



Chief Reader Report on Student Responses: 2025 AP[®] Microeconomics Free-Response Questions

• Number of Students Scored	118,022		
• Number of Readers	209		
• Score Distribution	Exam Score	N	%At
	5	25,405	21.5%
	4	28,292	24.0%
	3	26,693	22.6%
	2	23,975	20.3%
	1	13,657	11.6%
• Global Mean	3.24		

The following comments on the 2025 free-response questions for AP[®] Microeconomics were written by the Chief Reader James Leady, Teaching Professor, University of Notre Dame; Assistant Chief Reader Peter Duffer, Buffalo Grove High School; Exam Leader Gerald Simons, Professor, Grand Valley State University; and Question Leaders David Burgin, Science Hill High School; Julia Frankland, Professor, Malone University; and Mary Kohelis, Madonna High School. They give an overview of each free-response question and of how students performed on the question, including typical student errors. General comments regarding the skills and content that students frequently have the most problems with are included. Some suggestions for improving student preparation in these areas are also provided. Teachers are encouraged to attend a College Board workshop to learn strategies for improving student performance in specific areas.

Question 1

Task: Graph, Assert, Explain

Topic: Monopoly, Socially Efficient Outcomes, Short-Run Production Costs, Price Elasticity of Demand, Changes in Factor Demand and Factor Supply

	Max Points:	Mean Score:
Point 1	1	0.67
Point 2	1	0.68
Point 3	1	0.69
Point 4	1	0.47
Point 5	1	0.56
Point 6	1	0.57
Point 7	1	0.31
Point 8	1	0.75
Point 9	1	0.11
Point 10	1	0.41
Overall Mean Score: 5.21		

What were the responses to this question expected to demonstrate?

The question assessed an understanding of monopoly, the deadweight loss created by the firm, and the socially optimal output. The question then assessed understanding of the effect of a change in the firm's output if it were granted a per-unit subsidy. The question also assessed understanding of how the increase in demand for its product would affect its demand for labor and how a new regulation raising the minimum age for workers would affect the market wage.

The question stated that Voda Reservoir is a profit-maximizing firm and the only producer of bottled water in a country. The question also stated that Voda Reservoir is earning negative economic profit.

Part A asked to draw a correctly labeled graph for a monopoly earning negative economic profit. Part A (i) and part A (ii) asked to show the firm's profit-maximizing quantity and price, respectively. The question assessed knowledge of market conditions for a monopoly, a firm that has market power, and the ability to illustrate these concepts using a graph. This task required demonstrating knowledge of revenue and cost conditions by drawing a downward-sloping demand (D) curve, a downward-sloping marginal revenue (MR) curve that lies below the demand curve, and the marginal cost (MC) curve. The question required showing that the firm's profit-maximizing quantity (Q_M) occurs where $MR = MC$ and that the profit-maximizing price (P_M) is determined by identifying the price that corresponds to this quantity on the D curve. These tasks required demonstrating marginal analysis in a graphical format. Part A (iii) asked to draw the average total cost (ATC) curve consistent with the given negative economic profit condition by having the ATC curve above the D curve and MC passing through the minimum point of the ATC curve. Part A (iv) required completely shading the area of deadweight loss (DWL), which is bound by MC, Q_M , and D.

Part B asked to identify the socially optimal quantity (Q_S), which is the quantity where the MC curve intersects the D curve. This task required demonstrating an understanding of social efficiency in a graphical format.

Part C asked to explain what would happen to the firm's profit-maximizing quantity if the government granted a per-unit subsidy to Voda Reservoir. This task required determining the outcome of the per-unit subsidy, which decreases the firm's MC, so that MR intersects MC at an increased quantity of output.

Part D asked students to consider the effect of new producers entering the bottled water market on the demand for Voda Reservoir's bottled water and whether the demand would become more elastic, less elastic, or stay the same. This task required understanding that as firms enter a market, demand becomes more elastic as more substitute products become available to consumers.

Part E stated that Voda Reservoir hires workers in a perfectly competitive labor market. Part E (i) asked to explain the effect on the demand for labor in the bottled-water industry if the demand for bottled water increased. This task required recognizing that when the demand for bottled water increases, the price and marginal revenue of bottled water increase, thereby increasing the marginal revenue product of labor. Part E (ii) asked to explain the effect of the government implementing a new regulation that increases the minimum age required for a worker to be employed in a bottled-water factory on the market wage for workers. This task required recognizing that increasing the minimum age required for a worker to be employed would decrease the market supply of labor, which increases the market wage.

How well did the responses address the course content related to this question? How well did the responses integrate the skill(s) required on this question?

In part A 67% of responses earned point 1 for drawing a correctly labeled graph of a monopoly showing downward-sloping D and MR curves with the MR curve below the D curve. For point 2 in the graph for part A, 68% of responses showed a rising MC curve and identified the profit-maximizing quantity, Q_M , where $MR = MC$. For point 3 in the graph in part A, 69% of responses showed the profit-maximizing price, labeled P_M , from the D curve at Q_M . For point 4 in the graph for part A, 47% of responses showed the ATC curve above the D curve and showed the MC curve passing through the minimum of the ATC curve. For point 5 in the graph for part A, 56% of responses shaded the area of deadweight loss.

In part B 57% of responses earned point 6 for showing the socially optimal quantity of bottled water, labeled Q_S , from the intersection of the D and MC curves.

In part C 31% of responses earned point 7 for stating that if the government granted a per-unit subsidy, the profit-maximizing quantity of bottled water would increase and explaining that the per-unit subsidy would decrease the firm's MC, which shifts the MC curve to the right (down), intersecting the MR curve at a greater quantity, or explaining that the per-unit subsidy increases the firm's MR, which shifts the MR curve to the right, intersecting the MC curve at a greater quantity.

In part D 75% of responses earned point 8 for stating that if new producers entered the bottled-water market, the demand for Voda Reservoir's bottled water would become more elastic.

In part E (i) 11% of responses earned point 9 for stating that if the demand for bottled water increased, Voda Reservoir's demand for labor would increase and explaining that the increase in demand for bottled water will increase the price and marginal revenue of bottled water, increasing the marginal revenue product of labor. In part E (ii) 41% of responses earned point 10 for stating that if the government implements a new minimum age regulation, the market wage for labor would increase and explaining that the new regulation would decrease the supply of workers.

What common student misconceptions or gaps in knowledge were seen in the responses to this question?

<i>Common Misconceptions/Knowledge Gaps</i>	<i>Responses that Demonstrate Understanding</i>
<p>Part A Point 1</p> <ul style="list-style-type: none"> Missing or incorrect labels on axes Drawing a horizontal demand curve Labeling the demand curve as DARP or MRDARP 	<ul style="list-style-type: none"> Correctly labeling all axes Drawing a downward-sloping D curve and a downward-sloping MR curve below the D curve
<p>Part A Point 2</p> <ul style="list-style-type: none"> Identifying Q_M where MC intersects D 	<ul style="list-style-type: none"> Identifying Q_M where $MR = MC$
<p>Part A Point 3</p> <ul style="list-style-type: none"> Identifying P_M from the MR curve at Q_M 	<ul style="list-style-type: none"> Identifying P_M from the D curve at Q_M
<p>Part A Point 4</p> <ul style="list-style-type: none"> Drawing the ATC curve below or tangent to the D curve at Q_M Drawing the ATC curve without the MC curve passing through the minimum point of ATC Missing the ATC label 	<ul style="list-style-type: none"> Drawing the ATC curve above the D curve with MC passing through the minimum ATC
<p>Part A Point 5</p> <ul style="list-style-type: none"> Shading the area bound by MC, Q_M, and ATC to represent the DWL 	<ul style="list-style-type: none"> Shading the area bound by MC, Q_M, and D to represent the DWL
<p>Part B Point 6</p> <ul style="list-style-type: none"> Identifying the socially optimal quantity at minimum ATC 	<ul style="list-style-type: none"> Identifying the socially optimal quantity from the intersection of the MC and D curves

<p>Part C Point 7</p> <ul style="list-style-type: none"> Not including an explanation for how a per-unit subsidy affects a firm's marginal revenue or marginal cost, resulting in a change in the firm's profit-maximizing quantity 	<ul style="list-style-type: none"> Stating the per-unit subsidy will increase the profit-maximizing quantity and using one of the following explanations: The per-unit subsidy decreases the firm's MC and therefore MR intersects MC at an increased quantity OR the per-unit subsidy increases the MR for the product and therefore MR intersects MC at an increased quantity.
<p>Part D Point 8</p> <ul style="list-style-type: none"> Stating the demand would either become less elastic or stay the same 	<ul style="list-style-type: none"> Stating the demand will become more elastic
<p>Part E (i) Point 9</p> <ul style="list-style-type: none"> Not including an explanation for how an increase in demand for bottled water would increase the price and marginal revenue of bottled water, increasing the marginal revenue product of labor 	<ul style="list-style-type: none"> Stating the demand for labor will increase because the increase in demand for bottled water will increase the price and marginal revenue of bottled water, increasing the marginal revenue product of labor
<p>Part E (ii) Point 10</p> <ul style="list-style-type: none"> Not including in the explanation that increasing the minimum age requirement would decrease the supply of workers Explaining that increasing the minimum age requirement would increase the demand for labor 	<ul style="list-style-type: none"> Stating that an increase in the minimum age requirement would increase the market wage and explaining that the new regulation would decrease the market supply of workers

Based on your experience at the AP[®] Reading with student responses, what advice would you offer teachers to help them improve student performance on the exam?

The monopoly model is an important market structure for students to understand. Students should know how to draw a correctly labeled graph of a monopoly showing the cost and revenue curves corresponding to whether the firm is in a long-run equilibrium earning zero economic profit or in a short-run equilibrium earning positive or negative economic profit.

Students also need to make a clear distinction when labeling the firm's curves. "DARP" is not an acceptable label. "D = AR = P" is acceptable, yet to earn the point, P_M must be labeled on the vertical axis.

Teachers are encouraged to emphasize shading the area of the deadweight loss in different scenarios, which can be illustrated as the difference between consumers' marginal benefit (D) and the producer's marginal cost (MC) for those units *not* exchanged but would have been exchanged in a competitive market (where the socially optimal quantity is produced). Graphically, this is the area bound by Q_M , D, and MC. Teachers should introduce the concepts of allocative efficiency and the socially optimal output early in the curriculum with Topic 1.6 and revisit them throughout the AP Microeconomics curriculum (see Topics 2.6, 2.7, 2.8, 4.1, 4.2, 6.1, 6.2, and 6.4).

Teachers should review with students the effect of a subsidy in different market structures and its effect on the profit-maximizing quantity. Responses that missed point 7 in part C tended to not explain how a per-unit subsidy would lower marginal cost (or increase marginal revenue) and therefore result in $MR = MC$ at a greater quantity than before. The short-run production cost relationships are introduced in Topic 3.2 and spiraled through Unit 4 with Imperfect Competition. Teachers should provide students with opportunities to practice how changes in short-run production costs, whether fixed or variable costs, affect a firm's profit-maximizing price and quantity in different market structures.

Teachers are encouraged to help students apply concepts across units. For example, when teaching monopoly and monopolistic competition in Unit 4, revisit price elasticity of demand from Unit 2. It is important to emphasize how an increase in competition affects the elasticity of each firm's individual demand curve. As more firms enter a market, competition increases, making each firm's individual demand more elastic, reducing the firm's ability to increase prices without losing customers.

It is important for teachers to reinforce the chain of reasoning using precise economic terminology when explaining the effect of a change on an outcome. Teachers are encouraged to review the connections between the labor market and the product market emphasizing the effects of changes in product demand on labor demand through price, MR, and MRP. It is important to go beyond stating that labor demand is derived from product demand. Teachers should emphasize the underlying mechanism: $MRP_L = MR \times MP_L$. When the demand for a product increases, both the product's price and marginal revenue increase. This leads to a higher marginal revenue product of labor, meaning each worker generates more revenue for the firm. As a result, the firm's demand for labor increases because hiring additional workers becomes more profitable.

Teachers are encouraged to review the key factors that influence the supply and demand for labor and to help students understand these forces both conceptually and graphically. While a graph may not always be required in a response, students should be able to reference appropriate economic tools and models to explain market outcomes. For example, implementing a new regulation that increases the minimum age required to be employed will result in a leftward shift in the labor supply curve, leading to higher equilibrium wages. One of the core goals of the course is for students to use economic reasoning to determine outcomes in specific scenarios and explaining wage changes through supply and demand analysis is a clear application of that skill.

What resources would you recommend to teachers to better prepare their students for the content and skill(s) required on this question?

Teachers are encouraged to sign in to AP Classroom to access AP Daily videos and find questions on the topics and skills addressed in this question. AP teachers can also use the AP Question Bank in AP Classroom to enable students to practice and receive feedback on formative topic questions and past AP Exam questions.

Knowledge of the following topics is essential to correctly answer the question:

- Topic 2.3: Price Elasticity of Demand
- Topic 3.2: Short-Run Production Costs
- Topic 4.1: Introduction to Imperfectly Competitive Markets
- Topic 4.2: Monopoly
- Topic 4.4: Monopolistic Competition
- Topic 5.2: Changes in Factor Demand and Factor Supply
- Topic 6.1: Socially Efficient and Inefficient Market Outcomes
- Topic 6.4: The Effects of Government Intervention in Different Market Structures

Question 2

Task: Calculate, Explain, Assert

Topic: Market Equilibrium and Consumer and Producer Surplus, International Trade and Public Policy

	Max Points:	Mean Score:
Point 1	1	0.56
Point 2	1	0.57
Point 3	1	0.58
Point 4	1	0.55
Point 5	1	0.30
Overall Mean Score: 2.57		

What were the responses to this question expected to demonstrate?

The question assessed the understanding of potential changes in the market for rice in Rushland, including calculating the economic surplus, determining the effect of a price control, and evaluating various outcomes under international trade.

The question provided a demand and supply graph of the market for rice in the country of Rushland.

Part A asked to calculate the total economic surplus at market equilibrium based on the graph and to show the work. This part assessed knowledge of economic surplus and that the market has the maximum possible economic surplus when it is in equilibrium.

Part B asked if a price floor at \$3 created a surplus, a shortage, or neither and to explain their answer. This part assessed knowledge of a price floor and the understanding that a price floor is only effective when placed above the market equilibrium price.

For part C the question stated that instead of the price floor, Rushland engages in international trade at a world price of \$5 per bushel of rice. Part C (i) asked if Rushland should import or export rice and explain the answer using numbers from the graph. This part of the question assessed understanding of why nations trade with one another and that comparative prices between the domestic and world markets will influence trade. Part C (ii) asked to calculate the domestic consumer surplus when Rushland engages in international trade and to show the work. This part of the question assessed knowledge of calculating the domestic consumer surplus after opening the market to trade. Part C (iii) asked to calculate the total revenue that Rushland's farmers will earn at the world price and to show the work. This part of the question assessed understanding of the effect of a price change on total revenue.

How well did the responses address the course content related to this question? How well did the responses integrate the skill(s) required on this question?

In part A 56% of responses earned point 1 for calculating the total economic surplus at the market equilibrium as \$270 and showing the work.

In part B 57% of responses earned point 2 for stating that a \$3 price floor created neither a surplus nor a shortage in the market and explaining that a price floor set below the equilibrium price is nonbinding and will have no effect on the market price and quantity.

In part C (i) 58% of responses earned point 3 for stating that Rushland will export rice and explaining that at the world price of \$5, the domestic quantity supplied is 80 bushels of rice, which is greater than the domestic quantity demanded, which is 50 bushels of rice. In part C (ii) 56% of responses earned point 4 for calculating the domestic consumer surplus as \$125 and showing the work. In part C (iii) 30% of responses earned point 5 for calculating the total revenue Rushland’s farmers would earn at the world price of \$5 as \$400 and showing the work.

What common student misconceptions or gaps in knowledge were seen in the responses to this question?

<i>Common Misconceptions/Knowledge Gaps</i>	<i>Responses that Demonstrate Understanding</i>
<p>Part A Point 1</p> <ul style="list-style-type: none">Miscalculating economic surplus as $\\$4 \times 60 = \\240Stating there is no economic surplus at equilibrium	<ul style="list-style-type: none">Calculating economic surplus as $\frac{1}{2} \times (\\$10 - \\$1) \times (60 - 0) = \frac{1}{2} \times (\\$9 \times 60) = \\$270$Calculating economic surplus by adding together the values of consumer surplus and producer surplus as $\frac{1}{2} \times (\\$10 - \\$4) \times (60 - 0) + \frac{1}{2} \times (\\$4 - \\$1) \times (60 - 0) = \\$180 + \\$90 = \\270
<p>Part B Point 2</p> <ul style="list-style-type: none">Asserting that the price floor causes a shortage or a surplus of 30 units at \$3	<ul style="list-style-type: none">Asserting that the price floor causes neither a shortage nor a surplus because it is below equilibrium and is nonbinding

<p>Part C (i) Point 3</p> <ul style="list-style-type: none"> Asserting that rice is exported because Rushland will sell at \$4 and earn a profit Asserting that rice is exported because of a \$1 difference in price (without stating what prices are being compared) 	<ul style="list-style-type: none"> Asserting that Rushland will export rice because at the world price of \$5, the quantity demanded (50) is less than the quantity supplied (80) Explaining that Rushland will export rice because at the world price of \$5 there is a domestic surplus of 30 bushels of rice that can be exported
<p>Part C (ii) Point 4</p> <ul style="list-style-type: none"> Calculating consumer surplus as $\\$5 \times 50 = \\250 Calculating consumer surplus as $\frac{1}{2} \times (\\$10 - \\$4) \times 60 = \frac{1}{2} \times (\\$6 \times 60) = \\$180$ 	<ul style="list-style-type: none"> Calculating the domestic consumer surplus as $\frac{1}{2} \times (\\$10 - \\$5) \times (50 - 0) = \\$125$
<p>Part C (iii) Point 5</p> <ul style="list-style-type: none"> Calculating total revenue as $\\$5 \times 50 = \\250 or as $\\$5 \times 60 = \\300 	<ul style="list-style-type: none"> Calculating total revenue at the world price as $\\$5 \times 80 = \\400

Based on your experience at the AP[®] Reading with student responses, what advice would you offer teachers to help them improve student performance on the exam?

Teachers are encouraged to have students practice the calculations of consumer surplus, producer surplus, and total economic surplus in different scenarios, using the formulas and showing the work.

Teachers should use different scenarios involving price ceilings and floors above and below equilibrium to show their effects and emphasize that only binding price controls, those set above (floors) or below (ceilings) equilibrium, affect the market. For example, a nonbinding price floor set below equilibrium has no effect on the market outcome.

Teachers should review how international trade affects domestic markets. Teachers should help students make the correct comparisons to clarify how opening a market to international trade affects market outcomes. For example, when the world price is above the domestic price, comparing the quantity supplied and the quantity demanded at that higher price results in a surplus, and the domestic country would benefit by exporting the surplus of the good.

Teachers should provide opportunities to analyze and interpret the quantity supplied, the quantity demanded, and the quantity exported or imported in various market contexts with graphs and tables. For example, when a country sells at a world price of \$5 and produces 80 bushels, it is important to identify this quantity from the supply curve, not from the demand curve. Misreading the graph can lead to incorrect conclusions about production and trade outcomes.

What resources would you recommend to teachers to better prepare their students for the content and skill(s) required on this question?

Teachers are encouraged to sign in to AP Classroom to access AP Daily videos and find questions on the topics and skills addressed in this question. AP teachers can also use the AP Question Bank in AP Classroom to enable students to practice and receive feedback on formative topic questions and past AP Exam questions.

Knowledge of the following topics is essential to correctly answer the question:

- Topic 2.6: Market Equilibrium and Consumer and Producer Surplus
- Topic 2.9: International Trade and Public Policy

Question 3

Task: Assert, Explain, Calculate

Topic: Oligopoly and Game Theory

	Max Points:	Mean Score:
Point 1	1	0.71
Point 2	1	0.46
Point 3	1	0.48
Point 4	1	0.72
Point 5	1	0.52
Overall Mean Score: 2.88		

What were the responses to this question expected to demonstrate?

The question assessed understanding and analyzing the behavior of two firms, Tony's Trinkets and Bitaly's Bracelets, using a payoff matrix. The concepts in the question included identifying an action to maximize a firm's profit, asserting and explaining the conditions for a dominant strategy, determining the existence of Nash equilibria, calculating the minimum amount of additional profit needed for a firm to have a dominant strategy, and calculating the combined profit when the two firms merge.

The question provided a payoff matrix with two players, each with two strategies, and the payoffs for each combination of strategies.

Part A asked if choosing to produce Unique jewelry is the best choice for Tony's Trinkets when Bitaly's Bracelets produces Silver jewelry and to explain using numbers from the payoff matrix. This part assessed the understanding of the firms' best responses in an oligopoly market structure.

Part B asked to determine if there was a dominant strategy for Bitaly's Bracelets and explain the answer using numbers from the payoff matrix. This part assessed the understanding of identifying and explaining dominant strategies.

Part C asked to identify all the Nash equilibria for the game. This part assessed the understanding of Nash equilibrium and the ability to identify multiple Nash equilibria.

Part D asked to identify the minimum amount by which Tony's Trinkets' profit must increase so that choosing to produce Typical jewelry becomes its dominant strategy. This part assessed the understanding of identifying the incentive sufficient to alter a player's dominant strategy and analyzing the payoff matrix.

Part E introduced a new scenario in which the two firms merge to maximize their combined profits. Part E required calculating the maximum combined profit of the merged firm and showing the work.

How well did the responses address the course content related to this question? How well did the responses integrate the skill(s) required on this question?

In part A 71% of responses earned point 1 for stating that Unique is not the most profitable strategy for Tony's Trinkets and explaining that if Bitaly's Bracelets chooses to produce Silver, Tony's Trinkets should produce Typical, not Unique, because the profit of \$21 is greater than \$20.

In part B 46% of responses earned point 2 for stating that Bitaly’s Bracelets does not have a dominant strategy and explaining that when Tony’s Trinkets chooses Unique, Bitaly’s Bracelets’ profit is higher when it chooses Gold, $\$21 > \19 , and when Tony’s Trinkets chooses Typical, Bitaly’s Bracelets’ profit is higher when it chooses Silver, $\$16 > \7 .

In part C 48% of responses earned point 3 for identifying the two Nash equilibria by stating that one is Tony’s Trinkets chooses Unique and Bitaly’s Bracelets chooses Gold, AND that the other is Tony’s Trinkets chooses Typical and Bitaly’s Bracelets chooses Silver.

In part D 72% of responses earned point 4 for stating that \$6 is the minimum amount of increase in Tony’s Trinkets’ profits necessary for Typical to become a dominant strategy.

In part E 52% of responses earned point 5 for calculating the new firm’s maximum combined profit as \$39 and showing the work.

What common student misconceptions or gaps in knowledge were seen in the responses to this question?

Common Misconceptions/Knowledge Gaps	Responses that Demonstrate Understanding
<div>Part A Point 1</div> <ul style="list-style-type: none"> Asserting an incorrect action as the best choice given the action of the other firm (e.g., Unique jewelry is the best choice.) Choosing a strategy that has the highest payoff without providing any numerical comparison (e.g., Typical is the best choice for Tony’s Trinkets because it provides higher profits.) Choosing the correct strategy without using numbers from the matrix Choosing the correct strategy without using the correct comparison (e.g., $\\$21 > \\16) 	<ul style="list-style-type: none"> Stating that producing Unique jewelry is not the best choice for Tony’s Trinkets if Bitaly’s Bracelets chooses to produce Silver, and explaining that Tony’s Trinkets’ profit from producing Typical jewelry is \$21, which is greater than its profit when producing Unique jewelry, which is \$20

<p>Part B Point 2</p> <ul style="list-style-type: none"> • Asserting that Bitaly's Bracelets has a dominant strategy • Asserting that Bitaly's Bracelets does not have a dominant strategy but explaining the answer using incomplete comparisons from the payoff matrix (e.g., \$21, \$16) • Asserting that Bitaly's Bracelets does not have a dominant strategy but explaining using incorrect numbers from the payoff matrix (e.g., \$21 > \$7, \$19 > \$16) • Asserting that Bitaly's Bracelets does not have a dominant strategy but explaining without using numbers from the payoff matrix 	<ul style="list-style-type: none"> • Stating that Bitaly's Bracelets does not have a dominant strategy and explaining that when Tony's Trinkets chooses Unique, Bitaly's Bracelets' payoff is higher when it chooses Gold, \$21 > \$19, and when Tony's Trinkets chooses Typical, Bitaly's Bracelets' payoff is higher when it chooses Silver, \$16 > \$7
<p>Part C Point 3</p> <ul style="list-style-type: none"> • Identifying only one Nash equilibrium • Identifying incorrect strategies for the Nash equilibria (e.g., Unique, Silver and Typical, Gold) • Stating that because there is no dominant strategy, there cannot be a Nash equilibrium 	<ul style="list-style-type: none"> • Identifying the TWO Nash equilibria for the game, such as the following: <ul style="list-style-type: none"> ○ Tony's Trinkets chooses Unique and Bitaly's Bracelets chooses Gold. ○ Tony's Trinkets chooses Typical and Bitaly's Bracelets Chooses Silver.
<p>Part D Point 4</p> <ul style="list-style-type: none"> • Choosing an incorrect number from the series of numbers (e.g., \$2, \$4, \$11, or \$15) 	<ul style="list-style-type: none"> • Stating that the minimum amount is \$6

<p>Part E Point 5</p> <ul style="list-style-type: none"> • Calculating the total combined profits and adding the totals for all the cells (e.g., $\\$39 + \\$37 + \\$36 + 17 = \\129) • Calculating the total combined profits for all cells without marking and identifying the maximum profits • Stating \$39 without using numbers from the payoff matrix (e.g., Unique, Silver) • Stating \$39 without showing the work 	<ul style="list-style-type: none"> • Calculating the newly merged firm's maximum combined profit as \$39 and showing the work: $\\$20 + \\$19 = \\$39$
--	--

Based on your experience at the AP[®] Reading with student responses, what advice would you offer teachers to help them improve student performance on the exam?

When introducing the concept of game theory, teachers should emphasize the importance of being able to read a payoff matrix. It is vital that students recognize that there will be players, strategies, and payoffs and that each is important in the decision-making process.

Teachers should let students practice the means of identifying the best choice of one player based on the other player's decisions, determining if there are any dominant strategies, as well as noting if there are Nash equilibria.

Teachers can consider diverse ways to introduce game theory; one effective way is having students take on the role of the decision-makers and select the best choice based on the actions of the other player using the payoff matrix. Explaining the decisions then helps students learn the concepts of dominant strategy and Nash equilibrium.

Teachers are encouraged to provide students with multiple opportunities to practice game theory. Accessing questions and assigning questions from previous AP Exams, available through AP Central, provides multiple opportunities for students. Using the provided student samples and commentary from previous game theory questions reinforces what is needed to successfully master the content and skills addressed in this question.

What resources would you recommend to teachers to better prepare their students for the content and skill(s) required on this question?

Teachers are encouraged to sign in to AP Classroom to access AP Daily videos and find questions on the topics and skills addressed in this question. AP teachers can also use the AP Question Bank in AP Classroom to enable students to practice and receive feedback on formative topic questions and past AP Exam questions.

Knowledge of the following topic is essential to correctly answer the question: Topic 4.5: Oligopoly and Game Theory.