward across the Atlantic Ocean and in October 1492 he reached some islands which he named West Indies. His voyage opened up a new land for the Spanish conquerors.	Born in 1469 in Sines, Portugal. Sailed from Portugal onn July 8, 1497; went southward till he reached the tip of Africa; turned north and stopped at Kenya. On 20 May, 1498 he arrived at Calicut, India. His voyage opened a new trade route between Europe and Asia.

Compare the advantages of trade through sea and land routes. (See the picture on textbook page 108.)

Explain that ships came twice a year from Europe. The traders needed space to store their goods and asked for land. Explain the term 'factories'. Emphasize they are not the factories of today where things are manufactured—they were actually trading stations and also had 'godowns' (warehouses) for storing goods located there. Thus, the settlements and trade with the East began on a formal scale.

Conclusion: Recap the main points of this chapter.

Reinforcement: For homework, students should do Questions 1, 2, 3, 4 and 5 on page 108. The worksheet may be done for class work on completion of the chapter.

- Locate Calicut in the map of India on page 42 of the *Oxford School Atlas* (D – 9, on the Malabar Coast, South India).
- Collect and display more information about the different goods that were traded between Europe and the East in the 16th and 17th centuries.

Extended knowledge

1. Trading in spices has been going on since ancient times, particularly by Asian civilizations and later by Arabs. The Middle Eastern region and coastal areas of the Arabian Peninsula produced gums and plants used for incense; Yemen was famous for its incense, myrrh, and henna. India, Sri Lanka, and the South-east Asian regions produced variety of spices and herbs used in medicine as well as to flavour and preserve food. When Europeans were introduced to some of these spices as a result of the expansion of the Roman Empire (which also brought salt to the European tables), the demand for them increased as did their value. The Portuguese were followed to South-east Asia by the Dutch who focused mainly on the Malay and Indonesian islands' spices. The French and English displaced the Portuguese from the subcontinent, except for their hold on Goa, on the western Indian coast, which remained a Portuguese holding till 1961.
2. Another European, Marco Polo is also well-known for his travels to China in the 13th century along with his father and uncle, who were also at the court of the famous Mongol ruler Khubilai Khan. Their travels inspired later European voyagers and explorers. The Europeans were not the only ones to have travelled and made discoveries. As we read earlier, Ibn Batuta from Morocco travelled extensively around Africa, Asia and southern Europe—he covered 120,000 kilometres and is known as the greatest traveller of all times. The remarkable Zheng He (1371–1433) was a Chinese Muslim who was a mariner and fleet admiral; he made seven voyages across the seas around China and to South-east Asia and over the Indian Ocean to Africa. His voyages are remarkable for the huge size of the ships (with nine masts and as large as a football field) and the number of their crew which went into thousands!

1. Match the terms in Column A with their details in Column B.

	A		B
i)	The Silk Road	a)	trading stations in the East
ii)	Christopher Columbus	b)	sailed around Africa, reached India in 1499
iii)	Vasco da Gama	c)	warehouse for storing goods
iv)	Godowns	d)	route used for transport from China to Europe and back
v)	factories	e)	discovery of new land across the Atlantic Ocean

2. Complete these statements.

a) The main goods for ancient trade were _____ from China and _____ from India.

b) The return journey from Europe to _____ took _____ years.

c) When Columbus reached land after sailing across the _____ in 1492, he named it _____.

d) Bartolomeo Dias arrived at the _____ in 1488.

e) The Silk Road trade routes were under _____ control.

f) The first Europeans to arrive in the subcontinent and last to leave were the _____.

CHAPTER TWENTY-FOUR

THE EAST INDIA COMPANY

Text pages 109–112

The French first thought of training Indian soldiers and equipping them with modern weapons. They drilled their new soldiers in the disciplined form of European warfare rather than the mass charges so often used by the Indian rulers. When the British saw the effect, they quickly copied the French system. The policy was to take sides when two states quarrelled, or when a succession (always disputed) took place. The French would offer assistance in return for trading favours to one side, and the British to the other. The French and British planned to control the trade by setting up the East India Companies.

ANSWERS TO QUESTIONS IN MARGIN, PAGE 110:

i) The clothes worn by the merchant are obviously suited more for the cold European climate rather than the warm Indian weather.

ii) The merchant, with Europe behind him in the west, is facing the subcontinent to the east.

Robert Clive: As a boy in England he was a tearaway—he once fled from school and climbed the church tower, refusing to come down. At the age of 18 (1743), he was packed off to India to be a humble clerk in the East India Company. This was a typical method of disposing of difficult boys, as the expectation of life among Europeans in India was often very short. As a junior clerk, Clive was quarrelsome, resented authority, and attempted suicide.

In 1744 the French captured Madras from the British, but Clive managed to escape and somehow or the other became a very junior officer in the army. Here he had found his niche: he was quite brilliant as a soldier, even without any training. In 1751, with only 500 English and Indian troops, he captured the capital of the Carnatic (Arcot) against a French and Indian army of 10,000, and successfully held the city for 11 weeks, until relieved by supporting troops.

He returned to England a hero, but in 1756 he came back as governor of Fort St David in southern India. It was from here that with the aid of a traitor, Mir Jafar, he defeated Siraj-ud-Daula's forces, sixteen times larger than his army.

This was virtually the end of French power in the subcontinent, and the East India Company had *carte blanche* to do as they pleased, extorting money from everyone they could. With bribes and extortions, the British merchants became very rich, while they traded more for themselves than for the company.

Clive was made governor of Bengal, but retired to England in 1760, where he bought himself a seat in Parliament and was made a peer (lord). In 1765 he was sent back to India to restore order to Bengal, which had become almost ungovernable in the face of the rapacious traders. He restored some sort of order in the civil service and army, forcing the remaining Mughals to grant ever vaster sums of money.

Clive returned to England, very ill, and was immediately accused of corruption. At the end of a six-year trial he was found not guilty, but there were so many disqualifications that he was utterly disgraced. Illness and opium addiction drove him to suicide in 1774.

Siraj-ud-Daula was demonized in England, but was in fact a fine and just ruler. He was accused of being responsible for the event known as the Black Hole of Calcutta, in which (it was claimed in England) 146 prisoners were crammed all night into a windowless room measuring 4.5 × 5.5 metres. In the morning only 23 were left alive. Later historians put the number at 64 prisoners, while many people now discount the whole story as mere propaganda. A large well nearby (which still exists) was said to have been full of corpses from the Black Hole—but recent research seems to suggest that the bodies were of those killed in the actual fighting.

Warren Hastings: The East India Company was in such a disreputable and bankrupt state because of the corruption and greed of its traders that Warren Hastings, an experienced India official was sent out to restore order. He was strict and stopped many of the abuses, but of course, incurred the wrath of the men who had been profiting from the frauds. It was he who really established British power in the subcontinent, but on his return to London, he too was charged by his enemies with corruption. His trial lasted seven years, with a not guilty verdict, but he was a broken man and died soon afterwards.

The British government now realized that such a vast responsibility as the governing of India could not be left in the hands of a private company (East India Company) with its private army. So, in 1785, Parliament in London passed the bill put forward in 1784 by the prime minister William Pitt as the India Act, which basically established the British government in India until independence and partition (this is commonly known as Pitt's India Act).

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 112:

1. The French and British planned to control the trade by setting up the East India companies.
2. Clive mainly strengthened and established British presence in the subcontinent, by military means.

   Hastings brought in administrative measures to set up a British government in the subcontinent. Warren Hastings is called the founder of British India because be tried to set up a proper system of government and established British rule in India.
3. The Battle of Plassey was fought in 1757, between Siraj-ud-Daula and the British army, under Robert Clive. Mir Jafar was Siraj's chief general and a traitor. During the battle he kept his soldiers out of fighting and Siraj-ud-Daula lost the battle.
4. The effects of British victory in Bengal were that the East India Company plundered Bengal, imposed heavy taxes, and extorted bribes from the rich people.
5. Pitt's India Act was important for both Indians and the British because it put controls on the British East India Company and placed the governance in the hands of the Parliament. The Act also attempted to bring civil reforms for the benefit of the Indians.
6. Warren Hastings is called the founder of British India because he tried to set up a proper system of government and established British rule in India.

LESSON PLAN 28

Topic: The history and role of the East India Company

Objectives: To inform about the setting up, growth and role of the East India Company

Duration: Two/three periods (40 minutes x 2/3)

Resources: Textbook, atlas, encyclopedia, Internet, Teaching Guide

Introduction: Brainstorm by going back to the chapter on the Mughals. Sir Thomas Roe was the English envoy to Jahangir's court. While he waited to be received by the king, Roe and his companions also checked out sites for setting up a trading base. On the last day of the year 1600, the East India Company was granted the rights for trading in India and further east. The voyages of discovery in the 15th and 16th centuries had opened up the way for Englishmen to travel far beyond their little island kingdom.

Explanation: What do you think the Europeans did to start their trade in the subcontinent? They may have asked for some favours, especially some land. The Englishmen and traders who came in the early 17th century had been granted a charter to set up a trading company in the East, which eventually dealt mainly with India and China. Explain what a charter is; it is a statement which gives certain rights to a group of people to carry on their activities. Mention the arrival of Sir Thomas Roe and then Captain Best who won against the Portuguese at Surat in November 1612. The latter event helped the English to get Jahangir's permission to set up a factory at Surat, a port in Gujarat, and was the beginning of the East India Company's operations which spread to other parts of India.

Ask why ports were preferred for setting up factories? It facilitated movement and shipping.

Following the success of the English, the French set up their trade with India in 1664 and this resulted in rivalry between them to get a larger share of the trade. Refer to the textbook, page 109, and the Teaching Guide for more detail. It is advisable to also refer to the East India Company site on the Internet for more information.

Beginning with trade, the presence of the British and French in the subcontinent became a political issue as each wanted to win the support of influential and rich Indian states and increase their power in the subcontinent. Talk about the decline of the Mughal Empire with Aurangzeb's death—the government had already become weak, and with his death, a power struggle broke out among his successors (who were already very old themselves). Both the French and the British companies exploited the opportunity; they trained the soldiers of the Indian princes in return for trading rights.

Mention the war of succession in Carnatic and Hyderabad (India) in 1748 and the role played by the French and the British companies who wished to see their supporting rulers installed so that their profits would increase. Robert Clive, sent from England with an army, captured the Carnatic capital Arcot. (See textbook and Teaching Guide for further detail.) Talk about the struggle between the British and the French, and the decision of their governments that they should not fight. Why? (They will be weakened.) However, many Indian princes favoured the British company and their influence grew.

Talk about the war between the British and Siraj-ul-Daula at Fort William (now Kolkata) in 1756 and its capture by Siraj-ud-Daula. Give the details. Eventually Clive arrived at Fort William, defeated Siraj-ud-Daula and also seized the French station of Chandarnagar. Mention the conspiracy hatched by Clive and the role of Mir Jafar, the cunning general of Siraj-ud-Daula.

The Battle of Plassey: Talk about why it proved to be a disaster for Siraj-ud-Daula: wet gunpowder due to a thunderstorm, and the betrayal by Mir Jafar. Siraj-ud-Daula was captured and killed, and Mir Jafar was

made to pay damages to the Company, to Clive and others. Clive returned to England as a hero and a very rich one, but came back to India in 1756 as the governor of Fort St David (Madras/Chennai).

(See the Teaching Guide for reference to the 'Black Hole of Calcutta'—an exaggerated account, though deaths did take place.)

The French lost their power in India, leaving the British to do as they liked. Clive was made governor of the rich state of Bengal; he retired and went back to England in 1760, but because of the ungovernable situation in India, he was sent back in 1765. Discuss the situation—corruption, bribery, extortion, added to which were high taxes, which resulted in the plunder of Bengal as well as losses to the East India Company because of its officials. Read the details in the textbook. Mir Jafar fell out of favour and was replaced by Mir Kasim who took away the perks enjoyed by the British—he was soon replaced by Mir Jafar!

The Battle of Baksar took place in 1764 when Mir Kasim sought the help of the old Mughal ruler, Shah Alam II and the Nawab of Awadh against the East India Company. The British defeated them and Shah Alam was made to surrender at the British camp. His throne was restored and he was given an annual allowance, but in reality he had no power because the Company now collected all the taxes and oppressed the poor people.

The East India Company was now more of a political institution than a trading company. Clive was sent back in 1765 to stop the corruption. Mention the steps taken by him: tax collection by Indians, appointment of an honest police force and setting up of law courts. Eventually, Clive was also recalled to England, tried (for six years) and acquitted, but he fell into depression—despite the wealth he had amassed—and killed himself.

Meanwhile, more British governors followed but the problems did not end. It also important that students should know that incompetence, corruption, poor governance, and lack of progress on part of the Indians added to their problems and encouraged a stronger group—the British—to take over. (We must not just read history but learn from it!)

Arrival of Warren Hastings (1769): he was an experienced officer of the Company, fluent in Urdu, Persian and Bengali. He was appointed governor of Bengal in 1772, with a council to assist him. However, most of his council members opposed him all along and, as a result, his reforms (see info box, page 112) were slow to take effect. In 1785, Hastings too was recalled to England and tried for not having done as much as expected. The case lasted seven years, and though Hastings was also acquitted, he died an unhappy man.

Mention the realization of the British government of the inefficiency of the East India Company and the passing of the Pitts India Act of 1785 by the Parliament in London under the Prime Minister William Pitt.

Explain the main points of the Act as given on page 112. Tell the students that this was the real beginning of British rule in the subcontinent until independence in 1947.

Conclusion: This chapter covers the end of the Mughal Empire and Muslim kingdoms and the rise of the British. It is important for students to understand how the weakening kingdoms were exploited—sometimes with inside help—and the British interfered in their government. This eventually led to the British government in England imposing their authority as they did not want to lose this rich land. Recap the main points.

Reinforcement: Questions 1 to 6, on page 112 should be discussed and questions 2 and 5 may be done for homework, while the rest along with the worksheet may be done for class work in the second and third periods for this lesson.

Activity: Make a timeline of all the important events that took place from the beginning of the East India Company till the passing of Pitt's India Act.

1. Choose the correct answer.

   i) The first charter of the East India Company was granted to the English merchants on _____.

   a) 3 December 1600 b) 30 December 1500 c) 31 December 1600

   ii) _____ was the ambassador of King James I to the Mughal court in 1615.

   a) Warren Hastings b) Sir Thomas Roe c) Robert Clive

   iii) The important event in the year 1757 was the _____.

   a) Battle of Plassey b) capture of Arcot c) Battle of Baksar

   iv) _____ was appointed the Governor General of Bengal in 1772.

   a) Robert Clive b) Warren Hastings c) William Pitt

   v) The French trading station was located at _____.

   a) Surat b) Hyderabad c) Pondicherry

2. State whether the following statements are true or false.

a)	Mir Jafar was in secret touch with Robert Clive in the Battle of Plassey.	T	F
b)	The East India Company paid ten million rupees to Siraj-ud-Daula for his help.	T	F
c)	William Pitt was the Prime Minister of England in 1785.	T	F
d)	The East India Company was responsible for the terrible poverty in Bengal.	T	F
e)	The Dutch drove the Portuguese out of most of India except Goa.	T	F
f)	The French governor Dupleix was based at Chandarnagar.	T	F

THE STRUGGLE FOR FREEDOM

Text pages 113–116

Haider Ali was a Muslim army commander who seized control of Mysore. He was an implacable opponent of the British, as he realized that they would dominate the country unless effectively opposed. He successfully fought the British East India forces again and again, but died before he could inflict a final defeat. He was let down by the French who had promised him help by sea, but it never arrived, largely because of the strength of the British navy.

Haider Ali's son **Tipu Sultan** was an equally implacable enemy of the British. Unfortunately, the Nizam of Hyderabad and the Marathas were now on the British side, so that Tipu was outnumbered. Forced after the Third Mysore War to sign a humiliating treaty under which he lost half his territory, he fought on but failed to get any support. Driven back into his capital of Seringapatam he was besieged, and killed in the defence of the city as it fell.

Both Hyder Ali and Tipu Sultan had understood the East India Company's designs to extend their rule; to counter them, Tipu trained his army on the European model, and he also prepared a strong naval fleet to oppose the British navy in India. He set up factories to make modern weapons and also to expand industry in this kingdom and to build trade ties abroad. Tipu established diplomatic ties with France; he recognized the new government after the French Revolution. He was keen about modern technology and invited French experts to introduce new inventions to his people.

Tipu had made to order from Europe, a life-sized tiger with a clockwork inside to make it growl in a most realistic manner. It also moved its jaws as it chewed a model Englishman. It is now in the Victoria and Albert Museum in London. After Tipu's death, the British took his library and personal belongings which were sent to England.

ANSWERS TO QUESTIONS IN TEXT, PAGE 114:

i) Haider Ali and Tipu Sultan are considered heroes because they opposed foreign rule in their country. They are seen among the first freedom fighters of the subcontinent.

ii) Tipu Sultan was only partly successful, as he did not receive timely help from his supporters. However, the movement begun by him inspired later freedom movements.

War of Independence, 1857: This was a turning point in Anglo-Indian relations. Britain with all her wealth from the Industrial Revolution and colonial conquests felt that she was the most wonderful and powerful nation on earth. She controlled a quarter of the world's surface and was by far the richest nation in the world. The arrogance of the British colonial employees was insufferable. The immediate cause of the rising was the greased bullets for the new rifles, but that was merely the spark that set long-term grievances alight. The imposition of British ideas and missionary zeal had already inflamed opinions in India. Indian people in general were barred from gaining any position of power or importance. The British had ridden roughshod over traditions and sensibilities, and imposed their way of life. Under an ordinance of 1856, sepoys were liable to serve overseas, which for the Hindus meant a loss of caste.

In addition to the reasons given for the failure of the war (page 116), the other factors were the confinement of the war to north India, hence poor mass support; lack of leaders, lack of coordination, and breakdown of discipline, largely due to British refusal to appoint Indians to higher military ranks. The rising was not a national one: nationalism had not yet grown strong enough.

After the suppression of the troubles, many military changes were made:

- The ratio of sepoys to British soldiers which was 6:1, was changed to 2:1.
- All artillery was now in the hands of British troops.
- The Purbiahs of Oudh, who were at the core of the rising, were almost completely swept out of the army.
- The Bengal cavalry units were abolished and replaced by other races, who had not taken part in the war.

But the British had learned quite a few lessons.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 116:

1. British military superiority was due to the Industrial Revolution when the new factories could pour out limitless supplies of superior weapons of all kinds. The withdrawal of French and Dutch navies gave them virtually total control of the seas. The vast wealth from the industries enabled them to build new and better ships. The British had better fire power and though they lost the initial battles, they won the wars, with sustained fighting. They also gained support by better pay to the local soldiers, who did not give up their service. Another crucial factor was the induction of the Gurkhas in the British army, a tradition that continues to this day. These factors helped the British to win the wars from 1773 to 1849.
2. The causes of the war of 1857 are listed above and on page 115 of the textbook. The immediate cause of the war was the greasing of the cartridges issue—both Hindus and Muslims felt offended and saw it as an attempt to force conversion to Christianity. There had been earlier revolts by the troops but this was the spark which lit the fire of long-standing grievances about the injustices and inequalities of the British system which affected Hindus and Muslims alike.
3. The result of the war of 1857 was the effective end of Muslim rule in the subcontinent. The other result was that the British government realized that it needed to take control, instead of leaving the rule of its prized colony to the East India Company.
4. The Muslims bore the brunt of the war, losing their authority almost completely. The British realized their mistakes and tried to make amends by bringing in social reforms, eagerly accepted by the Hindu majority, but rejected by most of the Muslims.
5. Answer to this question is given in detail on page 116 of the textbook.

LESSON PLAN 29

Topic: How the people of the subcontinent struggled to be free of foreign rule

Objectives: To know about the early freedom fighters, the events and outcomes

Duration: Two periods (40 minutes x 2)

Resources: Textbook, encyclopedia, Internet, Teaching Guide

Introduction: Brainstorm:

- Why did the British parliament pass Pitt India's Act, 1785? (Because the East India Company failed to govern.)
- Can such a decision be accepted by a whole nation without any opposition? (Probable answer will be 'No'.)
- So what will an enslaved nation do? (Probable answer: raise a voice against it.)

The individuals who take this responsibility are regarded as heroes: who were such heroes in the subcontinent?

Explanation: Ask the students if they have heard of Hyder Ali and Tipu Sultan? They were freedom fighters who fought the British for freedom of their land. Introduce the chapter 'The struggle for freedom'.

Haider Ali and Tipu Sultan: Talk about Haider Ali and Tipu Sultan, their background, how they became the rulers of Mysore and their fight against the British Government. (See textbook and Teaching Guide for further details.) Both father (Haider Ali) and son (Tipu Sultan) did the best they could, fought bravely, and Tipu died fighting; however, they did not achieve as much as they expected. Discuss the reasons for this.

- Haider Ali had allied with the French against the Marathas and the British, but the French failed him both times.
- Tipu signed treaties with the British as well as with Mangalore (south India) and recovered land and prisoners from them. But the central and southern Indian states were against him.
- He was winning the Third Mysore War but his supplies ran out. He tried to get help from Arabia, Turkey and Afghanistan—which never came.

He was besieged by the British army for almost a year and then the British were able to break a gap in the fort of Seringapatam. Tipu Sultan was killed, sword in hand. (Read more about Tipu Sultan in the textbook as well as from the Teaching Guide.)

A very crucial factor for the success of the British in the East from 1600 onwards was their navy. They were a small island kingdom but their navy was a strong force which helped them to win against European rivals as well as to support their countrymen in foreign lands.

Note the wars against the British by different rulers of the subcontinent. They fought from 1773 to 1849, with intervals. Details are given in the textbook.

Mention the pattern of these wars: in the beginning the Indians would be winning but finally the British managed to win with timely supply of better weapons and backup.

The War of Independence, 1857:

This is known as the first war of independence. Give reasons why it happened and why it failed.

- Britain had become a rich nation from the resources of the subcontinent.
- The Industrial Revolution and its increasing trade with the world made the British feel superior.
- Their victory against Napoleon at Waterloo added to their pride.
- The local people resented the arrogance of the foreign rulers who justified their every action and looked down on the natives.
- Forced development of western culture at the cost of Asian culture.

There were some good and farsighted Europeans and British as well, but the people of the subcontinent did not like British rule and ways to be imposed on them.

The anger was piling up and what triggered off the rebellion by Hindus and Muslims was the British lack of respect for their religious values. The Hindus could not serve the British army overseas as it meant loss of caste. The issue of greased cartridges—suspected to be pig or cow fat—led to the refusal of Indian soldiers—Muslims and Hindus—to obey British officers, and the general uprising, which started from the Meerut garrison; they marched to Delhi and released the Mughal emperor Bahadur Shah from forced semi-imprisonment in the Red Fort. The rebellion spread to Lucknow, Jhansi, and Kanpur. (Use the atlas; give the details. See the text book and Teaching Guide.)

Talk about the destruction of cities, killing of hundreds of people, atrocities from both sides, where innocent people became victims.

Analyse the reasons for failure of the struggle. They are given in the text book. Encourage discussions. To mention briefly the reasons were:

- Absence of leadership
- Lack of unity
- Lack of coordination – scattered uprising
- Lack of discipline. Moreover, the ratio between the British and freedom fighters was 6:1.
- The Indian soldiers in the British army were well paid compared to the soldiers of the Indian rulers so they were not ready to join the uprising for an uncertain future.

Results: Though the uprising was a failure, the sepoys had won a much more important victory. The British government was made to realize its faults and take steps to mend its ways.

Conclusion: Recap the main points.

Reinforcement: Along with question 1, page 116, and the Worksheet, the questions on page 114, and following questions can be given for class work.

i) How did Haider Ali and his son Tipu Sultan come into power?

ii) What were the factors that affected Tipu Sultan's mission?

For homework, students should do questions 2, 3, 4, and 5 from the textbook.

Activity: Divide class into groups to collect more information on Tipu Sultan, Robert Clive and Warren Hastings, from the library sources (encyclopedia) and Internet. Their findings should be compiled and illustrated, if possible, and put up for display.

1. Fill in the blanks.

   a. Haider Ali became the ruler of _____ in 1761.

   b. In the second Mysore war Haider Ali invaded British-controlled _____ and defeated all the forces.

   c. Haider Ali died in _____ in _____.

   d. Tipu Sultan was the first to use _____ in warfare.

   e. The British became powerful after defeating _____ at Waterloo.

   f. The war of Independence began in the year _____ and came to an end in _____.

2. Write short answers to these questions.

   i) Why were the Indian garrisons in Punjab, Bengal, Madras (Chennai) and Bombay (Mumbai) loyal to the British ?

   _____

   _____

   _____

   ii) Name the two Indian leaders who could unite the Indians against the British.

   _____

   iii) Briefly describe the structure of Tipu Sultan's rockets and how they worked.

   _____

   _____

   _____

   iv) Which was the group that fought the British, joined their army afterwards and is still found in the British armed forces?

   _____

   _____

Text pages 117–119

The British realized in part where they had gone wrong and rushed to introduce social, economic, and administrative reforms. Education was expanded, Indians were considered nominally eligible for some senior positions, and some were even nominated for regional and national assemblies. The Muslim community on the whole was very resentful, and refused to cooperate, rejecting education, while the Hindus exploited the opportunity. A few clear-sighted Muslims, like Sayyid Ahmed Khan, urged their co-religionists to accept what was offered as they could see that Muslims would otherwise be no more than low-paid labourers.

The government in London realized that a private company must not be allowed to remain in power in such a vast country, and that rule must be invested in government. The next important India Act was passed in 1858. This stated that

- the British sovereign was sovereign of India;
- a senior cabinet minister in London was to be the head of the India Office;
- viceroys were to be the head of the government in India.

While this settled the political position, it was the actions taken by the viceroys and their governments in Delhi (which now had Indian representatives on the inner council) that brought about the changes on the ground. The main social/technical developments are shown on pages 118–119 of the textbook.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 118:

1. After 1857, the British began to realize their mistakes. Social, economic and administrative reforms were introduced. They opened schools and colleges for the Indians, and also appointed them for government jobs.

2. After 1857, the British government decided to end the East India Company and take over the rule of the subcontinent. The government in London realized that a private company should not be given such vast powers and that authority must be invested in the government.

3. Major reforms of the viceroys were the following:

   Lord Canning (1858–69)—did not seek revenge on the persons responsible for the uprisings and tried to sooth bitter feelings on both sides.

   Lord Mayo (1869–72)—made financial and educational reforms.

   Lord Lytton (1876–80)—improved the roads, railways, and the irrigation and taxation system.

   Lord Ripon (1880–84)—framed better laws.

   Lord Dufferin (1884–88)—set up the Indian National Congress in 1885.

   Lord Curzon (1899–1905)—brought improvement in the fields of educational reforms and preservation of valuable cultural heritage.

4. A good topic for discussion in class reflecting understanding of the issues faced by the people and the attitude of the colonial power.

LESSON PLAN 30

Topic: British rule in the subcontinent—the British Raj

Duration: Two periods (40 minutes x 2)

Objective: To inform and discuss how the British took over the government of the subcontinent and how this affected the popualtion

Resources: Textbook, atlas, encyclopedia, Internet, Teaching Guide

Introduction:

Ask a few questions to understand the reaction of the British government to satisfy the Indian people after the war (page 116). They realized their mishandling of the situation and tried to make amends.

- What steps do you think were taken by the British?
- Did they understand the issues faced by the local population?

Talk about the steps taken by the government to satisfy the people of the subcontinent:

- Opening of schools and universities
- Offered jobs to the Indians, at least theoretically
- The government in London realized that its job in the subcontinent could not be left to the Company.

Explanation: The Muslims did not cooperate with the British Government because they felt they had been targeted: the Mughal rulers were Muslims and the British had captured power from the Mughals. The Muslims too showed their resentment by boycotting the western education offered by the British, by not accepting jobs in the British government and avoiding business with them.

Do you think this negative attitude helped the Muslims? If not, why? Encourage discussion.

How did the Hindus react? They grabbed the opportunity to get western education, cooperated in all fields, did business, and got jobs—they were in an advantageous position as compared to the Muslims.

The East India Company comes to an end: Explain that Pitt's India Act 1785 had already rendered them a trading partner and control of the subcontinent was taken over by the British government. The Governor General was now known as the Viceroy.

Discuss the viceroys and their roles as well as periods of rule. Lord Canning (1858–69) was a suitable choice as the first viceroy after the war; he tried to remove the bitter feelings of the local population, but he also punished those found guilty of war crimes.

From 1869 onwards, British rule was at its peak. Discuss the viceroys who followed and their reforms.

Lord Curzon (1899–1905): did not advocate self-rule and independence of the subcontinent because he thought that British were the best rulers; he had a very superior attitude; he also divided Bengal into east and west, a step which did not favour Muslims there. But he took important steps to establish and improve educational standards and for preservation of valuable cultural heritage.

The reforms put in place by the British are detailed on pages 118 and 119. Though the reforms were received with mixed feelings by the people of the subcontinent, they did make a big difference to their lives. Discuss the impact of these measures and compare them to modern reforms in the subcontinent; this aspect of the chapter can lead to an interesting and lively discussion. For example, the law and order situation was brought under control; the notorious 'thugs' who looted and killed travelers were severely punished; improved railways made transport for people and goods faster and safer; focus on education led to social uplift and opened more opportunities. Ask students which of these reforms may have had lasting impact and why. Compare the post-1857 rule with the pre-1857 rule; note the changes.

Conclusion: Recap the main points.

Reinforcement: Worksheet 26 to be attempted in class.

Students to do questions on page 119 for homework.

1. Match names/events in Column A with correct detail in Column B.

	A		B
a)	Lord Lytton	i)	first viceroy after war of Independence
b)	Lord Mayo	ii)	included Indian nominees
c)	Lord Curzon	iii)	roads and railways
d)	Lord Dufferin	iv)	improved education, preserved heritage
e)	Lord Canning	v)	financial, educational reforms
f)	Viceroy's council, 1861	vi)	Indian National Congress, 1885

2. Complete these statements.

a) The Muslims did not cooperate with the British because

_____.

_____.

b) The word 'viceroy' means

_____.

c) Lord Curzon did not support

_____.

_____.

d) The posts of government officials were open to all but were not filled because

_____.

_____.

e) In 1858, the East India Company

_____.

3. Make a timeline to show the Viceroys' rule from 1858 to 1905.

SIR SAYYID AHMED KHAN

Text pages 120–121

Perhaps pupils could do some personal research work on Sir Sayyid Ahmed Khan—his far-sightedness, his emphasis on education and his ideas which laid the foundations for the separation of Hindus and Muslims, when independence eventually came. With reference to other sources on the history of the freedom movement, Sir Sayyid's life and achievements could be put up as a project or timeline.

ANSWERS TO QUESTIONS AND ACTIVITIES, PAGE 121:

1. The Muslims lagged behind in progress because initially they had rejected the western education and as a result could not acquire good jobs. They were left with low-paid jobs and could not participate in the government or compete with the Hindus.
2. Sir Sayyid Ahmed Khan tried to highlight the importance of education and modern science and knew that Muslims could not progress without knowledge. He tried to stop the Muslims from opposing the British. He also tried to make the British realize that they were being unjust to the Muslims.
3. Students to collect relevant information and share it in class. Some of the notable political names are Maulana Mohammad Ali Jauhar, Khan Abdul Ghaffar Khan, Liaquat Ali Khan, Khwaja Nazimuddin, and among intellectuals, Shanul Haq Haqqi and Mushtaq Ahmed Yousufi. Further research can be done using library resources and the Internet.
4. Some of the books written by Sir Sayyid Ahmed Khan are *Aasaar-ul Sanadeed, Asbab-e-Baghawat-e-Hind, Taareekh-e-zila Bijnor* (lost in the aftermath of the war); he also published the journal *Tehzeebul Akhlaq* and contributed to the leading papers of his time.

LESSON PLAN 31

Topic: Sir Sayyid Ahmed Khan and Muslims in the subcontinent

Duration: One period (40 minutes)

Objective: To understand Sir Sayyid's role and the reaction of contemporary Muslims

Resources: Textbook, library, encyclopedia, Internet, Teaching Guide

Introduction: Begin with short questions.

- How would someone feel when deprived of his privileges and position?
- Would you like to cooperate with people who have taken away your rights?
- Have you heard of Sir Sayyid Ahmed Khan?

Explanation: Describe the scenario after the collapse of the Mughal Empire and then the war of Independence: The Muslims had been left behind while the Hindus acquired western education and forged ahead in business and industry as well as

some government jobs. Sir Sayyid was in the small group of enlightened Muslims who realized that modern education was the key to progress.

Discuss Sir Sayyid's family, educational, and professional background; he was forward-looking and tried to persuade the Muslims to move ahead instead of opposing the British. They also did not trade with the British and eventually they became poor and depressed. He also tried to make the British realize their faults in dealing with Muslims. Above all, Sir Sayyid's focus and aim in life was education—he set up the Mohammadan Anglo-Oriental College in Aligarh in 1875–76, which finally became the Aligarh University in 1921. He was also an author of several books in Urdu and English; he worked hard to promote Urdu as the medium of instruction. Sayyid Ahmed Khan also wrote an important book on the causes of the Indian revolt. One of his very important observations to the British was that they should give power separately to Muslims and Hindus—he had seen the growing gap between the communities. This was the beginning of the two-nation theory and, ultimately, the partition of the subcontinent in 1947.

Mention his efforts to create understanding between the British Government and the Muslims and to remove ill feeling between the two. He also pointed out the unfair attitude of the British Government towards the Muslims and bring about a better understanding of the Muslims' problems. Sir Sayyid played a prominent role as one of the advocates of a homeland for the Muslims.

Sayyid Ahmed Khan was knighted, i.e. awarded the title 'Sir', in 1888. He passed away in 1898.

Conclusion: Recap the main points.

Reinforcement: Collect information about the contributions of Sir Sayyid Ahmed Khan to the cause of education and for Muslims of the subcontinent. Find out the names of important Muslim leaders and intellectuals who studied at Aligarh University. List them according to dates, and put up the list on the class board.

Extended Knowledge

Sayyid Ahmed Khan began his career at an early age because of financial problems after his father's death. His greatest interest was in education and the improvement of the Muslims' lot. He established schools in Ghazipur and Muradabad and he founded the Scientific Society which published translations of academic texts and also bilingual journals (in Urdu and English). These institutions were open to all Indians, irrespective of creed and caste. He also organized the All-India Muhammadan Educational Conference which met annually at different places and gave a forum to the Muslims. He repeatedly stressed the importance of education for Muslims and was naturally disappointed by the adverse reaction from some of them.

1. Fill in the blanks.

   a. Sir Sayyid Ahmed Khan was born in _____ in _____.

   b. He became a judge in the _____ in _____.

   c. Aligarh University was earlier known as the _____.

   _____

   _____

   d. Sayyid Ahmed Khan was awarded a _____ in _____.

   e. Sir Sayyid was the author of many books in _____ and _____ .

2. Underline the correct answer.

   a) The Muslims suffered a setback after

      i) the defeat in 1957 ii) the Mysore Wars iii) the end of East India Company

   b) The Hindus were able to get good jobs because

      i) they were good at business ii) they obeyed orders iii) they acquired education

   c) Sir Sayyid was a _____ of western education.

      i) founder ii) supporter iii) opponent

   d) Sir Sayyid's demand for separation of power among Muslims and Hindus led to the

      i) Two-nation theory ii) Simla Agreement iii) India Act, 1858

SECTION A

Time: 20 minutes **M. Marks 20 (5 x 4 marks each)**

1. What is the strategic importance of Pakistan's location?

   Why is Punjab's population higher than that of any other province?

2. Name the factors that determine the climate of a country.

   Why does Karachi have a milder climate than Lahore?

3. What is the importance of agriculture for Pakistan?

   Name the sources of water for agriculture in Pakistan.

4. What are the main mineral resources of Pakistan?

   Name the sources of power and energy in Pakistan and South Asia.

5. Why is industry important in a country's economy?

   Name the industries in Pakistan and South Asia.

SECTION B

Time: 20 minutes **M. Marks 30**

1. Name the neighbouring countries of Pakistan along with their direction. [4]

2. Fill in the blanks. [6]

   a. Low land between hills and mountains is called a _____.

   b. An area of high, flat land well above the sea level is a _____.

   c. Inland bodies of water are known as _____.

   d. When a river splits into smaller streams as it enters the sea it forms a _____.

   e. Strong winds that blow in a spiral are called _____ and _____.

3. Choose the correct answer. [5]

   i) Climate is the average weather condition recorded for

   a. any one day b. a few weeks

   c. the whole year d. a few months

ii) Agricultural land in Pakistan is _____.

a. 57% b. 67%

c. 27% d. 37%

iii) River Indus rises from the _____.

a. Hindukush Range b. Karakoram Range

c. Himalayas d. Pamir Mountains

iv) Bangladesh is ideal for growing _____.

a. wheat b. tea

c. dates d. cotton

v) _____ farms of Pakistan are affected by salt.

a. 75% b. 26% c. 86% d. 37%

4. State whether the following statements are true or false. [5]

a. The main occupation and industry in Maldives is fishing.

b. India produces more cotton than Pakistan.

c. Southern Punjab receives more rainfall than upper Punjab.

d. The economy of Nepal is based on industries.

e. Afghanistan is now a member of SAARC.

5. Complete the following statements. [5]

a. The main sources of irrigation in Pakistan are _____.

b. Livestock forms an important part of _____.

c. Livestock is reared for _____.

d. Pakistan's main cash crop _____.

e. Besides refined sugar, the other products from sugar cane are _____.

6. On an outline map of South Asia mark the following features: [5]

i) Khyber Pass	ii) River Indus	iii) Gilgit-Baltistan	iv) Deccan Plateau
v) Sri Lanka	vi) Islamabad	vii) Delhi	viii) Bay of Bengal
ix) Mumbai	x) Karachi		

SECTION A

Time: 20 minutes **M. Marks 20 (5 x 4 marks each)**

1 Describe the city of Mohenjo Daro and its people.

2 What were the Four Noble Truths and the Eight-Fold Path taught by Buddha?

3 When did Mohammad bin Qasim enter the subcontinent and why? What is the importance of this event?

4 Why do you think did Razia Sultana's officers not like her as their ruler? How much of this attitude still persists?

5 What were Sayyid Ahmed Khan's views about education? What steps did he take in this regard?

SECTION B

Time: 20 minutes **M. Marks 30**

1. Choose the correct answer.

a. The cities of Mohenjo Daro and Harappa were discovered in

a. 1820's b. 1920's

c. 4500BCE d. 2000BCE

b. Persia is modern-day

a. Afghanistan b. Tajikistan

c. Iran d. Syria

c. Porus was the king of

a. Sindh b. Balochistan

c. Punjab d. Greece

d. Kanishka was a ruler of the _____ dynasty.

a. Gupta b. Maurya

c. Kushan d. Nanda

e. Sindh remained a part of the Arab Empire for nearly _____ years after Mohammad bin Qasim.

a. 100 b. 500

c. 1000 d. 200

f. The Chinese scholar and pilgrim who visited Swat in the 5th century CE was _____.

a. Huien Tsang
b. Dalai Lama
c. Fa-Hsien
d. Mao Zedong

2. Fill in the blanks.

a. Christopher Columbus reached _____ instead of India.

b. Vasco Da Gama reached India in _____.

c. The caste system was brought to the subcontinent by the _____.

d. Asoka converted to Buddhism after the _____.

e. Most of the invaders from the north-west came into the subcontinent through the _____.

f. The Mauryan Empire was based in _____.

3. Match column A with column B.

A	**B**
(i) Ibn Batuta	(a) 13th century Mongol leader
(ii) Qutbuddin Aibak	(b) Grand Trunk Road
(iii) Sher Shah Suri	(c) Asoka's laws
(iv) Akbar	(d) Muslim traveller
(v) Changez Khan	(e) founder of the Delhi Sultanate
(vi) edicts	(f) Din-e-Ilahi

4 State whether the following statements are True or False.

a. Mir Jafar was loyal to Siraj-ud-Daula.

b. William Pitt was the Prime Minister of England in 1785.

c. Iltutmish was Qutbuddin Aibak's son.

d. Balban was a powerful general who later became the Sultan.

e. The Abyssinian ruler Negus was an honourable Christian who gave refuge to the Muslims.

f. Warren Hastings had never visited the subcontinent before being appointed Governor-General.

5. Make a timeline to show the following historical events in the subcontinent:

   i) The Battle of Panipat

   ii) Timur's invasion of Delhi

   iii) The War of Independence

   iv) Aryan invasion

   v) The Golden Age of the Gupta dynasty

   vi) The death of Aurangzeb

ANSWER KEY TO WORKSHEETS AND ASSESSMENTS

Worksheet 1

1. Pakistan's location is strategic because it is like a hinge or link that connects Western and Central Asia to South and South-east Asia.
2. Select any ten from the countries shaded green in the map on page 1. E.g. Yemen, Egypt, Bahrain, UAE, Oman, Saudi Arabia, Iraq, Iran, Turkey, Uzbekistan, etc.
3. Afghanistan—North-west; China—North-east; India—East; Iran—West
4. a) pass b) plateau c) young d) Khunjerab, Karakoram e) Khyber f) 2000 to 3000
5. India, Pakistan, Nepal, Bangladesh, Sri Lanka, Bhutan, Maldives
6. a) highest b) sharp c) estuary d) plains e) desert f) land g) flowing h) delta i) polar

Worksheet 2

1. Choose the correct answer.

   a) = iii) the whole year b) = ii) equator c) = i) Altitude

   d) = ii) cooler, milder e) = iii) it is very far from the sea f) = iii) fine
2. Currents are movements of water in the oceans.
3. The cold Humboldt Current brings low temperature to the west coast of South America; the warm Gulf Stream Current brings higher temperature to the east coast of North America.
4. Crops generally need good soil and a sunny climate with adequate rainfall to grow well. Agriculture cannot be successfully practised in places that are too dry, too wet, too hot or too cold. For example, rice cannot be grown in Pakistan's north or west as the climate is not suitable for it.
5. Atacama Desert is in Chile on the western coast of South America.
6. Cherrapunji is in Assam, India. It 1861 it had 22,990 mm (22.9 metres) of rain which is a world record to this day.
7. It is so because the North winds blow in from Arctic or colder regions.
8. These winds pick up large amounts of water while crossing the sea.
9. Use the *Oxford School Atlas for Pakistan* to help locate these places.

Worksheet 3

1. a) A thunderstorm brings lightning, thunder and rain, and can cause much damage.

   b) A tornado is a destructive, spinning, funnel-shaped cloud which destroys everything in its way.

   c) A hurricane is a violent storm with strong winds.

   d) A twister or waterspout is a swirling column of water sucked up by winds from the sea.
2. Refer to the textbook, page 13.
3. (a) Rain gauge (b) wind vane (c) barometer (d) Minimum-Maximum thermometer

4. It is important particularly for pilots, ship captains, sailors, fishermen, civil aviation offices and airport control tower staff to know about wind direction and speed as it affects their movement and work.
5. Refer to page 16 of the textbook. The teacher may also put up a photograph of a rain gauge from some other authentic source.

Worksheet 4

1. Pakistan, India, Bangladesh, Sri Lanka Nepal, Bhutan, Maldives
2. Sri Lanka, Maldives
3. Nepal, Bhutan
4. These are clay pots fastened to a belt which is powered by oxen moving in a circle.
5. Chenab, Jhelum, Sutlej and Ravi
6. a. River Indus and its tributaries
   b. River Ganga and Jamuna
   c. Rivers Padma, Meghna and Karnafuli

Worksheet 5

1. i) Nepal ii) Sri Lanka iii) Bangladesh iv) 37% v) 5% vi) coastal areas
   vii) Arabian Sea viii) Bay of Bengal ix) Bangladesh x) Pakistan
2. Pakistan: Islamabad; India: Delhi; Bangladesh: Dhaka; Sri Lanka: Sri; Jayawardenapura-Kotte; Nepal: Kathmandu; Bhutan: Thimphu; Maldives: Male

Worksheet 6

1. i) three ii) Indian Ocean iii) Arabian Sea iv) South-west v) Pakistan
   vi) Western Depression vii) Turkey viii) Snowfall ix) North-easterly x) dry
2. i) True ii) True iii) False iv) False
3. a) Cyclones b) Thunderstorms c) retreating monsoons d) Bangladesh e) dust storms
4. a) Cool b) Warm c) Cold d) Mild e) Hot
5. i) = d; ii) = c; iii) = b; iv) = e; v) = a

Worksheet 7

1. i) Punjab ii) 60 iii) Pakistan and India iv) wet and warm v) edible oil
   vi) molasses vii) maize viii) kinnoo and mango
2. Refer to the chart showing these regions in lesson plan above.
3. i) agriculture ii) cattle, sheep, goats iii) camels iv) buffaloes, oxen
   v) Nepal, Bhutan; rugs and carpets vi) rivers, lakes and coastal regions
   vii) sports goods, footwear/shoes, jackets, gloves, etc. viii) eggs and meat

Worksheet 8

1. a) – iii); b) – iv); c) – v); d) – ii); e) – i)
2. i) Pakistan imported Rs41, 000,000,000/- (4.1 billion rupees) worth of fertilizers in 2007.
   ii) De-forestation washes away top soil and causes soil erosion.
   iii) Maldives does not have large tracts of farmland.
   iv) Seepage is stopped by lining the canals with concrete.
   v) Herbicides and pesticides are chemicals to kill weeds and insects that damage crops.
   vi) Natural hazards like floods and cyclones are the most serious problem for Bangladesh's farmers.
   vii) Sri Lanka, Nepal and Bhutan grow enough crops to feed their population.

Worksheet 9

1. a) – little b) – Thar c) – fertilizer d) – 4th e – Saudi Arabia f) – 41 million
   g) – liquid h) – Punjab i) – jewellery j) – natural gas
2. a) – barrels b) – cubic meters c) – tonnes d) – carats
3. Oil: Adhi, Mangala, Makori, Dhodak, Zamzama, Qadirpur; Fimkassar*,
   Dhurnal*, Dhulian*, Meyal*, Pindori*, Balkassar*, Thora*, Tando Adam*,
   Mazari*, South Mazari Deep*, Pasakhi*, Laghari*
   [*These sites have both oil and gas deposits.]
   Natural gas: Sui, Kandhkot, Pirkoh, Uch, Mari, Mari Deep, Zarghoon South,
   Kandara, Miano, Sawan, Kadanwari, Bhit
   Coal: Ziarat, Degari (Sor Range), Duki, Chamalang, Khost, Makarwal,
   Lakhra, Jhimpir-Meting, Sonda, Thar

Worksheet 10

1. i) Thermal energy ii) Hydroelectricity iii) Nuclear energy
2. a) 5532 gwh b) 300 c) dams d) oil, gas and coal e) 123,614
   f) – i) Khyber Pakhtunkhwa, ii) Khyber Pakhtunkhwa iii) Punjab
   g) Chashma, KANUPP h) one million, one billion i) solar, wind
3. Water is heated by nuclear energy to turn the turbines that produce electricity.
4. a – iii), b –vi), c – v), d – ii), e –iv), f – vi)

Worksheet 11

1. a) Exports are items/products that a country sells abroad to earn foreign exchange.
   b) Imports are those goods that a country buys from abroad to meet its needs.
   c) Cottage industry is small-scale industry, with a low budget and often managed at home by family members.

2. A country must export more than it imports to earn more from its products rather than spend foreign exchange on buying from other countries. This helps to balance earnings and payments.
3. i) – c) ii) – c) iii) – b) iv) – a) v) – c)
4. a. Agricultural products: raw cotton, fish, wheat, rice, hide, wools
   b. Processed agricultural products: leather, carpets, sports goods, yarn, flour, carved wood, sugar
   c. Industrial products: synthetic fiber, chemicals, electronics items, fertilizer, paint

Worksheet 12

1. a) Bangalore, Hyderabad, Mumbai, Delhi b) 40 per cent c) to preserve its culture and language d) mountaineering and tourism e) jute, rice, tea, fish, garments f) It is in danger of sinking because of its low height and rising sea levels. g) Nepal and Pakistan
2. i) false ii) false iii) true iv) true v) true vi) false

Worksheet 13

1. a) air pollution b) radiation c) temperature, sea level d) garbage, germs e) marine f) Reduce, Re-use, Recycle
2. i) soil erosion ii) coral mining iii) trees iv) Plastic products v) environment issues

Worksheet 14

1. a=iii; b= vii; c=vi; d=v; e=ii; f= i; g=iv; h=viii
2. a) urban b) villages/countryside c) Dravidian, Balochistan d) Sri Lanka e) Punjabi f) Urdu g) statistics h) 1947 i) South Asian Association for Regional Cooperation j) English
3. a) Chittagong b) 212.9 c) Sri Lanka d) Male e) Bhutan f) census
4. (See page 63) Punjabi: 48%; Pashto: 13.5%; Seraiki: 12%; Sindhi: 10%; Urdu:7.5%; Balochi: 3%; Brahvi: 2.5%; other: 2.5%; Hindko: 1%

Worksheet 15

1. a) think b) liberty, security c) unfair d) fair e) innocent f) religion g) peaceful h) education i) job, life j) property
2. a. To follow the laws and rules laid down by the government.
   b. For safety on road and to avoid accidents
   c. By respecting the rights and beliefs of others.
   d. Respect, tolerate and understand others' beliefs and customs.
   e. United Nation International Children's Education Fund.
   f. By solving children's problems of health, hunger, and education.
   g. It was given the Nobel Peace Prize in 1965 for helping and supporting children.

3. a. No parking
   b. Heavy vehicles not allowed
   c. No left turn
   d. Work in progress
   e. Incline

Worksheet 16

1. The Aryans came from the North-west through the Khyber Pass in 1500BCE.
2. Many of the invaders, conquerors or raiders who came into this region settled down here and they influenced the local culture, customs and language.
3. i) = b) – 1920s; ii) = c) – mud bricks; iii) = d) – Dravidians; iv) = d) farmers
4. a. No signs of palaces have been discovered.
   b. They had no concept of money; no coins have been discovered.
   c. It shows that the people knew how to grow and process cotton into cloth, and that they traded in fabrics with Mesopotamia.
   d. These show that this civilization was advanced for its time as the buildings were properly planned and constructed.

Worksheet 17

1. a) = iii), b) = iv), c) = i), d) =ii)
2. Latin, French, English
3. a) = iii) Iran b) = i) Greek c) = ii) Gandhara d) = iii) Punjab e) = i) Jhelum f) = iv) 33 years

Worksheet 18

1. a. Buddhism began in the sixth century BCE in North-eastern India.
   b. He left home at the age of 29 in search of truth because he was upset to see people suffer.
   c. Karma means that people's actions in life determine their fate after death.
   d. Abolition of the caste system and equality for all could be the most popular.
2. See the textbook page 83.
3. a = iv) b = i) c = ii) d = iii)
4. a = caste system; b= hospitals; c = old people; d = forbidden; e = Punishments; f = religions

Worksheet 19

1. i) = e; ii) = d; iii) = b; iv) – c; v) = a
2. a) Nalanda b) 19th c) Swat d) Central Asia e) Golden Age f) Huns, 480CE

Worksheet 20

1. i) = c; ii) = a; iii) a; iv) = d
2. a) Kaaba, Hazrat Ibrahim (AS)
   b) Makkah, Abyssinia, Jafar ibn Abu Talib (RA)
   c) Makkah, Madina, 622CE
   d) Banu Hashim, ancestors
   e) 632CE
   f) merchants, travellers, armies
3. i) They were pagans and worshipped idols.
   ii) The ruler was Christian called Negus.
   iii) He was impressed by Jafar's recitation of Quranic verses in praise of Hazrat Maryam (AS) and Hazrat Isa (AS).
   iv) A manjaneeq is a very large catapult used in battle to hurl rocks at enemy forts during a siege.

Worksheet 21

1. i) = c) ii) = e) iii) = a) iv) = f) v) = b) vi) = d)
2. i) subcontinent, Arabs
   ii) Europe, subcontinent
   iii) Qutbuddin Aibak, 200 years
   iv) Razia Sultana, Iltutmish's
   v) Ibn Batuta, Moroccan
   vi) Timur, Delhi

Worksheet 22

1. i) = b); ii) = c); iii) = c); iv) = d); v) = d)
2. i) Bengal and Peshawar
   ii) Bairam Khan, Humayun's trusted general.
   iii) Din-e-Ilahi; it was meant to bring together Muslims and non-Muslims.
   iv) He fell seriously ill and was then put under house arrest by Aurangzeb.
   v) Shivaji was a Maratha warrior and leader; he used guerilla tactics to fight Aurangzeb's army.
3. A = Mughal Empire B = Marathas C = Rajputs D = Jats E = Sikhs F = Pashtun tribes

Worksheet 23

1. i) = d); ii) = e); iii) = b); iv) = c); v) = a)
2. a) silks, spices and jewels b) East Asia, two c) Atlantic Ocean, West Indies
   d) Cape of Good Hope e) Turkish f) Portuguese

Worksheet 24

1. i)= c); ii) = b); iii) = a); iv) = b); v) = c)

2. a) True; b) False; c) True; d) True; e) True; f) False

Worksheet 25

1. a) Mysore b) Carnatic c) Arcot, 1782 d) rockets e) Napoleon f) 1857, 1858

2. i) They were loyal to the British because they were better paid and had job security.

   ii) The Rani of Jhansi and Nana Sahib of Kanpur were strong leaders who could unite the local people against the British.

   iii) The rockets were made of iron with a bamboo rod attached by leather straps. They skimmed across the ground and caused great damage on impact.

3. The Gurkhas had fought the British (1814 – 16) but later joined them and some still serve in UK's armed forces.

Worksheet 26

1. a) = iii); b) = v); c) = iv); d) = vi); e) = i); f) = ii)

2. a) …they felt victimized (treated badly) by the British.

   b) Vice = in place of; roy = monarch.

   c) self-rule for the Indians because he thought they were not as good as the British.

   d) …lack of higher education among the Indians.

   e) …was abolished by the government in London.

Worksheet 27

1. a) 1817, Delhi b) Delhi, 1846 c) Mohammadan Anglo-Oriental College

   d) knighthood, 1888 e) Urdu, English

2. a) = i) b) = iii) c) = ii) d) = i)

ASSESSMENT PAPER (GEOGRAPHY)

Section A

1. a. Pakistan is located strategically, like a hinge, between the East (India, South-east and South Asia) and the West (Iran, Iraq, Afghanistan, Gulf States and Arabia); to the North it has access to Afghanistan, Central Asia and China, and to the South to the Arabian Sea, Gulf and Indian Ocean.

   b. Punjab is the agricultural heartland and industrial centre of Pakistan; hence more people live and work here as compared to other provinces.

2. a. Factors that determine the climate of a region are: temperature, distance from the Equator, altitude (height of land above sea level), distance from the sea, rainfall, wind and air pressure.

   b. Karachi is on the Arabian Sea coast which keeps its climate cooler in summer and milder in winter as compared to Lahore which is 1000km inland and has very hot summers and cold winters.

3. a. Pakistan is an agriculture-based economy which provides a larger share of income; industries are also based on agricultural goods.

   b. Sources of water for agriculture are rivers, lakes, stream, canals, dams, tube wells, and karez.

4. a. Main mineral resources in Pakistan are natural gas, oil (very little), coal, limestone, marble, salt, low grade iron ore, gemstones, and recently discovered large deposits of copper and some gold in Balochistan.

   b. Energy sources in South Asia are mainly hydel, thermal and nuclear. Solar and wind energy have not yet been exploited extensively.

5. a. Industry provides manufactured goods for export as well as domestic use, thus saving funds spent on imports; exports bring in good value. Industry also provides employment and creates skilled workers; overall improvement in economy and living standards.

   b. Pakistan's industries are mainly agriculture-based: cotton yarn and goods, hides and leather goods, dairy products, sports goods, carpets , textiles, readymade clothing, stainless steel cutlery and surgical instruments, tourism (especially in Northern areas), cement, fertilizer, chemicals and service industry, especially IT-based.

   SAARC countries: India is strong in IT-based service industry, next to Silicon Valley in California, engineering goods, electronic items, modes of transport, chemicals, pharmaceuticals, dairy products, cinema industry, textiles, jewellery and tourism. Bangladesh has tea, textiles, jute (raw and finished goods), paper, fish, rice, coconut. Sri Lanka has tea, tourism, gemstones, and jewellery.

Section B

1. Pakistan's neighbours and their location

   Iran to the west; Afghanistan to the north-west; China to the north-east; India to the East.

2. a) valley; b) plateau; c) lakes; d) delta; e) cyclone, anti-cyclone

3. i) = c; ii) = d; iii) = c); iv) = b); v) = b)

4. a) True b) False c) False d) True e) True

5. a. Rivers, dams, canals, tube wells, karez, Persian wheel, charsa

   b. agriculture, South Asia

   c. dairy products, meat, leather, hides

   d. cotton

   e. gur, molasses, bagasse

ASSESSMENT PAPER (HISTORY)

Section A

1. Mohenjo Daro is part of the 4500 years old Indus Valley civilization. It was discovered in the 1920s by a British archeologist. Mohenjo Daro was built along the Indus River; it was a well-planned city with large buildings made of bricks; there was also a big pool or bath near the stupa. It had proper streets and drainage channels and was quite a large city for its time.

The people were farmers and craftsmen; the city was probably ruled by priests. Statues, jewellery, implements and clay toys as well as seals have been found, but the writing on the seals has not been deciphered as yet. The reasons for the end of this civilization could be the Aryan invasion and also the shifting of the river course which made the land dry and infertile.

2. The Four Noble Truths taught by Buddha were: There is suffering in life; suffering is caused by greed and ignorance; it can be reduced by overcoming ignorance and by meditation; people should follow the Eight-fold Path.

   The Eight-fold Path taught that people should practise: right belief, right thought, right speech, right action, right means of livelihood, right effort, right remembrance, right meditation.

3. Mohammad bin Qasim arrived in Sindh in 711CE; he had been sent by the governor of Basra to deal with Raja Dahir as he did not punish the pirates who attacked and looted ships carrying people and cargo for the caliph in Damascus. Bin Qasim's arrival marked the advent of Islam in the subcontinent and Sindh became a part of the Arab Empire.

4. Razia Sultana was a very capable leader, groomed for the job by her father Iltutmish because his sons were not as good. But the nobles were opposed to Razia Sultana as their ruler—because she was a woman and they did not like taking orders from her.

   Sadly, this attitude towards women as leaders still persists in South Asia, especially in backward areas. In the cities, however, people are now more used to women as leaders in government, business and services.

5. Sir Sayyid Ahmed Khan believed that education was the key to progress. The Hindus had eagerly taken to western education offered by the British after 1857 and became eligible for government jobs. The Muslims refused and were left behind. Sir Sayyid said that the Muslims of the subcontinent could change their fate only by acquiring education and knowledge to move ahead in the world.

   Sir Sayyid set up the Mohammadan Anglo-Oriental College in Aligarh (1875–76), which later became the Aligarh University (1921) and the alma mater of many Muslim leaders of the subcontinent.

Section B

1. i) = b); ii) = c); iii) = c); iv) = c); v) = d); vi) = e)
2. a) America b) 1498 c) Aryans d) Battle of Kalinga e) Khyber Pass f) Bihar, eastern India
3. i) = d); ii) = e); iii) = b); iv) = f); vi) = c)
4. a) = F b) = T c) = F d) = T e) = T f) = F
5. 1500BCE – Aryan invasion
   c. 350CE – Golden Age of Guptas
   1398 – Timur's invasion of Delhi
   1526 – Battle of Panipat
   1707 – Death of Aurangzeb
   1857 – War of Independence

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