1.
(a) B and E is the Nash equilibrium.
(b) The secure strategy is one in which the player does not lose on other people's decisions. 400 is the maximum value of the 2nd column and 400 is the maximum value of the 2nd row.

2.
(a)

Player 1	Player 2		
	Strategy	A	B
	A	$ 500, $ 500	$ 0, $ 650
	B	$ 650, $ 0	$ 100, $ 100

(b)
Player 1 chooses B regardless of whether player 2 chooses A or B, because the payoff is always higher (650 > 500, 100 > 0). So, the dominant strategy of player 1 is B.
Player 2 chooses B regardless of whether Player 1 chooses A or B, because the payoff is always higher (650>500, 100>0). So the dominant strategy of player 2 is B.

(c)
When player 2 chooses A, player 1's best strategy is B because the payoff is higher (650 > 500).
When Player 2 chooses B, Player 1's best strategy is B because the payoff is higher (100>0).
When Player 1 chooses A, Player 2's best strategy is B because the payoff is higher (650>500).
When player 1 chooses B, player 2's optimal strategy is B because the payoff is higher (100>0).
The Nash equilibrium is. (B, B)

(d)
The aggregate payoff or total payoff is the sum of the payoff of two players by choosing a particular strategy pair.
The total payoff of (A, A) is 1,000, (B,B) is 200, and (B,A) and (A,B) are 650.
(a, a) > (b, a) = (a, b) > (b, b)

(e)
highest total payoff is (A,A. But it can't be sustained in equilibrium because the dominant strategy on both sides is B. Thus, both sides have an incentive to deviate from the outcome (A, A).

4.
(a)
In a single game, when both players choose to play simultaneously, the best response of player 2 is C when player 1 chooses A. Similarly, the best response of player 1 is A when player 2 chooses C. Nash equilibrium (A, C)

(b)
When both players have complete information, those players will collude with each other. Player 1 chooses to play B and Player 2 chooses to play D because (B,D) is more Pareto efficient than (A,C) and that's the Nash equilibrium. Thus, in the case of collusion, both players would gain more than the Nash equilibrium of one shot.

(c)

In each round of the game we play the Pareto optimal strategy and we don't deviate by playing any other strategy and if any player deviates then the other players will start (A,C) and that's possible.

For player 1 or player 2

$d = 1 / (1.05) = 0.9523$

$50 + 60 d + 10 d^2 + 10 d^3 + \dots$

$= 40 + 50 d + 10 + 10 + 10 d^2 + \dots$

$= 40 + 50 + (10 / 0.0477) = 297.3$

If no deviation is found

$50 + 50 d + 50 d^2 + \dots = 1048$

(d)

If the game is going to end at the next stage, no one is going to follow collusion and try to serve their own benefit.

Both players are playing for their own benefit and they both end up with a pure strategy Nash equilibrium. So, if there is uncertainty then no player is going to get more than they get in a Nash equilibrium.

5.

Target	Kmart		
	Strategy	Sale price	Regular price
	Sale price	1, 1	5,3
	Regular price	3,5	3,3

If Target announces the sale price, it's best for Kmart to announce the regular price, because it will make \$3 billion, which is more than the \$1 billion it made by announcing the sale price.

If Kmart publishes regular prices, then it is optimal for Target to publish sales prices. So, no player has an incentive to deviate from their strategy, where other players' strategy and (sale price, regular price) are Nash equilibria.

If Target announces its normal price, it would be in Kmart's best interest to announce the sale price, as it stands to make $5 billion more than the $3 billion it made by announcing its normal price.

If Kmart publishes sales prices, then it is ideal for Target to publish regular prices. So, no player has an incentive to deviate from their strategy, even other plver strategies, (real price sales price) is a Nash equilibrium.

In the table above, if either company announces a sale price, the other company's best response will be to charge the normal price. In this case, the company announces that the sale price will forever make a profit of $5 billion.