

CHAPTER 2

The World Population — Distribution, Density and Growth

CBSE Class 12 · Geography · Chapter 2

CBSE · Geography · Class 12

WHAT THIS CHAPTER DOES

A Explain the patterns and factors of world population distribution.

B Calculate arithmetic population density correctly.

Boards prep that builds confidence, not anxiety.

TODAY'S MISSION

Today's mission

1

Explain the patterns and factors of world population distribution.

2

Calculate arithmetic population density correctly.

3

Master the components of population change and the actual-growth formula.

4

Reproduce the demographic transition theory with all three stages.

5

Score 6-8/8 marks on this chapter's slice.

WHY THIS MATTERS

Why this chapter matters

- 1** 5-8 marks every CBSE board paper — the heaviest chapter of Unit I (People).
- 2** The demographic transition theory is a near-certain 5-marker; factors of distribution and density calculation are recurring.
- 3** Real-world relevance: India became the world's most populous country (2023); population policy, migration and ageing are live national issues.

TOPIC

A

Patterns of population distribution

THEOREM · LOAD-BEARING RESULT

How people are spread across the earth

Population distribution is the way people are spaced over the earth's surface. It is highly UNEVEN — broadly, about 90% of the world's population lives on roughly 10% of its land area, and the 10 most populous countries together hold close to 60% of the world's population.

STATEMENT

The most densely populated regions are: (1) the North-East USA, (2) North-Western Europe, (3) South, South-East and East Asia (the Indo-Gangetic plain, eastern China, Japan, Java). These river-

WHY THIS MATTERS

- Knowing the pattern lets us explain WHY some regions are crowded — and predict where pressure on resources, infrastructure and the environment will be greatest.

WATCH OUT FOR

NOTE Distribution (the SPREAD/ pattern of people) is not the same as density (people PER UNIT AREA). A region can have many people yet low density if it is very large.

TOPIC

B

Factors influencing distribution

TOPIC

Physical factors that pull or repel settlement

AVAILABILITY OF WATER

Water is the single most important geographical control on where people live. Human settlements cluster along rivers, deltas, lake shores and coasts because water serves drinking, irrigation, transport, industry and waste disposal all at once. The great population concentrations of the

LANDFORMS + CLIMATE

Landforms strongly shape density: flat plains and gently rolling valleys are easy to till, build on and connect by road and rail, so they support dense populations, whereas steep, rugged mountains and high plateaus (the Himalayas, the Andes interior) stay sparse because farming and movement are

SOILS + NATURAL VEGETATION

Fertile soils underpin intensive agriculture and therefore high rural densities — the alluvial soils of the Indo-Gangetic plain, the black cotton soils of the Deccan, the loess of northern China and the volcanic soils of Java all sustain large farming populations. Thin, infertile or leached

THE COMBINED GEOGRAPHICAL PULL

No single physical factor acts alone — high density needs a FAVOURABLE COMBINATION: reliable water + flat land + moderate climate + fertile soil. This is exactly why the world's great river valleys and deltas are crowded: they bundle all four advantages. It also explains the

TOPIC

Economic, social, cultural and political factors

MINERALS + INDUSTRIALISATION

Economic factors increasingly override physical ones in the modern world. Areas with rich MINERAL deposits attract mining settlements and the industries and services that grow around them — the Katanga-Zambia copper belt in Africa and the Chota Nagpur

URBANISATION

Cities are powerful magnets for population because they bundle employment, education, healthcare, entertainment and civic amenities in one place. The pull of the city drives continuous rural-to-urban migration, so the world's metropolitan regions show the highest densities on earth — Mumbai, Tokyo, Delhi

SOCIAL + CULTURAL FACTORS

Some places attract or repel people for social, cultural or religious reasons rather than economic ones. Settlements of social and religious significance — Varanasi, Jerusalem, Mecca — draw and hold populations, while areas of persistent social tension, communal

POLITICAL FACTORS

Governments deliberately shape population distribution through policy. They offer INCENTIVES — subsidised housing, jobs, tax holidays, free or cheap land — to attract people into sparsely settled or strategically important regions, or impose DISINCENTIVES and restrictions to

TOPIC

C

Density of population

THEOREM · LOAD-BEARING RESULT

Defining and calculating density



Density of population is the ratio between the number of people and the size of the land they occupy. The simplest measure is **ARITHMETIC DENSITY = Total Population ÷ Total Area**, expressed as persons per square kilometre.

STATEMENT

Densely populated regions (over 200 persons/sq km) include the Indo-Gangetic plain, eastern China, Western Europe and the North-East USA. Sparsely populated regions (under 1 person/sq

WHY THIS MATTERS

- Density tells us about **PRESSURE** on land and resources far better than raw population totals
- planners use it to allocate schools, water, transport and housing.

WATCH OUT FOR

NOTE Never confuse density with total population. Always **DIVIDE** population by area. A huge country with many people (e.g. Canada) can still have a very **LOW** density.

WORKED EXAMPLE

Worked density calculation

- 1** PROBLEM: A district has a population of 48,00,000 (4.8 million) people and a total area of 12,000 sq km. Find its arithmetic population density.
- 2** STEP 1 — Write the formula: $\text{Density} = \text{Total Population} \div \text{Total Area}$.
- 3** STEP 2 — Substitute: $\text{Density} = 48,00,000 \div 12,000$.
- 4** STEP 3 — Divide: $48,00,000 \div 12,000 = 400$.
- 5** STEP 4 — State with units: the population density = 400 persons per sq km. ANSWER: 400 persons/sq km — a densely populated district (above the 200/sq km threshold).
- 6** EXAM TIP: always write the formula first, keep the units (persons per sq km), and round sensibly. Examiners award a mark for the formula even if the arithmetic slips.

TOPIC

D

Population growth and its components

TOPIC

Growth, natural increase and the change components

GROWTH VS GROWTH RATE

Population GROWTH is the change — increase or decrease — in the number of people in a territory between two points in time, expressed as an absolute number. The GROWTH RATE expresses that change as a PERCENTAGE per year, which lets us compare regions of different size.

NATURAL VS ACTUAL GROWTH

NATURAL GROWTH (natural increase) counts only the balance of births and deaths: $\text{Natural Growth} = \text{Births} - \text{Deaths}$. ACTUAL GROWTH adds the migration component: $\text{Actual Growth} = \text{Births} - \text{Deaths} + \text{In-migration} - \text{Out-migration}$. The two diverge wherever

BIRTH + DEATH RATES (CBR, CDR)

The two natural components are measured as rates per thousand. Crude Birth Rate (CBR) = $(\text{live births} \div \text{mid-year population}) \times 1000$; Crude Death Rate (CDR) = $(\text{deaths} \div \text{mid-year population}) \times 1000$. Through most of the modern era the DEATH RATE has fallen fastest —

MIGRATION — PUSH AND PULL

Migration, the third component of change, is the movement of people across a boundary to take up residence elsewhere; it redistributes population without changing the world total. It is driven by PUSH factors that drive people away from a place — unemployment,

TOPIC

E

Demographic transition theory

TOPIC

How birth and death rates change as a society develops

WHAT THE THEORY DESCRIBES

The demographic transition theory describes how the population of any region changes over time as society moves from a rural, agrarian and illiterate condition to an urban, industrial and literate one. It is a generalisation built from the historical experience

STAGE 1 — HIGH STATIONARY

In the FIRST stage the society is rural and agrarian with high illiteracy, poor sanitation and limited medicine. Both the BIRTH RATE and the DEATH RATE are HIGH and roughly balance each other, so the total population stays LOW and grows extremely slowly or not

STAGE 2 — EXPANDING (EXPLOSION)

In the SECOND stage the DEATH RATE FALLS SHARPLY because of improved food supply, sanitation, clean water and modern medicine, while the BIRTH RATE remains HIGH out of custom and because the benefits of smaller families are not yet felt. The widening gap

STAGE 3 — LOW STATIONARY + BEYOND

In the THIRD stage BOTH the birth rate and the death rate fall to a LOW level and come back into balance, so the population stabilises at a HIGH total and grows only slowly. Society is now urban, literate and industrial with high living standards and small, planned families. Some

TOPIC

F

Doubling time, impact and control

TOPIC

Doubling time, spatial pattern, impact and population control

DOUBLING TIME

Doubling time is the number of YEARS a population would take to double in size at its current annual growth rate. It is inversely related to the growth rate — a faster-growing population doubles sooner — and is estimated by the Rule of 70: doubling time $\approx 70 \div$ annual growth rate (%)

SPATIAL PATTERN OF GROWTH

Population growth is itself unevenly distributed in space. The developed world (Europe, North America, Japan) now grows slowly or is declining, having completed the demographic transition, whereas much of Sub-Saharan Africa and South Asia still grows rapidly,

IMPACT OF POPULATION CHANGE

A small, balanced increase in population can be healthy — it signals development. But rapid, unchecked growth strains the carrying capacity of a region: it pressures food, water, housing, jobs, schools and hospitals, accelerates depletion of natural resources, drives

POPULATION CONTROL

Concern over runaway growth dates to Thomas Malthus, who warned that population, rising geometrically, would outstrip food supply growing only arithmetically, kept in check by 'positive checks' (famine, disease, war) unless restrained by 'preventive checks' (delayed marriage, moral

TOPIC

Density vs total population

TRAP → TRUTH

× **MISTAKE** A country with more people always has higher population density.

✓ **CORRECT** DENSITY = population ÷ AREA, not just total people. Canada has 38 million people but a density of only ~4 per sq km because its area is huge; Bangladesh has ~170 million but density over 1100 per sq km because its area is tiny. China has more people than Bangladesh but far LOWER density. Always divide by area.

TOPIC

Natural growth vs actual growth

TRAP → TRUTH

- × **MISTAKE** Natural growth and actual growth of population mean the same thing.
- ✓ **CORRECT** NATURAL GROWTH = Births – Deaths only (no migration). ACTUAL GROWTH = Births – Deaths + In-migration – Out-migration. Actual growth ADDS the migration component. A region can have positive natural growth but shrinking actual population if out-migration exceeds it (e.g., depopulating villages).

TOPIC

Negative growth = no births

TRAP → TRUTH

- × **MISTAKE** Negative population growth means no babies are being born.
- ✓ **CORRECT** NEGATIVE growth means the death rate (plus net out-migration) EXCEEDS the birth rate — population shrinks even though births continue. Seen in late-Stage-4/Stage-5 countries (Japan, several European nations). Births still happen; they're just fewer than deaths.

TOPIC

Demographic transition reverses everywhere

TRAP → TRUTH

- × **MISTAKE** Every country follows the demographic transition identically and at the same speed.
- ✓ **CORRECT** The MODEL is a generalisation based on European industrial history. The TIMING and SPEED differ: Europe took ~150-200 years; many developing countries compressed it into decades due to imported medicine lowering death rates fast (a wide Stage-2 'population explosion'). Some argue a Stage 5 (declining population) now exists. It is a descriptive trend, not a law.

TOPIC

Tropics are always crowded

TRAP → TRUTH

- × **MISTAKE** Hot tropical regions are always densely populated because life is easy there.
- ✓ **CORRECT** Hot-WET equatorial regions (Amazon, Congo) are SPARSELY populated — dense forest, poor soils, disease. Hot DESERT regions (Sahara, Arabian) are also sparse — lack of water. High density needs the RIGHT combination: water + fertile soil + moderate climate + economic opportunity. River valleys and deltas (Ganga, Nile, Yangtze) are crowded; tropical extremes are not.

TOPIC

Push vs pull factors

TRAP → TRUTH

- × **MISTAKE** Push and pull factors are the same kind of force acting on migrants.
- ✓ **CORRECT** PUSH factors DRIVE people AWAY from a place (unemployment, poverty, drought, conflict, epidemics). PULL factors ATTRACT people TO a place (jobs, better wages, education, security, amenities). The SAME migration is shaped by push at origin AND pull at destination acting together — Bihar's unemployment (push) + Delhi's jobs (pull).

TOPIC

Doubling time formula

TRAP → TRUTH

× **MISTAKE** Doubling time is the same as the annual growth rate.

✓ **CORRECT** DOUBLING TIME is the number of YEARS a population takes to double at its current growth rate — it is the INVERSE relationship to growth rate, not the rate itself. A higher growth rate means a SHORTER doubling time. Rough rule (Rule of 70): doubling time $\approx 70 \div$ annual growth rate (%). At 2% growth, a population doubles in about 35 years.

TOPPER TEMPLATE · MARK-BY-MARK

5-mark: 'Explain the demographic transition theory with its stages.'

1 **SETUP — WHAT THE THEORY DESCRIBES**
1 m

The demographic transition theory describes how a population changes over time as a society moves from a rural-agrarian-illiterate stage to an urban-industrial-literate one. It links birth rate, death rate and total population through three (sometimes four) stages and is based on the European industrialisation experience.

2 **STAGE 1 — HIGH STATIONARY**
1.5 m

STAGE 1 (HIGH STATIONARY): Both birth rate AND death rate are HIGH and roughly balanced, so population is LOW and grows very slowly. Society is rural, agrarian, with poor sanitation and high disease; life expectancy is low. Most of human history was in this stage.

3 **STAGE 2 — EARLY/LATE EXPANDING (POPULATION EXPLOSION)**
1.5 m

STAGE 2 (EARLY EXPANDING): The DEATH RATE FALLS SHARPLY due to better medicine, food supply and sanitation, while the BIRTH RATE STAYS HIGH. The widening gap causes RAPID POPULATION GROWTH — the 'population explosion'. Late Stage 2 sees the birth rate begin to fall as urbanisation and awareness rise. Most developing countries passed through this phase in the 20th century.

4 **STAGE 3 — LOW STATIONARY + CONCLUSION**
1 m

STAGE 3 (LOW STATIONARY): BOTH birth and death rates fall to a LOW level and balance again; population stabilises at a HIGH total. Society is urban, literate, with high standards of living and small families. CONCLUSION: The theory shows the death rate falls before the birth rate, which is exactly why a temporary 'explosion' occurs in the middle stage. A fourth/fifth declining stage is now observed in some developed nations.

TOPPER TEMPLATE · MARK-BY-MARK

5-mark: 'Explain the factors influencing the distribution of population.'

1 **GEOGRAPHICAL — WATER + LANDFORMS**
1 m

GEOGRAPHICAL FACTORS: (a) AVAILABILITY OF WATER — people cluster along rivers, deltas and coasts (Ganga, Nile, Yangtze valleys) because water serves drinking, farming, transport and industry. (b) LANDFORMS — flat plains and gentle valleys are densely settled; steep, rugged mountains are sparse.

2 **GEOGRAPHICAL — CLIMATE + SOILS**
1 m

(c) CLIMATE — moderate climates with low seasonal variation attract people; extreme hot deserts and cold polar regions repel them. (d) SOILS — fertile alluvial soils support intensive agriculture and dense populations (Indo-Gangetic plain), while infertile soils stay sparse.

3 **ECONOMIC FACTORS**
1.5 m

ECONOMIC FACTORS: (a) MINERALS — mining areas (Katanga-Zambia copper belt, Chota Nagpur) attract workers. (b) URBANISATION — cities offer jobs, education, healthcare and amenities, drawing migrants. (c) INDUSTRIALISATION — industrial belts (the Kobe-Osaka region, Ruhr) develop high densities.

4 **SOCIAL-CULTURAL-POLITICAL FACTORS**
1.5 m

SOCIAL & CULTURAL FACTORS: places with social and religious significance (Varanasi, Jerusalem) attract people, while areas of social/political unrest lose them. POLITICAL FACTORS: governments offer incentives (housing, jobs, tax breaks) to encourage or discourage settlement in particular regions. CONCLUSION: distribution is the combined outcome of physical, economic, social and political pulls.

TOPPER TEMPLATE · MARK-BY-MARK

3-mark: 'Explain the components of population change.'

- 1** **CRUDE BIRTH RATE**
1 m

CRUDE BIRTH RATE (CBR) = number of live births per 1000 persons in a year ($CBR = Bi \div P \times 1000$, where Bi = live births, P = mid-year population). A higher CBR adds to population.
- 2** **CRUDE DEATH RATE**
1 m

CRUDE DEATH RATE (CDR) = number of deaths per 1000 persons in a year ($CDR = D \div P \times 1000$). Falling death rates (better medicine and food) drive much of the modern population rise.
- 3** **MIGRATION + THE ACTUAL-GROWTH IDENTITY**
1 m

MIGRATION is the third component — in-migration adds people, out-migration subtracts them, shaped by PUSH factors (poverty, drought, conflict) and PULL factors (jobs, safety, amenities). The full identity is:
ACTUAL GROWTH = Births – Deaths + In-migration – Out-migration.

PYQ PATTERNS






Top PYQ patterns to drill

#1	Explain the demographic transition theory with its stages. (5 marks)	Annual
#2	Explain the factors influencing the distribution of population. (5 marks)	Most years
#3	What is density of population? Calculate the density for given data. (3 marks)	2018, 2021, 2023
#4	Explain the components of population change / push and pull factors of migration. (3 marks)	2019, 2022, 2024
#5	What is doubling time? / Distinguish natural growth and actual growth. (3 marks)	2020, 2023

MARKS DISTRIBUTION

10-year marks distribution

10-YEAR PYQ MARKS DISTRIBUTION

Demographic transition theory (stages)		34%
Factors influencing population distribution		26%
Population density — concept + calculation		18%
Components of population change (birth/death/migration)		22%
Population growth, doubling time, impact + control		16%

RECAP · MEMORISE THESE

Recap

1 Distribution + density — ~90% of people on ~10% of land; density = population ÷ area (persons/sq km). Driven by geographical (water, landform, climate, soil) + economic + social-political factors.

2 Growth components — Actual growth = Births – Deaths + In-migration – Out-migration. Natural growth omits migration. CBR/CDR per 1000; migration shaped by push (away) and pull (toward) factors.

3 Demographic transition — Stage 1 high stationary (high B, high D) → Stage 2 expanding (D falls first → population explosion) → Stage 3 low stationary (both low). Death rate falls before birth rate.

WHAT'S NEXT

What's next

- Chapter 3 — Population Composition (age-sex structure, sex ratio, literacy, occupation).
- Sit the 15-MCQ Quick Drill.
- Then the full Board-Pattern Paper — 27 marks.

You've mastered distribution, density and growth.

Demographic transition + the formulas — now prove it.

readyforboards.com

Helpline: +91 70330 05444

Boards prep that builds confidence, not anxiety.