Past-paper walk-through

Population Dynamics ▪ 2.4

eXercise

Questions in this set

- 2025 Set 1 Q2
- 2023 Set 1 Q1

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- // separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = "or words to that effect" – the wording need not match.

Question 2

2025 Set 1 ▪ Q2

A population pyramid shows changes in population over time. A population pyramid breaks down the population by male and female and divides the population into five-year age groupings called cohorts.

(a) Identify the recent trend in fertility shown in the population pyramid.

Question 2

2025 Set 1 ▪ Q2

A population pyramid shows changes in population over time. A population pyramid breaks down the population by male and female and divides the population into five-year age groupings called cohorts.

(b) Based on the data shown in the population pyramid, describe the ratio of males to females in the Japanese population age 80 and above.

Question 2

2025 Set 1 ▪ Q2

A population pyramid shows changes in population over time. A population pyramid breaks down the population by male and female and divides the population into five-year age groupings called cohorts.

(c) Describe one process that drives urbanization.

Question 2

2025 Set 1 ▪ Q2

A population pyramid shows changes in population over time. A population pyramid breaks down the population by male and female and divides the population into five-year age groupings called cohorts.

(d) Describe one factor that may lead to a decrease in total population within a more developed country.

Question 2

2025 Set 1 ▪ Q2

A population pyramid shows changes in population over time. A population pyramid breaks down the population by male and female and divides the population into five-year age groupings called cohorts.

(e) Explain how a country's population pyramid can be used to predict the future needs of the population.

Question 2

2025 Set 1 ▪ Q2

A population pyramid shows changes in population over time. A population pyramid breaks down the population by male and female and divides the population into five-year age groupings called cohorts.

(f) Explain why the population pyramid provides limited information about immigration to cities in Japan.

Question 2

2025 Set 1 ▪ Q2

A population pyramid shows changes in population over time. A population pyramid breaks down the population by male and female and divides the population into five-year age groupings called cohorts.

(g) Explain the degree to which a country's population growth rate may be affected by a pronatalist policy. (Response must indicate the degree [low, moderate, high] and provide an explanation.) 5 Map 1: Cow's Milk Production, 2018 Source: Food and Agriculture Organization Map 2: Pork Production, 2018 Source: Food and Agriculture Organization 6

Solution 2

(a)

Mark scheme

- - Japan's fertility rate has declined.
- - Japan's birth rate has declined.
- - Fewer children are being born.
- - Japan likely has a negative RNI.
- - Japan has low, slow, zero, and/or negative population growth.

Solution 2

(b)

Mark scheme

- - There are more women than men or there are fewer men than women.
- - In the cohorts age 80–100+, the male population is approximately 3 percent to 4 percent of the total population, while the female population is approximately 6 percent to 7 percent of the total population.
- - In the cohorts age 80–100+, the male population is approximately half the size of the female population.

Solution 2

(c) Mark scheme

- - Migration to cities or urban areas and/or increases in the population of a country, a city, metropolitan area, or an urban area.
- - Economic growth, trade, industrialization, and/or development in a country, metropolitan area, or an urban area.
- - Expansion of transportation and/or communication systems in a country, a city, metropolitan area, or an urban area.
- - Government development policies, zoning, and/or urban planning in a country, a city, metropolitan area, or an urban area.

Solution 2

- - Advancements in technology and/or infrastructure in a country, a city, metropolitan area, or an urban area.
- - Situation (a location's relationships to other places) influences the function and/or growth of cities.

Solution 2

(d) Mark scheme

- - Declining fertility may lead to a decrease in the number of children born and/or to a decrease in total population.
- - Increasing mortality may lead to a higher death rate and/or to a decrease in total population.
- - Out-migration or emigration may lead to a decrease in total population.
- - Social or cultural factors (e.g., access to education and employment) may lead to decreased fertility and/or a decrease in total population.
- - Political factors (e.g., war, conflict, immigration policies) may lead to decreased fertility and/or a decrease in total population.

Solution 2

- - Medical factors (e.g., epidemics, access to health care) may lead to decreased fertility, increased mortality, and/or a decrease in total population.
- - Environmental factors (e.g., natural disasters, extreme weather, limited resources, pollution) may lead to increased mortality, and/or a decrease in total population.
- - Economic factors (e.g., high unemployment, economic recessions, high cost of living, limited social programs) may lead to a decrease in total population.

Solution 2

(e) Mark scheme

- - Pyramids can be used to predict future needs by analyzing pyramid shapes or population growth and/or decline to predict markets for goods or services.
- - Pyramids can be used to predict future needs by indicating an aging population, which will lead to increased demand for goods and services for older people (e.g., medical care, housing, products marketed to older citizens).
- - Pyramids can be used to predict future needs by indicating lower fertility or birth rates, which will lead to decreased demand for products and services for children (e.g., childcare, schools, recreational activities, products marketed to children).

Solution 2

- - Pyramids can be used to predict future needs by indicating a rapidly growing population and/or high birth rates, which will lead to increased demand for goods and services for children and/or families (e.g., childcare, schools, recreational activities, products marketed to children).
- - Pyramids can be used to predict future needs by indicating an aging population and/or low birth rates, which may lead to labor shortages and/or a need for migrants to provide goods or services.
- - Pyramids can be used to predict future needs by indicating a rapidly growing population and/or high birth rates, which may lead to an increase in the labor force and/or economic growth.

Solution 2

(f) Mark scheme

- - Population pyramids do not provide data on migration, or population pyramids do not provide data on migration to Japan.
- - Population pyramids do not provide data on migration to cities, or population pyramids do not provide data on migration to cities within Japan.
- - This population pyramid shows country-scale data rather than city-scale data or data about the urban population in Japan.
- - Population pyramids are used to assess population growth and/or decline or used to predict markets for goods and/or services, but they are not used to assess migration data.

Solution 2

- - Population pyramids include data on age-sex structures, but they do not include migration data.

Solution 2

(g) Mark scheme

- To earn the point, state a DEGREE (high, moderate, or low) to which a pronatalist policy affects the population growth rate AND support it with a valid justification.
- For a HIGH degree (raises growth):
- - Pronatalist policies promote higher fertility through social programs and/or incentives.
- - They may raise growth by letting parents keep their jobs, be paid while caring for children, and/or not return to work immediately.

Solution 2

- - They may attract immigrants drawn by incentives (e.g., paid parental leave), increasing growth.
- For a MODERATE or LOW degree (little effect):
- - Little or no effect if the cost of raising children stays high and/or parents lack time to care for them.
- - Little or no effect if the policies are not granted equally to all residents.
- - Little impact because of societal norms (individual choice, environmental concerns) and/or family structures.

Question 1

2023 Set 1 ▪ Q1

No stimulus.

The rate of natural increase (RNI), also known as the natural increase rate, helps geographers assess annual population growth or decline.

(a) Define the concept of RNI.

(b) Describe how a country may have a negative RNI.

(c) Compare ONE difference between RNI and the total fertility rate as indicators of population change.

(d) Explain ONE reason why RNI in urban areas may vary significantly from RNI in rural areas in the same country.

(e) Explain why there are often differences in doubling times between less developed countries and more developed countries.

Question 1

(f) Explain ONE reason ethnonationalism might lead a government to promote pronatalist policies.

(g) Explain the degree to which a unitary government may be more effective than a federal government in enforcing antinatalist policies.

Solution 1

(a)

Mark scheme

- Define RNI (1 point) — accept any: the difference between the crude birth rate and crude death rate (optionally expressed as a percentage or per thousand of population); the number of live births minus deaths per thousand population; the difference between crude birth and death rates over a set period (e.g., a year); OR the annual percent change in population NOT including immigration or emigration.

Solution 1

(b)

Mark scheme

- Describe a negative RNI (1 point): a country has a negative RNI when the death rate is higher than the birth rate (i.e., the number of deaths exceeds the number of live births) in a given year.

Solution 1

(c) Mark scheme

- Compare RNI vs total fertility rate (1 point) — accept any: RNI is the annual percent growth rate of a population (excluding migration), while TFR estimates the number of children a woman of childbearing age (15–45) may have; RNI combines crude birth and death rates while TFR involves no mortality measure; RNI is an annual statistic for a specific year while TFR is a point-in-time estimate; an RNI of 0 is zero growth while a TFR of 2.1 is replacement level; RNI predicts growth via the demographic transition while TFR predicts growth by comparison to the replacement rate (2.1).

Solution 1

(d) Mark scheme

- Explain ONE reason urban RNI differs from rural RNI (1 point) — accept any well-explained reason, e.g.: urban families have fewer children due to reduced need for agricultural labor; higher urban cost of living (housing, schooling) incentivizes fewer children; greater urban access to health care, education, or family planning lowers fertility; urban women more often work outside the home; less urban living space; higher urban female education/political power/financial stability delays or reduces childbearing; lower urban infant/child mortality reduces the need for more children. Conversely, rural areas may lack access to contraception/family planning, hold traditional pronatalist values, need child labor for agriculture, or have poorer health care raising infant mortality — all raising rural RNI.

Solution 1

(e)

Mark scheme

- Explain differing doubling times LDCs vs MDCs (1 point): LDCs have higher RNI (higher birth/fertility rates from social/economic conditions such as agrarian economies, lower female status/education, early marriage, higher infant mortality, less family planning) $\rightarrow$ shorter doubling time; MDCs have lower RNI (service/technology economies, equitable female roles, later marriage, urbanization, low infant mortality, accessible family planning) $\rightarrow$ longer doubling time.

Solution 1

(f)

Mark scheme

- Explain ONE link from ethnonationalism to pronatalist policy (1 point) — accept any: children seen as a symbol of national pride / a centripetal (cohesion) force; a larger national/ethnic population improves social cohesion; higher birth rates support territorial expansion, economic growth, irredentism, or a larger military; a theocratic state promotes births on religious grounds; boosting the majority (dominant) group's numbers increases its political power over minorities; a state with restrictive immigration promotes births to reverse population decline.

Solution 1

(g) Mark scheme

- Explain the degree to which a unitary government is more effective at antinatalist enforcement (1 point). Must include a statement of degree AND a valid reason. Moderate/high degree: a unitary government can enact uniform countrywide family-planning laws with penalties/enforcement; may run a centralized national health/insurance system delivering family planning efficiently; can deliver incentives directly with fewer levels of governance to lose funds; a federal system's regional variation weakens enforcement. Low/moderate degree: little difference if the health-care/family-planning system is inadequate or inaccessible (or, conversely, if adequate), or if the government lacks enforcement or funding capacity — in which case governance type matters little.