

2 Population density and the demographic transition – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	Write it 3 times (English)		
Arithmetic density	_____	_____	_____
Physiological density	_____	_____	_____
Agricultural density	_____	_____	_____
Crude birth rate	_____	_____	_____
crude death rate	_____	_____	_____
Natural increase rate	_____	_____	_____
Total fertility rate	_____	_____	_____
replacement level	_____	_____	_____
Infant mortality rate	_____	_____	_____
demographic transition model	_____	_____	_____
population pyramid	_____	_____	_____
dependency ratio	_____	_____	_____

Recall

You already know that some places are crowded and others empty, and that people move. This sheet gives you the measures geographers use for that, and the model that explains how a country's population changes over time.

New ideas

■ 1 Three densities, not one

Arithmetic density is total population divided by total land area. It is the one most people mean by “density”, and it is the least useful.

Physiological density is population divided by ARABLE land – the land that can grow food. It tells you about pressure on food supply.

Agricultural density is the number of FARMERS divided by arable land. A low agricultural density means mechanised, efficient farming; a high one means many people working the same land by hand.

Egypt makes the point: its arithmetic density is low because most of it is desert, and its physiological density is among the highest on Earth.

■ 2 The rate vocabulary

Crude birth rate and **crude death rate** are births or deaths per 1000 people per year.

Natural increase rate is $(\text{CBR} - \text{CDR}) \div 10$, expressed as a percentage. It excludes migration – a country can have positive natural increase and a falling population.

Total fertility rate is the average number of children a woman would have in her lifetime at current rates. About 2.1 is **replacement level**; below it a population eventually shrinks without migration.

Infant mortality rate is deaths under one year per 1000 live births, and is the single best indicator of a country's health-care quality.

■ 3 The demographic transition model

The **demographic transition model** has five stages.

Stage 1: high birth rate, high death rate, no growth. Stage 2: the death rate falls sharply as sanitation and medicine improve while births stay high – population booms. Stage 3: the birth rate falls as women's education, urbanisation and contraception spread – growth slows. Stage 4: both rates are low, population is stable. Stage 5: births fall BELOW deaths and population declines.

The model describes what happened in Europe. It is a model, not a law – its main criticism is that it assumes every country follows the same path.

■ 4 Reading a population pyramid

A **population pyramid** plots age cohorts by sex. A wide base means high fertility (stage 2). Straight sides mean stable replacement (stage 4). A narrow base with a bulge on top means an ageing population (stage 4 or 5).

The **dependency ratio** is the share under 15 plus over 64, compared with the working-age group. A high ratio means fewer workers supporting more dependants – which is why both very young and very old populations strain a state’s finances.

Practice

Try these in order. The methods are all above.

2.1 Explain why physiological density is more useful than arithmetic density for judging pressure on food supply. [2]

2.2 A country has a crude birth rate of 28 and a crude death rate of 8. Calculate its natural increase rate. [2]

2.3 State what a total fertility rate of 1.4 implies for a country’s future population. [2]

2.4 Describe the shape of a population pyramid for a country in stage 2 of the demographic transition. [2]

2.5 Explain one criticism of the demographic transition model. [2]
