
AP[®] Human Geography

Sample Student Responses and Scoring Commentary

Set 1

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Free Response Question 1

- Scoring Guideline**
- Student Samples**
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Question 1: No Stimulus**7 points**

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- (A)** Define intensive agriculture. **1 point**
- Accept one of the following:
- A1. Agriculture that requires large quantities of inputs (e.g., labor, capital, agricultural products) per unit of land.
 - A2. Agriculture that attempts to maximize yield (e.g., double-cropping, terracing) on relatively smaller amounts of land.
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- (B)** Describe the change over time in the numbers and sizes of family-run dairy farms. **1 point**
- Accept one of the following:
- B1. Every year, there are fewer family-run dairy farms as small farms go out of business or become part of larger conglomerates. At the same time, the average size of dairy farms is increasing.
 - B2. Family-run dairy farms decreased by 94,000 between 1992 and 2018 (e.g., a decrease of 93% since 1970, decreasing by 3% per year), but remaining farms increased in size to reduce production costs that consistently run more than milk prices.
 - B3. Family-run dairy farms decreased in number as more dairy products are being produced by large corporate farms (e.g., agribusinesses) instead of family-run farms.
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- (C)** Explain how economies of scale are used to maximize profitability in dairy farming. **1 point**
- Accept one of the following:
- C1. Dairy farms can reduce per unit costs by manufacturing larger volumes of milk or dairy products using mechanization, transportation, or computerized production processes that reduce the amount of labor or energy needed to produce each unit of food.
 - C2. Large dairy farms can often finance the costs of production or the price of farmland with larger loans or lower interest rates than what is available to small family farmers.
 - C3. Dairy farms have engaged in vertical integration to control multiple steps in the production process as a means of increasing profitability.
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(D) Explain a recent trend in the location of dairy farms with respect to consumer locations. **1 point**

Accept one of the following:

- D1. Dairies have moved farther from consumer locations as a result of improvements in transportation methods and networks.
- D2. Dairies have moved farther from consumer locations as a result of improvements in preservation and storage.
- D3. Dairies have moved farther from consumer locations as a result of conversion of agricultural land to urban and suburban land use.
- D4. Dairies have moved farther from consumer locations as a result of changes in the price of land or cost of production that lead farmers to relocate.
- D5. Dairies have moved farther from consumer locations as a result of environmental regulations.
- D6. Specialized dairies have moved or remain close to consumer locations as a result of community-supported agriculture.
- D7. Specialized dairies have moved or remain close to consumer locations as a result of eat-local or farm-to-table movements.
- D8. Specialized dairies have moved or remain close to consumer locations as a result of consumer preference for raw or unpasteurized dairy products.

(E) Explain ONE way in which a complex commodity chain connects large-scale dairies to consumers. **1 point**

Accept one of the following:

- E1. Milk is manufactured into value-added dairy products (e.g., yogurt, cheese, cream, other dairy products, frozen foods), increasing the complexity of the commodity chain as more steps are needed for processing and packaging.
 - E2. Dairy solids are used in the industrial production of food ingredients or cosmetics, so more steps are needed in the commodity chain.
 - E3. Whey is used in formula for infants, in snacks, and for other purposes and is processed at a different plant, adding complexity to the commodity chain.
 - E4. Customized packaging of dairy products adds complexity as additional steps are needed in the commodity chain.
 - E5. Overproduction of milk may result in production of dairy products such as dry milk and canned milk that can be preserved much longer than fresh milk and shipped long distances and/or internationally to consumers. This adds complexity to the commodity chain.
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- (F)** Explain ONE way in which small-scale dairy farms can specialize to compete with large-scale dairies. **1 point**

Accept one of the following:

- F1. By producing and/or selling value-added dairy products (e.g., cheeses, butter, ice cream, yogurt, kefir, liquid cream, clotted cream).
 - F2. By engaging in organic dairy farming—production of dairy products and animal feed without the use of synthetic or industrially produced pesticides, fertilizers, antibiotics, and/or growth hormones (e.g., rBST, rBGH).
 - F3. By marketing and selling their dairy products as locally raised or as a way of supporting the local community (e.g., farm-to-table, eat-local movements).
 - F4. By producing and/or selling grass-fed dairy products or pasture-raised dairy products.
 - F5. By selling non-homogenized milk for real farm taste.
 - F6. By raising heirloom varieties of animals, different species (e.g., goats or sheep for milk products) or heirloom dairy products (e.g., buttermilk, sour milk) that command high prices.
 - F7. By selling non-pasteurized milk or raw milk and raw milk dairy products (e.g., soft cheeses) to appease epicurean or specific health-issue-conscious consumers (allergens) that command high prices.
 - F8. By guaranteeing and publicizing humane treatment for dairy animals.
 - F9. By providing home delivery of dairy products and related items (e.g., eggs, bakery goods).
 - F10. By engaging in agritourism.
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(G) Explain an environmental sustainability problem that results from the production of dairy on large-scale farms. **1 point**

Accept one of the following:

- G1. Concentrations of animal waste can result in water contamination such as of groundwater, surface water (e.g., streams, ponds, bays), or drinking water harming natural ecosystems or posing human health risks to communities downstream from the source of pollution.
- G2. Nitrous oxide or methane produced by cows are major contributors to global warming.
- G3. Degradation of ecosystems (e.g., deforestation, overgrazing) has occurred in order to increase the size of or production levels on dairy farms.
- G4. Large-scale farms may consume large amounts of fossil fuels (e.g., for the transportation, production, refrigeration, or cleaning of dairy products or to provide care for dairy cows) which contributes to pollution.
- G5. Antibiotics and concentrated feed containing artificial chemical supplements can contaminate the environment through animal waste.
- G6. Waste lagoons can be destroyed by natural disasters (e.g., floods, hurricanes) and contaminate aquifers, surface water, and drinking water.
- G7. Bank erosion causes stream sedimentation and biodiversity loss and/or aquatic ecosystem damage downstream.
- G8. Dairy farms are water intensive and can cause depletion of groundwater aquifers.
- G9. Dust containing ammonia contaminates the air in locations near large-scale dairy farms.

Total for question 1 7 points



Begin your response to each question at the top of a new page. Do not skip lines.

- a) Intensive agriculture is agriculture that requires small amounts of land. It also requires large amounts of labor and capital. It is more condensed and concentrated than extensive farming due to the less amount of land required.
- b) Over time the number of family-run dairy farms and their size have decreased. This is because they cannot compete with larger businesses and so are replaced by corporations or horizontally integrated into them. Then, there are less dairy farms owned by families today.
- c) Economies of scale is the concept ~~that~~ of providing a more cost efficient way to produce something and to be able to outsell competitors. By doing this, ~~it~~ things can be more easily mass produced. This mass production maximizes profitability in dairy farming by allowing for more dairy products to be sold. Then, a higher profit is made the more dairy products are sold. This new efficiency that allows for such mass production may be through the mechanization on dairy farms which may allow for more milk to be produced or more cheese to be made more efficiently. Then, economies of scale maximize profits of dairy-farms by making production more efficient through mechanization.

Begin your response to each question at the top of a new page. Do not skip lines.

d) A recent trend regarding location of dairy farms with respect to consumer locations is that dairy farms now exist much further away from consumer locations. In the past, dairy farms had to be located relatively close to consumer locations due to ~~the~~ the products that they produced being perishable. Then, it had to be close enough so it could easily ~~move~~ and quickly transport the goods, such as milk. Now, new technology, such as refrigerator cars, have enabled dairy farms to be located much further from consumer locations. Faster transportation and use of refrigerator cars allows for dairy goods to be shipped further away without perishing. This then explains the trend of dairy farms being located further away.

e) One way that a complex commodity chain connects large-scale dairies to consumers is through transportation and packaging. A commodity chain involves different steps that a good takes before being sold. In this case, ~~there has to be~~ ~~one~~ step dairies have to take before selling their products is transporting milk to be packaged or made into cheese. ~~The transportation~~ The packaging of the good allows it to be sold to consumers. Then, transportation of milk and dairy products, as well as their packaging, is a way that a commodity chain connects large-scale dairies to consumers. Finally, it is important to note that ~~these~~ ^{this} steps take place in ^{then where the milk is produced} different areas, which is why they exist in a commodity chain.

Question 1

Question 2

Question 3

Begin your response to each question at the top of a new page. Do not skip lines.

f) One way that small-scale dairy farms can specialize to compete with large-scale dairies is through the making of unique value-added specialty ~~goods~~ ^{goods}. By making unique value-added specialty ~~goods~~ ^{goods} such as artisan cheeses a small dairy farm can stand out from large-scale dairies. Ultimately, large-scale dairies focus on high production. This results in its products being more similar and simple so to keep things cost-efficient. The uniqueness of a value-added specialty good would stand out against other competitors and make it more likely for people to buy from the small dairy.

g) An environmental sustainability problem that results from the production of dairy on large-scale farms is pollution. Ultimately, the large scale raising of cows ~~requires~~ results in the producing of a lot of methane. This is because the grazing cows produce the gas from their burps and other bodily functions. This large amount of methane produced ultimately contributes to climate change and air pollution. Production of dairy on farms also requires machines to acquire the milk or turn it into cheese. These machines are powered by fossil fuels which further contributes to climate change and air pollution.

Question 1

Question 2

Question 3

Begin your response to each question at the top of a new page. Do not skip lines.

Intensive agriculture is a large amount of labor compared to the farm land. It is the opposite of extensive labor which is not a lot of labor compared to land.

Family run farms have increased in size, but decreased in ~~the~~ number. They have had to increase in size to keep up for the demand and to survive from the commercial agribusiness. However, since they increased in size there have been fewer farms since the big family farms have bought them. Also, the small dairy farms can't keep up with the prices of an agribusiness.

~~The location of the farms have moved further away from the urban areas for cheaper land. The farms have been able to do this because the milk shed, the radius that ~~can~~ ^{dairy} can be delivered without spoiling, has increased due to better transport technology.~~

The large farms have been able to maximize profit by using antibiotics. This maximizes profits as the ~~milk~~ ^{dairy} is immune to common diseases. Small scale have maximized profits by using machinery to save time.

Question 1 Question 2 Question 3



Begin your response to each question at the top of a new page. Do not skip lines.

The location of the farms have moved farther away from the urban areas for cheaper land. The farms have been able to do this because of the milkshed, the radius that dairy can be transported without spoiling, has increased with transportation technology.

Large-scale dairy farms have a complex commodity chain to consumers by supplying factories that create dairy products. This makes the different dairy factories to be supplied by the same agribusinesses.

One way that small-scale dairy farms can specialize to compete is by going organic or non-gmo. This can take some customers away from cheap large-scale and make them pay more because of the fear of GMOs and antibiotics.

An environmentally sustainability problem is the GMOs and waste produced by the cows. This can cause infected water around the farms and it will hurt the environment's water.

Question 1

Question 2

Question 3



Begin your response to each question at the top of a new page. Do not skip lines.

A. Intensive Agriculture can be defined as a type of agriculture that is used to gain profit.

B. The number and sizes of family owned dairy farms has significantly decreased because they are being bought out by larger corporations. Larger corporations have a higher sustainability over family owned businesses because they are more successful and more common as time moves forward. The sizes of these farms will increase as long as they are owned by these larger corporations because they will put the money forward to expand these farms in order to benefit their own company.

C. Economies of scale are helping to create huge business boosts for dairy farming by creating farms that are dependent on the type of economy. Profitability coming from dairy farms is at a higher point when built through a high developed economy. There is more use and need for dairy farms in a high processing economy. Through the use of economies to scale, profitability in dairy farms is increasing through common consumer services.

D. Today, the trend in the location of dairy farms tend to be widespread. With new technological advances such as refrigerated milk trucks, the location of dairy farms is no longer dependent on the conservation of the milk. Dairy farms no longer have to be located close to consumer locations because of this new form of transportation. Spilled milk is less common, and

Question 1 Question 2 Question 3



Begin your response to each question at the top of a new page. Do not skip lines.

With the amount of profit coming in from these farms, affording the transportation is not difficult, continuing the trend of the farms being widespread.

E. Complex commodity chains look to benefit the consumer in the end. Through the processes of transportation, these commodity chains connect large-scale dealers no matter the location. These chains work to connect small businesses to larger corporations through the process of sharing profit and tend to benefit the consumer. This commodity chain creates relations to different scales of businesses, leading to a shared incentive among dairy farms.

F. Small scale dairy farms can look to support their consumers on a more local scale than a global scale. Remaining local produces many benefits to that specific region such as sustainability as well as creating job opportunities for locals. Although large scaled businesses tend to have higher profit, small scale farms can have the advantage of touching the hearts of locals and benefiting their people. This makes them just as reliable as large scale farms.

G. Large scale farms tend to abuse the use of their animals because they are bred on a global scale. The use of cows to produce milk creates a sustainability problem when considering how long these species will last throughout future generations. This is a concern because with the need for milk by consumers, large scale farms will do whatever

Question 1

Question 2

Question 3



Begin your response to each question at the top of a new page. Do not skip lines.

they feel is needed in order to profit and benefit themselves in the end. This will ~~create~~ create a disinterest for the animals and future generations.

Question 1

Note: Student samples are quoted verbatim and may contain spelling and grammatical errors.

Overview

Students were expected to be able to define intensive agriculture and then to describe how family-run dairy farms are changing in number and size, specifically recognizing how large-scale commercial agricultural operations are replacing them. Then students were asked to explain two economic concepts—economies of scale and complex commodity chains—as they relate to these large-scale dairy farms. Additionally, students were expected to understand the contemporary locations of dairy farms in contrast to the von Thünen model of patterns of agricultural production. Finally, students were asked to apply a discussion of environmental sustainability, a concept that appears in the first unit of the course but is emphasized in both the agriculture and economic units. Specifically, it was necessary for students to explain the challenge of sustainability as it applies to large-scale dairy farms present in contemporary agriculture.

Skills required of the students were (1) describe the geographic concept of intensive agriculture, (2) describe spatial relationships between family-run and large-scale commercial dairy farms, (3) explain spatial relationships across various geographic scales using the geographic concept of economies of scale, (4) explain the significance of geographic differences between locations of dairy farms in the past and in recent times, (5) describe the relevant geographic concepts of complex commodity chains and organic farming in a specified context, and (6) explain a likely outcome in a geographic scenario by using the process of environmental sustainability.

Sample: 1A

Score: 7

The response to part A earned 1 point because it defines intensive agriculture as farming done with large labor inputs per unit of land.

The response to part B earned 1 point because it describes how family-run dairy farms have decreased in number as more dairy products are being produced by large corporate farms (agribusinesses) instead of family-run farms.

The response to part C earned 1 point because it explains how dairy farms can reduce per unit costs by manufacturing larger volumes of milk or dairy products using mechanization, transportation, or computerized production processes that reduce the amount of labor or energy needed to produce each unit of food.

The response in part D earned 1 point because it explains how dairies have moved farther from consumer locations as a result of improvements in transportation methods and networks.

The response to part E earned 1 point because it explains how milk is manufactured into cheese, which increases the complexity of the commodity chain as more steps are needed for processing and packaging.

The response in part F earned 1 point because it explains how small-scale dairy farms are able to compete with large-scale farms by producing value-added dairy products.

The response in part G earned 1 point because it explains the environmental sustainability problem that methane produced by cows is a major contributor to global warming.

Question 1 (continued)

Sample: 1B

Score: 5

The response to part A earned 1 point because it defines intensive agriculture as agriculture done with large quantities of inputs per unit of land.

The response to part B earned 1 point because it describes how the number of dairy farms declined while the size of dairy farms has increased.

The response to part C did not earn a point because it does not explain how economies of scale are used to maximize profitability in dairy farming.

The response to part D earned 1 point because it explains how dairies have moved farther from consumer locations as a result of improvements in transportation methods and networks.

The response to part E did not earn a point because it does not explain a way in which a complex commodity chain connects large-scale dairies to consumers.

The response to part F earned 1 point because it explains how small-scale dairy farms engage in organic dairy farming as a way to compete with large-scale dairy farms.

The response to part G earned 1 point because it explains that concentrations of animal waste can result in water contamination.

Sample: 1C

Score: 3

The response to part A did not earn a point because it does not define intensive agriculture.

The response to part B earned 1 point because it describes how family-run dairy farms have decreased in number as more dairy products are being produced by large corporate farms (agribusinesses) instead of family-run farms.

The response to part C did not earn a point because it does not explain how economies of scale are used to maximize profitability in dairy farming.

The response to part D earned 1 point because it explains how dairies have moved farther from consumer locations as a result of improvements in transportation methods and networks.

The response to part E did not earn a point because it does not explain a way in which a complex commodity chain connects large-scale dairies to consumers.

The response to part F earned 1 point because it explains that small-scale dairies can compete with large-scale dairies by marketing and selling their dairy products as locally raised as a way of supporting the local community.

The response to part G did not earn a point because it does not explain an environmental sustainability problem that results from the production of dairy on large-scale farms.