Chapter 6: Dynamics of Population

Exercise 6.1 — Questions and Activities

Q1 Why is it important for a country to study its population through demography?

Demography studies the size, structure, and composition of a population — including age, gender, education, occupation, and religion — and how these change over time due to births, deaths, and migration. This knowledge helps governments plan schools, hospitals, roads, water supply, and energy needs. For example, a region with many young children needs more schools, while one with a large elderly population needs more healthcare facilities. Businesses also use demographic data to understand their customers. Ultimately, studying population helps a country allocate and manage its resources efficiently.

Q2 How can a low fertility rate affect a country's future economy and workforce?

A low fertility rate means fewer babies are being born, so over time the working-age population shrinks. As more people retire and fewer young workers replace them, farms, factories, and offices face labour shortages, which can slow economic growth. Governments also collect less in taxes from a smaller workforce, making it harder to pay pensions and provide services for the growing elderly population. Countries like Japan and China already face this challenge — Japan has had to raise the retirement age and invest in robots and automation to make up for the shortage of young workers.

Q3 Do you think a high birth rate is always good for a country? Why or why not?

A high birth rate is not always good for a country. When birth rates are very high, the population grows rapidly, which can strain resources like food, water, housing, and employment. Governments struggle to provide enough schools, hospitals, and infrastructure for a fast-growing population. While a large young population can create a demographic dividend — more workers to drive economic growth — this benefit is only realised if the country invests adequately in education, skills, and job creation. Without these investments, a high birth rate can lead to poverty, unemployment, and pressure on public services rather than prosperity.

Q4 Do you think it's better to have more people or fewer people in a country? What are the challenges countries face in the case of a fast-growing or shrinking population?

Neither extreme is ideal — both fast-growing and shrinking populations present challenges. A fast-growing population puts pressure on food, water, land, housing, education, and employment. Cities become overcrowded and resources get depleted quickly. On the other hand, a shrinking population means fewer workers to support the economy, labour shortages, and fewer taxpayers to fund government services. An ageing society also requires expensive healthcare and pension systems. Countries like India face the challenge of harnessing a large youth population through education and jobs, while countries like Japan and Italy struggle with an ageing, shrinking workforce. A stable, balanced population is generally most beneficial.

Q5 How does the age structure of a country affect the kind of jobs and services it needs? Explain with examples.

The age structure determines the demands placed on a country's economy and services. A young population with many children needs more schools, teachers, paediatric healthcare, and playgrounds. A large working-age group (15–64 years) creates demand for jobs, housing, transport, and consumer goods. An elderly population needs more hospitals, geriatric care, retirement homes, and pension systems. For example, India, with nearly 65 per cent of its population in the working-age group, needs massive investment in employment and skill development. Japan, with a large elderly population, has invested in robots and AI-assisted elder-care to meet its healthcare demands.

Q6 Why do you think families are generally getting smaller? Does having fewer children ensure better education and health for them? How does it affect families and society?

Families are getting smaller because of rising urbanisation, higher living costs, better education for women, and more women entering the formal workforce. As women pursue careers, they tend to marry later and have fewer children. With rapid urbanisation, the cost of raising children — in terms of schooling, healthcare, and housing — has increased significantly. Having fewer children can allow families to invest more in each child's education, nutrition, and healthcare, improving outcomes. For society, smaller families reduce strain on public resources and can help raise the overall quality of life. However, over generations, very low fertility rates can lead to an ageing, shrinking population, creating economic and social challenges.

Q7 Observe the graph below showing changes in life expectancy across gender in India and answer the questions given below:
a) Has the life expectancy in India increased? If yes, what could be the reasons?
b) What was the life expectancy of males and females in 2010?

a) Yes, life expectancy in India has increased significantly over the decades. At the time of independence, life expectancy at birth in India was around 30 years; by 2024 it had risen to 70 years. The key reasons include improvements in healthcare (availability of antibiotics, vaccines, and oral rehydration solutions), better nutrition and sanitation, reduction in child mortality (from 271 per 1,000 in 1950 to 28 in 2023), and broader economic development that made these benefits available to more people.

b) According to the graph, the approximate life expectancy in India in 2010 was around 66–67 years for males and around 69–70 years for females, with females generally having a slightly higher life expectancy than males.

Q8 What is a demographic dividend, and how does it benefit a country? What do you think India needs to do today to make the most of its demographic dividend before 2050?

A demographic dividend is the economic growth potential that arises when a large share of a country's population is in the working-age group (15–64 years). More working people means higher productivity, greater output of goods and services, more tax revenue, and faster economic growth. India currently has about 65 per cent of its population in the working-age group and a median age of only 28 years, giving it a significant advantage. However, this window is limited — the young population is expected to decline after 2050. To harness the dividend, India needs to invest heavily in quality education, vocational training, healthcare, and job creation. Supporting women's participation in the workforce — through childcare facilities and flexible work policies — is also essential to maximise this opportunity.

Q9 Choose two countries (for example: India and Japan, or Nigeria and Italy). Find out their: Population size, Fertility rate, Life expectancy, Age distribution. How are they different? What might be the reasons behind these differences? For instance, find out how countries with ageing populations are managing this.

Guidance: Choose two contrasting countries such as India and Japan. Research their population size, fertility rate, life expectancy, and age distribution using data from the chapter and additional sources. Compare them — for example, India (population ~1.46 billion, fertility rate 1.9, median age 28) versus Japan (smaller population, fertility rate well below 2, median age 50, wide-top population pyramid). Explain the differences in terms of economic development, healthcare access, urbanisation, and cultural factors. Include how ageing-population countries like Japan are responding — such as raising the retirement age, adopting automation and robots, and building large-scale elder-care centres as described in the chapter.

Q10 Imagine you are a researcher who intends to study migration patterns in your locality. Make a questionnaire to collect data on the following questions: Name of the person, Age of the person, Occupation of the person, Place of residence, Number of years lived in the place, List the factors contributing to migration, such as lack of facilities, poor infrastructure, limited job opportunities and so on.

Guidance: Prepare a structured questionnaire with one question per data point. Include fields such as: (1) What is your name? (2) What is your age? (3) What is your occupation? (4) What is your current place of residence? (5) How many years have you lived here? (6) Did you migrate from another place — if yes, where from? (7) What were the main reasons for moving? (Tick all that apply: limited job opportunities / lack of schools or hospitals / poor roads or infrastructure / natural disaster / family reasons / better wages / other.) The questionnaire should be respectful and clearly explain that responses are for research purposes only.

Q11 Draw a population pyramid on graph paper for India using the data given in the following table. (Age-group-wise percentage distribution of population, estimated for 2021)

Guidance: On graph paper, draw a horizontal bar chart with age groups (0–4, 5–9, 10–14 … 80+) listed vertically in the centre. Draw male bars extending to the left and female bars to the right, using the percentage values from the table (e.g., Males 0–4: 8.6%, Females 0–4: 8.2%). Label each age group, mark the percentage scale on both sides, and add a title 'India Population Pyramid (2021 estimates)' with a legend for male and female. The pyramid should have a wider base (younger age groups) and narrow towards the top, showing India's predominantly young population with a large working-age bulge in the 15–29 age bands.

Q12 Observe the population pyramid for Japan in 2023 below. What can you infer from this? Write your observations and share in the class.

Japan's 2023 population pyramid shows a narrow base and a wide middle and top — the opposite of a young, growing population. The very narrow base indicates that very few children are being born (extremely low birth rate and fertility rate well below 2.1). The widest sections are in the 45–75 age range, showing a large elderly population. The top of the pyramid is not sharply tapered, indicating many people are living into their 80s and beyond due to excellent healthcare. This confirms that Japan has an ageing, shrinking population. It faces serious economic challenges: fewer workers to replace retirees, labour shortages, high healthcare and pension costs, and slow economic growth — exactly the challenges discussed in the chapter.