3. 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.

STOP

END OF EXAM

Question 3: Short — 5 points

A Point 1	State "No," producing Unique jewelry is not the best choice for Tony's Trinkets if Bitaly's Bracelets chooses to produce Silver jewelry and explain that Tony's Trinkets' profit from producing Typical jewelry is \$21, which is greater than its profit when producing Unique jewelry, which is \$20.	**1 point**
B Point 2	State that Bitaly's Bracelets does not have a dominant strategy and explain 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.	**1 point**
C Point 3	Identify the **TWO** Nash equilibria for the game as the following: • Tony's Trinkets chooses Unique, and Bitaly's Bracelets chooses Gold. • Tony's Trinkets chooses Typical, and Bitaly's Bracelets chooses Silver.	**1 point**
D Point 4	State that the minimum amount is \$6.	**1 point**
E Point 5	Calculate the new firm's maximum combined profit as \$39 and show your work. $\text{Maximum Combined Profit} = \$20 + \$19 = \$39$	**1 point**