Exercise walk-through

1.1

Population and spatial scale: supported rehearsal

International Baccalaureate · IB Diploma · Geography · SL

Where people live

- **Population distribution** is the pattern of where people live.
- It depends on **physical factors** (climate, water, relief and soil) and **human factors** (jobs, transport, history and government policy).
- In China, about 94% of people live east of the "Hu Line", a line drawn from Heihe in the north-east to Tengchong in the south-west, on about 43% of the land.
- The west is high, dry and cold.

$$\text{density} = \frac{\text{population}}{\text{area}}$$

How populations change

- The **demographic transition model** (DTM) shows how birth and death rates change as a country develops:
- *Demographic transition: death rates fall before birth rates, and the gap is population growth*
- The model is based on European history.
- It does not include migration, and it does not say how long each stage lasts: China passed through stages 2 to 4 in about 50 years, much faster than Britain.

$$\text{dependency ratio} = \frac{\text{aged 0–14} + \text{aged 65 and over}}{\text{aged 15–64}} \times 100$$

Key terms (2)

- **Replacement level**: the fertility rate (about 2.1) at which a population replaces itself over time.
- **Dependency ratio**: the number of people aged 0–14 and 65 and over for every 100 people aged 15–64.
- **Demographic dividend**: the boost to growth when the share of working-age people is high.
- **Internally displaced person (IDP)**: someone forced to leave home who stays inside their own country.

Exercises 2.1·2.3

2.1 Define crude birth rate and crude death rate, stating the units of each. [2]

male female

2.2 A country has CBR 18 per 1 000 and CDR 9 per 1 000. Calculate the natural increase rate and the approximate doubling time. [3]

male female

2.3 State what happens to CBR and CDR in stage 2 of the demographic transition model, and name the growth result. [2]

male female

Exercises 2.1·2.3

2.1 Define crude birth rate and crude death rate, stating the units of each. [2]

male female

2.1 CBR: live births per 1 000 people per year (1). CDR: deaths per 1 000 people per year (1).

2.2 A country has CBR 18 per 1 000 and CDR 9 per 1 000. Calculate the natural increase rate and the approximate doubling time. [3]

male female

2.2 NIR $= 18 - 9 = 9$ per 1 000 $= 0.9\%$ a year (2). Doubling time $\approx 70/0.9 \approx 78$ years (1).

2.3 State what happens to CBR and CDR in stage 2 of the demographic transition model, and name the growth result. [2]

male female

2.3 CDR falls sharply (medicine, sanitation, food) while CBR stays high (1); the gap between them produces explosive (rapid) natural increase (1).

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Exercises 2.4·2.5

2.4 A population has 60 children (0–14), 30 elderly (65+) and 210 of working age (15–64). Calculate the dependency ratio. [3]

male female

2.5 Classify each as push or pull: (a) civil conflict at home; (b) higher wages abroad; (c) crop failure from drought. [3]

male female

Exercises 2.4·2.5

2.4 A population has 60 children (0–14), 30 elderly (65+) and 210 of working age (15–64). Calculate the dependency ratio. [3]

male female

2.4 Dependents = 60 + 30 = 90 (1); ratio = 90/210 × 100 ≈ 43 dependents per 100 of working age (2).

2.5 Classify each as push or pull: (a) civil conflict at home; (b) higher wages abroad; (c) crop failure from drought. [3]

male female

2.5 (a) Push – drives people out (1); (b) pull – draws people in (1); (c) push (1).

Exercise 3.1

3.1 *(Data-response style.)* A district of 2 million has CBR 24 and CDR 8 per 1 000, with net out-migration of 12 per 1 000 a year. Calculate annual natural increase and total population growth, and explain what the difference implies for the district's age structure and services. [6]

male female

Exercise 3.1

3.1 *(Data-response style.)* A district of 2 million has CBR 24 and CDR 8 per 1 000, with net out-migration of 12 per 1 000 a year. Calculate annual natural increase and total population growth, and explain what the difference implies for the district's age structure and services. [6]

male female

3.1 Natural increase $= 24 - 8 = 16$ per 1 000 $= 1.6\%$; on 2 million that is 32 000 people a year (2). Total growth is natural increase plus net migration: $16 - 12 = 4$ per 1 000, which is 0.4%, about 8 000 a year (2). The difference is out-migration of the young workforce: the district keeps its births but loses 15–34-year-olds, so the population ages even while growing – schools demand falls over time while elder care and health services rise, and the dependency ratio worsens (2).

Exercise 3.2

3.2 *(Evaluate style.)* Using one anti-natalist policy example, examine its effects on fertility AND one unintended consequence. [4]

male female

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male female

3.2 China's one-child policy (1979–2015) penalised second births and tied benefits to small families: fertility fell well below replacement, slowing population growth as intended (2). Unintended consequences: a rapidly ageing population with a shrinking workforce, and a skewed sex ratio from son preference under the one-child limit – leading to the two-child and three-child reversals (2). (Any accurate anti-natalist example with intended plus unintended effects earns the marks.)

Exercise 3.3

3.3 *(Migration style.)* Distinguish a refugee from an economic migrant, and explain one impact of remittances on a country of origin. [3]

male female

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male female

3.3 A refugee crosses an international border fleeing a well-founded fear of persecution, conflict or violence, protected by the 1951 Convention (1); an economic migrant moves by choice for work or living standards and has no Convention protection (1). Remittances add to the origin country's income (a major GDP share for Nepal or the Philippines), funding consumption, schooling and housing – while deepening dependence on migration itself (1).

Local review guidance: show the subtraction before the percentage and state the units; the difference between natural increase and total growth is migration – name who leaves; (R1) the "examine" item needs intended AND unintended effects. Authored classroom guidance.