

HOLIDAY HOMEWORK 假期作业

AP Human Geography

Exercise sheets and past-paper practice, topic by topic.

每个单元：练习卷 + 历年真题。

For class or self-study • no answer keys included.

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1 Maps, scale and spatial thinking – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
reference map	参考地图	_____	_____	_____
thematic map	专题地图	_____	_____	_____
choropleth	分级统计图	_____	_____	_____
dot	点密度图	_____	_____	_____
graduated symbol	比例符号图	_____	_____	_____
isoline	等值线图	_____	_____	_____
cartogram	变形地图	_____	_____	_____
Density	密度	_____	_____	_____
Concentration	集中度	_____	_____	_____
Pattern	分布模式	_____	_____	_____
scale of analysis	分析尺度	_____	_____	_____
Distance decay	距离衰减	_____	_____	_____
Time-space compression	时空压缩	_____	_____	_____

Recall

You have used maps and geography before:

- A map is a flat picture of a place, and it always leaves things out.
- Places are near or far from each other, and distance affects how they interact.
- Some things are spread evenly across an area; others cluster together.

This sheet turns those everyday ideas into the vocabulary AP Human Geography grades you on.

New ideas

■ 1 Two kinds of map

A **reference map** 参考地图 shows where things are — countries, roads, rivers. A **thematic map** 专题地图 shows a variable: how much of something is where.

The thematic types you must name are: **choropleth** 分级统计图 (areas shaded by value), **dot** 点密度图 (one dot equals a number of things), **graduated symbol** 比例符号图 (bigger symbol, bigger value), **isoline** 等值线图 (lines joining equal values), and **cartogram** 变形地图 (area size distorted to show the value).

■ 2 Every projection lies

A globe is curved; paper is flat. Flattening always distorts **shape**, **area**, **distance** or **direction** — you can preserve some, never all. Mercator keeps direction, which is why sailors used it, but it inflates land near the poles: Greenland looks the size of Africa and is fourteen times smaller.

■ 3 Density, concentration, pattern

These three are graded as separate terms and students routinely swap them.

Density 密度 is how many per unit area. **Concentration** 集中度 is how tightly they are packed — clustered or dispersed. **Pattern** 分布模式 is the arrangement — linear, centralised, random.

■ 4 Scale of analysis

The **scale of analysis** 分析尺度 is the level you look at: global, regional, national, or local. The same data can show opposite patterns at different scales — a country can be growing while half its provinces shrink. Naming your scale is a mark.

■ 5 Distance decay and time-space compression

Distance decay 距离衰减 says interaction between two places weakens as the distance between them grows. **Time-space compression** 时空压缩 says improvements in transport and communication have weakened that effect — the friction of distance is falling.

Practice

Try these in order. The methods are all above.

1.1 Name the type of thematic map that shades whole areas according to a value. [1]

1.2 Explain one way the Mercator projection distorts the world map. [2]

1.3 Distinguish between the density and the concentration of a phenomenon. [2]

1.4 Explain how the scale of analysis can change the conclusion drawn from the same data. [2]

1.5 Define distance decay, and explain how time-space compression affects it. [3]

1 Regions, site and situation – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
region	区域	_____	_____	_____
formal region	正式区	_____	_____	_____
functional region	功能区	_____	_____	_____
vernacular region	感知区	_____	_____	_____
Site	场所特征	_____	_____	_____
Situation	相对位置	_____	_____	_____
Absolute location	绝对位置	_____	_____	_____
Relative location	相对位置	_____	_____	_____
GIS	地理信息系统	_____	_____	_____
GPS	全球定位系统	_____	_____	_____
Remote sensing	遥感	_____	_____	_____
census	人口普查	_____	_____	_____
Environmental determinism	环境决定论	_____	_____	_____
Possibilism	或然论	_____	_____	_____

Recall

From Part 1 you can now name map types, projections, and the three spatial terms — density, concentration and pattern.

This sheet covers the rest of Unit 1: how geographers divide the world into regions, and where their data comes from.

New ideas

■ 1 Three kinds of region

A **region** 区域 is an area defined by one or more shared characteristics. There are exactly three types and the exam expects you to name which one you mean.

A **formal region** 正式区 shares a measurable trait — a country, a wheat belt, an area where more than half the people speak French. A **functional region** 功能区 is organised around a node and its surrounding area: a pizza delivery zone, a newspaper circulation area, an airport's catchment. A **perceptual** or **vernacular region** 感知区 exists in people's minds — “the Midwest”, “the South” — with no agreed boundary.

■ 2 Site and situation

Site 场所特征 is what a place is physically like: its land, water, climate, soil. **Situation** 相对位置 is where it sits relative to other places — its connections, its accessibility.

Singapore has an unremarkable site (a small, hot, resource-poor island) and an extraordinary situation (astride the Strait of Malacca), which is why it is wealthy. Naming which one explains a place is a common exam task.

■ 3 Absolute and relative

Absolute location 绝对位置 is a fixed coordinate: 1.35° N, 103.82° E. **Relative location** 相对位置 describes a place by reference to others: “at the southern tip of the Malay Peninsula”.

The same split applies to distance and direction — absolute distance is measured in kilometres, relative distance in travel time, cost or effort.

■ 4 Where the data comes from

Geographers now work mostly with digital data. **GIS** 地理信息系统 (Geographic Information System) stores layers of spatial data and analyses relationships between them. **GPS** 全球定位系统 gives absolute location from satellites. **Remote sensing** 遥感 collects data about the surface from satellites or aircraft without touching it.

Non-digital sources still matter: a national **census** 人口普查, field observation, interviews, and travel narratives.

■ 5 Environmental determinism and possibilism

Environmental determinism 环境决定论 claimed the physical environment decides how a society develops. It was used to justify colonialism and is rejected today.

Possibilism 或然论 replaced it: the environment sets limits, but people choose among the possibilities within them — which is why two societies in similar environments develop differently.

Practice

Try these in order. The methods are all above.

1.6 Name the type of region defined by a node and the area it serves. [1]

1.7 Distinguish between the site and the situation of a city, using an example. [3]

1.8 Give one absolute and one relative way of describing distance. [2]

1.9 Explain one way a geographer would use GIS that a paper map could not do. [2]

1.10 Explain why environmental determinism was replaced by possibilism. [2]

**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.
- Describe the spatial pattern of the companies and institutions shown in the inset map.
 - Describe the concept of a growth pole.
 - Explain ONE way education infrastructure affects a region's potential for high-technology development.
 - Explain how the pattern shown on the map resembles the galactic city model.
 - Explain ONE way local economic changes may be a result of deindustrialization.
 - Explain how the products and services listed in the table demonstrate that this economy has moved into the quaternary sector.
 - 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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2 Population density and the demographic transition – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
Arithmetic density	算术密度	_____
Physiological density	生理密度	_____
Agricultural density	农业密度	_____
Crude birth rate	出生率	_____
crude death rate	死亡率	_____
Natural increase rate	自然增长率	_____
Total fertility rate	总和生育率	_____
replacement level	更替水平	_____
Infant mortality rate	婴儿死亡率	_____
demographic transition model	人口转变模型	_____
population pyramid	人口金字塔	_____
dependency ratio	抚养比	_____

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 算术密度 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 生理密度 is population divided by ARABLE land — the land that can grow food. It tells you about pressure on food supply.

Agricultural density 农业密度 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 出生率 and **crude death rate** 死亡率 are births or deaths per 1000 people per year.

Natural increase rate 自然增长率 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 总和生育率 is the average number of children a woman would have in her lifetime at current rates. About 2.1 is **replacement level** 更替水平; below it a population eventually shrinks without migration.

Infant mortality rate 婴儿死亡率 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** 人口转变模型 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** 人口金字塔 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** 抚养比 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.

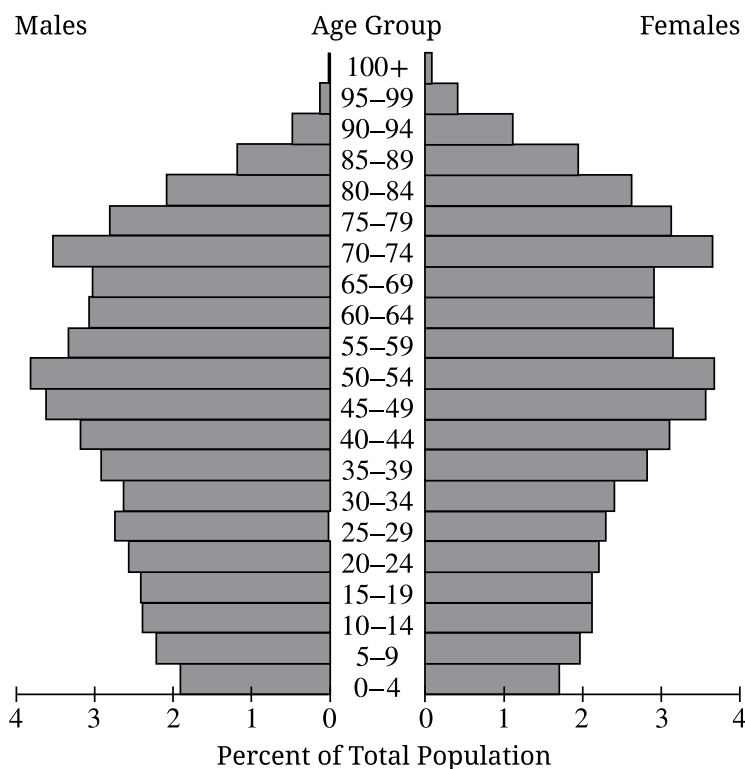
2.1 Explain why physiological density is more useful than arithmetic density for judging pressure on food supply. [2]

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]

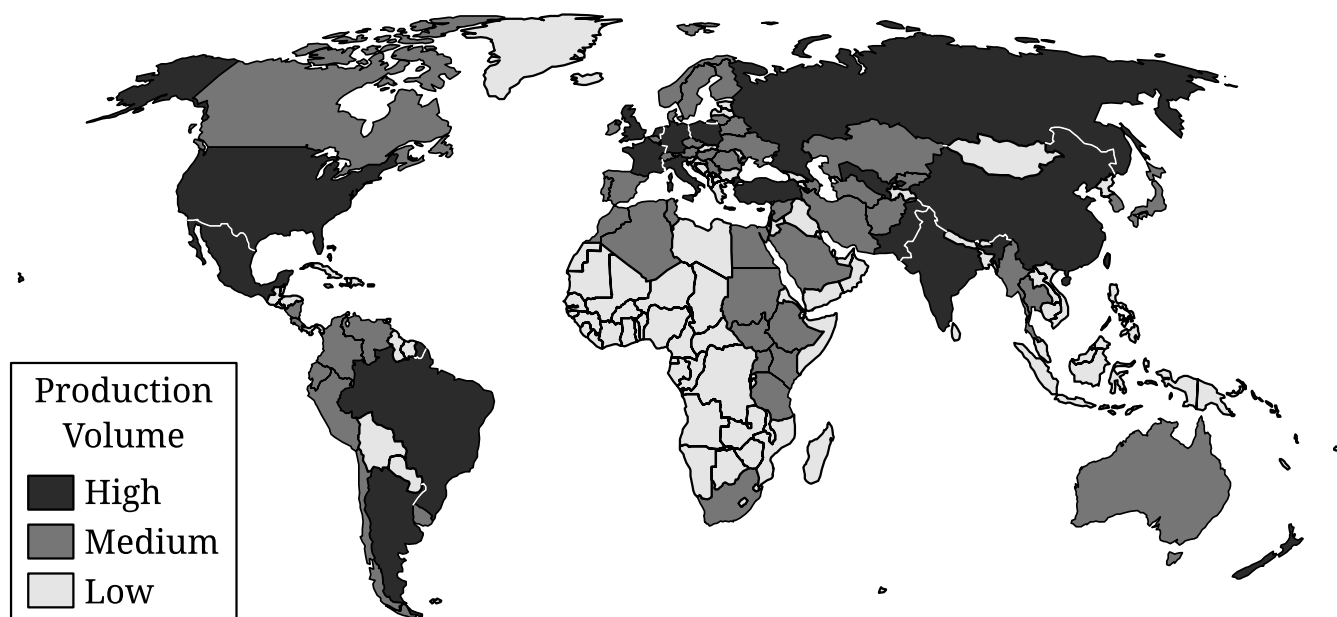
Japan Population Pyramid, 2021

Source: United States Census Bureau International Database

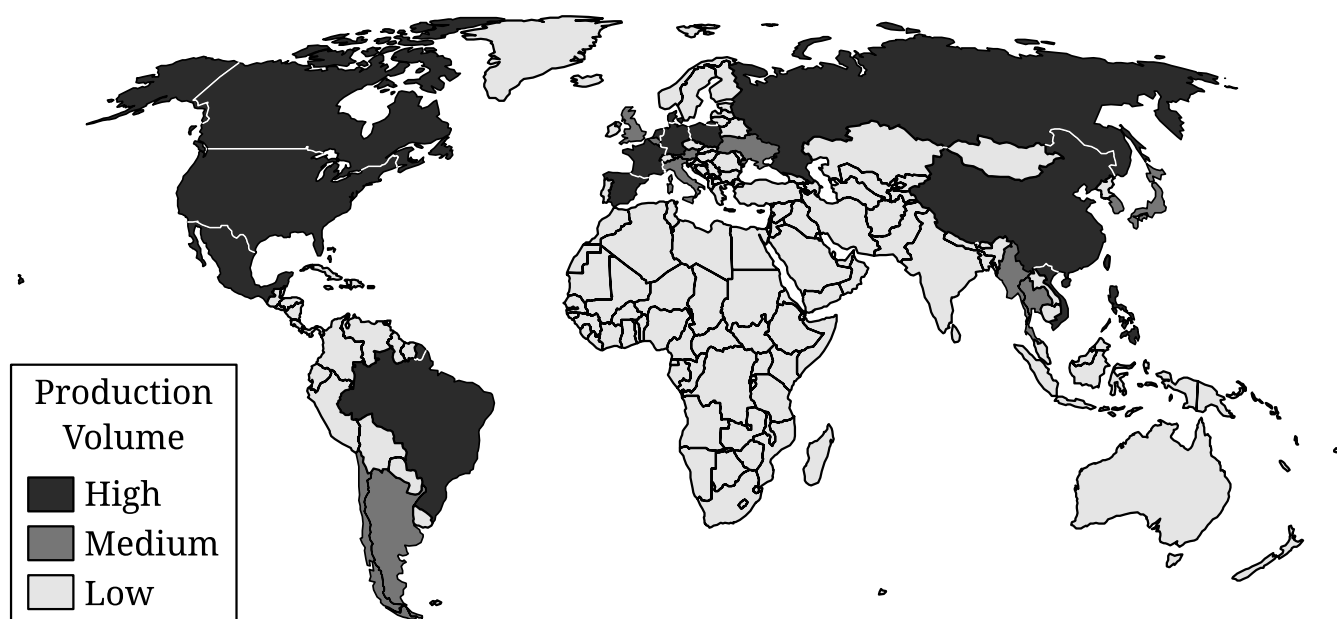
2. A population pyramid shows changes in population over time. A population pyramid breaks down the population by male and female and divides the population into five-year age groupings called cohorts.

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

HUMAN GEOGRAPHY**SECTION II****Time—1 hour and 15 minutes****3 Questions**

Directions: You have 1 hour and 15 minutes to answer all three of the following questions. It is recommended that you spend approximately one-third of your time (25 minutes) on each question. It is suggested that you take up to 5 minutes of this time to plan and outline each answer. You may plan your answers in this orange booklet, but no credit will be given for anything written in this booklet. **You will only earn credit for what you write in the separate Free Response booklet.**

Question 1

1. 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.
 - 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.

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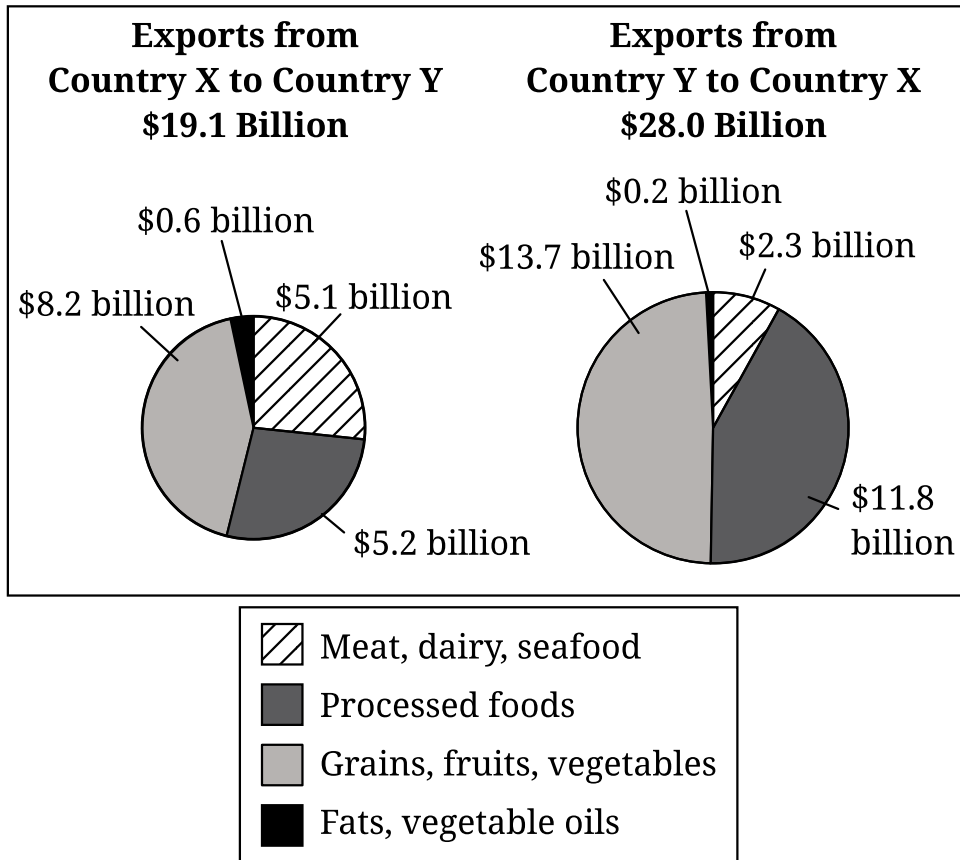
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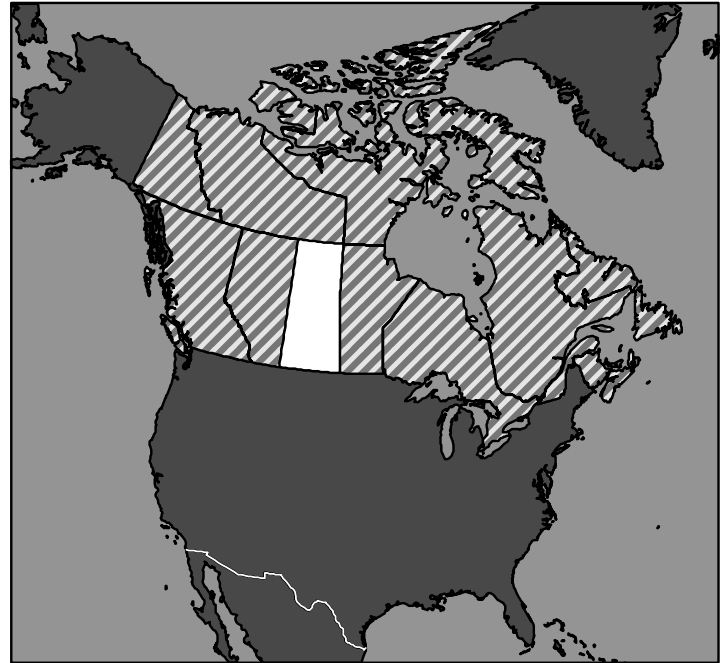
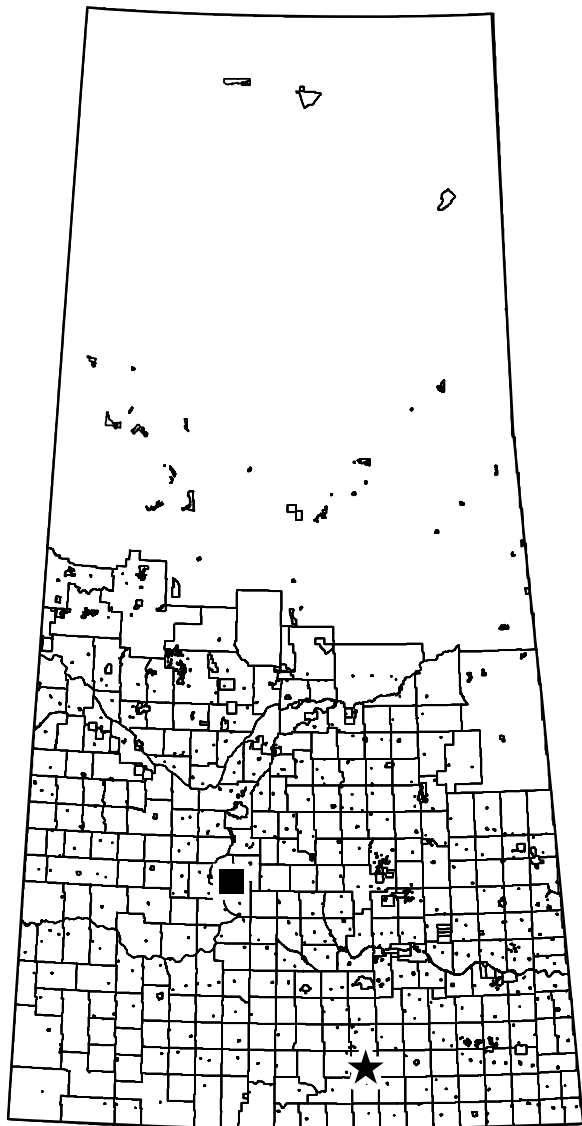
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Food Exports Between Country X and Country Y

2. Country X and Country Y have a long-established trade relationship in agricultural products. Country X is a developed country, and Country Y is a developing country.

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

- Using the data in the charts, identify the largest food export category between the two countries.
- Using the data in the charts, describe the difference between the two countries in the meat, dairy, and seafood category.
- Define the concept of comparative advantage.
- Describe one effect of Green Revolution technologies on food supplies in developing countries.
- Explain how advances in agricultural technology may increase the carrying capacity of land.
- Explain the degree to which the economies of Country X and Country Y are interdependent. (Response must indicate the degree [low, moderate, high] and provide an explanation.)
- Explain how the charts provide limited information about economic development.

Map 1: Political Divisions in Saskatchewan, Canada

- ☐ Saskatchewan
- ☒ Other Canadian provinces and territories
- ☒ Other countries

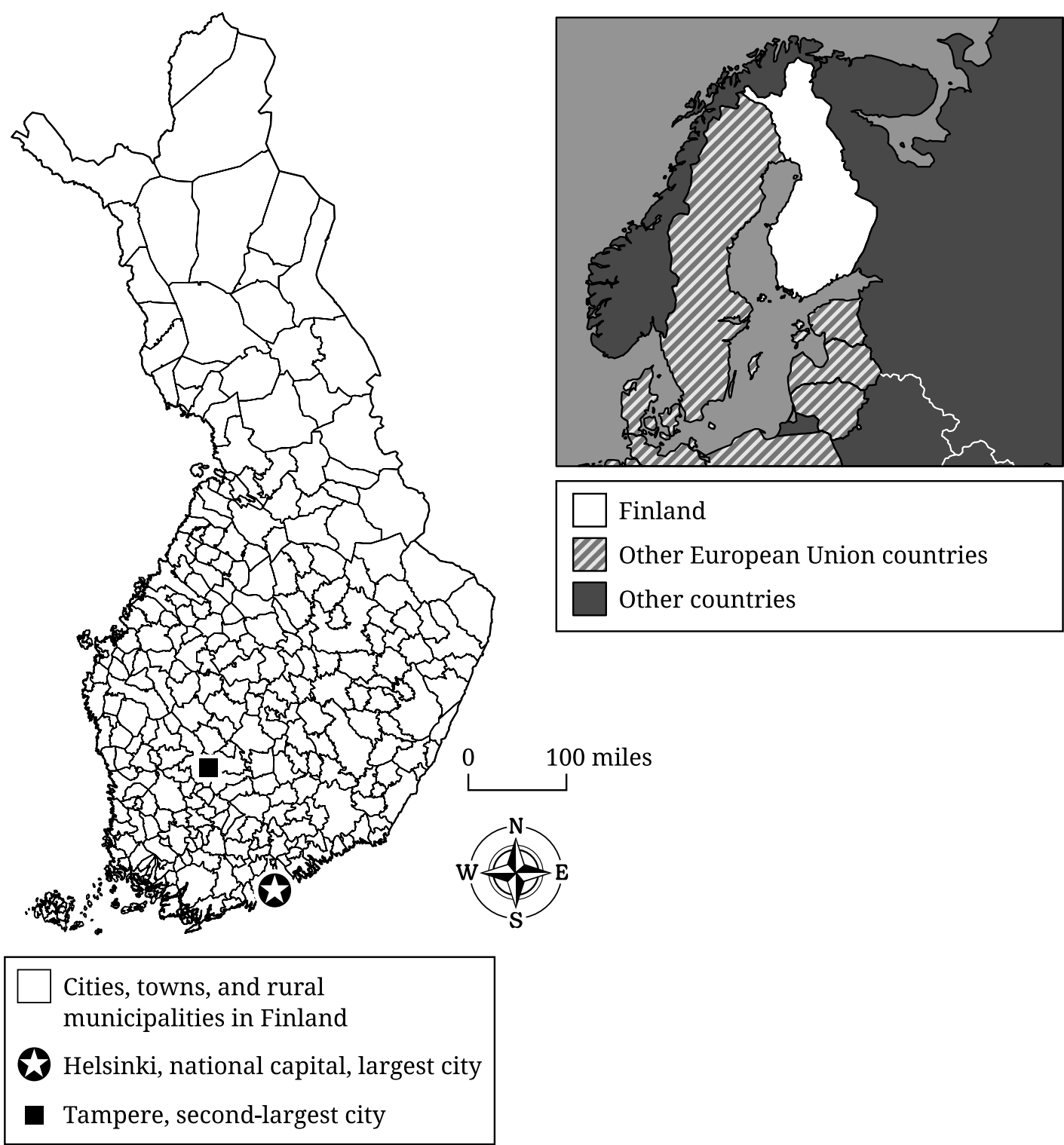
0 100 miles



- ☐ Cities, towns, and rural municipalities in Saskatchewan
- ★ Regina, provincial capital, second-largest city
- Saskatoon, largest city

Source: Statistics Canada

Map 2: Political Divisions in Finland



Source: ESRI Data Partners

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2 Malthus, policy and migration – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
pro-natalist policy	鼓励生育政策	_____	_____	_____
anti-natalist policy	限制生育政策	_____	_____	_____
Push factors	推力	_____	_____	_____
pull factors	拉力	_____	_____	_____
Intervening obstacles	中间障碍	_____	_____	_____
intervening opportunities	中间机会	_____	_____	_____
Voluntary migration	自愿迁移	_____	_____	_____
forced migration	强迫迁移	_____	_____	_____
refugee	难民	_____	_____	_____
internally displaced person	国内流离失所者	_____	_____	_____
asylum seeker	寻求庇护者	_____	_____	_____
Step migration	阶梯式迁移	_____	_____	_____
Chain migration	连锁迁移	_____	_____	_____
Transhumance	季节性迁移	_____	_____	_____

Recall

Part 1 gave you the densities, the rates and the demographic transition model.

This sheet covers the other half of Unit 2: why populations grow or shrink beyond births and deaths, and why people move.

New ideas

■ 1 Malthus and his critics

Thomas Malthus argued that population grows geometrically (1, 2, 4, 8) while food supply grows arithmetically (1, 2, 3, 4), so population must eventually outrun food and be checked by famine, disease or war.

He has been wrong so far, for two reasons his critics name: agricultural technology raised yields far faster than he allowed, and fertility fell as countries developed rather than rising with prosperity. **Ester Boserup** argued the opposite causal direction — population pressure **DRIVES** agricultural innovation.

Neo-Malthusians revive the argument for resources other than food: fresh water, arable soil, and the climate's capacity to absorb emissions.

■ 2 Population policies

A **pro-natalist policy** 鼓励生育政策 encourages births — paid parental leave, child allowances, subsidised childcare. Countries in stage 4 or 5 adopt them.

An **anti-natalist policy** 限制生育政策 discourages births — family-planning provision, education campaigns, and in the strongest case legal limits. China's one-child policy is the standard example, and its standard consequences are an ageing population, a shrinking workforce, and a skewed sex ratio.

■ 3 Push and pull

Push factors 推力 drive people out of a place; **pull factors** 拉力 draw them to another. Both may be economic, political, environmental, cultural or social — and most migration decisions combine several.

Intervening obstacles 中间障碍 (a border, a mountain range, the cost of the journey) block or divert a move; **intervening opportunities** 中间机会 stop it early, when something acceptable turns up closer than the intended destination.

■ 4 Types of migration

Voluntary migration 自愿迁移 is chosen; **forced migration** 强迫迁移 is not. Within forced migration, a **refugee** 难民 has crossed an international border fleeing persecution or conflict; an **internally displaced person** 国内流离失所者 has fled but remains inside their own country. An **asylum seeker** 寻求庇护者 has applied for refugee status and is awaiting a decision.

Internal migration moves within a country, **international migration** between countries. **Step migration** 阶梯式迁移 moves in stages — village to town to city.

Chain migration 连锁迁移 follows relatives or countrymen who went before. **Transhumance** 季节性迁移 is the seasonal movement of herders with their animals.

■ 5 Ravenstein's laws

Ravenstein observed that most migrants move short distances, that longer moves tend to be to major cities, that each migration flow produces a counterflow, and that most migrants are young adults. These hold up well and are worth naming in an answer.

Practice

Try these in order. The methods are all above.

2.6 State Malthus's claim about population and food supply. [2]

2.7 Explain one reason Malthus's prediction has not come true. [2]

2.8 Distinguish between a refugee and an internally displaced person. [2]

2.9 Give one example each of an intervening obstacle and an intervening opportunity. [2]

2.10 Explain one demographic consequence of a strict anti-natalist policy. [2]

HUMAN GEOGRAPHY**SECTION II****Time—1 hour and 15 minutes****3 Questions**

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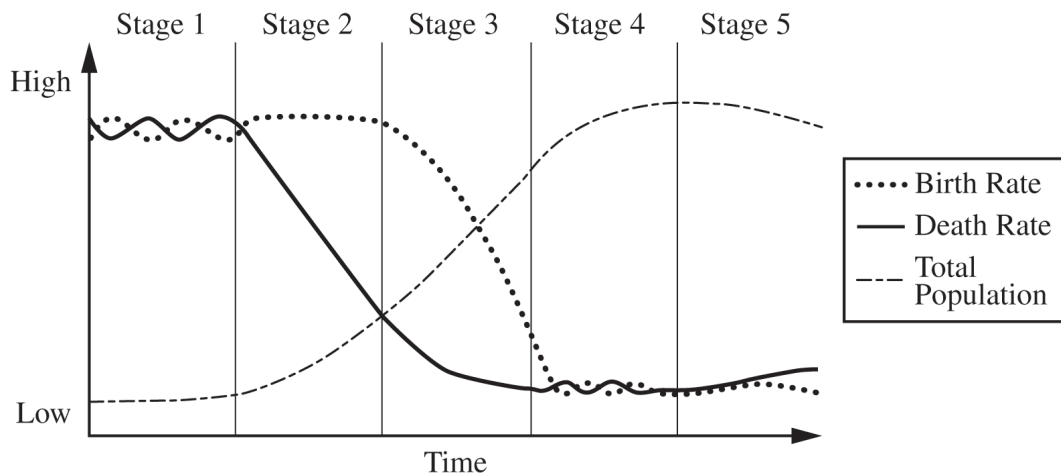
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Question 3

Demographic Transition Model



Demographic Data for Selected Countries, 2019

Country	Birth Rate	Death Rate	Population Over Age 65
Croatia	9	13	21%
Estonia	11	12	20%
Germany	9	11	22%
Greece	8	12	22%
Japan	7	11	28%
Portugal	8	11	23%
Romania	10	13	19%

Source: World Bank

3. The demographic transition model can be used to theorize the changes in a country's total population over time.
- Select ONE country listed in the table and identify its stage in the demographic transition model.
 - Define the concept of a pronatalist policy.
 - Explain ONE factor that affects birth rates as countries move from stage 3 to stage 4 in the demographic transition model.
 - Describe ONE likely economic effect when countries have negative population growth.
 - Based on the data shown in the table, describe a policy that a government might develop in response to demographic change.
 - Explain ONE reason why the life expectancy in urban areas may be higher than the life expectancy in the entire country.
 - Using the data in the table, explain how, over time, low birth rates may impact the country's percent of population over age 65.

STOP

END OF EXAM

3. Pastoral nomadism is widely practiced in the Sahel region of Africa. The map and table provide information about spatial patterns and social tensions associated with this type of agriculture.
- A. Describe ONE reason for the migration patterns shown on the map.
 - B. Describe ONE cause of desertification in the Sahel region.
 - C. Explain how pastoral nomadism may affect the cultural landscape of the Sahel region.
 - D. Explain ONE way mixed-crop farming could be affected by climatic conditions.
 - E. Using the map and table, explain why expanding protected natural areas may affect the migration routes of nomadic herders in the Sahel region.
 - F. Using the information in the table, explain why farmers' increased use of irrigation may increase conflicts with nomadic herders.
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STOP

END OF EXAM

- 1.** Migration contributes to significant population growth and change in urban landscapes. As populations increase, urban areas face economic, social, and environmental challenges.

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

- A.** Describe one type of voluntary migration.
- B.** Explain how migration may affect a city's economy.
- C.** Describe one type of housing discrimination that may occur in urban areas.
- D.** Explain how a city's infrastructure affects society.
- E.** Describe one challenge to sustainability in urban areas.
- F.** Explain how urban design initiatives are intended to affect cities.
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3 Culture, diffusion, language and religion – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
Culture	文化	_____	_____	_____
Cultural traits	文化特征	_____	_____	_____
cultural landscape	文化景观	_____	_____	_____
Folk culture	民俗文化	_____	_____	_____
Popular culture	流行文化	_____	_____	_____
Diffusion	扩散	_____	_____	_____
hearth	起源地	_____	_____	_____
Relocation diffusion	迁移扩散	_____	_____	_____
Expansion diffusion	扩展扩散	_____	_____	_____
Contagious	传染扩散	_____	_____	_____
Hierarchical	等级扩散	_____	_____	_____
Stimulus	刺激扩散	_____	_____	_____
language family	语系	_____	_____	_____
dialects	方言	_____	_____	_____

English	中文	Write it 3 times (English)		
lingua franca	通用语			
pidgin	皮钦语			
creole	克里奥尔语			
Toponyms	地名			
Universalising religions	普世宗教			
Ethnic religions	民族宗教			

Recall

You know that people in different places eat differently, speak differently and worship differently — and that some of those differences are spreading while others are disappearing.

This sheet gives you the vocabulary for describing culture as a spatial thing.

New ideas

■ 1 Culture and the landscape

Culture 文化 is the shared practices, beliefs and material objects of a group. **Cultural traits** 文化特征 are the individual elements — a food, a greeting, a building style.

The **cultural landscape** 文化景观 is the visible imprint of human activity on a place: field patterns, house styles, religious buildings, signs and their languages. Reading a landscape for what it reveals about the people who made it is the core skill of this unit.

■ 2 Folk and popular culture

Folk culture 民俗文化 is practised by a small, often rural, homogeneous group; it changes slowly, spreads by relocation, and produces distinctive local landscapes.

Popular culture 流行文化 is practised by large, heterogeneous groups; it changes quickly, spreads through media, and produces uniform landscapes — the same shopfronts in every city.

Popular culture erodes local distinctiveness, which is why **cultural landscape homogenisation** is a standard exam theme. The counter-process is **cultural appropriation** debates and deliberate revival of folk practice.

■ 3 How things diffuse

Diffusion 扩散 is the spread of a trait from its **hearth** 起源地. There are two families.

Relocation diffusion 迁移扩散: people physically carry the trait to a new place — a migrant community brings its language and cuisine.

Expansion diffusion 扩展扩散 spreads outward while remaining strong at the source, and has three forms. **Contagious** 传染扩散 spreads to everyone nearby, like a viral video. **Hierarchical** 等级扩散 jumps between important nodes first — a fashion appears in major cities before reaching small towns. **Stimulus** 刺激扩散 spreads the underlying IDEA while the form changes — a fast-food chain selling a vegetarian burger where beef is not eaten.

■ 4 Language

A **language family** 语系 branches into **branches**, then **groups**, then individual languages and **dialects** 方言. Indo-European is the largest family; Sino-Tibetan the second.

A **lingua franca** 通用语 is a language adopted for communication between speakers of different first languages. A **pidgin** 皮钦语 is a simplified contact language; when children grow up speaking it as a first language it becomes a **creole** 克里奥尔语.

Toponyms 地名 — place names — are evidence of who settled a place and when.

■ 5 Religion

Universalising religions 普世宗教 seek converts and spread by both expansion and relocation diffusion — Christianity, Islam, Buddhism. **Ethnic religions** 民族宗教 are tied to a people and a place, spread mainly by relocation, and rarely seek converts — Hinduism, Judaism, Shinto.

The distinction predicts the map: universalising religions are widely dispersed, ethnic ones concentrated in a homeland.

Practice

Try these in order. The methods are all above.

3.1 Define the cultural landscape. [2]

3.2 Give two differences between folk culture and popular culture. [2]

3.3 Name the type of expansion diffusion in which a trend appears in large cities before small towns. [1]

3.4 Explain the difference between a pidgin and a creole. [2]

3.5 Explain why universalising religions are more widely dispersed than ethnic religions. [3]

Question 2**PER CAPITA PRODUCTION OF STAPLE FOOD CROPS
IN HEARTH-OF-DOMESTICATION COUNTRIES**

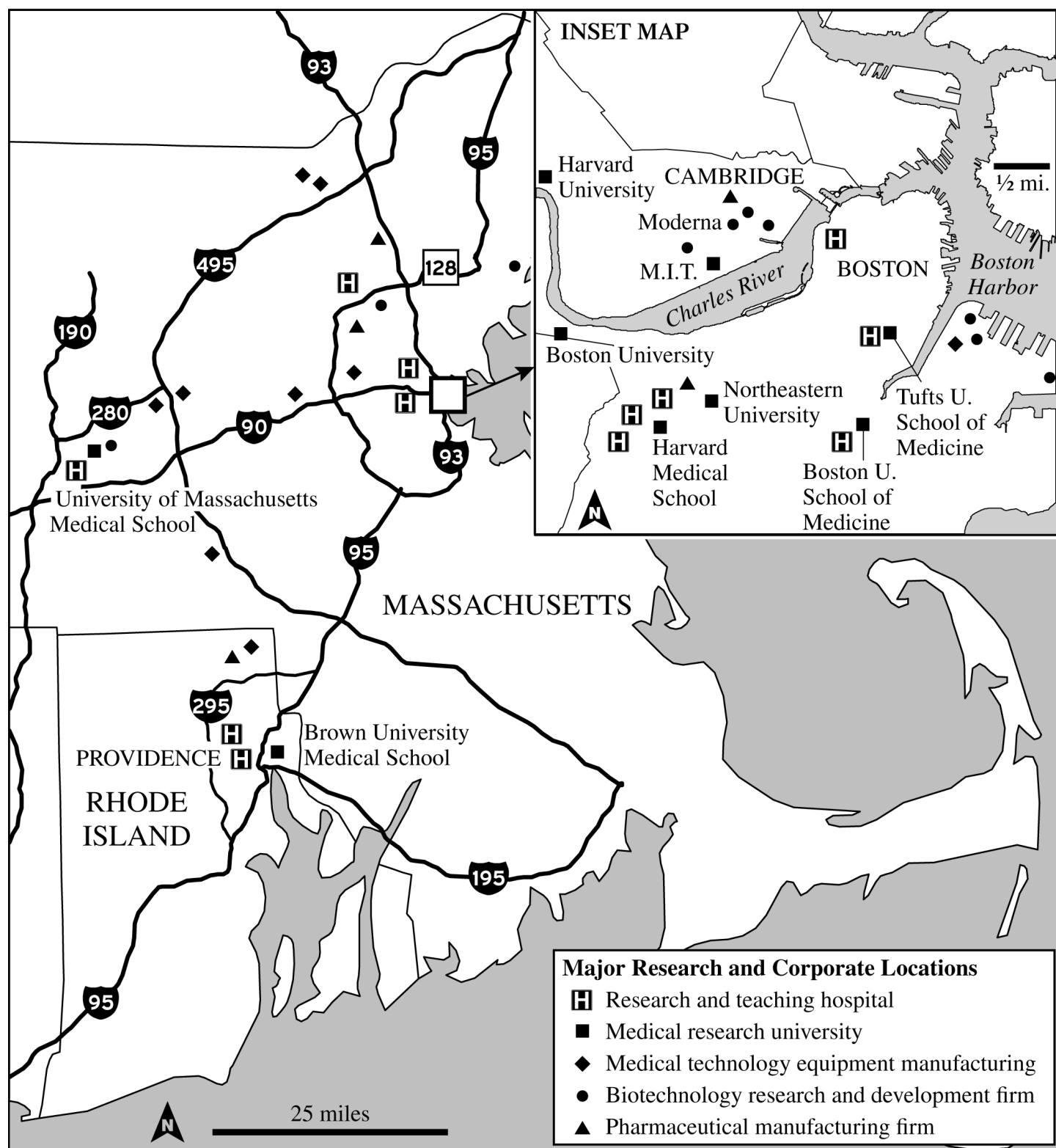
Country	Corn (maize) (pounds per capita)	Potato (pounds per capita)	Rice (pounds per capita)	Yam (pounds per capita)	Cassava (manioc or yuca) (pounds per capita)
	Hearth: Mexico	Hearth: Peru	Hearths: China and Mali	Hearth: Niger River basin	Hearth: Amazon River basin
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Source: Food and Agriculture Organization of the United Nations

2. Staple food crops provide most of the carbohydrates in people's diets, and some staples are also used as animal feed or in the distillation of ethanol. Cassava is a root crop (tuber) that is the source of farinha, tapioca, and the pearls in bubble tea.
- A. Describe the concept of an early hearth of domestication.
 - B. Identify the crop listed in the table that has diffused the least from its hearth of domestication to the countries listed in the table.
 - C. Explain how food preferences can be a culture trait.
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 - E. Explain how the data in the table support the concept of a crop's consumption pattern being the result of globalization.
 - F. Explain why a crop may be farmed intensively in a less developed country and be farmed extensively in a more developed country.
 - G. Explain ONE way the global supply chain links crops such as those listed in the table to consumers in other countries.

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.

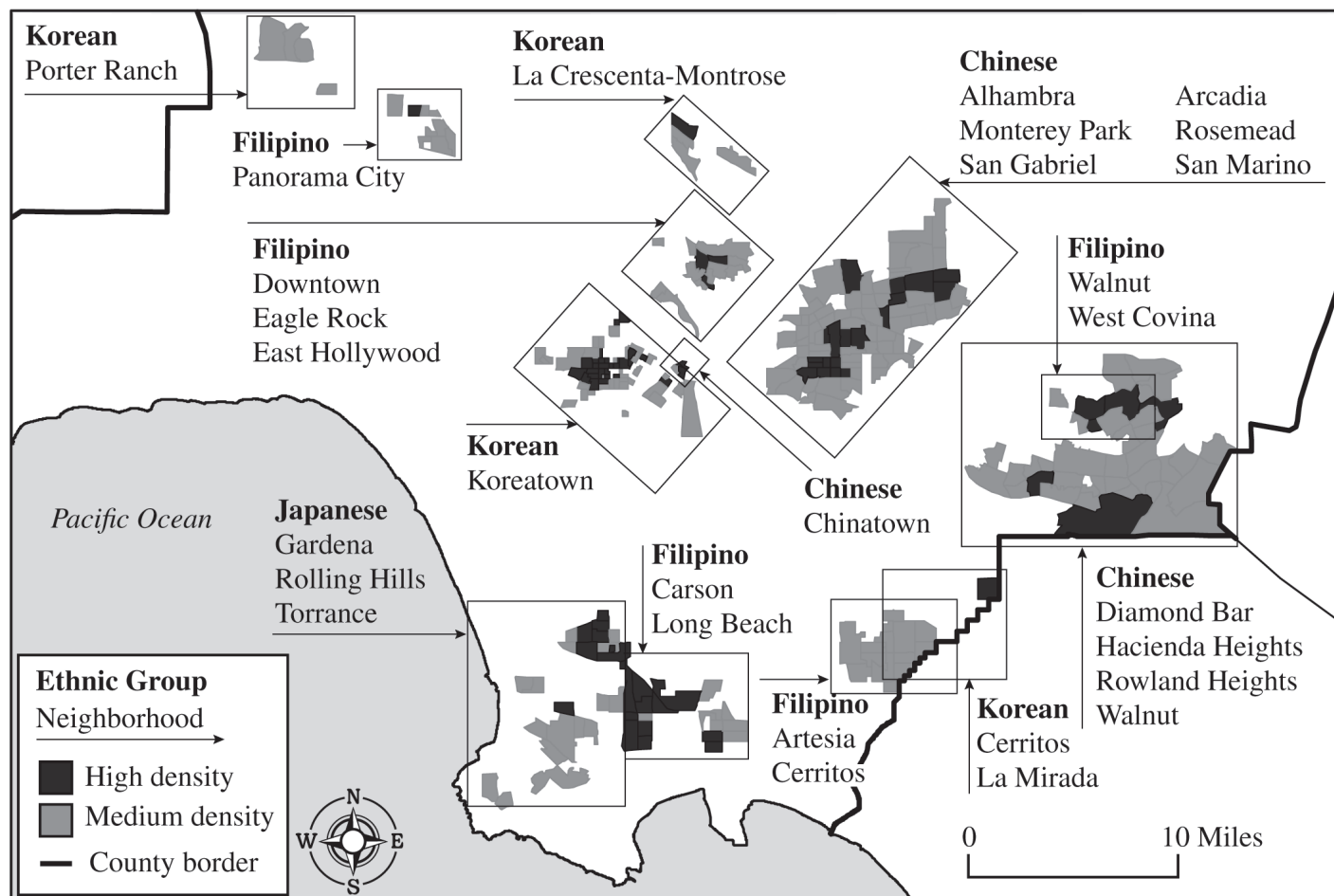
Question 3

MAJOR MEDICAL AND BIOTECHNOLOGY COMPANIES AND INSTITUTIONS IN THE BOSTON AND PROVIDENCE REGION

Source: National Institutes of Health

The inset map shows the downtown areas of Boston and Cambridge, Massachusetts.

Question 2

**Selected Asian Ethnic Neighborhoods
in Los Angeles County, California**

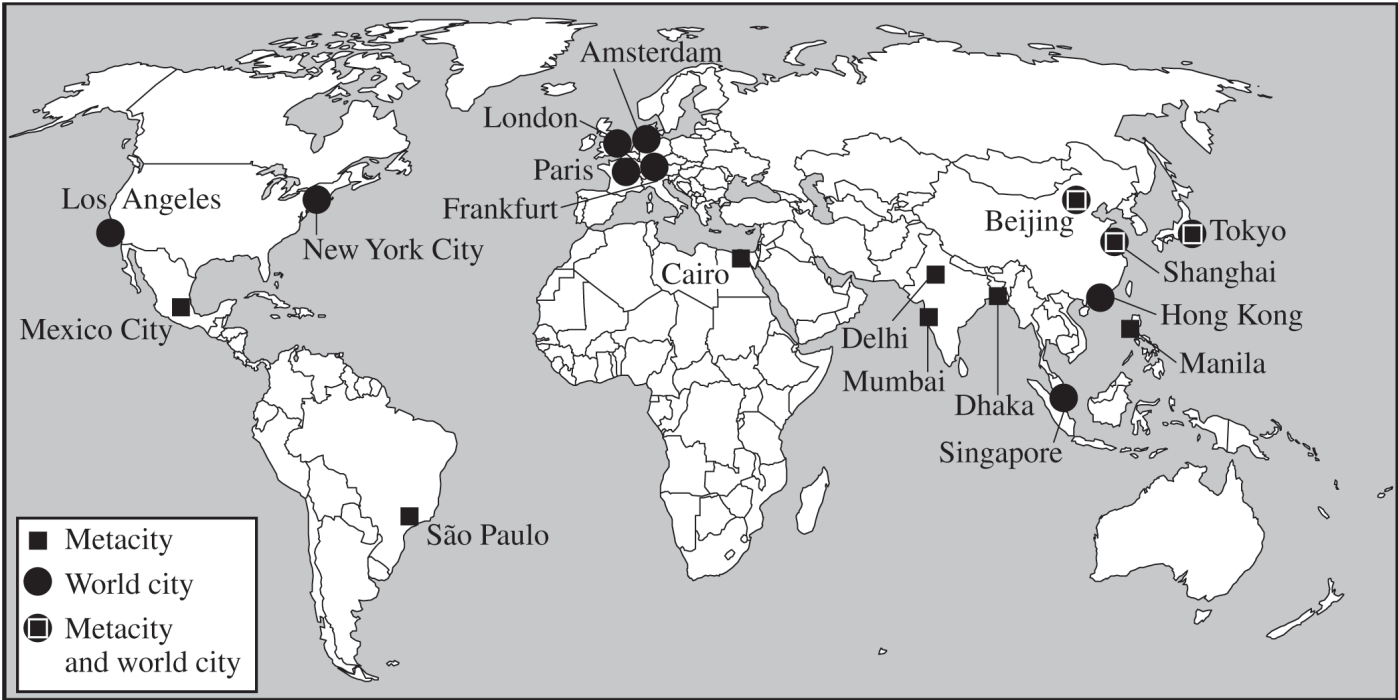
Source: United States Census Bureau

2. The map shows predominantly Asian ethnic neighborhoods in Los Angeles County, California. The names of the neighborhoods and the densities of the ethnic groups are identified on the map.
- A. Identify ONE neighborhood labeled on the map where two or more Asian ethnic groups reside.
 - B. Describe the spatial pattern of Chinese ethnic neighborhoods labeled on the map.
 - C. Explain ONE way immigrants may choose to assimilate into their new place of residence.
 - D. Explain ONE way immigrants may preserve their ethnic traditions in their new place of residence.
 - E. Describe ONE way that ethnic neighborhoods may contribute to a sense of place in large metropolitan areas such as Los Angeles.
 - F. Explain how the process of redistricting may be used to decrease an ethnic community's political power.
 - G. Explain how the process of redistricting may be used to increase an ethnic community's political power.

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Question 3

Metacities and Top-Tier World Cities, 2020



Source: United Nations

Selected Cities

Urban Area	Population, 2000	Population, 2020	Population Growth, 2000 to 2020	City GDP per Capita, 2020	Country GDP per Capita, 2020
Cairo	13.6 million	20.9 million	54%	\$4,865	\$3,609
Dhaka	10.3 million	21.0 million	104%	\$7,920	\$2,001
New York City	17.9 million	18.8 million	5%	\$86,615	\$63,529
Paris	9.7 million	11.0 million	13%	\$71,346	\$39,180

Note: Values are estimates based on publicly available data.

Question 2**PER CAPITA PRODUCTION OF STAPLE FOOD CROPS
IN HEARTH-OF-DOMESTICATION COUNTRIES**

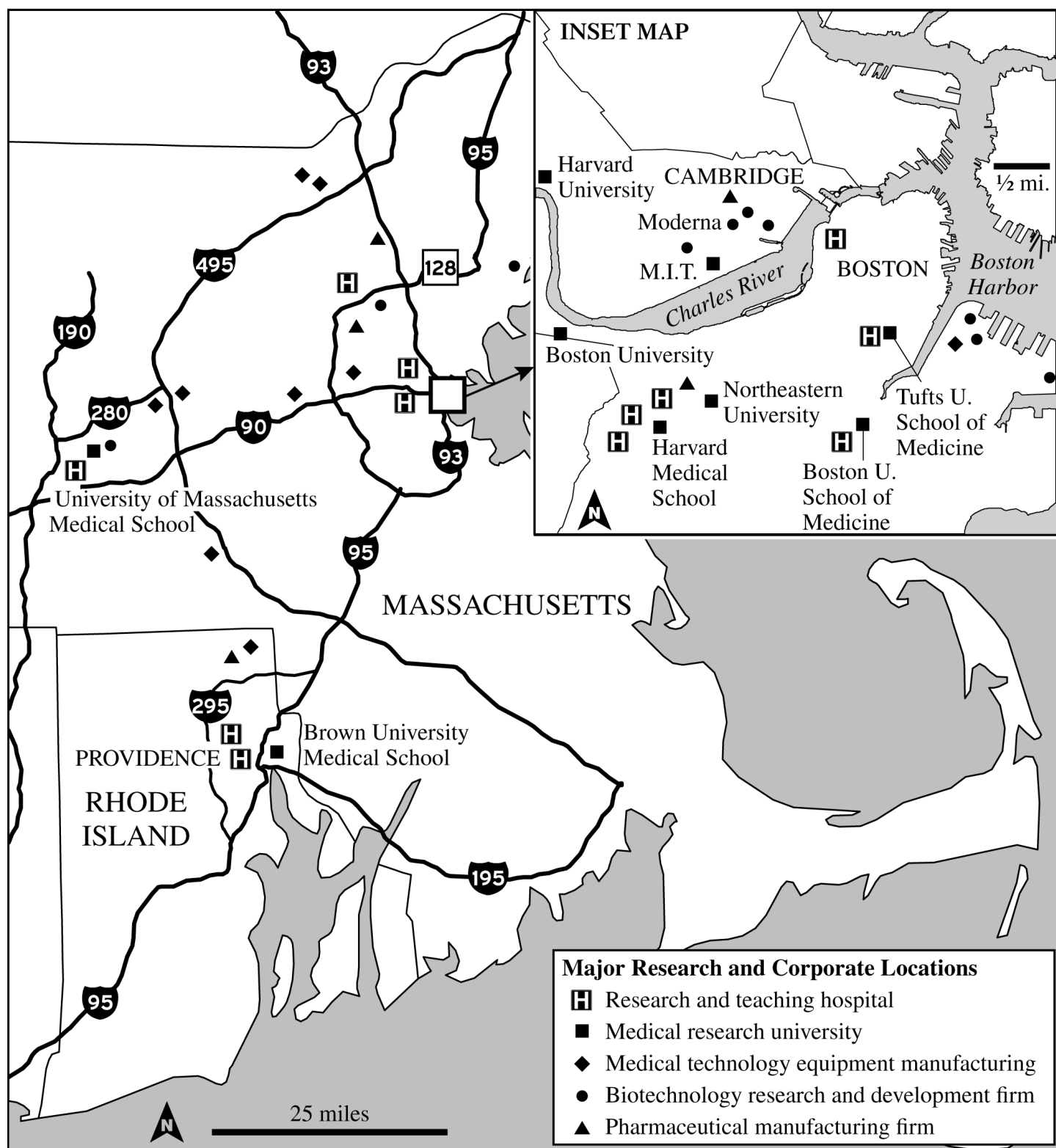
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The inset map shows the downtown areas of Boston and Cambridge, Massachusetts.

HUMAN GEOGRAPHY**SECTION II****Time—1 hour and 15 minutes****3 Questions**

Directions: You have 1 hour and 15 minutes to answer all three of the following questions. It is recommended that you spend approximately one-third of your time (25 minutes) on each question. It is suggested that you take up to 5 minutes of this time to plan and outline each answer. You may plan your answers in this orange booklet, but no credit will be given for anything written in this booklet. **You will only earn credit for what you write in the separate Free Response booklet.**

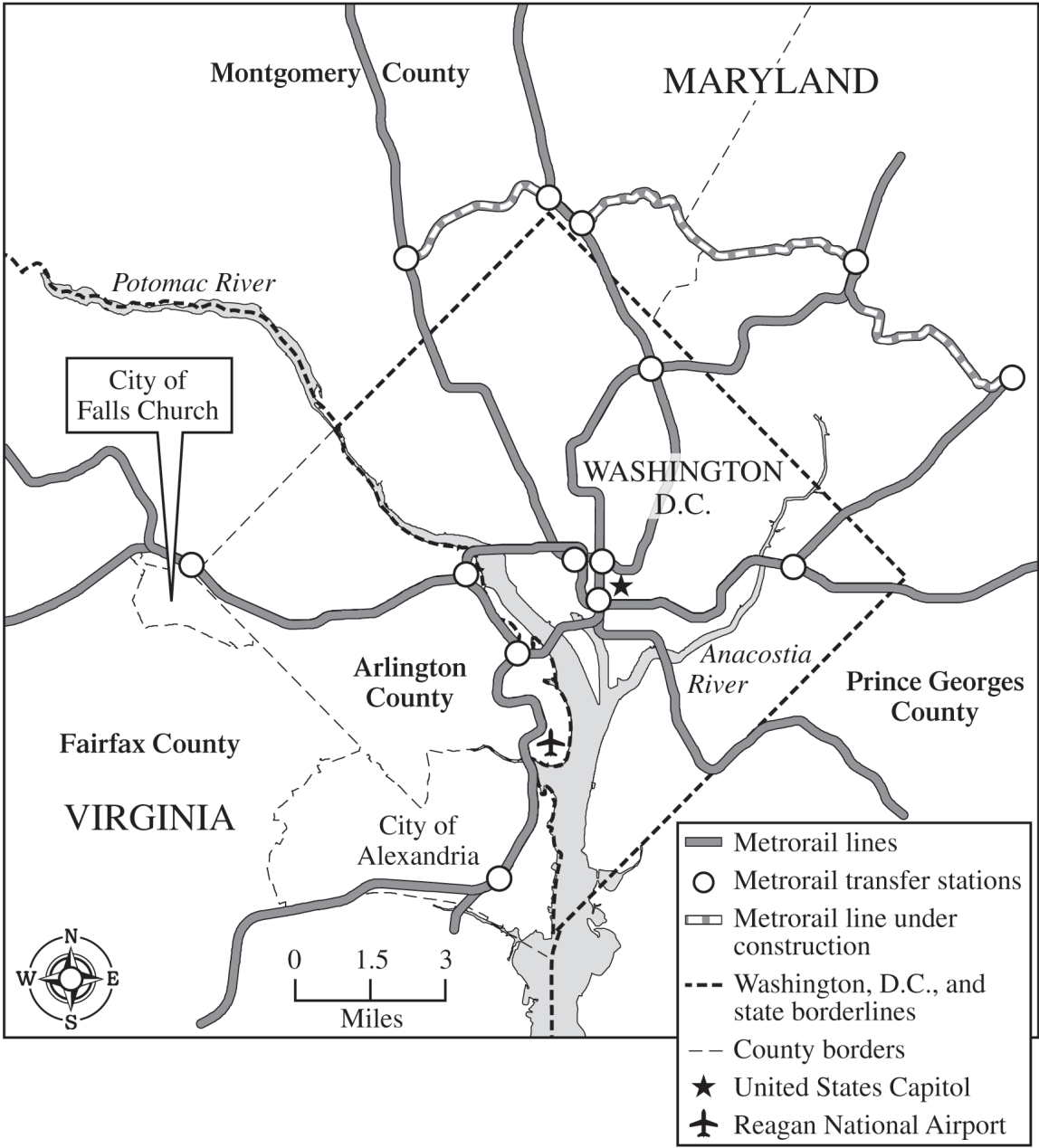
Question 1

1. The interaction of people contributes to the spread of cultural practices that change over time and vary between places. Interactions among cultures can lead to new forms of cultural expression.
 - A. Describe ONE type of diffusion by which culture traits spread.
 - B. Describe the process of creolization of language.
 - C. Describe how the globalization of foods has influenced cultural patterns of food consumption.
 - D. Explain ONE way that agricultural land use practices may have negative environmental effects.
 - E. Explain how a new style of music may be created as a result of cultural diffusion from different regions.
 - F. Explain how toponyms may result from the diffusion of religion across the cultural landscape.
 - G. Explain the degree to which the use of indigenous languages has been influenced by colonialism. (Response must indicate the degree [low, moderate, high] and provide an explanation.)

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Question 2

Washington, D.C., and Surrounding Jurisdictions



Source: ESRI Data Partners

3 Cultural interaction and identity – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
Acculturation	文化适应	_____	_____	_____
Assimilation	同化	_____	_____	_____
Syncretism	文化融合	_____	_____	_____
Multiculturalism	多元文化主义	_____	_____	_____
Ethnic enclaves	族裔聚居区	_____	_____	_____
ghetto	隔都	_____	_____	_____
Sense of place	地方感	_____	_____	_____
Placelessness	无地方性	_____	_____	_____
Sequent pance	occu- 连续占用	_____	_____	_____
Ethnicity	族群	_____	_____	_____
cultural relativism	文化相对主义	_____	_____	_____

Recall

Part 1 covered culture, diffusion, language and religion.

This sheet finishes Unit 3: what happens when cultures meet, and how identity attaches to place.

New ideas

■ 1 Three outcomes when cultures meet

Acculturation 文化适应: a group adopts some traits of a dominant culture while keeping its own identity — a migrant family speaks the new language at work and their own at home.

Assimilation 同化: a group loses its original culture and becomes indistinguishable from the host — usually over generations, and usually not by choice.

Syncretism 文化融合: two cultures blend into something new that belongs to neither — a musical form, a religious practice, a cuisine.

These three are graded as distinct terms. Using “assimilation” for all three is the commonest error in the unit.

■ 2 Multiculturalism and its opposites

Multiculturalism 多元文化主义 is a policy or condition in which several cultures coexist with their differences intact. Its opposite in policy terms is assimilationist pressure; its opposite in spatial terms is segregation.

Ethnic enclaves 族裔聚居区 form where a group clusters voluntarily for mutual support; a **ghetto** 隔都 is a concentration produced by exclusion rather than choice. The distinction is about cause, not appearance.

■ 3 Cultural identity and place

Sense of place 地方感 is the meaning people attach to a location — the reason a neighbourhood matters to those who live there. **Placelessness** 无地方性 is the loss of that distinctiveness, produced by identical retail and architecture.

Sequent occupance 连续占用 is the idea that successive societies each leave their mark on the same place, so a landscape is a record of everyone who has held it.

■ 4 Gender and ethnicity in space

Ethnicity 族群 is identity based on shared ancestry and cultural practice; **race** is a social construct based on perceived physical difference. They are not the same and geographers keep them apart.

Gender shapes space too: access to public space, safety, journey-to-work patterns and land rights all differ by gender, and the AP course expects you to recognise that a “neutral” spatial pattern may not be neutral in effect.

■ 5 Globalisation of culture

Global media and trade spread popular culture rapidly, producing convergence. Against it run two counter-currents: **cultural relativism** 文化相对主义, judging a culture by its own standards, and active revival — communities deliberately reviving a language, festival or craft that was fading.

Practice

Try these in order. The methods are all above.

3.6 Distinguish between acculturation and assimilation. [2]

3.7 Define syncretism and give one example. [2]

3.8 Explain the difference between an ethnic enclave and a ghetto. [2]

3.9 Explain how popular culture can produce placelessness. [2]

3.10 Explain what the idea of sequent occupance tells a geographer about a landscape. [2]

Question 2**PER CAPITA PRODUCTION OF STAPLE FOOD CROPS
IN HEARTH-OF-DOMESTICATION COUNTRIES**

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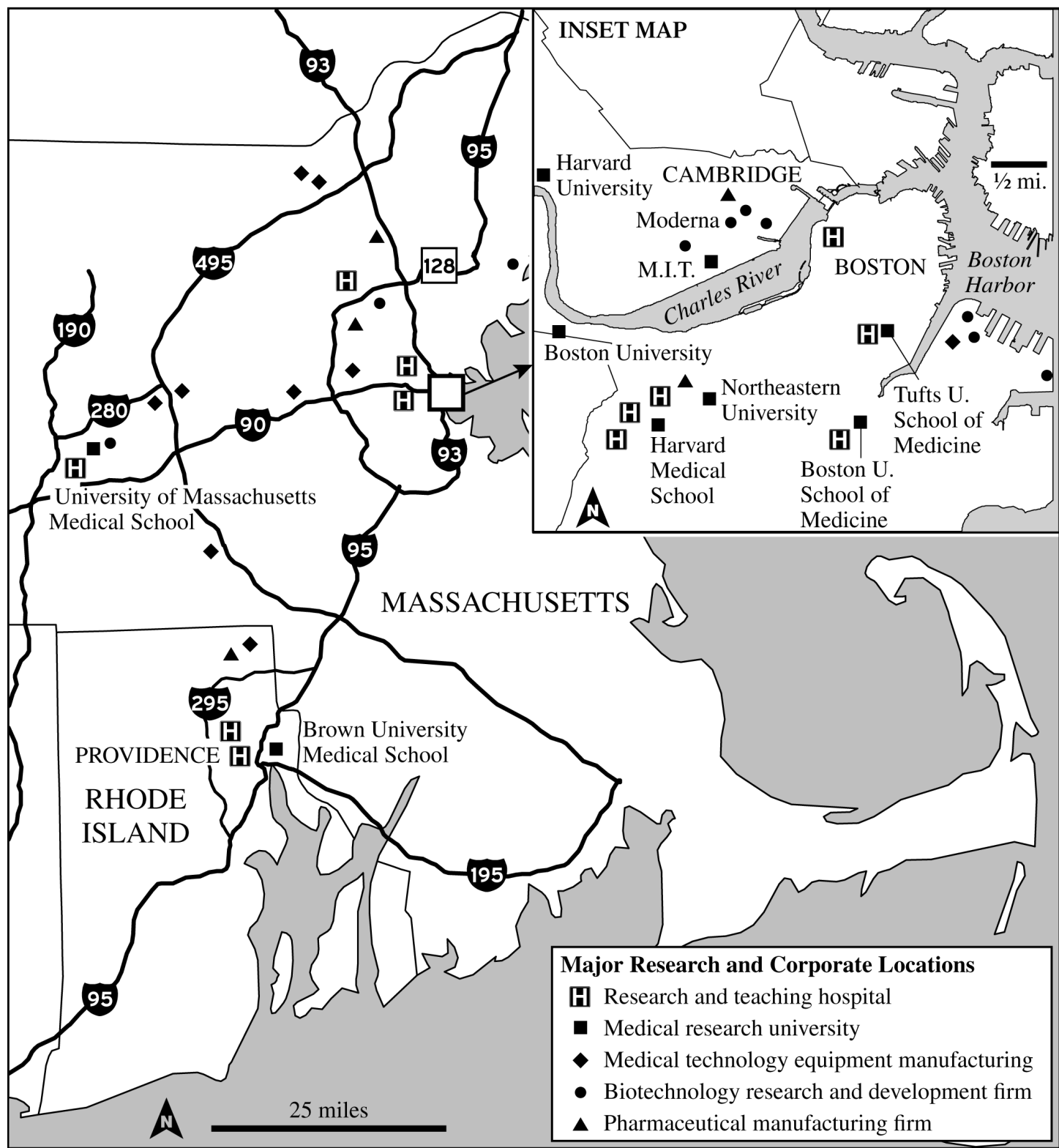
Source: Food and Agriculture Organization of the United Nations

2. Staple food crops provide most of the carbohydrates in people's diets, and some staples are also used as animal feed or in the distillation of ethanol. Cassava is a root crop (tuber) that is the source of farinha, tapioca, and the pearls in bubble tea.
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Question 3

MAJOR MEDICAL AND BIOTECHNOLOGY COMPANIES AND INSTITUTIONS IN THE BOSTON AND PROVIDENCE REGION



Source: National Institutes of Health

The inset map shows the downtown areas of Boston and Cambridge, Massachusetts.

3. Pastoral nomadism is widely practiced in the Sahel region of Africa. The map and table provide information about spatial patterns and social tensions associated with this type of agriculture.
- A. Describe ONE reason for the migration patterns shown on the map.
 - B. Describe ONE cause of desertification in the Sahel region.
 - C. Explain how pastoral nomadism may affect the cultural landscape of the Sahel region.
 - D. Explain ONE way mixed-crop farming could be affected by climatic conditions.
 - E. Using the map and table, explain why expanding protected natural areas may affect the migration routes of nomadic herders in the Sahel region.
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END OF EXAM

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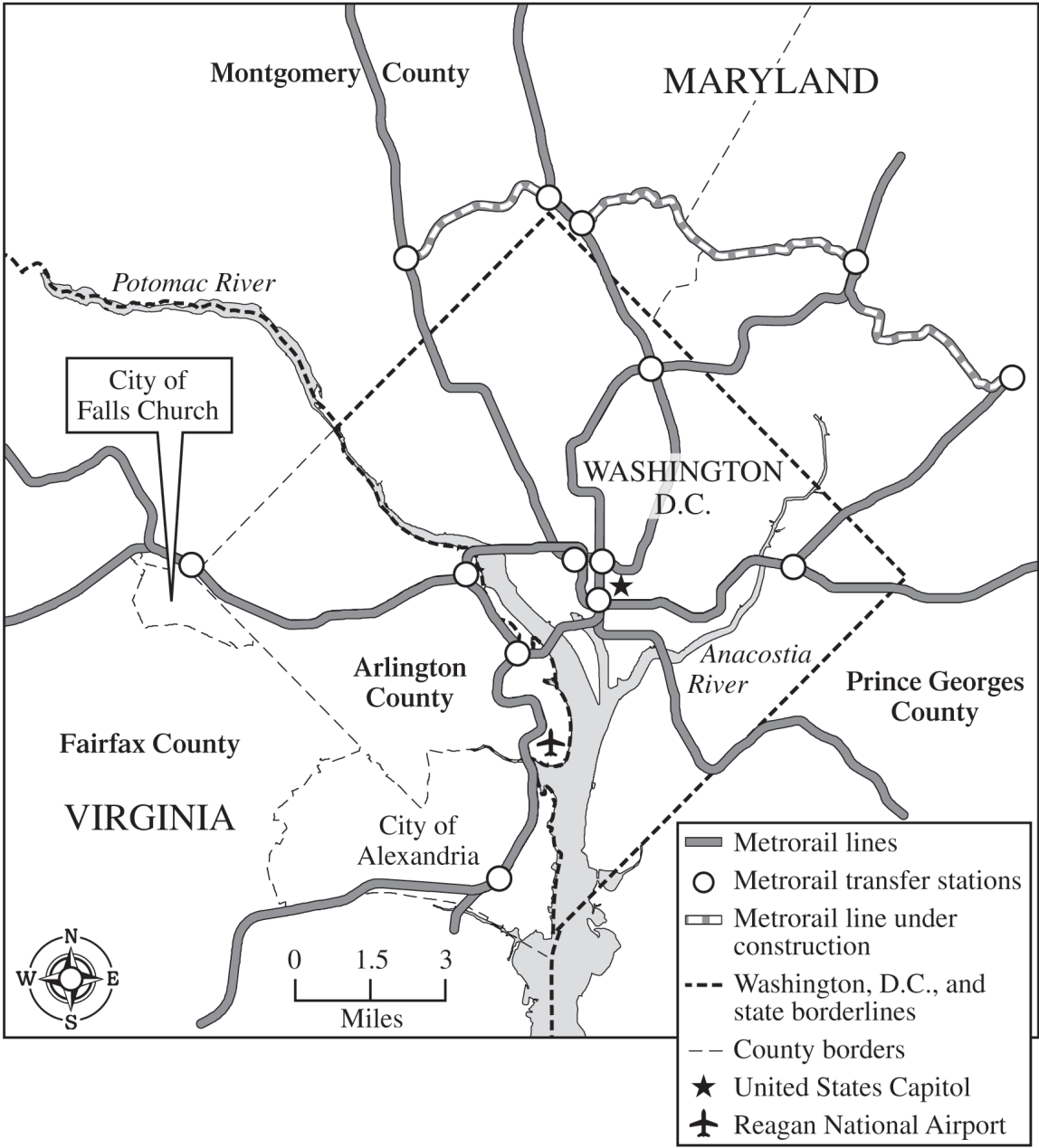
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Question 2

Washington, D.C., and Surrounding Jurisdictions



Source: ESRI Data Partners

Question 2**PER CAPITA PRODUCTION OF STAPLE FOOD CROPS
IN HEARTH-OF-DOMESTICATION COUNTRIES**

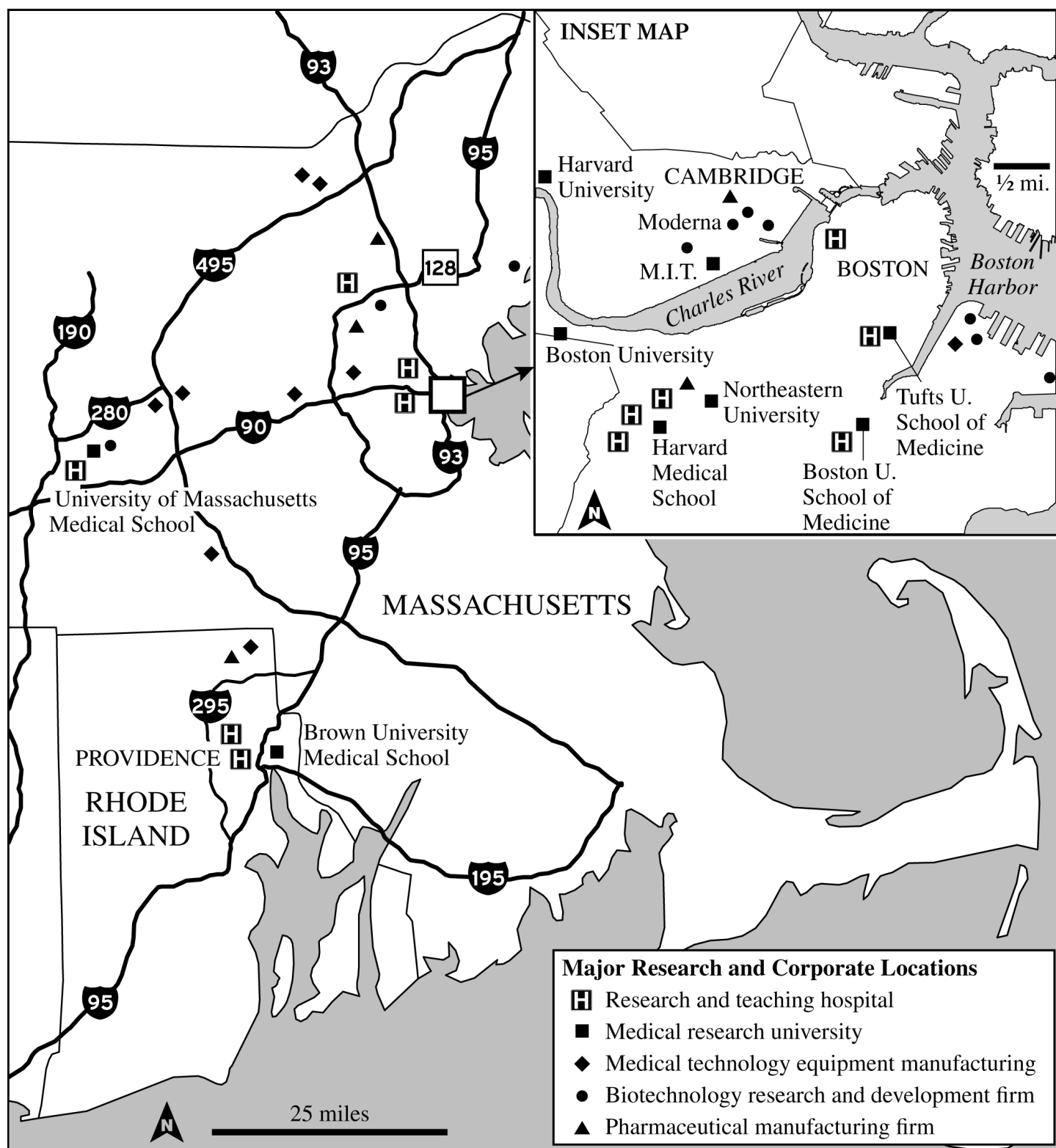
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Source: Food and Agriculture Organization of the United Nations

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Question 3

MAJOR MEDICAL AND BIOTECHNOLOGY COMPANIES AND INSTITUTIONS IN THE BOSTON AND PROVIDENCE REGION

Source: National Institutes of Health

The inset map shows the downtown areas of Boston and Cambridge, Massachusetts.

4 States, nations and boundaries – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
state	国家	_____	_____	_____
nation	民族	_____	_____	_____
nation-state	民族国家	_____	_____	_____
multinational state	多民族国家	_____	_____	_____
stateless nation	无国之民族	_____	_____	_____
Sovereignty	主权	_____	_____	_____
Self-determination	民族自决	_____	_____	_____
Compact	紧凑型	_____	_____	_____
Elongated	狭长型	_____	_____	_____
Fragmented	破碎型	_____	_____	_____
Perforated	穿孔型	_____	_____	_____
Prorupted	突出型	_____	_____	_____
landlocked	内陆	_____	_____	_____
antecedent boundary	先成边界	_____	_____	_____
subsequent boundary	后成边界	_____	_____	_____

English	中文	Write it 3 times (English)		
superimposed boundary	强加边界			
relict boundary	遗迹边界			
geometric	几何边界			
physical	自然边界			
Definitional	定义争端			
Locational	位置争端			
Operational	运作争端			
Allocational	资源争端			

Recall

You know that the world is divided into countries, that borders exist, and that some borders are disputed.

This sheet gives you the precise vocabulary — because in this unit “state”, “nation” and “country” mean different things.

New ideas

■ 1 State, nation, nation-state

A **state** 国家 is a politically organised territory with a permanent population, defined borders, a government, and sovereignty — recognition by other states.

A **nation** 民族 is a group of people with a shared cultural identity, who see themselves as belonging together. It is about people, not territory.

A **nation-state** 民族国家 is a state whose borders closely match a single nation. Iceland and Japan are near examples; most states are not.

A **multinational state** 多民族国家 contains several nations (Russia, Canada). A **stateless nation** 无国之民族 is a nation with no state of its own — the Kurds are the standard example.

■ 2 Sovereignty and its limits

Sovereignty 主权 is a state's right to govern its territory without outside interference. It is qualified in practice by membership of supranational organisations, by treaties, and by economic dependence.

Self-determination 民族自决 is the principle that a nation has the right to govern itself. It is the argument behind both decolonisation and modern separatist movements, and it collides directly with the sovereignty of existing states — which is why these disputes are hard.

■ 3 Shapes of states

The shape of a state has real consequences for governing it. **Compact** 紧凑型 (roughly circular, easiest to govern). **Elongated** 狭长型 (long and thin — transport and communication are costly). **Fragmented** 破碎型 (in separate pieces, sometimes across water). **Perforated** 穿孔型 (completely surrounds another state). **Prorupted** 突出型 (a compact core with a corridor extending out, often to reach a resource or the sea).

A **landlocked** 内陆 state has no coastline and so depends on neighbours for sea trade. An **enclave** is a territory entirely inside another state; an **exclave** is part of a state separated from its main body.

■ 4 Kinds of boundary

By origin: an **antecedent boundary** 先成边界 was drawn before the area was heavily settled; a **subsequent boundary** 后成边界 was drawn as the cultural landscape developed; a **superimposed boundary** 强加边界 was forced on an existing cultural landscape by an outside power — the colonial borders of Africa; a **relict boundary** 遗迹边界 no longer functions but is still visible.

By type: **geometric** 几何边界 (a straight line, often a parallel or meridian) or **physical** 自然边界 (a river, a mountain crest).

■ 5 Boundary disputes

Definitional 定义争端: the two sides read the treaty text differently. **Locational** 位置争端: they agree the wording and disagree where it falls on the ground. **Operational** 运作争端: they disagree about how the border should be managed — migration, smuggling. **Allocational** 资源争端: they disagree about a resource that crosses it — oil, water, fish.

Practice

Try these in order. The methods are all above.

4.1 Distinguish between a state and a nation. [2]

4.2 Define a stateless nation and give one example. [2]

4.3 Explain one governing difficulty caused by a fragmented state shape. [2]

4.4 Explain what a superimposed boundary is and why such boundaries often cause conflict. [3]

4.5 Name the type of boundary dispute that concerns a resource crossing the border. [1]

- 1.** The European Union (EU) and Association of Southeast Asian Nations (ASEAN) are supranational organizations composed of independent member states.

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

- A.** Define the concept of an independent state.
- B.** Describe one purpose of supranational organizations.
- C.** Describe one global outcome of an increase in international trade.
- D.** Explain how deindustrialization has affected the economy of core countries.
- E.** Explain why international boundaries on land or at sea may lead to disputes over resources.
- F.** Explain how supranational organizations such as the EU or ASEAN may challenge the sovereignty of member states.
- G.** Explain how advances in communication technologies may affect state sovereignty.

HUMAN GEOGRAPHY**SECTION II****Time—1 hour and 15 minutes****3 Questions**

Directions: You have 1 hour and 15 minutes to answer all three of the following questions. It is recommended that you spend approximately one-third of your time (25 minutes) on each question. It is suggested that you take up to 5 minutes of this time to plan and outline each answer. You may plan your answers in this orange booklet, but no credit will be given for anything written in this booklet. **You will only earn credit for what you write in the separate Free Response booklet.**

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 - A. Define the concept of territoriality in terms of political geography.
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 - F. Local governments often divide cities into representative electoral districts. Explain how the process of redrawing district boundary lines may affect election results within a city.
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2. The map shows political jurisdictions and Metrorail, a subway system in the Washington, D.C., metropolitan area. The city and county jurisdictions shown on the map operate the Washington Metropolitan Area Transit Authority (WMATA), which runs Metrorail.
- A. Identify ONE type of boundary shown on the map.
 - B. Describe ONE site characteristic of Washington, D.C., shown on the map.
 - C. Explain how political power is spatially distributed within a federal system of governance.
 - D. Explain ONE way suburban sprawl is likely to negatively affect environmental sustainability in metropolitan areas.
 - E. Describe ONE way transportation-oriented development, such as expanding a Metrorail line, may promote urban sustainability.
 - F. Explain how regional transportation networks led to the development of edge cities.
 - G. Explain how the geographic fragmentation of local governments could present a challenge to the Washington, D.C., metropolitan area's ability to construct a new Metrorail line.

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.

4 Devolution, power and geopolitics

– Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
centripetal force	向心力	_____	_____	_____
centrifugal force	离心力	_____	_____	_____
Devolution	权力下放	_____	_____	_____
balkanisation	巴尔干化	_____	_____	_____
Irredentism	民族统一主义	_____	_____	_____
unitary state	单一制国家	_____	_____	_____
federal state	联邦制国家	_____	_____	_____
Gerrymandering	选区划分操纵	_____	_____	_____
supranational organisation	超国家组织	_____	_____	_____
Mackinder's heart-land theory	心脏地带理论	_____	_____	_____
Spykman's rim-land theory	边缘地带理论	_____	_____	_____
Colonialism	殖民主义	_____	_____	_____
Neocolonialism	新殖民主义	_____	_____	_____

Recall

Part 1 gave you states, nations, shapes and boundaries.

This sheet covers what pulls states apart, what holds them together, and how power is organised inside and above them.

New ideas

■ 1 Forces that bind and forces that break

A **centripetal force** 向心力 pulls a state together: a shared language, a common enemy, a national holiday, an efficient transport network, a unifying religion.

A **centrifugal force** 离心力 pulls it apart: linguistic or religious division, uneven economic development, a physical barrier separating regions, and a minority nation with its own identity.

Almost every question about state stability wants these two named and weighed against each other for a specific case.

■ 2 Devolution and its outcomes

Devolution 权力下放 is the transfer of power from a central government to regional units. It usually follows centrifugal pressure and is intended to relieve it.

Its outcomes range from a stable federal settlement to **balkanisation** 巴尔干化 — the fragmentation of a state into hostile smaller units. **Irredentism** 民族统一主义 is a state's claim to territory in a neighbour on the grounds that its own nation lives there.

■ 3 How power is arranged internally

A **unitary state** 单一制国家 concentrates power centrally; a **federal state** 联邦制国家 divides it between the centre and regional governments. Large, diverse or fragmented states tend towards federalism because a distant centre cannot govern them well.

Gerrymandering 选区划分操纵 is redrawing electoral district boundaries for political advantage. Its three named forms are **cracking** (splitting an opposing group across many districts so it is a majority in none), **packing** (concentrating it into one district so its votes are wasted elsewhere), and **stacking**. **Redistricting** itself is legitimate; gerrymandering is its abuse.

■ 4 Above the state

A **supranational organisation** 超国家组织 is an alliance of states pooling some sovereignty for a shared goal — the EU, the UN, NATO, ASEAN, the African Union.

They gain their members economic and security advantages and cost them some sovereignty, which is the tension every essay on them should name.

■ 5 Geopolitical theory

Mackinder's heartland theory 心脏地带理论: whoever controls the interior of Eurasia controls the world, because it is unreachable by sea power.

Spykman's rimland theory 边缘地带理论: the coastal fringe matters more, because that is where population, industry and access to the sea are.

Both are twentieth-century models. Name them for what they explain — the strategic logic behind alliances and interventions — not as truths.

■ 6 Colonialism's residue

Colonialism 殖民主义 left superimposed boundaries, export-oriented transport networks running from the interior to the port rather than between regions, and economies dependent on a single commodity. **Neocolonialism** 新殖民主义 describes continued economic control after formal independence.

Practice

Try these in order. The methods are all above.

4.6 Give one centripetal and one centrifugal force acting on a state. [2]

4.7 Define devolution and explain why a state might use it. [3]

4.8 Explain how packing differs from cracking in gerrymandering. [2]

4.9 State one advantage and one cost to a state of joining a supranational organisation. [2]

4.10 Explain one way colonial rule still shapes the geography of a former colony. [2]

- 1.** The European Union (EU) and Association of Southeast Asian Nations (ASEAN) are supranational organizations composed of independent member states.

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

- A.** Define the concept of an independent state.
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Question 1

1. 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.
 - 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.

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5 Agriculture and von Thünen – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
First Agricultural Revolution	第一次农业革命	_____
Second Agricultural Revolution	第二次农业革命	_____
Green Revolution	绿色革命	_____
Subsistence agriculture	自给农业	_____
commercial agriculture	商业农业	_____
Intensive	集约农业	_____
extensive	粗放农业	_____
shifting cultivation	迁移农业	_____
pastoral nomadism	游牧	_____
plantation agriculture	种植园农业	_____
Von Thünen	杜能	_____
clustered	集聚型	_____
dispersed	分散型	_____
linear	线状型	_____
Agribusiness	农业综合企业	_____

English	中文	Write it 3 times (English)
Monoculture	单一栽培	_____
Food deserts	食物荒漠	_____

Recall

You know food is grown somewhere and eaten elsewhere, and that farming looks different in different countries.

This sheet gives you the classifications and the one model you must be able to apply.

New ideas

■ 1 The agricultural revolutions

The **First Agricultural Revolution** 第一次农业革命, the Neolithic domestication of plants and animals, made permanent settlement possible.

The **Second Agricultural Revolution** 第二次农业革命 accompanied the Industrial Revolution: improved tools, crop rotation, selective breeding and better transport raised yields and freed labour for the factories.

The **Green Revolution** 绿色革命 of the mid-twentieth century introduced high-yield seed varieties, chemical fertiliser, pesticides and irrigation. It raised output enormously, especially in Asia, at the cost of chemical dependence, water depletion, and an advantage to farmers who could afford the inputs.

■ 2 Ways of classifying farming

Subsistence agriculture 自给农业 feeds the farmer's own household; **commercial agriculture** 商业农业 produces for sale.

Intensive 集约农业 uses a great deal of labour or capital on a small area (market gardening, wet rice); **extensive** 粗放农业 uses little on a large area (ranching, shifting cultivation).

Named systems worth knowing: **shifting cultivation** 迁移农业 with its **slash-and-burn** clearing; **pastoral nomadism** 游牧 in dry lands; **plantation agriculture** 种植园农业, a commercial monoculture typically established under colonial rule; **Mediterranean agriculture** with its characteristic olives, grapes and citrus.

■ 3 Von Thünen's model

Von Thünen 杜能 explained the RING pattern of land use around a market. Land closest to the market goes to whatever pays the highest rent, and what pays most is set by transport cost and perishability.

The classic rings, from the centre out: market gardening and dairying (perishable,

must be close); forestry (heavy, costly to move — in his day, for fuel); field crops (durable, cheaper to transport); ranching (lowest value per unit area, so it takes the cheapest land).

The model assumes a flat plain, one market, uniform soil and one transport mode. Modern refrigeration and roads weaken it — which is a valid evaluation point, not a reason to ignore it.

■ 4 The rural landscape

Survey systems shape the map: **metes and bounds** follows natural features; the **township-and-range** grid produces the rectangular fields visible across the American Midwest; **long-lot** gives each holding narrow river frontage.

Settlement patterns are **clustered** 集聚型, **dispersed** 分散型 or **linear** 线状型, and each reflects how land was allocated and how farming was organised.

■ 5 Modern issues

Agribusiness 农业综合企业 integrates farming with processing and distribution under corporate control. **Monoculture** 单一栽培 raises efficiency and lowers resilience to disease. **Food deserts** 食物荒漠 are areas with poor access to affordable fresh food. **Sustainable agriculture** aims to maintain yields without depleting soil, water or biodiversity.

Practice

Try these in order. The methods are all above.

5.1 State one benefit and one cost of the Green Revolution. [2]

5.2 Distinguish between intensive and extensive agriculture. [2]

5.3 Explain why market gardening occupies the ring closest to the market in von Thünen's model. [2]

5.4 State one assumption of von Thünen's model that limits its use today. [2]

5.5 Explain one risk of monoculture. [2]

Question 2**PER CAPITA PRODUCTION OF STAPLE FOOD CROPS
IN HEARTH-OF-DOMESTICATION COUNTRIES**

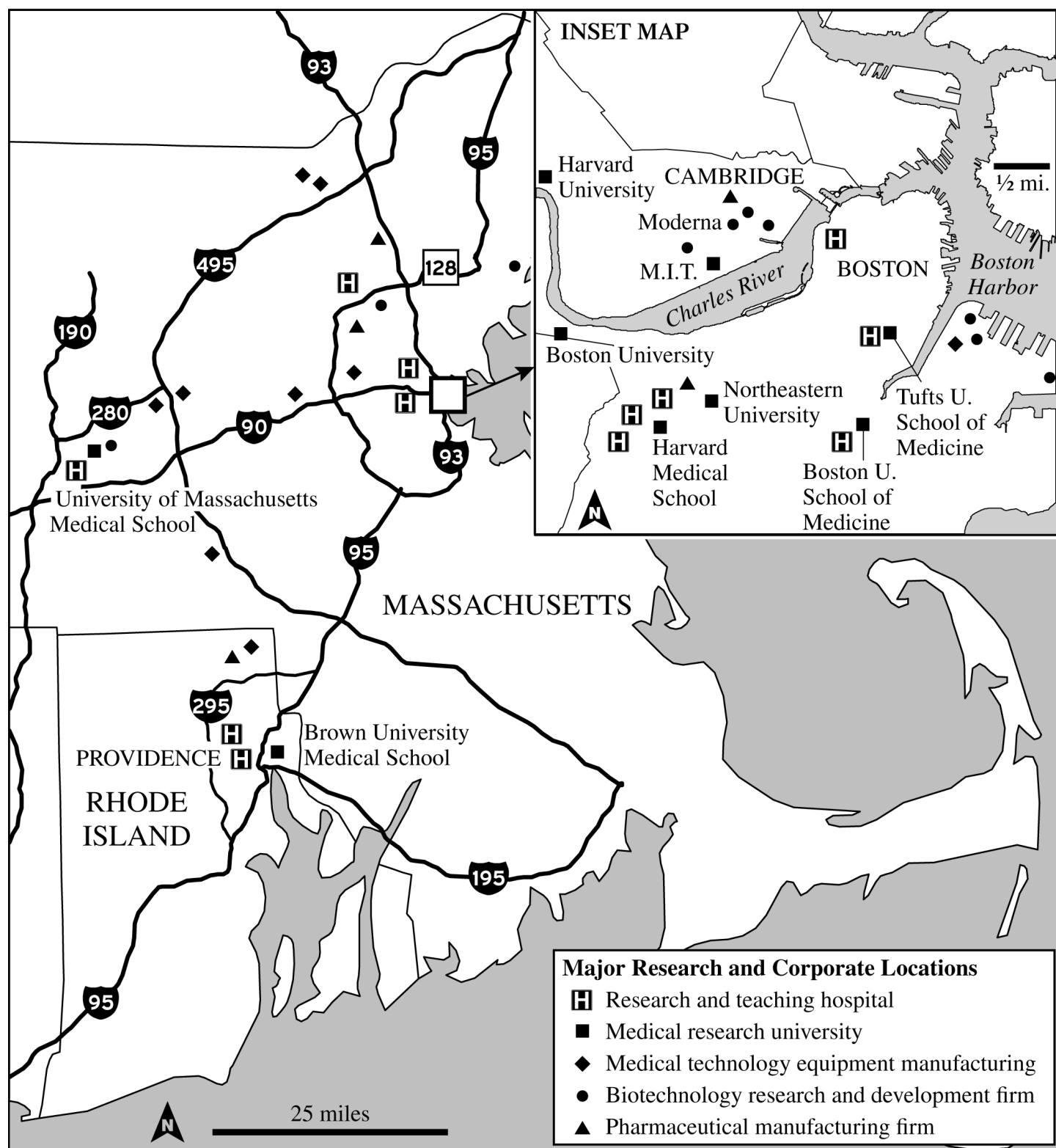
Country	Corn (maize) (pounds per capita)	Potato (pounds per capita)	Rice (pounds per capita)	Yam (pounds per capita)	Cassava (manioc or yuca) (pounds per capita)
	Hearth: Mexico	Hearth: Peru	Hearths: China and Mali	Hearth: Niger River basin	Hearth: Amazon River basin
Brazil	1,056	39	108	3	183
China	412	145	333	0	52
Mexico	471	31	4	0	0
Nigeria	121	15	93	549	618
Peru	107	362	216	0	13

Source: Food and Agriculture Organization of the United Nations

2. Staple food crops provide most of the carbohydrates in people's diets, and some staples are also used as animal feed or in the distillation of ethanol. Cassava is a root crop (tuber) that is the source of farinha, tapioca, and the pearls in bubble tea.
- A. Describe the concept of an early hearth of domestication.
 - B. Identify the crop listed in the table that has diffused the least from its hearth of domestication to the countries listed in the table.
 - C. Explain how food preferences can be a culture trait.
 - D. Explain how the Columbian Exchange contributed to a crop's diffusion beyond its hearth of domestication.
 - E. Explain how the data in the table support the concept of a crop's consumption pattern being the result of globalization.
 - F. Explain why a crop may be farmed intensively in a less developed country and be farmed extensively in a more developed country.
 - G. Explain ONE way the global supply chain links crops such as those listed in the table to consumers in other countries.

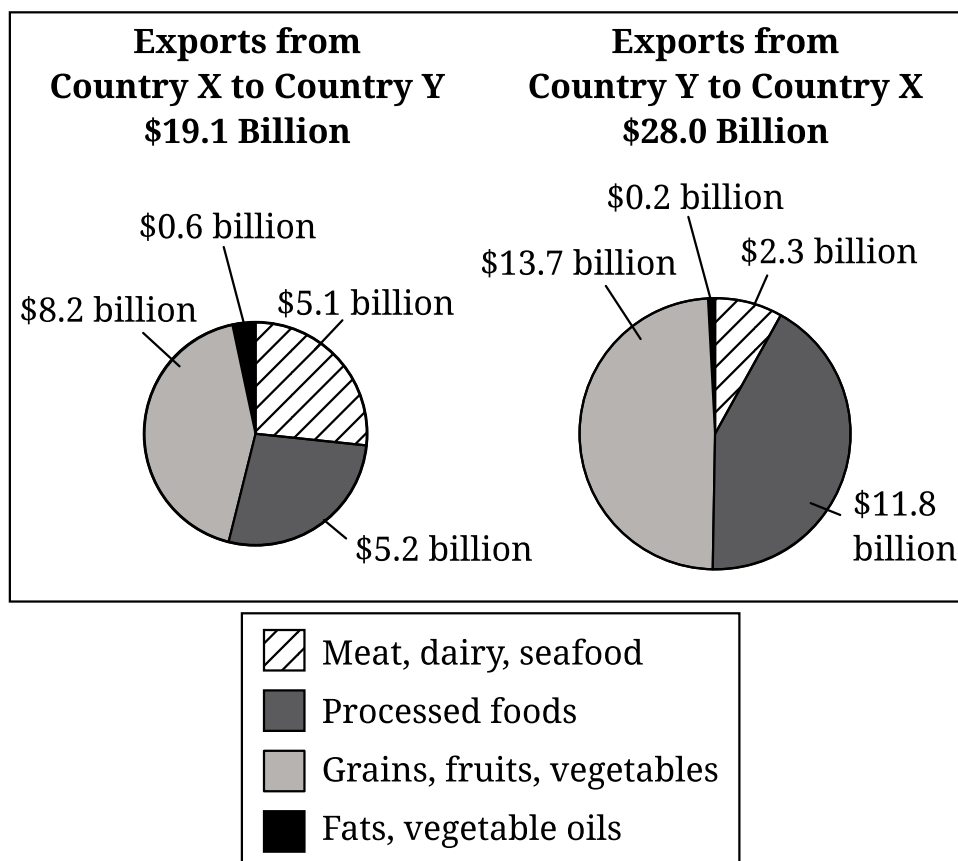
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Question 3

MAJOR MEDICAL AND BIOTECHNOLOGY COMPANIES AND INSTITUTIONS IN THE BOSTON AND PROVIDENCE REGION

Source: National Institutes of Health

The inset map shows the downtown areas of Boston and Cambridge, Massachusetts.

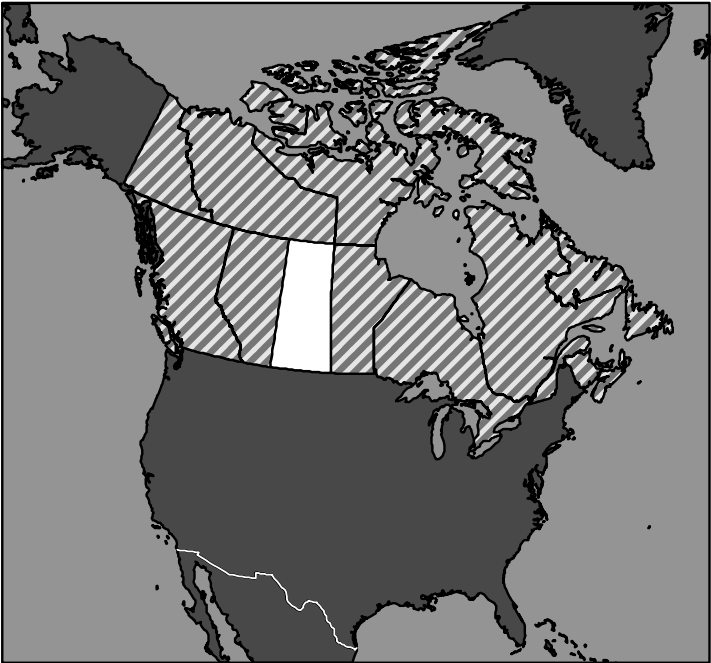
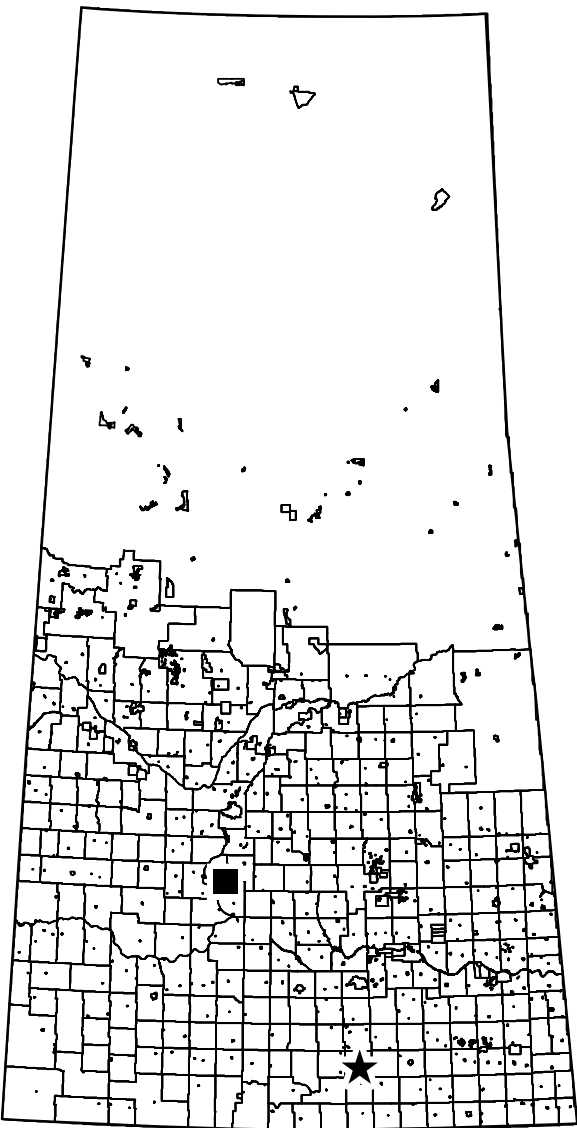
Food Exports Between Country X and Country Y

2. Country X and Country Y have a long-established trade relationship in agricultural products. Country X is a developed country, and Country Y is a developing country.

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

- Using the data in the charts, identify the largest food export category between the two countries.
- Using the data in the charts, describe the difference between the two countries in the meat, dairy, and seafood category.
- Define the concept of comparative advantage.
- Describe one effect of Green Revolution technologies on food supplies in developing countries.
- Explain how advances in agricultural technology may increase the carrying capacity of land.
- Explain the degree to which the economies of Country X and Country Y are interdependent. (Response must indicate the degree [low, moderate, high] and provide an explanation.)
- Explain how the charts provide limited information about economic development.

Map 1: Political Divisions in Saskatchewan, Canada



- Saskatchewan
- Other Canadian provinces and territories
- Other countries

0 100 miles

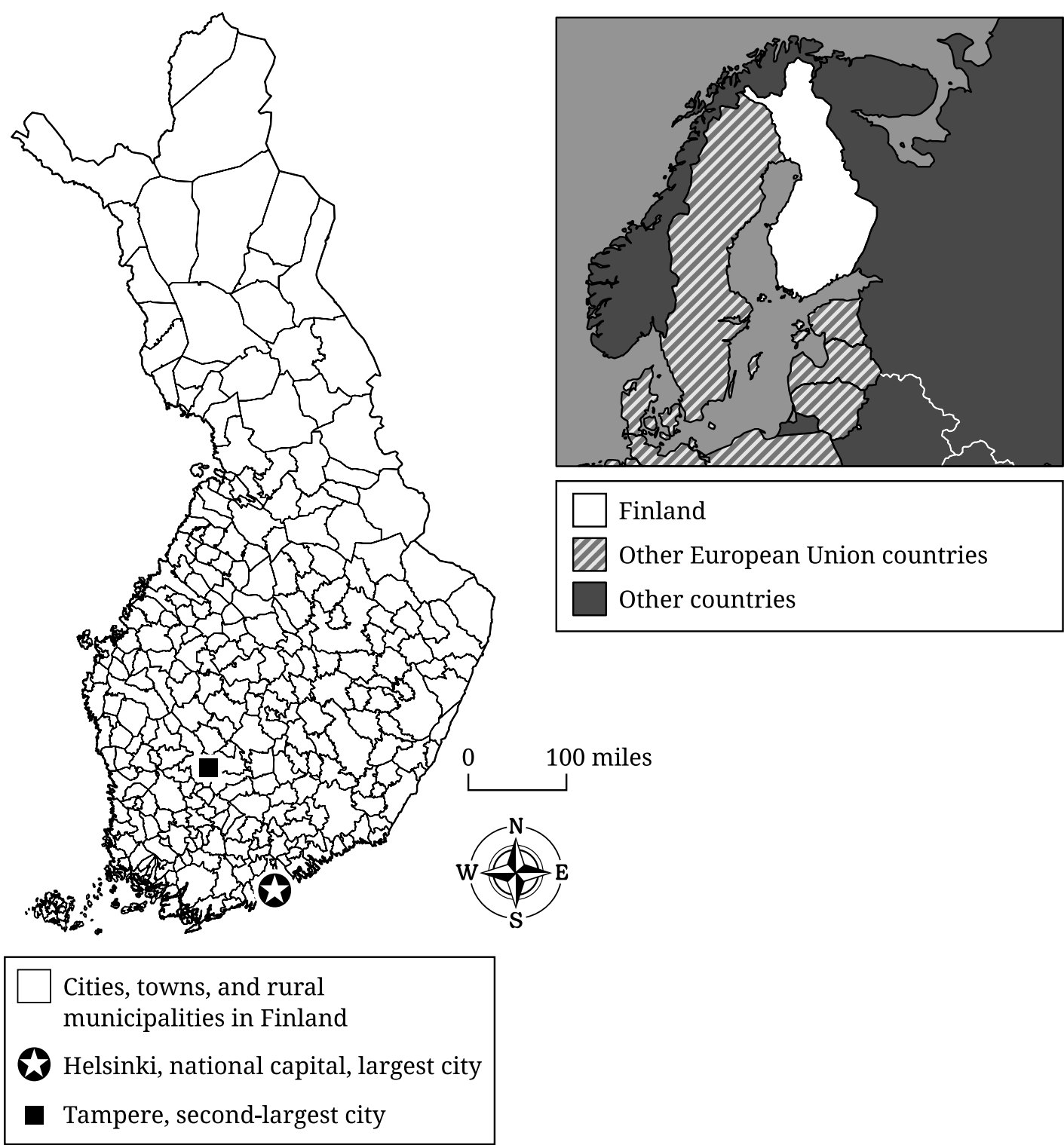


- Cities, towns, and rural municipalities in Saskatchewan
- ★

 Regina, provincial capital, second-largest city
- Saskatoon, largest city

Source: Statistics Canada

Map 2: Political Divisions in Finland



Source: ESRI Data Partners

Question 2**PER CAPITA PRODUCTION OF STAPLE FOOD CROPS
IN HEARTH-OF-DOMESTICATION COUNTRIES**

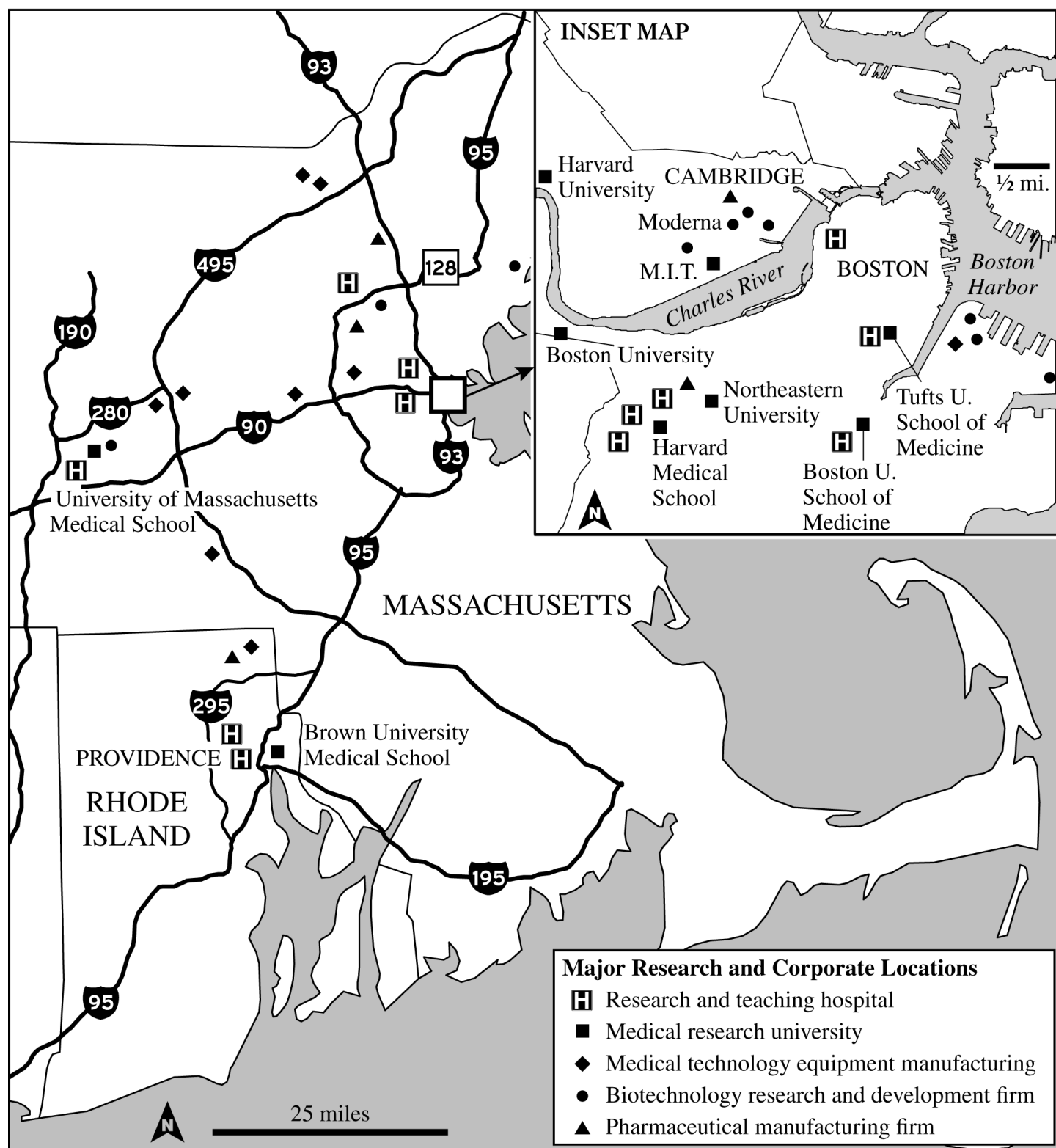
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The inset map shows the downtown areas of Boston and Cambridge, Massachusetts.

5 Agricultural regions and the environment – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

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Bid-rent	竞租	_____	_____	_____
Desertification	荒漠化	_____	_____	_____
Salinisation	盐碱化	_____	_____	_____
Soil erosion	土壤侵蚀	_____	_____	_____
Eutrophication	富营养化	_____	_____	_____
Food security	粮食安全	_____	_____	_____
Fair trade	公平贸易	_____	_____	_____

Recall

Part 1 gave you the agricultural revolutions, the classifications and von Thünen's rings.

This sheet covers where food actually comes from at world scale, and what farming does to the land.

New ideas

■ 1 Climate sets the possibilities

Agriculture is bounded by climate and soil. Wet rice needs heavy seasonal rainfall and flat, floodable land; wheat needs a temperate belt with a dry harvest season; pastoral nomadism occupies land too dry to crop at all.

This is possibilism, not determinism: climate limits what is possible, and the choice among the possibilities is economic and cultural.

■ 2 Agricultural regions

The standard world classification (after Whittlesey) distinguishes subsistence regions — shifting cultivation in the humid tropics, pastoral nomadism in the dry lands, intensive subsistence wet-rice in East and South Asia — from commercial regions: mixed crop and livestock, dairying, grain farming, ranching, Mediterranean, and plantation.

Two rules make the map readable. Subsistence dominates where incomes are low and holdings small; commercial farming dominates where a market, transport and capital exist.

■ 3 The bid-rent idea applied to land

Bid-rent 竞租 says land value falls with distance from the market, so the use that can pay most occupies the closest land. It explains von Thünen's rings, and the same logic reappears in Unit 6 explaining land use inside a city — recognising that it is the same idea in two units is worth a mark.

■ 4 Environmental consequences

Desertification 荒漠化: productive dryland degrades to desert through overgrazing, over-cultivation and deforestation.

Salinisation 盐碱化: irrigation in a dry climate leaves dissolved salts behind as water evaporates, until the soil will not support crops.

Soil erosion 土壤侵蚀 follows the removal of vegetation cover. **Deforestation** for cropland and pasture removes carbon storage and habitat.

Eutrophication 富营养化: fertiliser runs off into water, algae bloom, decay consumes the oxygen, and fish die.

■ 5 Food security and the global system

Food security 粮食安全 is reliable access to sufficient, safe and nutritious food. It fails through poverty and distribution far more often than through absolute shortage — the world produces enough calories.

Fair trade 公平贸易 guarantees producers a minimum price. **Food miles** measure transport distance, though local food is not automatically lower-carbon. **Urban agriculture** and **community-supported agriculture** shorten the chain between grower and eater.

Global supply chains mean a temperate country eats tropical fruit year-round, at the cost of dependence on distant producers and vulnerability to disruption.

Practice

Try these in order. The methods are all above.

5.6 Explain why pastoral nomadism occupies dry regions rather than humid ones. [2]

5.7 Explain how irrigation can lead to salinisation. [3]

5.8 Describe the process of eutrophication. [3]

5.9 Explain why food insecurity can exist in a country that produces enough food. [2]

5.10 State how the bid-rent idea connects agricultural land use with urban land use. [2]

Question 2**PER CAPITA PRODUCTION OF STAPLE FOOD CROPS
IN HEARTH-OF-DOMESTICATION COUNTRIES**

Country	Corn (maize) (pounds per capita)	Potato (pounds per capita)	Rice (pounds per capita)	Yam (pounds per capita)	Cassava (manioc or yuca) (pounds per capita)
	Hearth: Mexico	Hearth: Peru	Hearths: China and Mali	Hearth: Niger River basin	Hearth: Amazon River basin
Brazil	1,056	39	108	3	183
China	412	145	333	0	52
Mexico	471	31	4	0	0
Nigeria	121	15	93	549	618
Peru	107	362	216	0	13

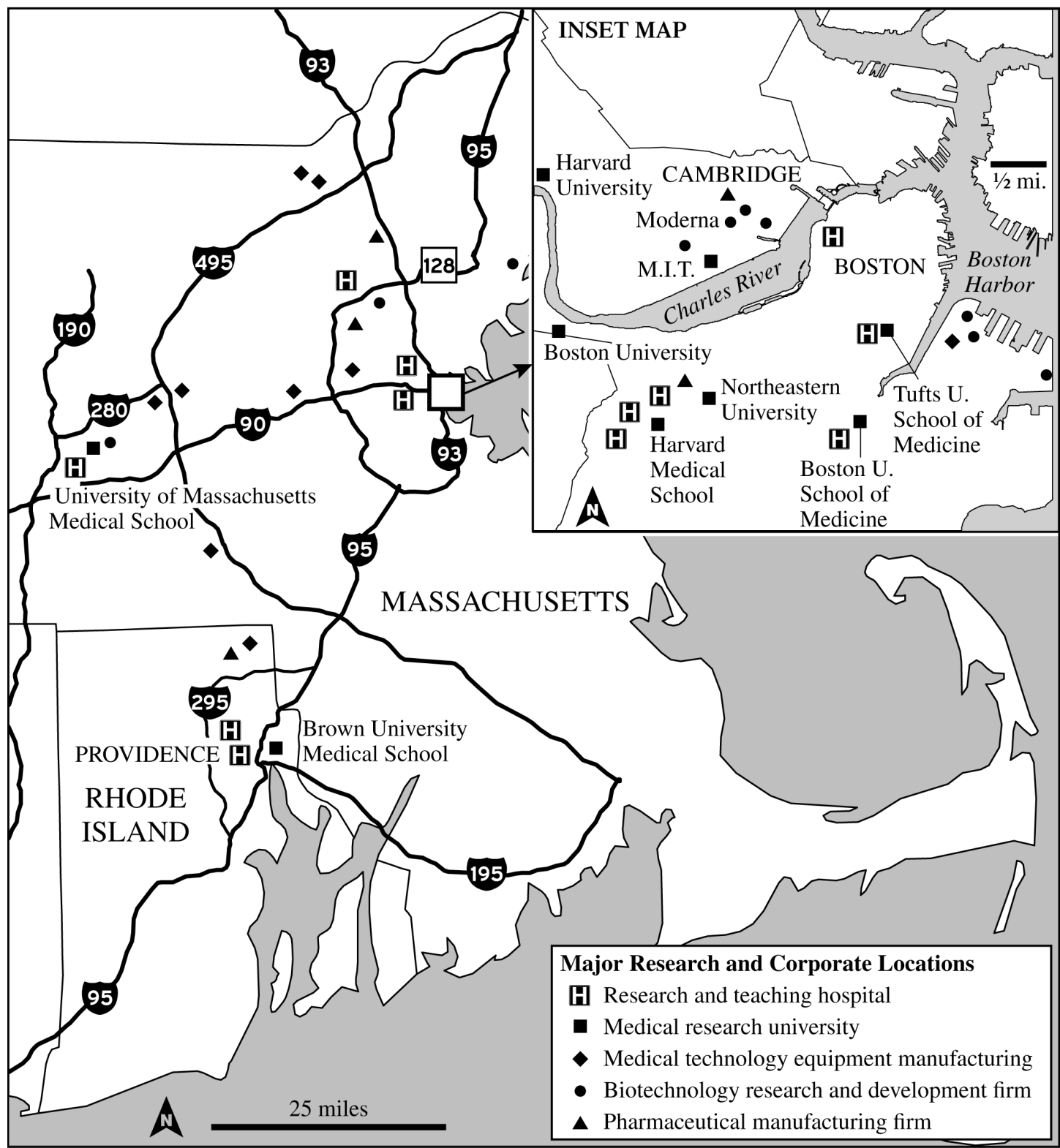
Source: Food and Agriculture Organization of the United Nations

2. Staple food crops provide most of the carbohydrates in people's diets, and some staples are also used as animal feed or in the distillation of ethanol. Cassava is a root crop (tuber) that is the source of farinha, tapioca, and the pearls in bubble tea.
- A. Describe the concept of an early hearth of domestication.
 - B. Identify the crop listed in the table that has diffused the least from its hearth of domestication to the countries listed in the table.
 - C. Explain how food preferences can be a culture trait.
 - D. Explain how the Columbian Exchange contributed to a crop's diffusion beyond its hearth of domestication.
 - E. Explain how the data in the table support the concept of a crop's consumption pattern being the result of globalization.
 - F. Explain why a crop may be farmed intensively in a less developed country and be farmed extensively in a more developed country.
 - G. Explain ONE way the global supply chain links crops such as those listed in the table to consumers in other countries.

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.

Question 3

MAJOR MEDICAL AND BIOTECHNOLOGY COMPANIES AND INSTITUTIONS IN THE BOSTON AND PROVIDENCE REGION



Source: National Institutes of Health

The inset map shows the downtown areas of Boston and Cambridge, Massachusetts.

Question 2**PER CAPITA PRODUCTION OF STAPLE FOOD CROPS
IN HEARTH-OF-DOMESTICATION COUNTRIES**

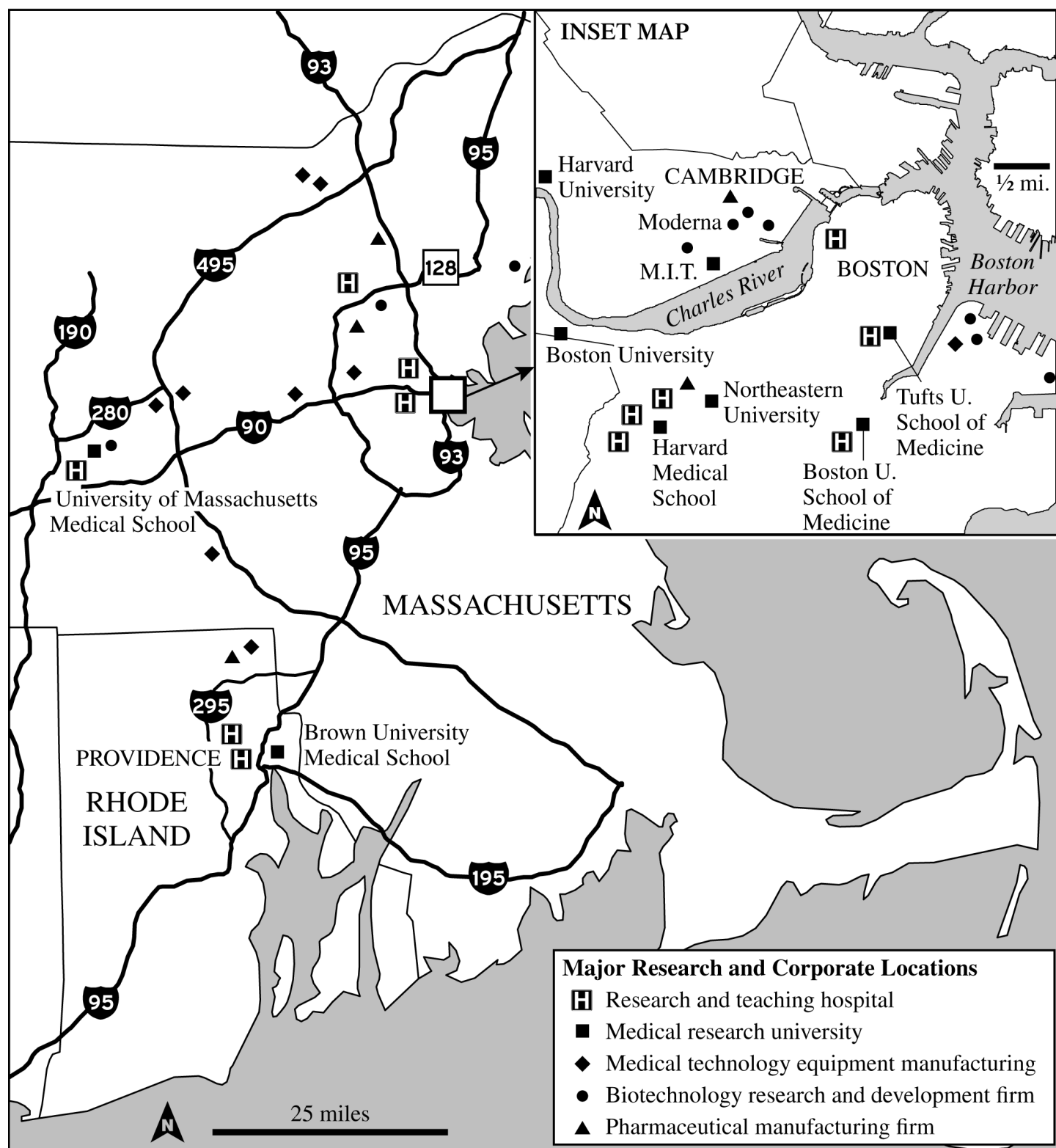
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HUMAN GEOGRAPHY**SECTION II****Time—1 hour and 15 minutes****3 Questions**

Directions: You have 1 hour and 15 minutes to answer all three of the following questions. It is recommended that you spend approximately one-third of your time (25 minutes) on each question. It is suggested that you take up to 5 minutes of this time to plan and outline each answer. You may plan your answers in this orange booklet, but no credit will be given for anything written in this booklet. **You will only earn credit for what you write in the separate Free Response booklet.**

Question 1

1. The availability of food in the context of a growing world population is influenced by many social, environmental, and economic factors.
 - A. Define the concept of carrying capacity.
 - B. Describe ONE way that humans have altered the environmental sustainability of agricultural lands.
 - C. Explain how transportation technology has increased economies of scale in the agricultural sector of less developed countries.
 - D. Explain a likely negative economic outcome of Green Revolution agricultural practices on rural communities.
 - E. Explain ONE weakness of Malthusian theory in predicting the relationship between food production and population growth in contemporary society.
 - F. Explain how surplus food production has changed the global market for local agricultural products.
 - G. Explain the degree to which Green Revolution agricultural practices were effective in reducing hunger in less developed countries. (Response must indicate the degree [low, moderate, high] and provide an explanation.)

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.

Question 2**PER CAPITA PRODUCTION OF STAPLE FOOD CROPS
IN HEARTH-OF-DOMESTICATION COUNTRIES**

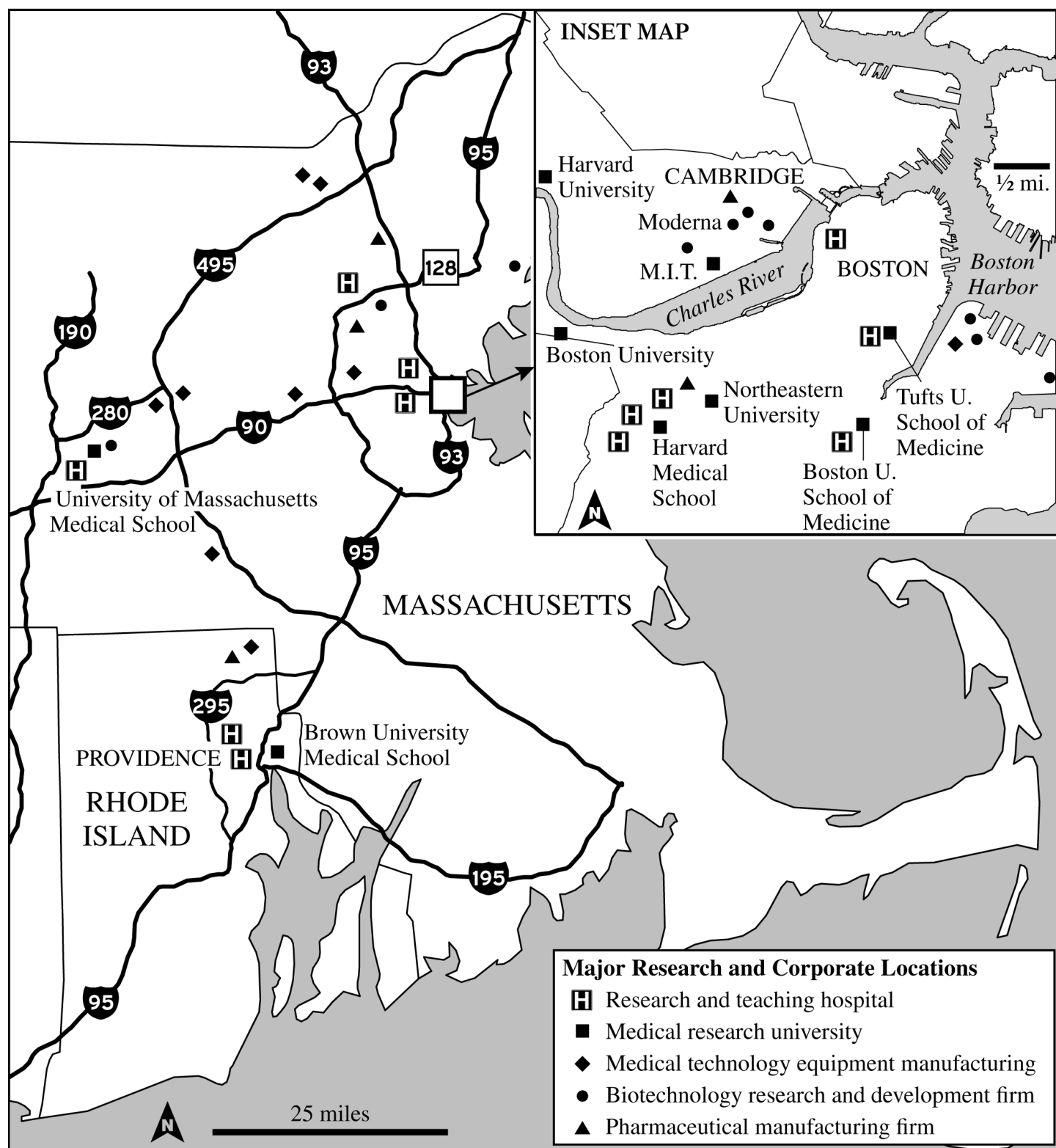
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Question 3

MAJOR MEDICAL AND BIOTECHNOLOGY COMPANIES AND INSTITUTIONS IN THE BOSTON AND PROVIDENCE REGION

Source: National Institutes of Health

The inset map shows the downtown areas of Boston and Cambridge, Massachusetts.

6 Urbanisation and models of the city

– Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
Urbanisation	城市化	_____	_____	_____
Suburbanisation	郊区化	_____	_____	_____
counter-urbanisation	逆城市化	_____	_____	_____
re-urbanisation	再城市化	_____	_____	_____
megacity	特大城市	_____	_____	_____
world city	世界城市	_____	_____	_____
Central place theory	中心地理论	_____	_____	_____
range	服务范围	_____	_____	_____
threshold	门槛人口	_____	_____	_____
rank-size rule	位序规模法则	_____	_____	_____
primacy	首位度	_____	_____	_____
gravity model	引力模型	_____	_____	_____
Burgess concentric zone model	同心圆模型	_____	_____	_____
Hoyt sector model	扇形模型	_____	_____	_____

English	中文	Write it 3 times (English)
Harris–Ullman multiple nuclei model	多核心模 型	

Recall

You have lived in or visited a city and noticed that the centre looks different from the edge, and that shops, offices and housing are not mixed at random.

This sheet gives you the models that explain that pattern, and the vocabulary for city systems.

New ideas

■ 1 Urbanisation and its causes

Urbanisation 城市化 is the increase in the proportion of a population living in urban areas. It is driven by rural push (mechanisation, land shortage) and urban pull (jobs, services, education).

Suburbanisation 郊区化 moves people outward from the city core; **counter-urbanisation** 逆城市化 moves them past the suburbs into rural areas; **re-urbanisation** 再城市化 brings them back to a revitalised centre.

A **megacity** 特大城市 has over 10 million people; a **metacity** over 20 million; a **world city** 世界城市 exerts influence far beyond its own country through finance, culture and corporate headquarters — a matter of function, not size.

■ 2 How cities relate to each other

Central place theory 中心地理论 (Christaller) explains the size and spacing of settlements. Each settlement has a **range** 服务范围 — how far people will travel for a good — and a **threshold** 门槛人口 — the minimum population needed to support it. High-order goods (a specialist hospital) have a large range and high threshold, so there are few such centres, spaced far apart; low-order goods (a bakery) have small range and threshold, so those centres are numerous and close together.

The **rank-size rule** 位序规模法则 says the n th largest city is $1/n$ the size of the largest. Where instead one city dominates — several times larger than the second — that is **primacy** 首位度, and a **primate city** is often a sign of a colonial or highly centralised past.

The **gravity model** 引力模型 predicts interaction between two places as proportional to the product of their populations and inversely proportional to the square of the distance between them.

■ 3 Models of internal structure

Burgess concentric zone model 同心圆模型: rings around the central business district — CBD, transition zone, working-class housing, better housing, commuter zone.

Hoyt sector model 扇形模型: wedges radiating from the centre along transport lines, so a high-income sector runs outward as a strip rather than a ring.

Harris–Ullman multiple nuclei model 多核心模型: the city grows around several nodes, not one, because some activities repel each other (heavy industry and high-income housing) and others cluster.

There are also regional variants: the **Latin American (Griffin–Ford)** model with its elite spine and peripheral squatter settlements; the **Southeast Asian (McGee)** model built around an old port zone; the **African** model with three distinct CBDs.

■ 4 Bid-rent inside the city

Land is most expensive at the centre because it is most accessible. Retail can pay most and so takes the core; industry pays less and takes a middle ring; housing pays least per unit area and takes the outside. That is the same bid-rent logic as von Thünen’s farms.

Practice

Try these in order. The methods are all above.

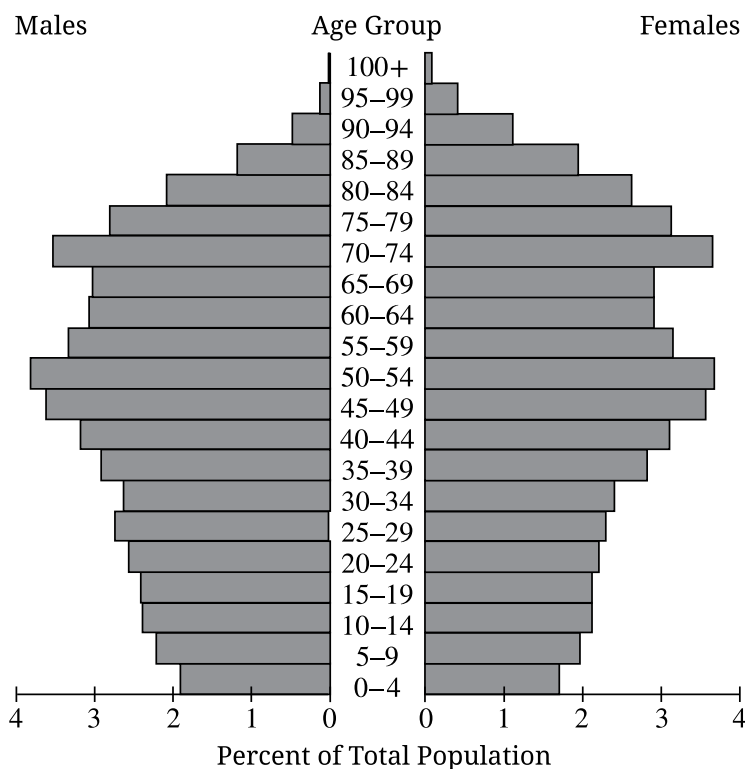
6.1 Distinguish between the range and the threshold of a good. [2]

6.2 Explain why there are fewer high-order central places than low-order ones. [2]

6.3 Define a primate city. [2]

6.4 State one difference between the Burgess and Hoyt models of urban structure. [2]

6.5 Explain, using bid-rent, why retail occupies the central business district. [2]

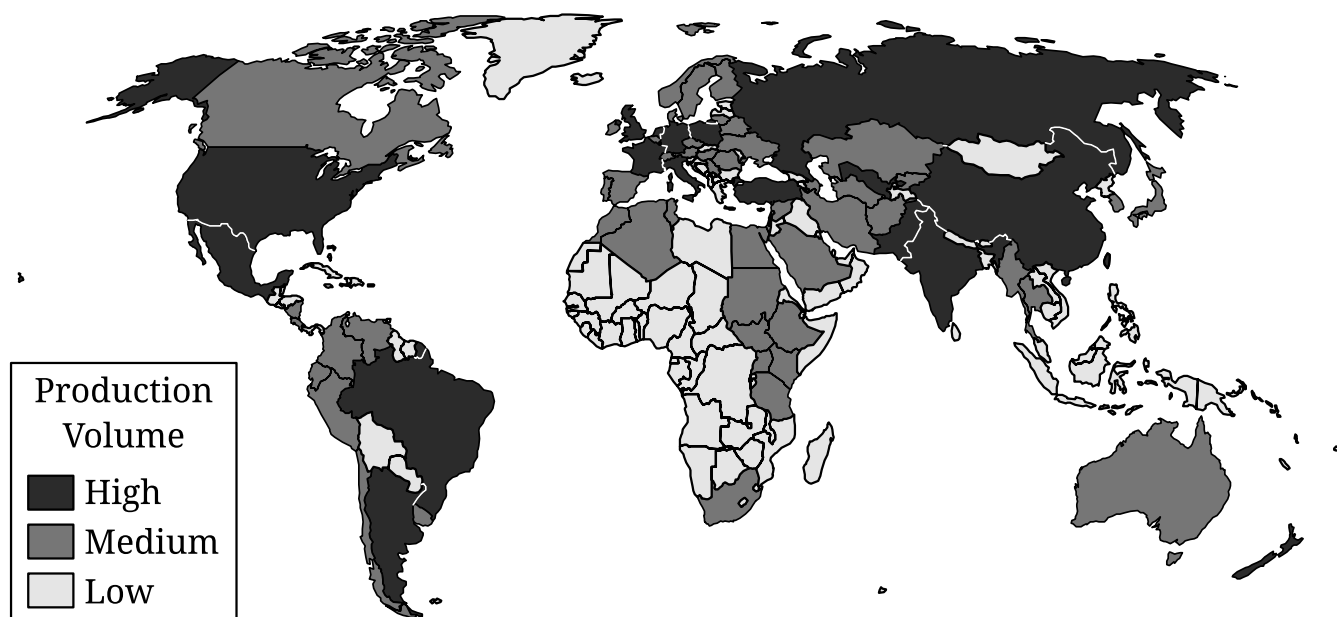
Japan Population Pyramid, 2021

Source: United States Census Bureau International Database

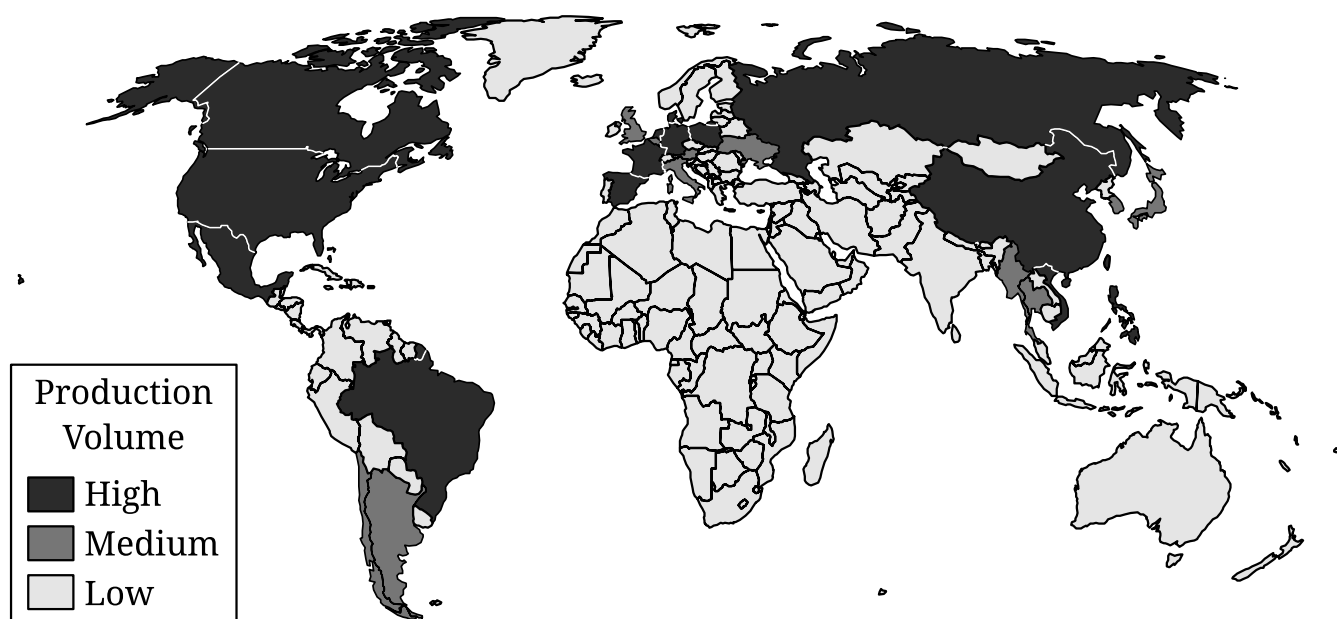
2. A population pyramid shows changes in population over time. A population pyramid breaks down the population by male and female and divides the population into five-year age groupings called cohorts.

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

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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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6 Urban change and its problems — Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
Gentrification	绅士化	_____	_____	_____
Urban renewal	城市更新	_____	_____	_____
Filtering	住房过滤	_____	_____	_____
Redlining	红线划分	_____	_____	_____
Urban sprawl	城市蔓延	_____	_____	_____
greenbelt	绿带	_____	_____	_____
smart growth	精明增长	_____	_____	_____
New Urbanism	新城市主义	_____	_____	_____
edge city	边缘城市	_____	_____	_____
squatter settlements	棚户区	_____	_____	_____
Segregation	隔离	_____	_____	_____
The urban heat island	城市热岛	_____	_____	_____

Recall

Part 1 gave you urbanisation, central place theory and the internal models.

This sheet covers what happens to cities as they change — and the problems that come with growth.

New ideas

■ 1 Processes reshaping the inner city

Gentrification 绅士化: higher-income residents move into a declining central neighbourhood, property values rise, and lower-income residents are displaced. It improves the building stock and destroys the community that lived there — both halves belong in an answer.

Urban renewal 城市更新 is state-led redevelopment of declining areas, historically by clearance. **Filtering** 住房过滤 is the passing down of housing from higher to lower income groups as it ages. **Redlining** 红线划分 was the refusal of loans in areas mapped as risky, usually on racial grounds; **blockbusting** was the practice of provoking panic selling to profit from turnover.

■ 2 Sprawl and the responses to it

Urban sprawl 城市蔓延 is low-density expansion into surrounding countryside. It consumes farmland, raises car dependence and infrastructure cost per household, and hollows out the centre.

Responses: a **greenbelt** 绿带 legally restricts building around a city; **smart growth** 精明增长 concentrates development along transit corridors; **New Urbanism** 新城市主义 designs walkable mixed-use neighbourhoods; **transit-oriented development** puts density at the stations.

An **edge city** 边缘城市 is a concentration of offices and retail on the periphery, at a motorway junction rather than in the historic centre.

■ 3 Squatter settlements

In rapidly urbanising countries, in-migration outruns formal housing supply and **squatter settlements** 棚户区 grow on land the occupants do not own — often steep, flood-prone or otherwise unwanted ground.

They are characterised by insecure tenure and missing services rather than by poverty alone, which is why **site-and-service schemes** and tenure regularisation are the standard policy responses.

■ 4 The problems that recur in questions

Segregation 隔离 by income or ethnicity. **Food deserts** where fresh food is unavailable within reasonable reach. **Congestion** and the air quality that follows. **Housing affordability**. **The urban heat island** 城市热岛, where dark surfaces and waste heat leave a city several degrees warmer than its surroundings. **Infrastructure strain** on water, sanitation and waste.

■ 5 Sustainable urban design

The measures that appear in mark schemes: mixed-use zoning so people live near work; public transport investment; brownfield redevelopment ahead of greenfield; urban green space; water recycling; and density high enough to make services viable.

Each has a trade-off worth naming — density against amenity, greenbelt against housing supply, gentrification against displacement.

Practice

Try these in order. The methods are all above.

6.6 Define gentrification and state one negative consequence. [3]

6.7 Explain two costs of urban sprawl. [2]

6.8 Explain what makes an area a squatter settlement. [2]

6.9 Explain one cause of the urban heat island effect. [2]

6.10 State one benefit and one drawback of a greenbelt policy. [2]

2. The map shows political jurisdictions and Metrorail, a subway system in the Washington, D.C., metropolitan area. The city and county jurisdictions shown on the map operate the Washington Metropolitan Area Transit Authority (WMATA), which runs Metrorail.
- A. Identify ONE type of boundary shown on the map.
 - B. Describe ONE site characteristic of Washington, D.C., shown on the map.
 - C. Explain how political power is spatially distributed within a federal system of governance.
 - D. Explain ONE way suburban sprawl is likely to negatively affect environmental sustainability in metropolitan areas.
 - E. Describe ONE way transportation-oriented development, such as expanding a Metrorail line, may promote urban sustainability.
 - F. Explain how regional transportation networks led to the development of edge cities.
 - G. Explain how the geographic fragmentation of local governments could present a challenge to the Washington, D.C., metropolitan area's ability to construct a new Metrorail line.

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.

HUMAN GEOGRAPHY**SECTION II****Time—1 hour and 15 minutes****3 Questions**

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Question 1

1. Political geographers analyze territoriality and sovereignty at a variety of scales, including regional, state, substate regional, and local.
 - A. Define the concept of territoriality in terms of political geography.
 - B. Describe the concept of sovereignty as it relates to the state.
 - C. Compare ONE difference in territorial organization between the governments of unitary states and the governments of federal states.
 - D. Recently, the United Kingdom decided to withdraw from the European Union. Explain ONE possible reason why sovereignty would play a role in the United Kingdom's decision to withdraw from the European Union.
 - E. During the United Kingdom's withdrawal from the European Union, some people in Scotland proposed independence from the United Kingdom. Explain ONE possible reason why territoriality would play a role in the devolution of a state.
 - F. Local governments often divide cities into representative electoral districts. Explain how the process of redrawing district boundary lines may affect election results within a city.
 - G. Explain why neighboring local governments may face challenges in providing transportation services to residents of a rapidly growing metropolitan area.

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.

- 1.** Migration contributes to significant population growth and change in urban landscapes. As populations increase, urban areas face economic, social, and environmental challenges.

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

- A.** Describe one type of voluntary migration.
- B.** Explain how migration may affect a city's economy.
- C.** Describe one type of housing discrimination that may occur in urban areas.
- D.** Explain how a city's infrastructure affects society.
- E.** Describe one challenge to sustainability in urban areas.
- F.** Explain how urban design initiatives are intended to affect cities.
- G.** Explain why urban design initiatives may be criticized.

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7 Development, industry and location

– Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
Primary	第一产业	_____
Secondary	第二产业	_____
Tertiary	第三产业	_____
Quaternary	第四产业	_____
Quinary	第五产业	_____
at purchasing power parity	购买力平价	_____
Human Development Index	人类发展指数	_____
Gender Inequality Index	性别不平等指数	_____
Weber's least-cost theory	韦伯工业区位论	_____
bulk-reducing industry	减重工业	_____
bulk-gaining industry	增重工业	_____
Agglomeration	集聚	_____
Rostow's stages of growth	罗斯托发展阶段论	_____
Wallerstein's world-systems theory	世界体系理论	_____

English	中文	Write it 3 times (English)
core	核心	_____
semi-periphery	半边缘	_____
periphery	边缘	_____
Dependency theory	依附理论	_____

Recall

You know that some countries are richer than others, and that factories are not built at random.

This sheet covers how development is measured and what decides where industry locates.

New ideas

■ 1 The sectors of an economy

Primary 第一产业: extracting raw materials — farming, fishing, mining. **Secondary** 第二产业: manufacturing. **Tertiary** 第三产业: services. **Quaternary** 第四产业: information and research. **Quinary** 第五产业: the highest-level decision-making.

As a country develops, employment shifts up the chain. Naming which sector dominates is often the quickest way to place a country's development level.

■ 2 Measuring development

GDP per capita is the standard single measure and hides distribution entirely. **GNI per capita** adds income earned abroad. Both should be quoted **at purchasing power parity** 购买力平价 to be comparable.

The **Human Development Index** 人类发展指数 combines life expectancy, education (mean and expected years of schooling) and GNI per capita — a composite, which is why it can rank a country differently from income alone.

The **Gender Inequality Index** 性别不平等指数 measures reproductive health, empowerment and labour-market participation. The **Gini coefficient** measures income inequality within a country: 0 is perfect equality, 1 perfect inequality.

■ 3 Where industry locates

Weber's least-cost theory 韦伯工业区位论 says a factory locates to minimise the sum of transport cost, labour cost and agglomeration effects.

The transport part turns on weight. A **bulk-reducing industry** 减重工业 (steel, ore smelting) loses weight in processing, so it locates near the RAW MATERIAL. A **bulk-gaining industry** 增重工业 (soft drinks, car assembly) gains weight or bulk, so it locates near the MARKET. A **footloose** industry has no strong pull either way.

Agglomeration 集聚 is the clustering of related firms to share suppliers, labour pools and knowledge; **degglomeration** is the dispersal that follows when congestion and land costs outweigh those gains.

■ 4 Development theories

Rostow's stages of growth 罗斯托发展阶段论: traditional society, preconditions for take-off, take-off, drive to maturity, high mass consumption. Its assumption — that every country follows one path, with no reference to colonial history or global position — is the standard criticism.

Wallerstein's world-systems theory 世界体系理论 divides the world into **core** 核心, **semi-periphery** 半边缘 and **periphery** 边缘, and argues the core's wealth depends on extracting value from the periphery. It explains persistent inequality better than Rostow and is weaker on how a country moves between categories.

Dependency theory 依附理论 holds that the periphery's underdevelopment is produced by, not merely coincident with, the core's development.

Practice

Try these in order. The methods are all above.

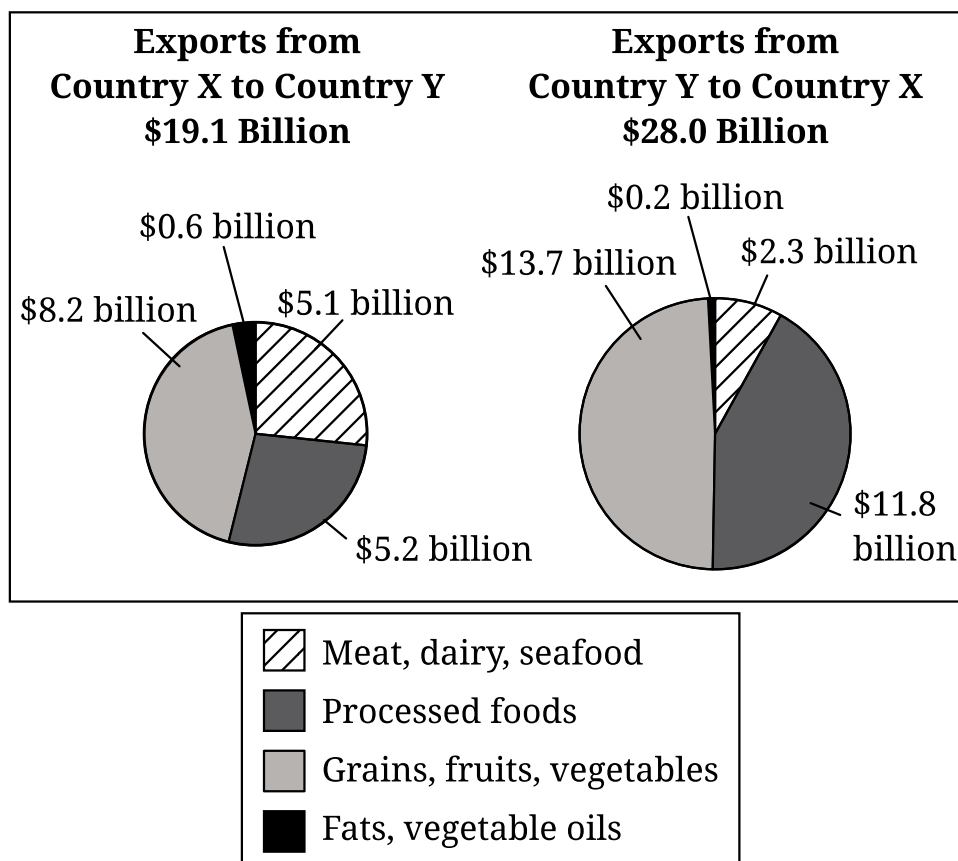
7.1 Name the economic sector that includes research and information processing. [1]

7.2 Explain one advantage of the Human Development Index over GDP per capita. [2]

7.3 Explain why a bulk-reducing industry locates near its raw material. [2]

7.4 Give one benefit firms gain from agglomeration. [2]

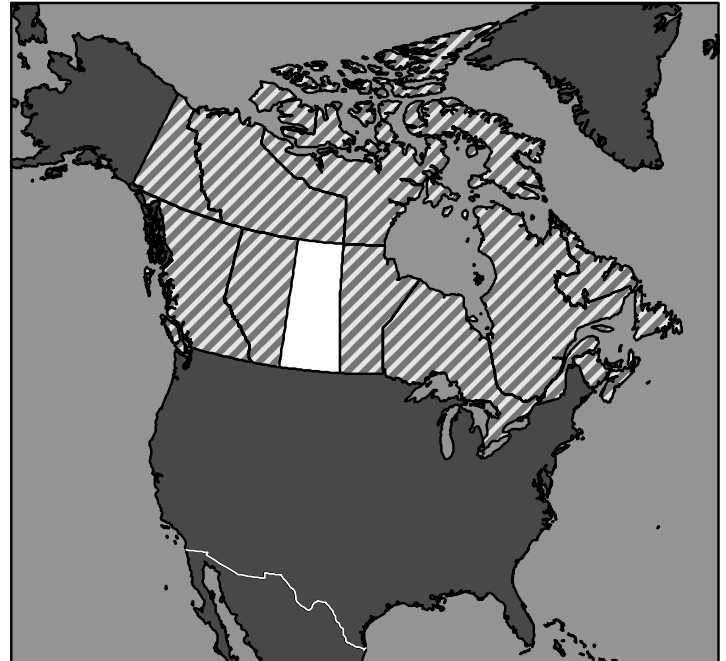
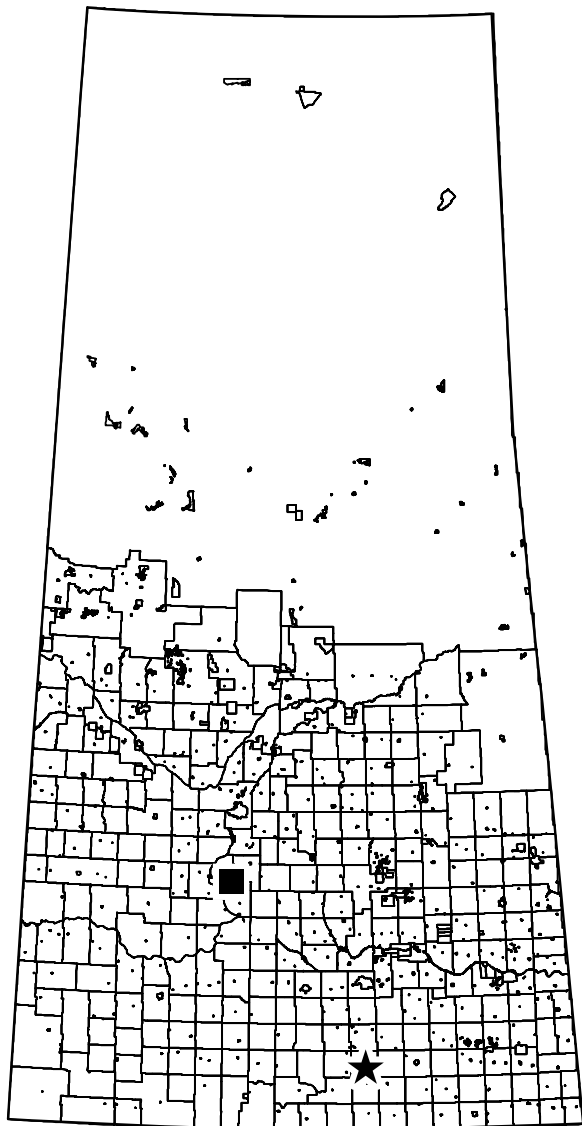
7.5 State one criticism of Rostow's model. [2]

Food Exports Between Country X and Country Y

2. Country X and Country Y have a long-established trade relationship in agricultural products. Country X is a developed country, and Country Y is a developing country.

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

- Using the data in the charts, identify the largest food export category between the two countries.
- Using the data in the charts, describe the difference between the two countries in the meat, dairy, and seafood category.
- Define the concept of comparative advantage.
- Describe one effect of Green Revolution technologies on food supplies in developing countries.
- Explain how advances in agricultural technology may increase the carrying capacity of land.
- Explain the degree to which the economies of Country X and Country Y are interdependent. (Response must indicate the degree [low, moderate, high] and provide an explanation.)
- Explain how the charts provide limited information about economic development.

Map 1: Political Divisions in Saskatchewan, Canada

- ☐ Saskatchewan
- ☒ Other Canadian provinces and territories
- ☒ Other countries

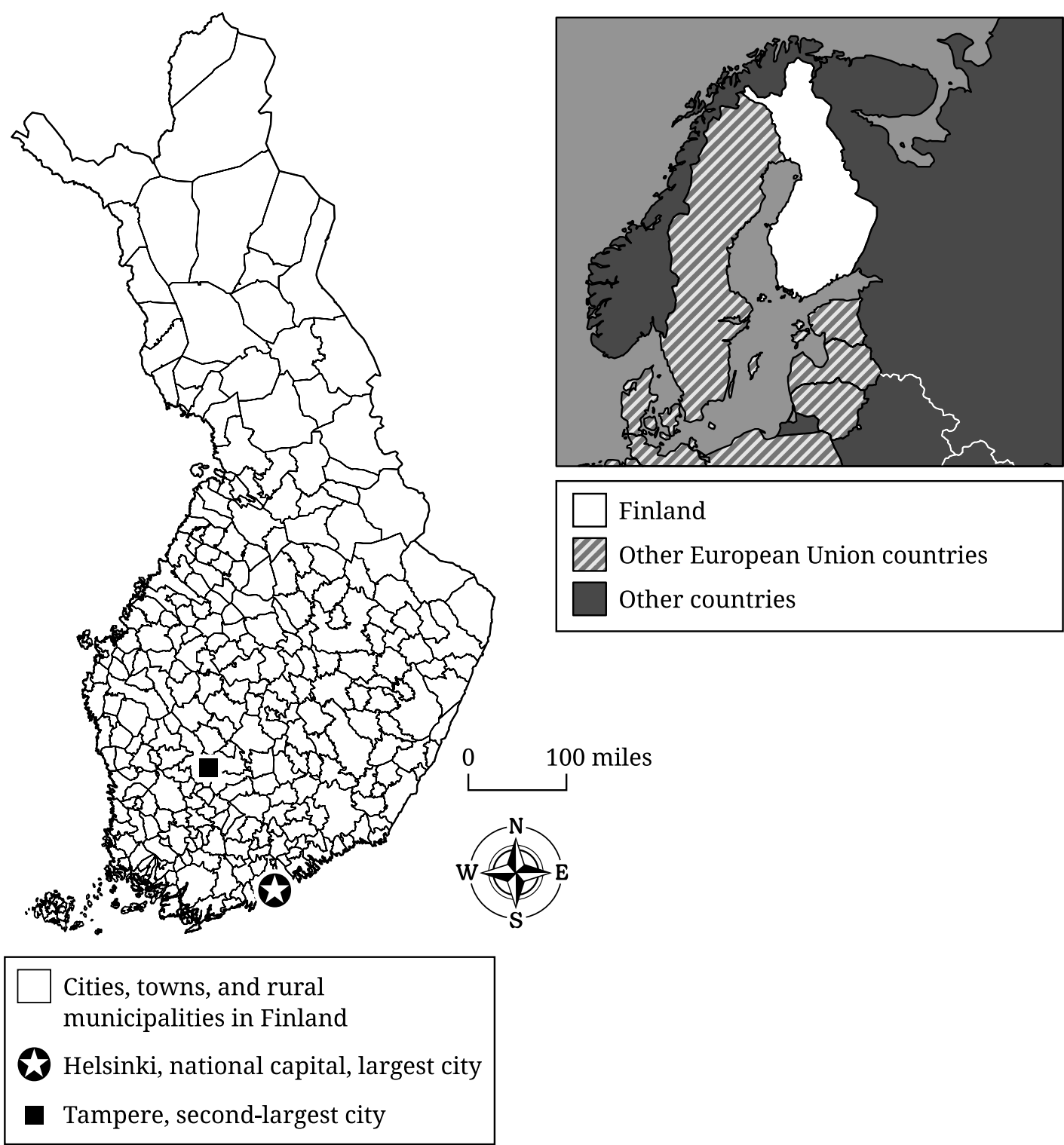
0 100 miles



- ☐ Cities, towns, and rural municipalities in Saskatchewan
- ★ Regina, provincial capital, second-largest city
- Saskatoon, largest city

Source: Statistics Canada

Map 2: Political Divisions in Finland



Source: ESRI Data Partners

Question 2**DEVELOPMENT INDICATORS FOR SELECTED COUNTRIES, 2020**

Country	Gross National Income per Capita	Percent of Workforce in Agriculture	Total Fertility Rate	Mean Years of Schooling Women/Men	Life Expectancy	Air Pollution Mortality Rate (per 100,000 people)	Percent of Population with Access to Clean-Burning Fuels
Afghanistan	\$1,976	39%	4.5	1.9 / 6.0	61	211	32%
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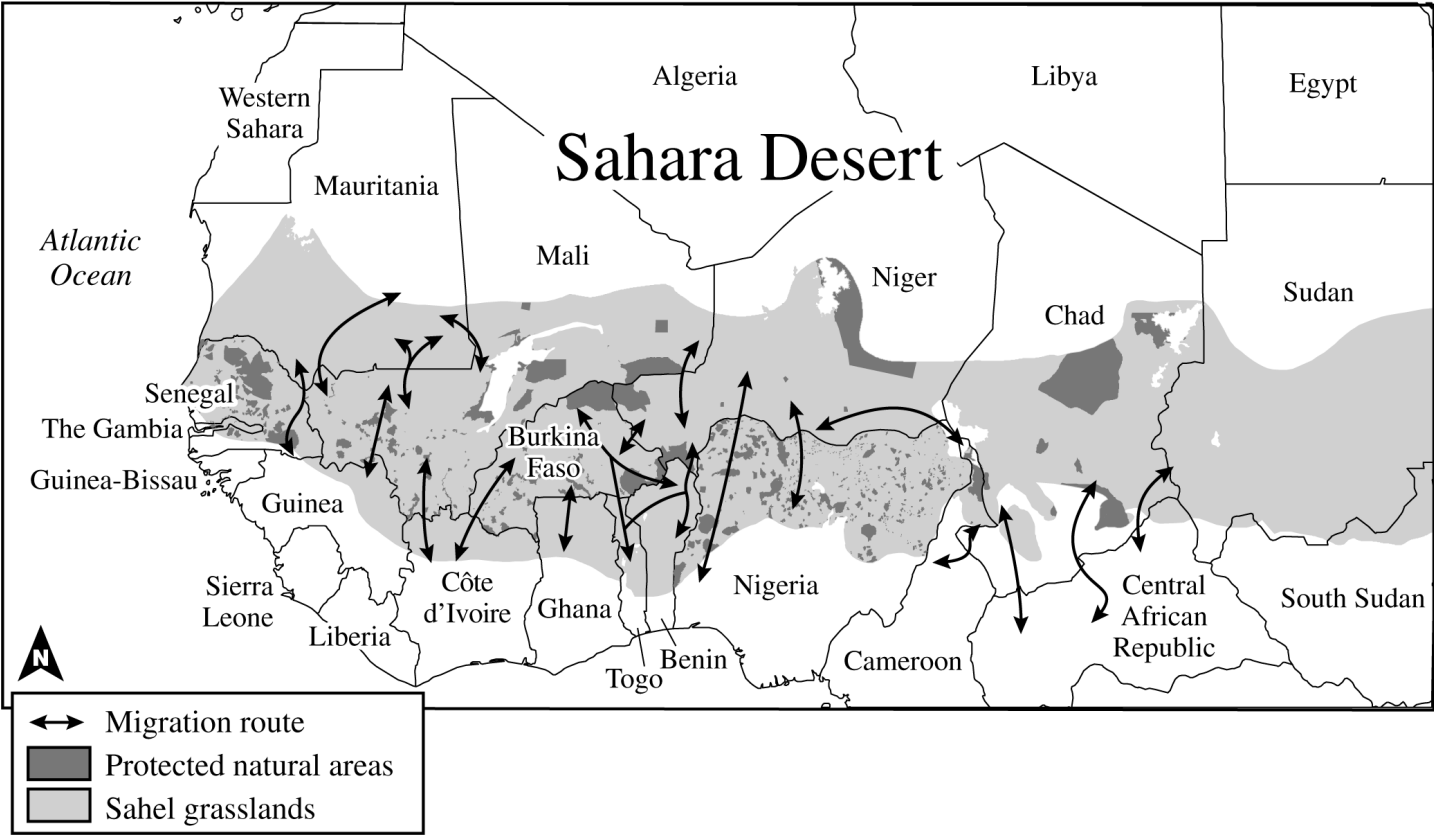
Source: World Bank, UNICEF

2. In 1990 the United Nations (UN) began using the Human Development Index (HDI) to measure levels of development. In 2015 the UN established the Sustainable Development Goals (SDGs) to set targets for environmental quality, economic development, and social programs.
- A. Using the data categories in the table, identify ONE indicator that is used to calculate HDI scores.
 - B. Using a different indicator than the one identified in part A, explain why Brazil's HDI score is higher than that of Afghanistan.
 - C. The UN and many countries have promoted sustainability principles. Describe ONE specific way that sustainability goals can respond to economic challenges.
 - D. Explain ONE reason why increasing women's access to education is likely to affect a country's total fertility rate.
 - E. SDG 8 is to "promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all." Explain ONE way in which a country's development of ecotourism might affect economic growth.
 - F. Using data from the table, explain how access to clean-burning fuels for people's homes relates to the life expectancy of a country's population.
 - G. Explain how ONE of the countries in the table would be classified according to Rostow's stages of economic growth.

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Question 3

PASTORAL NOMADISM IN THE SAHEL REGION OF AFRICA



Source: Food and Agriculture Organization

The Sahel is an environmental transition zone between the Sahara desert and the wet tropical forest regions of Africa. The landscape is a semiarid grassland, having distinct dry and wet seasons, and the region is interspersed with shrubs and small woodlands.

SOURCES OF TENSION RELATED TO PASTORAL NOMADISM

Groups	Potential Sources of Tension
Nomadic herders versus crop farmers	• Damage to fields by migrating herds • Overgrazing by migrating herds • Competition for access to water • Increasing size of crop farms
Nomadic herders versus conservation organizations	• Grazing of protected areas • Degradation of natural habitats
Nomadic herders versus government officials	• Failure to follow regulations on cross-border migration • Activities such as smuggling foreign goods

Source: Organisation for Economic Co-operation and Development

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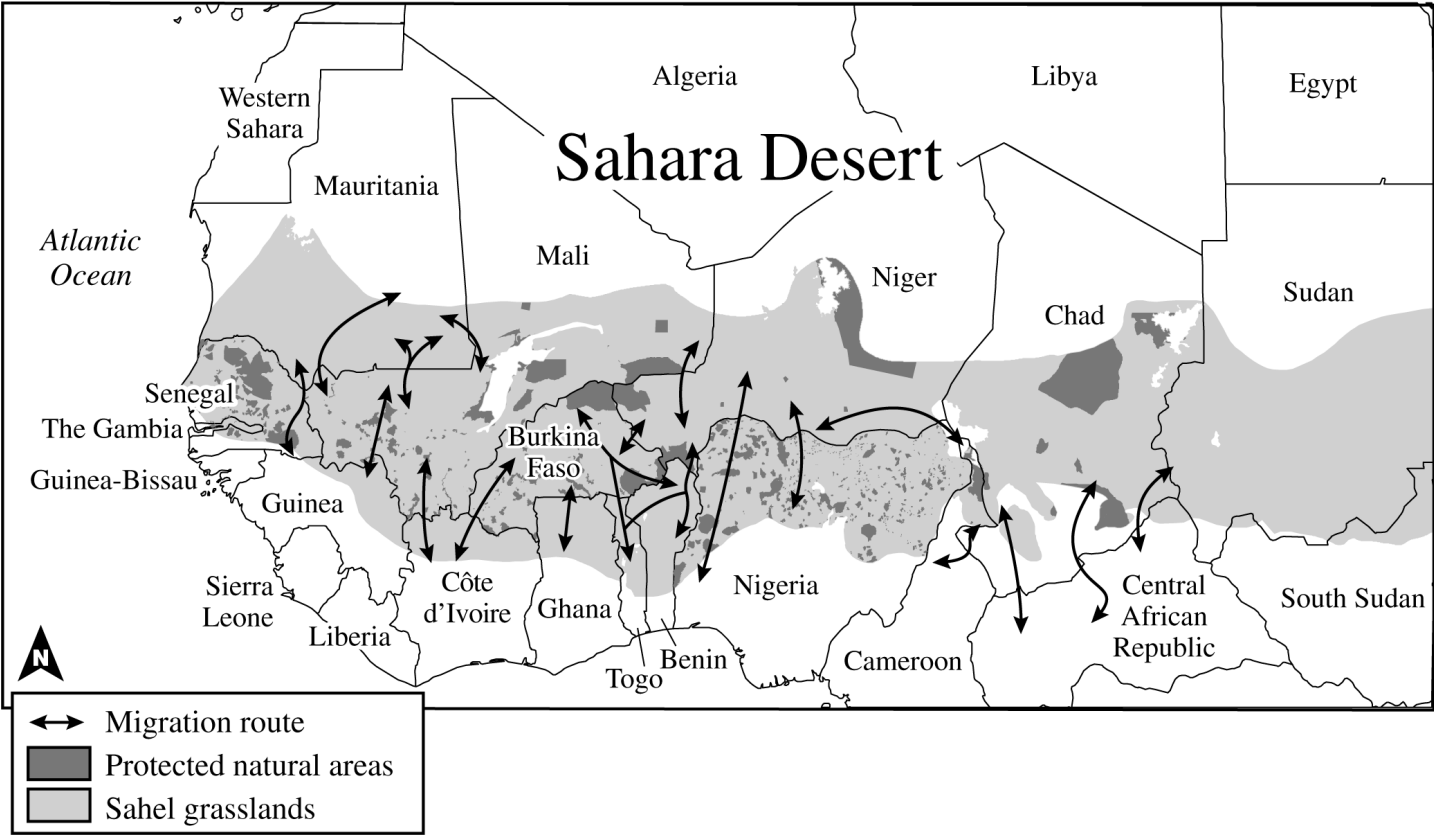
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7 Globalisation and sustainability – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
multinational corporation	跨国公司	_____	_____	_____
Outsourcing	外包	_____	_____	_____
offshoring	离岸外包	_____	_____	_____
Deindustrialisation	去工业化	_____	_____	_____
new international division of labour	新国际劳动分工	_____	_____	_____
Special economic zones	经济特区	_____	_____	_____
Comparative advantage	比较优势	_____	_____	_____
Trade blocs	贸易集团	_____	_____	_____
Neoliberal	新自由主义	_____	_____	_____
microfinance	小额信贷	_____	_____	_____
Sustainable development	可持续发展	_____	_____	_____
Ecotourism	生态旅游	_____	_____	_____

Recall

Part 1 gave you the sectors, the development measures, Weber's location theory and the development models.

This sheet covers what has changed since those models were written: globalised production, and what development costs.

New ideas

■ 1 Globalised production

A **multinational corporation** 跨国公司 operates in more than one country and can locate each stage of production wherever it is cheapest.

Outsourcing 外包 contracts a function to another firm; **offshoring** 离岸外包 moves it to another country. **Deindustrialisation** 去工业化 is the decline of manufacturing employment in the country it leaves.

The **new international division of labour** 新国际劳动分工 describes the result: research and management in the core, assembly in the periphery and semi-periphery.

Special economic zones 经济特区, **export processing zones** and **free-trade zones** offer tax and regulatory concessions to attract that assembly work. They raise employment and foreign exchange; the standard criticisms are low wages, weak labour and environmental protection, and profits repatriated rather than reinvested.

■ 2 Trade and blocs

Comparative advantage 比较优势 says a country gains by specialising in what it produces at the lowest OPPORTUNITY cost, even if another country is better at everything.

Trade blocs 贸易集团 reduce barriers among members — the EU, USMCA, ASEAN, Mercosur. **Neoliberal** 新自由主义 policy — deregulation, privatisation, free trade — is the framework most such agreements assume, and its critics point to the losers within each country, not only between them.

■ 3 Development and gender

Women's education and employment are among the strongest predictors of falling fertility and rising household welfare, which is why the **Gender Inequality Index** appears in development questions and why **microfinance** 小额信贷 — very small loans to entrepreneurs who cannot access banks, most of them women — is a standard example of a targeted intervention.

■ 4 Sustainable development

Sustainable development 可持续发展 meets present needs without compromising the ability of future generations to meet theirs. It balances three things: economic growth, social equity and environmental protection — an essay naming only the environmental leg has answered a third of the question.

Ecotourism 生态旅游 channels tourist income to conservation and local communities. Its risk is that the volume of visitors damages what they came for.

The **UN Sustainable Development Goals** frame most modern development policy and are worth naming as the current international standard.

■ 5 The costs that recur in evaluation

Industrialisation raises incomes and produces pollution, urban crowding and resource depletion. Export dependence on one commodity leaves a country exposed to a price crash. Foreign investment brings capital and can outbid local firms for labour and land.

Every evaluation question in this unit is asking you to weigh a real gain against a real cost — so name both, then decide.

Practice

Try these in order. The methods are all above.

7.6 Distinguish between outsourcing and offshoring. [2]

7.7 State one benefit and one criticism of special economic zones. [2]

7.8 Explain the principle of comparative advantage. [2]

7.9 Explain how microfinance is intended to support development. [2]

7.10 Define sustainable development and name the three dimensions it balances. [3]

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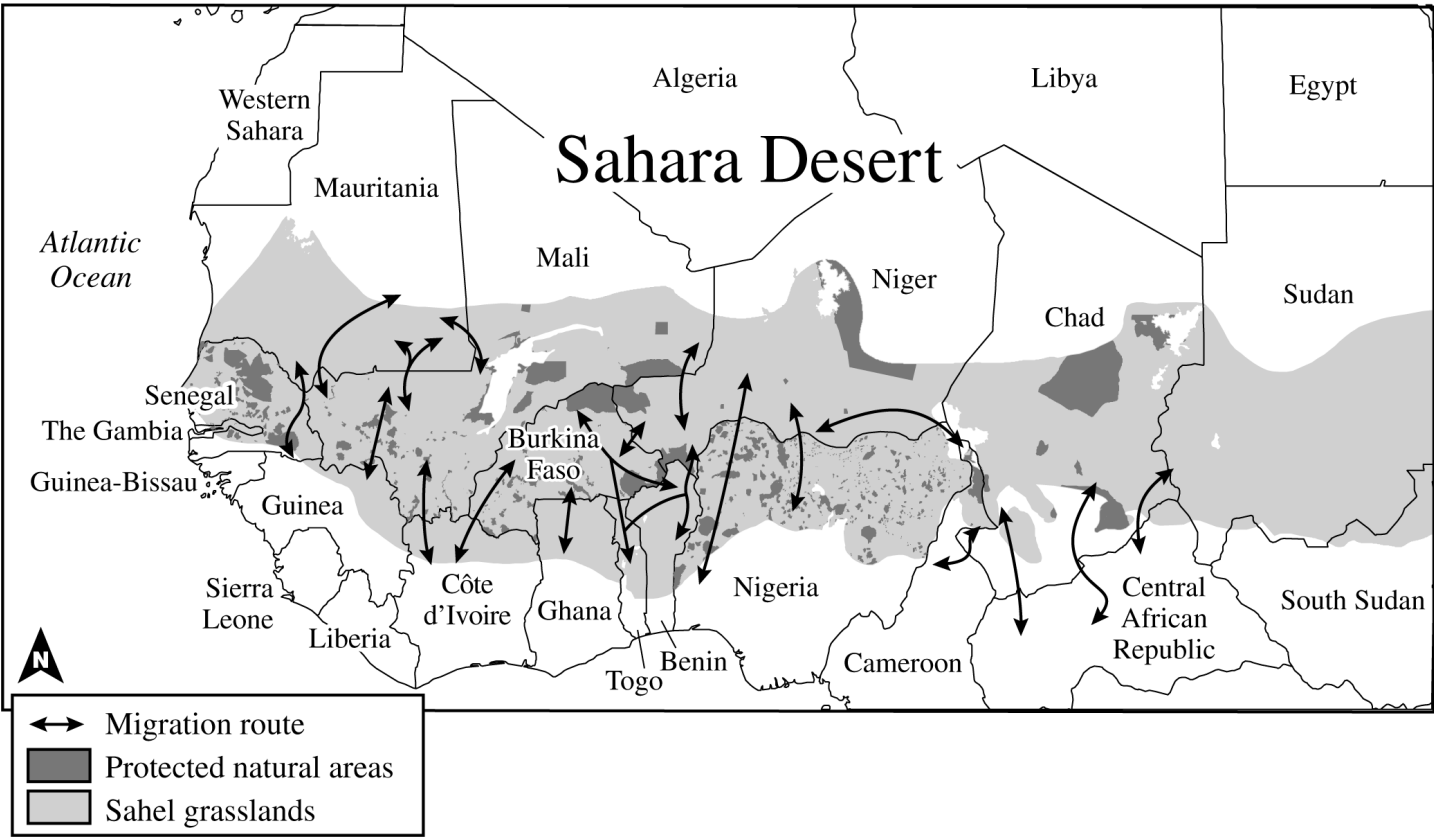
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Source: Organisation for Economic Co-operation and Development

- 1.** The European Union (EU) and Association of Southeast Asian Nations (ASEAN) are supranational organizations composed of independent member states.

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

- A.** Define the concept of an independent state.
- B.** Describe one purpose of supranational organizations.
- C.** Describe one global outcome of an increase in international trade.
- D.** Explain how deindustrialization has affected the economy of core countries.
- E.** Explain why international boundaries on land or at sea may lead to disputes over resources.
- F.** Explain how supranational organizations such as the EU or ASEAN may challenge the sovereignty of member states.
- G.** Explain how advances in communication technologies may affect state sovereignty.

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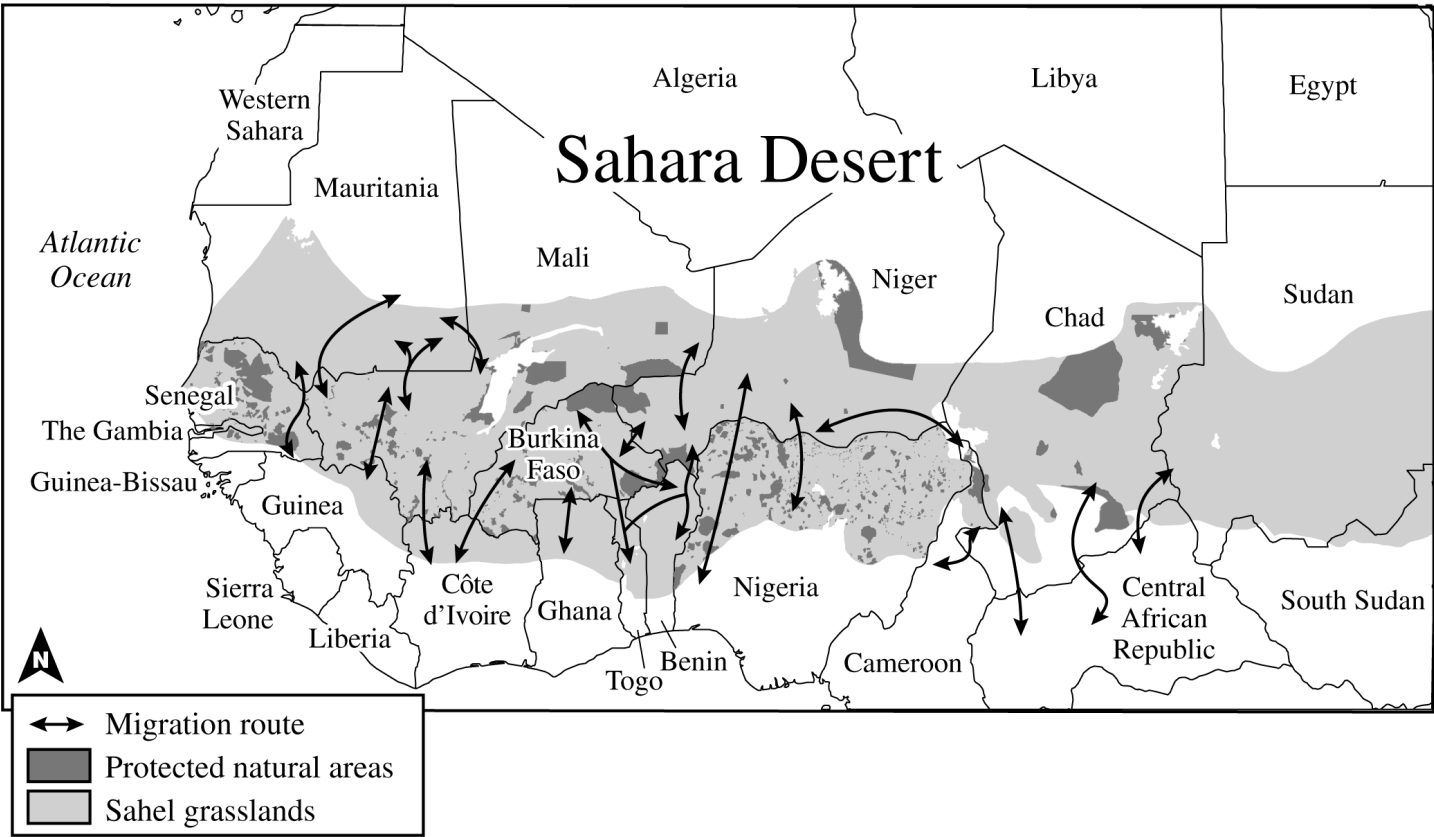
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