Unit 4.5 Oligopoly and Game Theory

AP Microeconomics Homework

Multiple-Choice Questions

1. 2021 AP Micro MCQ Q40

Evergreen and Nature View are bidding for a landscaping contract. The payoff matrix provided shows what each firm's total weekly profit will be for each combination of bids. The first entry in each cell shows the profits of Evergreen, and the second entry shows the profits of Nature View. Evergreen and Nature View act independently and simultaneously, and each firm knows all the information about the payoffs associated with the strategies. Which of the following describes their dominant strategies?

		Nature View	
		Bids High	**Bids Low**
Evergreen	**Bids High**	\$5, \$5	\$0, \$6
	Bids Low	\$6, \$0	\$3, \$3

(A) Evergreen does not have a dominant strategy. Nature View's dominant strategy is to bid high.

(B) Evergreen's dominant strategy is to bid high. Nature View does not have a dominant strategy.

(C) Evergreen's dominant strategy is to bid low. Nature View's dominant strategy is to bid high.

(D) Evergreen's dominant strategy is to bid high. Nature View's dominant strategy is to bid high.

(E) Evergreen's dominant strategy is to bid low. Nature View's dominant strategy is to bid low.

2. 2022 AP Micro MCQ Q2

Which of the following best describes firms in an industry if all the firms are in a cartel?

(A) They produce the allocatively efficient quantity.

(B) They face a perfectly elastic demand curve.

(C) They have identical cost curves.

(D) They coordinate their production decisions.

(E) They agree to remove barriers to entry.

3. 2022 AP Micro MCQ Q10

The project funding decisions made by two interdependent research companies, Creative and Genezyz, resulted in a profit of \$4 million for Creative and a profit of \$5 million for Genezyz. Which of the

following is required for this combination of project choices to be a Nash equilibrium?

(A) Genezyz charges a lower price to its customers than Creative does.

(B) Neither firm has a dominant strategy.

(C) Neither firm could earn higher profits by unilaterally changing its project choice.

(D) Creative could earn a higher profit if it chose a different project when Genezyz chose its initial project.

(E) The combined profits of the two firms are maximized at the current combination of project choices.

4. 2022 AP Micro MCQ Q24

RKB and JCM are two competing firms that are considering which project to develop. RKB will develop either Project Alpha or Project Beta. JCM will develop either Project X or Project Y. The payoff matrix provided shows the payoffs for each combination of strategies, and both players (RKB and JCM) have complete information. The first value in each cell represents the payoff for RKB, and the second value represents the payoff for JCM. Each firm independently and simultaneously chooses its strategy.

		JCM	
		Project X	**Project Y**
RKB	**Project Alpha**	\$300, \$400	\$250, \$250
	Project Beta	\$350, \$250	\$400, \$300

Which of the following conclusions is supported by the information in the payoff matrix?

(A) There is no combination of project choices that results in a Nash equilibrium.

(B) There are multiple combinations of project choices that result in Nash equilibria.

(C) RKB has a dominant strategy, but JCM does not.

(D) JCM has a dominant strategy, but RKB does not.

(E) Neither firm has a dominant strategy.

5. 2023 AP Micro MCQ Q12

A player's dominant strategy is

(A) independent of the other player's choice

(B) dependent on the other player's choice

(C) the strategy that results in the maximum combined payoff for both players

(D) the strategy that always delivers the other player's best outcome of the game

(E) the strategy that always delivers the other player's worst outcome of the game

6. 2023 AP Micro MCQ Q46

Rover's Rest and Dave's Den are the only two dog daycare companies in a town. Each firm is considering whether to run ads or to not run ads. The first entry in each cell shows Dave's Den's profit, and the second entry shows Rover's Rest's profit. Each dog daycare company independently and simultaneously chooses its strategy. Assume the two firms know all the information in the matrix and do not cooperate. Use the payoff matrix provided to answer the next two questions.

		Rover's Rest	
		Run Ads	**No Ads**
Dave's Den	**Run Ads**	\$500, \$400	\$400, \$500
	No Ads	\$700, \$800	\$900, \$700

Which of the following represents the Nash equilibrium?

(A) Dave's Den chooses "Run Ads," and Rover's Rest chooses "No Ads."

(B) Both Dave's Den and Rover's Rest choose "Run Ads."

(C) Both Dave's Den and Rover's Rest choose "No Ads."

(D) Dave's Den chooses "No Ads," and Rover's Rest chooses "Run Ads."

(E) There are multiple Nash equilibria.

7. 2023 AP Micro MCQ Q47

Use the same payoff matrix as in the previous question. The advertising agency raises its prices, causing a firm that chooses to run ads to earn \$200 less in profits. Once the firms adjust to the higher advertising prices, what is the total combined profit of the two firms in the new Nash equilibrium?

(A) \$500

(B) \$700

(C) \$1,300

(D) \$1,500

(E) \$1,600

8. 2024 AP Micro MCQ Q15

Which of the following best describes an oligopoly?

(A) CoffeeBar can sell as many cups of coffee as it wants at the market price but will lose all its customers if it charges a higher price.

(B) CoffeeBar is the only coffee shop in town with complete market power to charge high prices and earns positive economic profit in the long run.

(C) CoffeeBar is the only employer of beverage service workers in town and pays a fixed wage to all hired workers.

(D) CoffeeBar sets its own price for its coffee beverages, but because it is one of many coffee shops in town, it earns zero economic profit in the long run.

(E) CoffeeBar is one of only two coffee shops in town and is constantly offering promotions and discounts to steal customers from the other coffee shop.

9. 2024 AP Micro MCQ Q57

Bygone2 and Cleared4U are two competing firms in the waste management industry. When deciding to invest in future technologies, each firm can choose to open a new recycling center or a new composting center. The payoff matrix provided shows the value of profits for each combination of strategies, and both firms have complete information. The first value in each cell represents the payoff for Bygone2, and the second value represents the payoff for Cleared4U. Each firm independently and simultaneously chooses its strategy. Which of the following statements is true?

		Cleared4U	
		Recycling	**Composting**
Bygone2	**Recycling**	\$45, \$47	\$42, \$37
	Composting	\$38, \$43	\$40, \$41

(A) Neither firm has a dominant strategy.

(B) Both firms have a dominant strategy to open a new composting center.

(C) Both firms have a dominant strategy to open a new recycling center.

(D) Cleared4U has a dominant strategy to open a new recycling center, and Bygone2 has a dominant strategy to open a new composting center.

(E) Bygone2 has a dominant strategy to open a new recycling center, and Cleared4U has a dominant strategy to open a new composting center.

10. 2025 AP Micro MCQ Q16

Nick's Barbecue and Frank's Barbecue are two competing restaurants. Each restaurant is deciding whether to advertise or not advertise. The payoff matrix shows each firm's profit for each combination of strategies. The first entry in each cell shows Nick's Barbecue's profit, and the second entry shows Frank's Barbecue's profit. Each firm independently and simultaneously chooses its strategy.

		Frank's Barbecue	
		Advertise	**Not Advertise**
Nick's Barbecue	**Advertise**	\$600, \$100	\$360, \$250
	Not Advertise	\$370, \$140	\$330, \$150

Which of the following is true about the restaurants' dominant strategies?

(A) Nick's Barbecue's dominant strategy is Advertise, and Frank's Barbecue's dominant strategy is Advertise.

(B) Nick's Barbecue's dominant strategy is Advertise, and Frank's Barbecue's dominant strategy is Not Advertise.

(C) Nick's Barbecue's dominant strategy is Not Advertise, and Frank's Barbecue's dominant strategy is Advertise.

(D) Nick's Barbecue's dominant strategy is Not Advertise, and Frank's Barbecue's dominant strategy is Not Advertise.

(E) Nick's Barbecue's dominant strategy is Advertise, and Frank's Barbecue does not have a dominant strategy.

11. 2025 AP Micro MCQ Q53

Ally's Candles and Bob's Candles are the only two sellers of candles in town. Both candle companies are considering changing their current pricing strategies. Each company is deciding between increasing prices or decreasing prices to increase their profits. Suppose Ally's Candles realizes that increasing price will increase its profits regardless of what Bob's Candles does. Which of the following concepts best describes this situation?

(A) Nash equilibrium

(B) Price discrimination

(C) Dominant strategy

(D) Prisoner's Dilemma

(E) Collusion

Free-Response Questions

12. 2024 AP Micro FRQ Q3

Nice Ride and Field Cruiser are the only two producers of vehicles. Nice Ride is deciding whether to improve Safety or Comfort. Field Cruiser is deciding whether to improve Reliability or Power. The payoff matrix shows the payoffs for each combination of strategies. The first entry in each cell shows Nice Ride's profit, and the second entry shows Field Cruiser's profit. Each firm independently and simultaneously chooses its strategy. Assume the two firms know all the information in the matrix and do not cooperate.

		Field Cruiser	
		Reliability	**Power**
Nice Ride	**Safety**	$10 million, $28 million	$32 million, $35 million

	Comfort	$30 million, $40 million	$25 million, $20 million

(a) What is Field Cruiser's most profitable strategy if Nice Ride chooses to improve Safety?

(b) Does Nice Ride have a dominant strategy? Explain using numbers from the payoff matrix.

(c) Is Nice Ride choosing to improve Safety and Field Cruiser choosing to improve Power a Nash equilibrium? Explain using numbers from the payoff matrix.

(d) Suppose Nice Ride and Field Cruiser decide to merge to maximize combined profits and choose to keep producing both Nice Ride and Field Cruiser vehicles. Assuming the values in the payoff matrix do not change, what would be the new firm's total profit?

(e) Suppose instead that a change in fuel prices reduces the profitability of choosing to improve Power by $10 million for Field Cruiser. Identify each firm's profit at the Nash equilibrium.

13. 2025 AP Micro FRQ Q3

Tony's Trinkets and Bitaly's Bracelets are the only two firms in a town that produce and sell jewelry. Tony's Trinkets is deciding whether to produce Unique jewelry or Typical jewelry. Bitaly's Bracelets is deciding whether to produce Gold jewelry or Silver jewelry. The payoff matrix shows the payoffs for each combination of strategies. The first entry in each cell shows Tony's Trinkets' profit, and the second entry shows Bitaly's Bracelets' 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.

		Bitaly's Bracelets	
		Gold	**Silver**
Tony's Trinkets	**Unique**	$15, $21	$20, $19
	Typical	$10, $7	$21, $16

(a) Suppose Bitaly's Bracelets chooses to produce Silver jewelry. Is choosing to produce Unique jewelry the best choice for Tony's Trinkets? Explain using numbers from the payoff matrix.

(b) Is Bitaly's Bracelets' dominant strategy to produce Gold jewelry, to produce Silver jewelry, 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 Tony's Trinkets' profit from producing Typical jewelry increases regardless of what Bitaly's Bracelets does. What is the minimum amount by which Tony's Trinkets' profit must increase in order for Typical jewelry to become a dominant strategy: $2, $4, $6, $11, or $15?

(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.