Chief Reader Report on Student Responses:

2024 AP® Microeconomics Set 2

Free-Response Questions

• Number of Students Scored	103,809			
• Number of Readers	147			
• Score Distribution	Exam Score	N	%At	
	5	23,816	22.9	
	4	24,763	23.9	
	3	21,569	20.8	
	2	19,936	19.2	
	1	13,725	13.2	
• Global Mean	3.24			

The following comments on the 2024 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 Jaymily Solano, Seminole High School; James Brumbaugh, Professor of Economics, Laurel Ridge Community College; and Tamra Carl, York Community 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, and Explain
Topic: Monopoly, Price Discrimination, and Elasticity
Max Score: 10
Mean Score: 4.99

What were the responses to this question expected to demonstrate?

The question assessed students' understanding of how a monopoly could maximize profits, how instead it could maximize revenue, the relationship between marginal revenue and elasticity, and the effects of price discrimination on consumer surplus. The question also assessed students' understanding of how a loss of barriers to entry would affect the elasticity of demand.

The question stated that "Arzeye Pharma has a patent, a legal barrier to entry, on its newly developed eye treatment that cures common eye problems. Arzeye Pharma is currently earning positive economic profits and is producing the profit-maximizing quantity of eye treatments."

In part (a) students were asked to draw a correctly labeled graph for a monopoly earning positive economic profit. Parts (a)(i) and (a)(ii) asked students to show the profit-maximizing quantity and price, respectively. The question tested students' knowledge of market conditions for a monopoly and their ability to illustrate these concepts using a graph. This task required demonstrating knowledge of revenue and cost conditions by drawing a downward-sloping demand curve (D), a downward-sloping marginal revenue curve (MR) that lies below the demand curve, and by drawing the marginal cost (MC) curve. Students were required to show that the profit-maximizing quantity (Q^*) occurs where MR equals MC and that the profit-maximizing price (P^*) is determined by identifying the price that corresponds to this quantity on the D curve. These tasks required students to demonstrate marginal analysis in a graphical format. Part (a)(iii) asked students to draw the average total cost (ATC) curve consistent with the given positive economic profit condition by having the ATC curve below P^* at Q^* and with the rising MC curve passing through the minimum point of the ATC curve. Part (a)(iv) asked students to completely shade the area of consumer surplus (CS). This task required students to demonstrate their understanding that CS is value net of the price paid for the consumers who purchase the good, and so corresponds to the area that lies below the D curve down to P^* and over to Q^*.

Part (b) of this question redirected students to consider that Arzeye Pharma wanted to charge a price that maximized total revenue instead of maximizing profit. Part (b)(i) asked students to label on their graphs in part (a) the revenue-maximizing quantity labeled as Q_R. This task required students to demonstrate knowledge that the revenue-maximizing quantity is located where MR=0. Part (b)(ii) asked students to determine whether demand at their labeled Q_R was elastic, inelastic, or unit elastic. This task required students to demonstrate their understanding of the relationship between marginal revenue and elasticity by stating that the demand at Q_R was unit elastic.

Part (c) of this question redirected students to consider that Arzeye Pharma engaged in perfect price discrimination. In part (c)(i) students were asked to label on their graphs in part (a) the lowest price the firm would charge as P_2. This task required students to understand that the lowest price a perfectly price discriminating monopolist charges is from where D=MC, similar to the P=MC condition in a perfectly competitive market. In part (c)(ii) students were asked to determine that CS would decrease to zero and

explain that the monopolist would charge the maximum price each consumer is willing to pay. This task tested their understanding that a perfectly price discriminating monopolist extracts all economic surplus.

Part (d) redirected students by stating that Arzeye Pharma's patent had expired. Students were asked to conclude the demand would become more elastic since new firms would enter the market and provide substitutes. This part of the question assessed students' understanding that a change in the availability of substitutes would increase consumers' sensitivity to a change in price.

How well did the responses address the course content related to this question? How well did the responses integrate the skills required on this question?

In part (a) 65% of students earned the point for drawing a correctly labeled graph of a monopoly showing downward-sloping demand and marginal revenue curves with the MR curve below the D curve. In part (a)(i) 65% of students earned the point for identifying the profit-maximizing quantity, Q^*, where MR equals MC. In part (a)(ii) 71% of students earned the point for showing the profit-maximizing price, P^*, from the D curve at the quantity Q^*. In part (a)(iii) 44% of students earned the point for correctly drawing the ATC below P^* at Q^* with the MC curve intersecting the ATC curve at its minimum. In part (a)(iv) 61% of students earned the point for completely shading the correct area of consumer surplus.

In part (b)(i) 38% of students correctly labeled the revenue-maximizing quantity Q_R where MR=0. In part (b)(ii) 42% of students correctly stated that the demand at Q_R was unit elastic.

In part (c)(i) 42% of students earned the point for correctly labeling the price the monopoly would charge as P_2 from MC=D when the monopoly was engaged in perfect price discrimination. In part (c)(ii) 29% of students correctly stated that consumer surplus would decrease to zero and explained that the monopolist would charge the maximum price each consumer was willing to pay.

In part (d) 63% of students earned the point for correctly stating that when the monopolist patent expired the demand would become more elastic since new firms would enter the market and more substitutes would become available.

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

Common Misconceptions/Knowledge Gaps	*Responses that Demonstrate Understanding*
Part (a) • Missing labels or showing incorrect labels on the axis. • Drawing a horizontal demand curve. • Identifying the MR curve as the same as the D curve. • Omitting the MR curve. • Not drawing MR to or past the quantity axis.	• Correctly labeling all axes. • Drawing a downward-sloping D and a downward-sloping MR below D, with MR passing the quantity axis.

Part (a)(i)	
• Identifying Q* directly below the intersection of D and MC. • Identifying Q* directly below the intersection of ATC and D.	• Drawing an upward-sloping MC and labeling the profit-maximizing quantity as Q* below where MR=MC.
Part (a)(ii)	
• Identifying P* from where MR=MC. • Identifying P* from where MC=ATC. • Identifying P* from where ATC=D.	• Identifying P* from D above Q*.
Part (a)(iii)	
• Drawing ATC on or above P* at Q*. • Drawing ATC without MC passing through the minimum point of ATC.	• Drawing ATC below P* at Q* with MC passing through the minimum point of ATC.
Part (a)(iv)	
• Shading the CS below MR instead of D. • Incorrectly shading the CS from D below P*. • Incorrectly shading the CS beyond Q*. • Incomplete or missing areas of shading CS.	• Shading the CS area below demand to P* and over to Q*.
Part (b)(i)	
• Identifying Q_R at the intersection of MR=MC, or at MC=D, or at ATC=D. • Labeling Q_R inside the axis.	• Labeling Q_R outside the axis where MR=0.
Part (b)(ii)	
• Stating demand at Q_R is either elastic or inelastic.	• Stating that at Q_R is unit elastic.
Part (c)(i)	
• Identifying P_2 where MR=MC, or where ATC=D, or where MC=ATC. • Identifying P_2 from D at a point not associated with any other curve.	• Labeling P_2 where MC=D.

Part (c)(ii)	
• Stating that consumer surplus would increase. • Not including an explanation with the correct assertion.	• Stating that consumer surplus would decrease to 0 **AND** explaining that the monopolist charges the maximum price that each consumer is willing to pay.
Part (d)	
• Stating that demand would be less elastic or stay the same. • Stating that demand would be elastic without including "more." • Not including an explanation with the correct assertion.	• Stating that demand will be more elastic since new firms will enter the market and more substitutes will be available, making consumers more sensitive to a change in price.

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

Market graphs are important for understanding how price and output are related in different market structures. To have success on the AP exam, students should know how to correctly illustrate and analyze graphs of firms in different market structures. The monopoly model and its accompanying graph is an important market structure model for students to understand since nearly all firms have some degree of market power.

In parts (a)(i) through (a)(iv) students were relatively successful at constructing the basic model, correctly drawing demand, marginal revenue, marginal cost, and average total cost curves, and then using these curves to identify the profit-maximizing quantity and price. Students generally understood the basic mechanics of the quantity and price determination for a firm with market power. However, particularly in part (a)(iii), students struggled with correctly drawing the average total cost curve. Although many students correctly drew the average total cost curve showing positive economic profit, there needs to be an emphasis on the rising marginal cost curve passing through the minimum point of the average total cost curve. Additionally, this will be useful for other units that share similar graphical characteristics.

In parts (b)(i) and (b)(ii) students struggled with determining where the revenue-maximizing quantity was located. Many students either labeled an elastic quantity, which is to the left of MR=0, or an inelastic point, which is to the right of MR=0. Students also had difficulties in asserting that the point was unit elastic at MR=0. It would be beneficial to review with students the points of elasticity in relation to the marginal revenue curve and to review points of elasticity when introducing the monopolist demand curve and marginal revenue curve. Modeling and providing practice on points of elasticity as to where the revenue is maximized will ensure that students can determine the revenue-maximizing price and quantity.

In part (c)(i) students were required to locate and label the price the monopolist would charge after it engaged in perfect price discrimination. Many students struggled with correctly locating and labeling the price where marginal cost was equal to demand. It would be helpful to demonstrate where a perfectly price

discriminating monopolist would charge in comparison to perfect competition. In part (c)(ii) students had difficulty explaining that the consumer surplus would decrease to zero because the monopolist would charge the maximum price each consumer would be willing to pay. It would be beneficial for students to be provided with the opportunity to revisit the topics of consumer surplus when working with perfect competition and monopoly models. Additionally, it is important to discuss and demonstrate how the monopolist captures all of the consumer surplus through perfect price discrimination.

In part (d) students were relatively successful in determining that the demand would be more elastic when new firms entered the market and provided substitutes. Students generally understood removing barriers increased competition. Many students struggled with explaining why demand would be more elastic. It would be helpful for students to practice explaining the sequence of events that occur when barriers to entry are removed from imperfectly competitive markets.

A general recommendation is to encourage students to consider all the information that is provided in the stem of the problem. It is important to provide students with the opportunity to review each piece of information and determine what is relevant. It would be helpful to allow students to practice reviewing previous free-response questions available for use.

Finally, students can benefit from practicing using economic reasoning and terminology consistently. Educators should encourage students to use proper phrasing by providing more opportunities to use content-related vocabulary in discussion and written assignments.

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

We recommend that teachers take advantage of the resources available in AP Classroom for the topics and skills covered in this question. AP Daily videos on Topics 2.2 through 2.5 Elasticity modules, 4.1 Introductions to Imperfectly Competitive Markets, 4.2 Monopoly and 4.3 Price Discrimination can be assigned to students as warm-ups, lectures, or reviews, and topic questions can be assigned to assess student understanding.

Task: Assert, Calculate, and Explain
Topic: Production Function, Short-run and Long-run Production Costs, & Optimal Hiring Decision
Max Score: 5
Mean Score: 1.33

What were the responses to this question expected to demonstrate?

The question assessed students' understanding of how firms make decisions to maximize profits in labor markets and their understanding of how decisions are related to costs and production in the short run and the long run.

The question started with a short-run production function for Lowen Feline cat food company. Lowen Feline sells cat food at $10 a bag and hires workers at a market wage of $18. A table was provided showing the number of workers and the corresponding total production of cat food associated with the level of workers employed.

In part (a) students were asked to calculate the average fixed cost (AFC) given fixed costs (FC) of $90 and six workers hired and to show their work. Students were expected to use the production function table to find the total quantity (Q) of cat food bags that six workers produced and then divide FC by Q.

In part (b) students were directed to assume that the only variable input was labor and were asked to calculate the marginal cost (MC) associated with an increase of output from 27 units to 30 units and to show their work. Students were expected to use the production function table to figure out the number of additional workers needed to produce the increase in Q and multiply the number of workers by the wage rate of $18. This would provide them with the change in total cost (TC), associated with the change in variable cost, of adding labor which the students would then divide by the change in Q.

In part (c) students were asked to identify which hired worker was first associated with diminishing marginal returns and to explain using numbers. Students were expected to use the production function table to figure out the marginal product (MP) of each worker and then identify where MP began to decrease.

In part (d) students were asked to state the profit-maximizing number of workers Lowen Feline should hire and explain using marginal analysis. After stating the number of workers, students were expected to explain, by comparing marginal revenue product (MRP) with marginal factor cost (MFC), how Lowen Feline would determine this number of workers to maximize profits.

In part (e) students were informed that in the long run, a rival firm, Gato Food, increases production from 40 to 50 units and that its total cost increases from $600 to $900. Students were directed to state and explain using numbers whether Gato Food was experiencing economies of scale, diseconomies of scale, or constant returns to scale. Students were expected to divide the total cost values by output to determine that Gato Food's long-run average total cost (LRATC) increases and that it experiences diseconomies of scale.

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) 30% of students earned the point for correctly calculating AFC of six workers and for showing their work.

In part (b) 9% of students earned the point for correctly calculating MC of increasing output from 27 to 30 units and for showing their work.

In part (c) 53% of students earned the point for correctly stating diminishing marginal returns begin with the hiring of the third worker and explaining using numbers that MP is increasing from worker one to worker two, but beginning with worker three, MP decreases.

In part (d) 29% of students earned the point for correctly stating the profit-maximizing number of workers is 7 and explaining that MRP of the seventh worker is greater than MFC of the seventh worker, while the MRP of the eighth worker is less than MFC of the eighth worker and therefore the hiring of the eighth worker would decrease profits.

In part (e) 18% of students earned the point for correctly stating Gato Food experiences diseconomies of scale and explaining using numbers that LRATC increases.

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

Common Misconceptions/Knowledge Gaps	Responses that Demonstrate Understanding
Part (a) • Dividing FC by number of workers instead of Q.	• Calculating AFC as FC/Q =$90/30 bags=$3 per bag.
Part (b) • Correctly calculating the change in TC, but not dividing this by the change in Q.	• Calculating MC as (Change in TC)/ (Change in Q) =$18/3 bags=$6 per bag.
Part (c) • Refering to total product rather than MP. • Using other terminology such as marginal revenue or marginal benefit. • Refering to MP in the explanation, but MRP in numbers.	• Identifying that diminishing marginal returns begin with the third worker as MP increases from 5 to 7 units with the first and second workers and then decreases to 6 units with the hiring of the third worker.

Part (d)	
• Using total profit values rather than marginal analysis. • Stating the profit-maximization rule for employing labor but not applying the rule to the specific situation. • Refering to marginal revenue and marginal cost instead of MRP and MFC.	• Stating the seventh worker maximizes profit because MRP ($20) is greater than MFC ($18) **AND** hiring the eighth worker decreases profit because the MRP ($10) is less than MFC ($18).
Part (e) • Stating increasing TC instead of increasing LRATC. • Not refering to LRATC at all. • Confusing increasing costs with increasing returns.	• Stating that Gato Food will experience diseconomies of scale because LRATC increases from $15 per unit (=$600/40 units) to $18 per unit (=$900/50 units).

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?

Production functions and the profit-maximization behavior of firms that buy production inputs from perfectly competitive factor markets are topics frequently assessed on exams. In general, student responses indicated they were familiar with the topics and understood the questions asked. Teachers are encouraged to spend more time explaining how firms make decisions using marginal analysis and include examples of factor markets. Although assessments of student learning often emphasize calculation and identification, students should also be able to explain the decisions made. Additional practice using terminology may help students better articulate their reasoning in the explanation portions of exams.

In part (a) some students incorrectly calculated average fixed cost by dividing total fixed cost by the number of workers instead of by the quantity of output. This might be because students are accustomed to seeing output in the first column in a table, whereas here it was presented in the second column. Teachers are encouraged to vary the format in which they present information in their tables and to remind students to write down which information they need to solve a problem before beginning the actual calculation.

In part (b) many students correctly calculated the change in TC but did not divide this by the change in Q to calculate MC. This could be because students are often presented with numerical examples where the change in Q is always one unit. Teachers are encouraged to use examples where the change in Q is not one, so that students can practice calculating MC in those situations. It might also be helpful for teachers to encourage students to write out the equation for MC before they begin any calculation.

In part (c) some students did not provide a complete explanation because they referred to the MP of the third worker only. Teachers are encouraged to explain to students that adding more workers to a fixed input increases productivity, but after a certain point, each additional worker has less access to fixed inputs, thus reducing the productivity.

In part (d) some students either did not correctly state the profit-maximizing number of workers or did not sufficiently explain their reasoning in part because there is no number of workers in the prompt where MRP

exactly equals MFC. Teachers are encouraged to provide examples that reflect this situation for students to practice.

In part (e) many students correctly stated that Gato Food will experience diseconomies of scale but did not explain this with reference to LRATC. It would be beneficial for students to practice numerically calculating LRATC and tying that directly to economies or diseconomies of scale.

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

We recommend that teachers take advantage of the resources available in AP Classroom for the topics and skills covered in this question. AP Daily Videos on Topics 3.1 The Production Function, 3.4 Types of Profit, and 5.3 Profit Maximizing Behavior in Perfectly Competitive Factor Markets can be assigned to students as warm-ups, lectures, or reviews, and Topic Questions can be assigned to assess student understanding.

Question 3

Task: Assert, Calculate, and Explain
Topic: Perfectly Competitive Market & Government Intervention
Max Score: 5
Mean Score: 1.71

What were the responses to this question expected to demonstrate?

The question assessed students' understanding of perfectly competitive markets and regulation. The concepts in the question included total economic surplus, price ceiling, subsidy equilibrium, total cost of a subsidy, and deadweight loss.

The question provided a graph showing a perfectly competitive market for backpacks with a demand and supply curves. The prices on the vertical axis are in increments of $15 up to $150. The quantities on the horizontal axis are in increments of 4 backpacks up to 40 backpacks.

In part (a) students were asked to calculate the total economic surplus and to show their work. Students were required to calculate ½ × ($150 – $30) × (16) = $960.

In part (b) a government regulation on price was introduced with a price ceiling of $60. The students were asked to state if the quantity of backpacks purchased increases, decreases, or does not change, and to explain their response. Students were required to state decrease and explain that a binding price ceiling will cause a decrease in quantity supplied and the quantity purchased will be limited to the quantity supplied, which is less than the equilibrium quantity.

In part (c) a government regulation was introduced with a per-unit subsidy of $30 to the sellers of backpacks. Part (c)(i) required students to state that $75 is the price paid by consumers per backpack after the per-unit subsidy. Part (c)(ii) asked students to calculate the total cost of the subsidy to the government and to show their work. Students were required to calculate $30 × 20 = $600. Part (c)(iii) asked students to state if the per-unit subsidy caused deadweight loss to increase, decrease, or remain the same and explain their response. Students were required to answer increase and explain that the per-unit subsidy causes the new equilibrium quantity (20 backpacks) to be greater than the allocatively efficient quantity (16 backpacks).

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) 58% of students earned the point for correctly calculating the total economic surplus equal to $960 and showing their work.

In part (b) 42% of students earned the point for stating that the number of backpacks purchased decreased and explaining that the price ceiling causes a decrease in quantity supplied of backpacks which limits the quantity purchased.

In part (c)(i) 34% of the students earned the point for correctly stating $75 is the price paid by consumers per backpack after the per-unit subsidy. In part (c)(ii) 35% of students earned the point for correctly calculating $600 as the total cost of the subsidy to the government and showing their work. In part (c)(iii) 6% of students earned the point for correctly stating deadweight loss increased and explaining that the per-unit subsidy caused the new equilibrium quantity to be greater than the allocatively efficient quantity.

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

Common Misconceptions/Knowledge Gaps	Responses that Demonstrate Understanding
Part (a) • Calculating only consumer surplus, not total economic surplus. • Not showing all calculation work. For example, stating $60 in calculation instead of ½ × ($150–$30).	• Calculating total economic surplus as ½ × ($150–$30) × 16. • Calculation shows each step.
Part (b) • Stating the quantity of backpacks purchased increases. • Stating correctly the amount of backpacks purchased decreases but explaining consumers purchase less because there is a shortage of backpacks without identifying the size of the shortage.	• Stating the quantity of backpacks purchased decreases **AND** explaining that the price ceiling is a lower price, which decreases the quantity supplied and limits the amount that can be purchased.
Part (c)(i) • Identifying the price consumers pay as $60 because students subtracted the $30 subsidy from the original $90 equilibrium price. • Identifying the price consumers pay is $105 from the students decreasing supply for a per-unit tax.	• Identifying the price consumers pay as $75 from the students calculating $105 – $30 at a quantity of 20. • Identifying the price consumers pay as $75 from the students increasing the supply curve for a per-unit subsidy.
Part (c)(ii) • Calculating the total cost of the subsidy as Per-unit Subsidy × Original Equilibrium Quantity. $480 = $30 × 16.	• Calculating the total cost of the subsidy as Per-unit Subsidy x New Quantity of Backpacks. $600 = $30 × 20.

Part (c)(iii)	
• Asserting that deadweight loss will remain the same and explaining that the per-unit subsidy created a new equilibrium that was allocatively efficient. • Asserting that deadweight loss will increase and explaining that a subsidy creates a deadweight loss with no reference to a new equilibriuum quantity that is larger than the allocatively efficient quantity.	• Asserting that deadweight loss will increase and explaining that the per-unit subsidy causes the new equilibrium quantity to be larger than the allocatively efficient quantity. • Asserting that deadweight loss will increase and explaining that because there are no externalities, the per-unit subsidy causes the marginal cost which is also the marginal social cost (from supply) to be greater than the marginal benefit which is also the marginal social benefit (from demand) at the new equilibrium quantity.

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?

In part (a) students had a good understanding of how to calculate total economic surplus. Consumer and producer surplus is a concept tested throughout the AP Microeconomics course. It should especially be revisited with factors that shift the supply and demand curves, taxes, subsidies, and imperfect competition. It is recommended that teachers have students practice in class with 4-function calculators. Students must show their work, and it is recommended that they write down each step that they input into the calculator for their answer.

In part (b) students had a good understanding that when there is a price ceiling less of a product will be produced. However, some students had difficulty explaining why less is produced and focused on the shortage that is created by a price ceiling. It is recommended that teachers show, when graphing a price ceiling, the movement along the supply curve that limits the amount the producers would be willing to supply.

Students had difficulty with answering questions about the subsidy. To calculate the price consumers pay after the subsidy, some students in part (c)(i) subtracted the cost of the subsidy from the equilibrium price, rather than shifting the supply curve to the right and identifying the new equilibrium price. When calculating the total cost to the government in part (c)(ii), some students did not use the new equilibrium quantity, but rather used the per-unit subsidy price multiplied by the original equilibrium quantity. When presenting the concepts of government intervention, teachers should have students practice with both per-unit taxes and per-unit subsidies. When graphing a subsidy, it is recommended for students to shade in the total cost of the subsidy to the government so students can see it. In part (c)(iii) students generally knew that a subsidy increases deadweight loss but had difficulty explaining why deadweight loss occurs. In their response, students simply stated that a subsidy creates a deadweight loss with no reference to the change in quantity. Other students stated that a subsidy does not create a deadweight loss and explained that the equilibrium with the subsidy is allocatively efficient because *any* equilibrium in a market with no externalities is allocatively efficient. This is a topic that should be revisited with imperfect competition and externalities. It is recommended for teachers throughout the course to point out allocative efficiency in the market graph. When teaching about subsidies (and taxes), teachers should indicate that the government is

intervening in an efficient market and label the equilibrium quantity as allocatively efficient. The stem states that there are no externalities, so that information implies MSC=MPC=S and MSB=MPB=D. It is recommended that teachers always start from this point to tie different parts of the course together and approach the topic of deadweight loss and allocative efficiency with ease. Students should label the new equilibrium quantity, with an arrow pointing to it, to illustrate that the market has an overproduction with a subsidy (or underproduction with a tax). This reinforces both that there is a deadweight loss when the market is not at the allocative efficiency quantity and why the deadweight loss exists.

A general recommendation for students is to be consistently practicing graphing. A graph can be used to complement an answer on the AP exam. The visual assists students in explaining more clearly the concepts.

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

We recommend that teachers take advantage of the resources available in AP Classroom for the topics and skills covered in this question. AP Daily videos on Topic 2.6 Market Equilibrium and Consumer and Producer Surplus and Topic 2.8 The Effects of Government Intervention in the Markets can be assigned to students as warm-ups, lectures, or reviews, and topic questions can be assigned to assess student understanding.