

AP[®] HUMAN GEOGRAPHY 2013 SCORING GUIDELINES

Question 1

The high-tech centers of Silicon Valley in California and the Research Triangle in North Carolina have developed in the past 40 years.

Part A (6 points total)

Discuss the following three factors that contributed to the rise of such industrial regions: investment capital, labor, and government.

Investment Capital (2 points)	
Source (1 point)	Target (1 point)
<ul style="list-style-type: none"> • Investors taking risks • Wealthy technology pioneers or individuals • Companies, firms, businesses • Banks (lenders) • Venture capitalists • Entrepreneurs • University investment 	<ul style="list-style-type: none"> • To develop technologies and/or innovations • New computing hardware. (e.g., iPads, iPods, PCs) • Communications technology (e.g., smart phones, telecommunications) • Robotics • Data storage (e.g., cloud) • Programming (e.g., gaming) • Software (e.g., apps) • Pharmaceuticals • Biotechnology • Materials science (e.g., electronics, medical, energy)

Labor (2 points)	
Pool (1 point)	Outcome (1 point)
<ul style="list-style-type: none"> • University/professionally educated • Skilled labor (e.g., high or technical) • Highly specialized (e.g., trained labor) • Scientists • Engineers • Creative, innovative, or inventive people 	Developing: <ul style="list-style-type: none"> ○ knowledge ○ ideas ○ technologies ○ products ○ companies

Government (2 points)
<ul style="list-style-type: none"> • Federal/state funding for research and development • Locating federal and state agencies in high-tech centers • Zoning to promote high-tech and research facilities (Note: no credit for just the term zoning) • Government funding for transportation, communication or utility infrastructure • State/local economic development (e.g., tax reduction, tax holidays, subsidies) • Government subcontracting to local high-tech firms

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Question 1 (continued)

Part B (2 points total)

Define the concept of agglomeration and explain its role in the continuing expansion of such regions.

Agglomeration	
Definition (1 point)	Role in Regional Expansion (1 point)
The clustering of similar or related firms in close proximity to one another Note: no credit for merger or consolidation of companies	<ul style="list-style-type: none">• Urbanization links to or location on the edge of existing cities providing operating cost advantages• Attracting similar companies to share a specialized or educated local labor pool/infrastructure• Multiplier effects of attracting business services, personal services or labor

A. Over the past forty years, a number of highly specialized high-tech centers have emerged in Silicon Valley and the Research Triangle. This growth has generated a lucrative business opportunity and many corporations see a profit motive.

1. Investment capital refers to the initial money necessary to create a business venture. This capital is utilized in order to create new start-ups and create an innovative, new base for high-tech enterprises. For instance, many start-up corporations pitch their ideas to investors who back their projects in the hope of future profit. It is for this reason that many software and medical technologies that require large capital outlays are being produced in California and North Carolina. The investment capital provided the monetary support that led to the growth of high-tech industries. Intel represents one such corporation.

2. Labor also played a significant role in the rise of high-tech centers. In many cases, corporations in this competitive market are searching for young, motivated, and highly-educated workers. The demand for engineers and software creators appears insatiable. For this reason, growth in

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ADDITIONAL ANSWER PAGE FOR QUESTION 1

these fields has skyrocketed. In some cases, educated workers are emigrating from countries like China and India in order to find jobs in these specialized fields. These workers come with ideas of their own which can be utilized for future enterprises.

3. The US government also plays an integral role in promoting the growth of specialized industry. One way they achieve this objective is through the use of allocating loans and tax breaks. By giving corporations incentives to grow their markets, invest in new ideas, and hire more workers, the government can work to remain competitive globally. Additionally, many departments and agencies within the federal government provide contracts for corporations located in Silicon Valley and the Research Triangle. For instance, the Department of Defense may contract software engineers to create programs for their missile programs to both incentivize industry and keep costs low. The government also plays a major role in promoting STEM (science, Technology, Engineering, and Math) standards in educational programs and workforce development. These all help give rise to

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high-tech centers in the United States.

B. Agglomeration refers to the clustering of similar industries to take advantage of manufacturing in the area and to remain competitive. In ~~the~~ regards to Silicon Valley and the Research Triangle, major high-tech industries are grouped together. Just-in-time, Post-Fordist operations have made these areas centers for obtaining and utilizing components necessary to manufacture technologically advanced components. It is much easier to transport these goods when they are near each other. Additionally, a tight-knit location allows corporations to maintain competitiveness with neighboring, similar corporations. They can easily determine what the newest fad or business practice that their competitor is using is. By agglomerating, companies are attempting to maximize profit by drawing investment to an area of renown and by marketing their products and services to the same consumers. They can then use techniques like advertising and product differentiation to remain on top.

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ANSWER PAGE FOR QUESTION 1

A) The development of high-tech centers in Silicon Valley and the Research Triangle in North Carolina are due to the support of various services. ¹⁾ Investment capital allowed for people to invest their money in businesses and services they believed would be successful. The high-tech centers and the Research Triangle therefore had funds to support growth and development of new technology and/or softwares. ²⁾ Labor forces thrived in that many people were becoming more specialized and developed in roles that could push these centers and facilities to excellence. Each year, the labor would bring new ³⁾ ideas and technologies to the drawing board. The government supported the modernization and development of the country technologically because it would increase communications within the country and globally. The government invested in products and development of these centers and research facilities to push forth a better economic standing and to be ahead of the rest of the world technologically. Each of these services allowed the quick development of technology over the past 40 years. ³⁾ Agglomeration is the joining together and combination of similar urban services to make a more efficient service to customers. For example, the high-tech centers and the Research Triangle used many different services and companies to be successful. First, they had to have the natural

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resources and energy to be able to ~~make~~^{experiment with} and construct various developing technologies; therefore, they needed an extracting company and someone to transport it to the facilities. Then, the centers and research facilities used the ~~raw~~ raw materials to make new products and experiment with potential global successes. After products are made, they need to be advertised and distributed to the public for purchasing. Each step in the process requires a company or service to complete it. Therefore, different services agglomerate, or join together, to form a more efficient way to make products and get them out into the public.

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Over the past 40 years, Silicon Valley in California, and the Research Triangle ~~in~~ in North Carolina have sprung up and developed. One of the reasons for the success is the large amount of investments they received. With the popularity and interest of computers increasing, the computer became part of popular culture. People in colleges were getting computer degrees and other high education. These areas are near several big colleges like Berkeley and Stanford, causing a demand for quaternary and quinary jobs. The jobs came up and more investments also came. Silicon valley and the Research Triangle became the centers of high-end jobs for well educated people. This caused a large migration of people to these areas and the start of a new business sector. The government became interested in the high quality workers from these areas and began to recruit workers in the government's technology sector, and started to buy from the high tech areas of Silicon Valley and the Research Triangle. The development of the new technology/computer sector, the high demand for quaternary and quinary jobs, and migration of people to these areas caused an agglomeration. An agglomeration is when a large group of people/ideas come together. Agglomeration is still continuing in these areas today as more successful businesses like Facebook

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and Google appear. The companies in these areas have globalized and have reached out to countries all over the world. These companies have helped spread popular culture all over the world, for better or for worse. Some people think that the time-space compression that has allowed us to share our ideas, thoughts, and beliefs ^{quickly} can cause a desensitization, loss of ethnic cultures, and a plainness to all the countries. Others believe that the Silicon valley and the Research Triangle agglomerations will continue to grow and provide more jobs and ~~business~~ business sectors in other parts of the world.

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Question 1

Overview

This question was intended to determine students' understanding of ways in which the economic landscape reflects spatial processes and governmental policies. The students were provided with two well-known centers of development: the "Research Triangle" of North Carolina and the "Silicon Valley" of California. The students were asked to discuss the role investment capital, labor, and government policies contributed to the development of these centers of business and industry over the past 40 years. The students were then asked to define the concept of agglomeration and explain its role or impact in the further development of such regions. The concepts and theories of industrial localization and economic development are critical to human geography; therefore, this question was focused on one of the fundamental themes of the course. In addition, the concepts of sovereignty and a state's power to control its economy are all basic concepts in the political geography section of the course. The purpose behind the examples was to give the students an authentic frame for their answers. These two regions are well known around the world, and therefore should have enabled students to envision the type of regional development the geography concepts seek to explain. The questions are about important aspects of the students' lives; in this case, the developments of new technology and employment potentials, as well as the spatial dynamics of the national economy.

Sample: 1A Score: 8

The response demonstrates a comprehensive understanding of the factors which have contributed to the rise of high-tech centers and of the role of agglomeration in such regions. Part A1 received 2 points for correctly discussing that investors back the projects proposed by high-tech start-up corporations through investment capital (source) and by correctly discussing that software and medical technologies "require large capital outlays" (target). Part A2 received 2 points for correctly discussing the need for highly educated workers (pool) and understanding that these workers bring their own ideas to these high-tech enterprises (outcome). The response received 2 points in part A3 for discussing the role of government investments of loans and tax breaks in these areas and correctly discussing the role of federal contracts given to high-tech firms in these areas. Part B received 2 points by correctly defining agglomeration as the "clustering of similar industries together" and by explaining that high-tech manufacturing centers near each other provide operating cost advantages.

Sample: 1B Score: 6

This response earned full credit (2 points) in part A1, full credit (2 points) in part A2, partial credit (1 point) in part A3, and partial credit (1 point) in part B. Part A1 earned 2 points by explaining that investors invest their money in "... businesses and services they believed would be successful" (source). Thus, the companies received the capital needed for the development of new technologies (target). The response received 1 point in part A2 (pool) for correctly discussing the role of specialized labor in high-tech centers (pool) and 1 point (outcome) for correctly discussing the development of new ideas and technologies. Part A3 earned 1 point for correctly discussing the role of government in the investment and development of technologies. The second point was not earned in part A3 because a discussion of an additional correct government-based action is not provided. The response did not earn the definition point in part B because agglomeration is incorrectly defined as joining together and combining similar urban services. The response earned 1 expansion point in part B by correctly explaining how companies work together via agglomeration.

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Question 1 (continued)

Sample: 1C

Score: 4

This response received partial credit parts A1, A2, A3, and B. The response received 1 point in part A1 (source) for correctly discussing the large amount of investments received by high-tech firms. The target point was not earned because a target for the investment capital received is not provided. The essay received 1 point in part A2 (pool) by correctly discussing how high-tech centers attracted large numbers of highly educated workers. The point was not earned in part A2 (outcome) because the response does not indicate what the highly skilled labor in high-tech centers creates. The response received 1 point in part A3 for discussing government recruiting workers, subcontracting, and purchasing services. Credit was not earned in part A3 (point 2) because a discussion of an additional correct government-based action is not provided. The essay did not receive the definition point in part B because agglomeration was incorrectly defined as “when a large group of people/ideas come together.” The essay received 1 expansion point in part B by correctly explaining the attraction of labor and new business to high-tech centers.