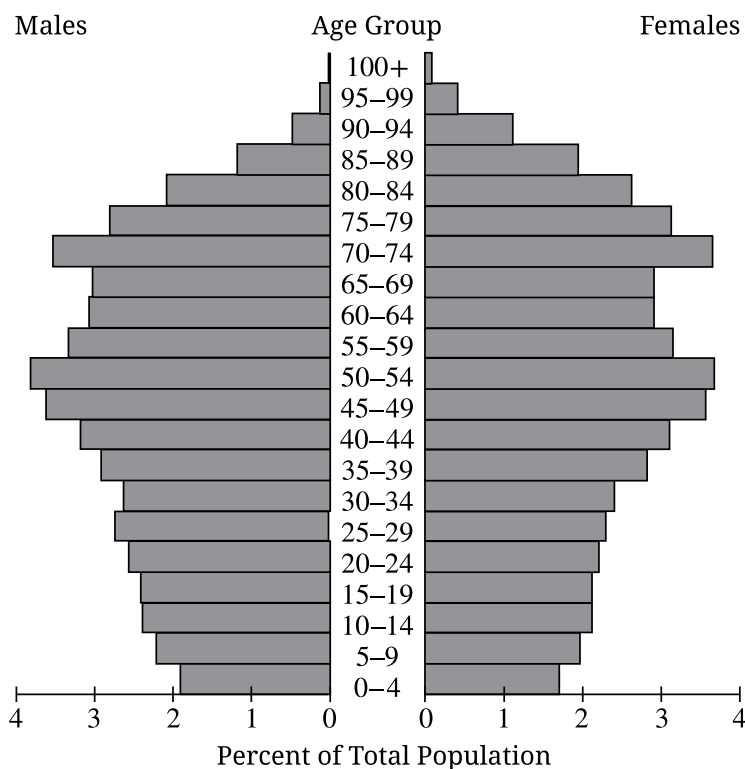


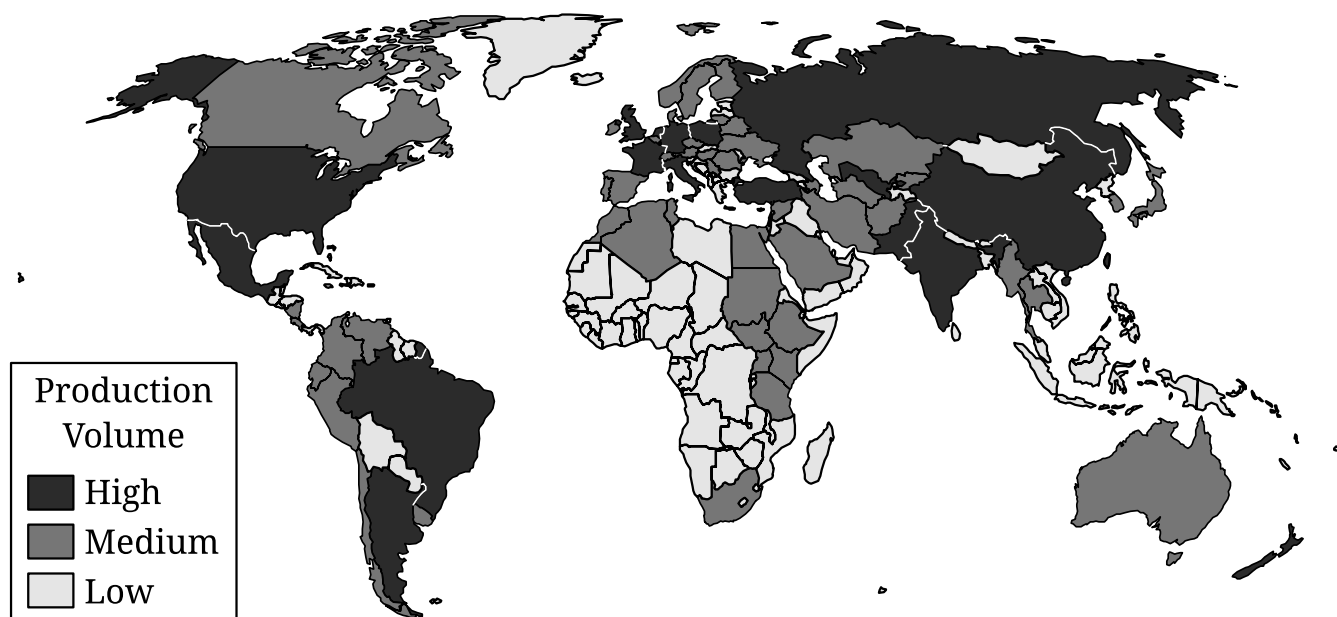
Japan Population Pyramid, 2021

Source: United States Census Bureau International Database

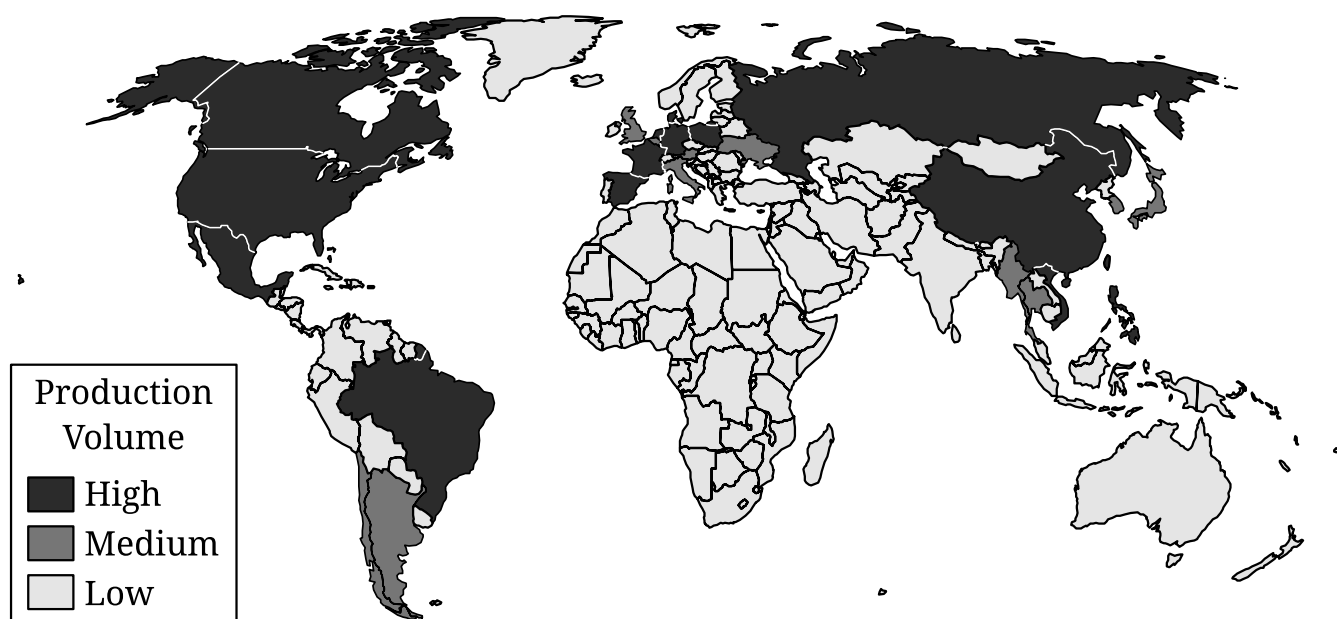
2. A population pyramid shows changes in population over time. A population pyramid breaks down the population by male and female and divides the population into five-year age groupings called cohorts.

Respond to parts A, B, C, D, E, F, and G.

- Identify the recent trend in fertility shown in the population pyramid.
- Based on the data shown in the population pyramid, describe the ratio of males to females in the Japanese population age 80 and above.
- Describe one process that drives urbanization.
- Describe one factor that may lead to a decrease in total population within a more developed country.
- Explain how a country's population pyramid can be used to predict the future needs of the population.
- Explain why the population pyramid provides limited information about immigration to cities in Japan.
- 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.)

Map 1: Cow's Milk Production, 2018

Source: Food and Agriculture Organization

Map 2: Pork Production, 2018

Source: Food and Agriculture Organization

3. The world cities and metacities shown on the map are features of contemporary globalization and urbanization. The data table shows gross domestic product (GDP) per capita at the city and country scale.
- A. Identify ONE city on the map that is both a metacity and a world city.
 - B. Describe the spatial pattern of world cities shown on the map.
 - C. Compare the concept of a metacity with the concept of a world city. (Response must include both concepts in the comparison.)
 - D. Explain ONE reason why the cities shown on the table have higher city GDP per capita than the country GDP per capita.
 - E. Explain ONE way population growth in a metacity may challenge environmental sustainability.
 - F. Explain ONE reason why migrants to metacities may have difficulty obtaining housing.
 - G. Using the data from the table, explain the relationship between a city's level of economic development and the city's percent population growth over time.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

**SELECTED TECHNOLOGY RESEARCH AND DEVELOPMENT AREAS
IN THE MEDICAL FIELD**

Category	Product or Service
Biotechnology:	• Genetic engineering research • Biochemistry research • Diagnostic and testing science
Gene therapies:	• Cancer treatments • Neurological treatments • Rare and genetic disease treatments • Antiviral treatments and vaccines (e.g., Moderna)

3. Since the 1980s, the northeastern United States has developed into a major global center of high-technology industry that specializes in the medical field.
- A. Describe the spatial pattern of the companies and institutions shown in the inset map.
 - B. Describe the concept of a growth pole.
 - C. Explain ONE way education infrastructure affects a region's potential for high-technology development.
 - D. Explain how the pattern shown on the map resembles the galactic city model.
 - E. Explain ONE way local economic changes may be a result of deindustrialization.
 - F. Explain how the products and services listed in the table demonstrate that this economy has moved into the quaternary sector.
 - G. The map focuses on a regional scale. Explain a possible limitation of drawing country scale conclusions from a regional scale map.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

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