PRACTICE EXAM

APEconLabs

AP® Microeconomics

Free-Response Questions

Practice Set 1

Developed by APEconLabs

Original practice material modeled on the format of the AP Microeconomics exam. Section II — 3 free-response questions — suggested time 1 hour. A complete answer key and scoring guidelines are included at the end of this document.

MICROECONOMICS
SECTION II

TOTAL TIME — 1 HOUR · 3 QUESTIONS

Directions

Section II has 3 questions and lasts 1 hour. You may use the available paper for scratch work and planning, but you must write your answers in the free-response booklet. Label parts (e.g., A, B, C) and sub-parts (e.g., i, ii, iii) as needed. Use a pencil or a pen with black or dark blue ink to write your responses.

Include correctly labeled graphs, if useful or required, in explaining your answers. A correctly labeled graph must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

A calculator is allowed in this section.

You may pace yourself as you answer the questions in this section, or you may use these optional timing recommendations: spend the first 10 minutes reading all of the questions and planning your answers. Then spend about 25 minutes on Question 1 and about 12 minutes each on Questions 2 and 3.

You can go back and forth between questions in this section until time expires.

Note: This is original practice material developed by APEconLabs. It mirrors the structure and concept coverage of the AP Microeconomics free-response section and is intended for teacher and student use in the classroom.

1. Glaciara Springs is a profit-maximizing firm and the only producer of bottled spring water in a country. Currently, Glaciara Springs is earning negative economic profit.

A. Draw a correctly labeled graph for Glaciara Springs and show each of the following.

i. The profit-maximizing quantity, labeled Q_M

ii. The profit-maximizing price, labeled P_M

iii. The average total cost curve consistent with Glaciara Springs earning negative economic profit, labeled ATC

iv. The area of deadweight loss, shaded completely

B. Suppose the government requires Glaciara Springs to produce the socially optimal quantity of bottled water. On your graph in part A, show the socially optimal quantity of bottled water, labeled Q_S.

C. Suppose instead the government grants a per-unit subsidy to Glaciara Springs. What will happen to Glaciara Springs' profit-maximizing quantity of bottled water? Explain.

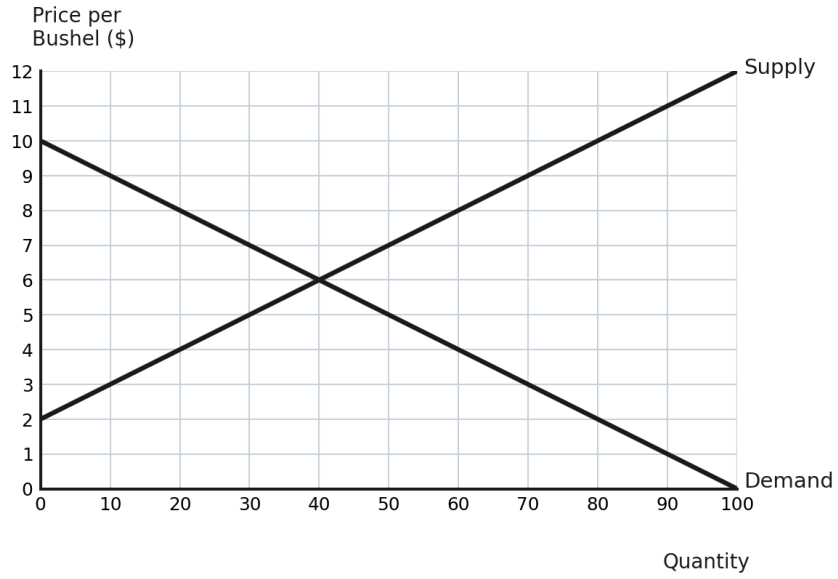
D. Suppose new producers have entered the bottled-water market and Glaciara Springs continues to operate in the bottled-water market. Will the demand for Glaciara Springs' bottled water become more elastic, become less elastic, or stay the same as new producers enter the market?

E. Glaciara Springs hires workers in a perfectly competitive labor market.

i. If the demand for bottled water increases, what will happen to Glaciara Springs' demand for labor? Explain.

ii. The government implements a new regulation that raises the minimum age required for a worker to be employed in a bottled-water bottling facility. What will happen to the market wage in the short run? Explain.

2. The graph provided shows the market for wheat in the country of Solbria.



A. Calculate the total economic surplus at market equilibrium. Show your work.

B. If the government sets a price floor at $4 per bushel, will there be a surplus, a shortage, or neither? Explain.

C. Suppose that instead of the price floor, Solbria engages in international trade and the world price of wheat is $8 per bushel.

i. Will Solbria export or import wheat? Explain using numbers from the graph.

ii. Calculate the domestic consumer surplus when Solbria engages in international trade. Show your work.

iii. Calculate the total revenue that Solbria's farmers will earn at the world price. Show your work.

3. Crisp Café and Bean Box are the only two firms in a town that produce and sell coffee drinks. Crisp Café is deciding whether to feature Espresso or Drip coffee. Bean Box is deciding whether to feature Latte or Mocha drinks. The payoff matrix shows the payoffs for each combination of strategies. The first entry in each cell shows Crisp Café's profit, and the second entry shows Bean Box's profit. Each firm independently and simultaneously chooses its strategy. Assume that the two firms know all the information in the matrix and do not cooperate.

		Bean Box	
		Latte	**Mocha**
Crisp Café	**Espresso**	\$18, \$24	\$22, \$23
	Drip	\$12, \$9	\$25, \$17

A. Suppose Bean Box chooses to feature Mocha drinks. Is choosing to feature Espresso the best choice for Crisp Café? Explain using numbers from the payoff matrix.

B. Is Bean Box's dominant strategy to feature Latte, to feature Mocha, or does it not have a dominant strategy? Explain using numbers from the payoff matrix.

C. Identify all Nash equilibria for this game.

D. Suppose Crisp Café's profit from featuring Drip coffee increases regardless of what Bean Box does. What is the minimum amount by which Crisp Café's profit must increase in order for Drip to become a dominant strategy: \$2, \$4, \$7, \$10, or \$14?

E. Suppose instead that these two firms now cooperate and merge into one firm to maximize their combined profits. The new firm will have two locations and continue to face the same actions and payoffs. Calculate the new firm's maximum combined profit. Show your work.

STOP · END OF SECTION II

Answer Key
& Scoring Guidelines

Practice Set 1

Model responses below indicate the economic reasoning and key terms expected for full credit. On the exam, correctly labeled graphs are required where a question asks students to "draw" or "show"; graph requirements are described in words here.

Question 1

A. On a monopoly graph (vertical axis: price and cost; horizontal axis: quantity), demand is downward sloping, marginal revenue (MR) lies below demand, and marginal cost (MC) is upward sloping.

i. Q_M is the quantity where MR = MC.

ii. P_M is read up from Q_M to the demand curve.

iii. ATC is drawn above P_M at Q_M (ATC > price), consistent with negative economic profit.

iv. Deadweight loss is the triangle between Q_M and the socially optimal quantity, bounded above by demand and below by MC.

B. Q_S, the socially optimal quantity, is where MC intersects the demand curve (price = MC). It lies to the right of Q_M.

C. The profit-maximizing quantity will increase. A per-unit subsidy lowers the firm's marginal cost, shifting MC downward, so the new MR = MC intersection occurs at a larger quantity.

D. Become more elastic. As new producers enter, consumers have more substitutes for Glaciara Springs' water, making the firm's demand more elastic.

E. i. Demand for labor will increase. Labor demand is a derived demand; an increase in demand for bottled water raises the marginal revenue product of labor, so the firm hires more workers.

ii. The market wage will increase. Raising the minimum age decreases the number of people eligible to work, so the labor supply decreases (shifts left), and the equilibrium wage rises.

Question 2

A. At market equilibrium, quantity = 40 and price = $6 (where supply equals demand). Consumer surplus = ½ × ($10 - $6) × 40 = $80. Producer surplus = ½ × ($6 - $2) × 40 = $80. Total economic surplus = $80 + $80 = $160.

B. Neither. The equilibrium price is $6, so a price floor of $4 is below the equilibrium price and is non-binding. The market stays at equilibrium with no surplus and no shortage.

C. i. Export. At the world price of $8, quantity supplied (60) exceeds quantity demanded (20). The domestic surplus of 40 units is sold abroad, so Solbria exports wheat.

ii. At the world price of $8, domestic quantity demanded = 20. Consumer surplus = ½ × ($10 - $8) × 20 = $20.

iii. At the world price, Solbria's farmers sell their entire quantity supplied (60 units) at $8 each. Total revenue = $8 × 60 = $480.

Question 3

A. No. If Bean Box features Mocha, Crisp Café earns $22 from Espresso and $25 from Drip. Because $25 > $22, Drip — not Espresso — is the best choice for Crisp Café.

B. Bean Box does not have a dominant strategy. If Crisp Café features Espresso, Bean Box earns $24 from Latte versus $23 from Mocha, so it prefers Latte. If Crisp Café features Drip, Bean Box earns $9 from Latte versus $17 from Mocha, so it prefers Mocha. Because its best choice depends on Crisp Café's choice, Bean Box has no dominant strategy.

C. There are two Nash equilibria: (Espresso, Latte) and (Drip, Mocha). At each, neither firm can increase its profit by unilaterally changing its own strategy.

D. $7. For Drip to be a dominant strategy, Drip must give Crisp Café more profit than Espresso in both columns. In the Mocha column Drip ($25) already beats Espresso ($22). In the Latte column Drip ($12) must exceed Espresso ($18), so profit must rise by more than $6; the smallest listed amount that works is $7.

E. Combined profit per cell: Espresso/Latte = $18 + $24 = $42; Espresso/Mocha = $22 + $23 = $45; Drip/Latte = $12 + $9 = $21; Drip/Mocha = $25 + $17 = $42. The maximum combined profit is $45, at Espresso/Mocha.