

Chapter 16

1. In which market structure would you place each of the following products: monopoly, oligopoly, monopolistic competition, or perfect competition? Why?
 - a. Retail market for water and sewerage services
 - b. Economics textbooks
 - c. Economics, by N. Gregory Mankiw and Mark P. Taylor
 - d. Photographic film
 - e. Restaurants in a large city
 - f. Car tyres
 - g. Breakfast cereal
 - h. Gold bullion
 - i. Air travel from any one airport

2. The following information describes the demand schedule for a unique type of apple. This type of apple can only be produced by two firms because they own the land on which these unique trees spontaneously grow. As a result, the marginal cost of production is zero for these duopolists, causing total revenue to equal profit.

- a. Complete the following table.

| Price per box | Quantity (in boxes) | Total revenue (profit) |
|---------------|---------------------|------------------------|
| €12 | 0 | _____ |
| 11 | 5 | _____ |
| 10 | 10 | _____ |
| 9 | 15 | _____ |
| 8 | 20 | _____ |
| 7 | 25 | _____ |
| 6 | 30 | _____ |
| 5 | 35 | _____ |
| 4 | 40 | _____ |
| 3 | 45 | _____ |
| 2 | 50 | _____ |
| 1 | 55 | _____ |

- b. If the market were perfectly competitive, what price and quantity would be generated by this market? Explain.
- c. If these two firms colluded and formed a cartel, what price and quantity would be generated by this market? What is the level of profit generated by the market? And what is the level of profit generated by each firm?
- d. If one firm cheats and produces one additional increment (five units) of production, what is the level of profit generated by each firm?
- e. If both firms cheat and each produces one additional increment (five units) of production (compared to the cooperative solution), what is the level of profit generated by each firm?
- f. If both firms are cheating and producing one additional increment of output (five additional units compared to the cooperative solution), will

either firm choose to produce an additional increment (five more units)? Why? What is the value of the Nash equilibrium in this duopoly market?

- g. Compare the competitive equilibrium to the Nash equilibrium. In which situation is society better off? Explain.
- h. Describe what would happen to the price and quantity in this market if an additional firm were able to grow these unique apples. (Do not attempt to calculate quantitative changes – the direction of change is all that's required.)
- i. Use the data from the duopoly example above to fill in the boxes of the prisoners' dilemma. Place the value of the profits earned by each duopolist in the appropriate box in Exhibit 1.

Exhibit 1

| | | | |
|------------------------|----------------|------------------------|----------------|
| | | Firm 1 Decision | |
| | | Sell 15 | Sell 20 |
| Firm 2 Decision | Sell 15 | | |
| | Sell 20 | | |

- j. What is the solution to this prisoners' dilemma? Explain.
- k. What might the solution be if the participants were able to repeat the "game?" Why? What simple strategy might they use to maintain their cartel?