AP HUMAN GEOGRAPHY • EXERCISE SHEET

2.4 Population Dynamics

Name: _____ Class: _____ Date: _____ **Total: 10 marks**

Objective

Build the skills to answer exam questions on **population dynamics** 人口动态—birth, death, and growth rates.

You must be able to:

- define **crude birth rate** 粗出生率 (CBR), **crude death rate** 粗死亡率 (CDR), and **rate of natural increase** 自然增长率 (RNI)
- define **total fertility rate** 总和生育率 (TFR) and **infant mortality rate** 婴儿死亡率 (IMR)
- calculate RNI from CBR and CDR
- explain **doubling time** 倍增时间

1 Worked examples

Study these first. Each one shows the method for a task used later.

■ Key rates

CBR = births per 1,000 people per year. **CDR** = deaths per 1,000. **RNI** = (CBR − CDR) ÷ 10, as a percent (migration excluded).

■ TFR and IMR

TFR = average children per woman; a TFR near **2.1** is replacement level. **IMR** = deaths under age 1 per 1,000 live births —a strong indicator of development.

■ Doubling time

Doubling time 70 ÷ RNI (in %). An RNI of 2% doubles a population in about 35 years.

2 Practice

2.1 Define the rate of natural increase. [2]

2.2 A country has a CBR of 30 and a CDR of 10. Calculate its RNI. [2]

2.3 Country Y has a TFR of 1.6.

(a) State whether this is above or below replacement level. [1]

(b) Predict what happens to the population size over time, ignoring migration. [1]

3 Exam-style questions

3.1 Replacement-level fertility is a total fertility rate of about [1]

- **A** 0.5
- **B** 1.0
- **C** 2.1
- **D** 4.0

3.2 With an RNI of 2% per year, the population doubles in roughly [1]

- **A** 7 years
- **B** 35 years
- **C** 70 years
- **D** 140 years

3.3 A country's infant mortality rate falls sharply over 20 years.

(a) State what IMR measures. [1]

(b) Explain what the fall suggests about development. [1]

4 Go further

- work through the **2.4 Population Dynamics** lesson on the **Learn** page;
- read the **Population and Migration** section of the AP Human Geography handout on the **Know** page.

Solutions

2.1 the percentage growth of a population from births minus deaths, excluding migration.

2.2 $(30 - 10) \div 10 = 2.0\%$.

2.3 (a) below replacement (2.1). (b) the population will shrink/decline over time.

3.1 C. about 2.1 children per woman replaces a couple plus child mortality.

3.2 B. $70 \div 2 = 35$ years.

3.3 (a) deaths of infants under age 1 per 1,000 live births. (b) improving health care, nutrition, and sanitation —rising development.