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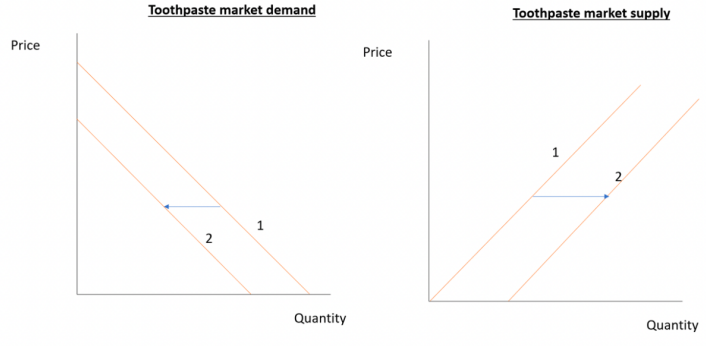
BADM 505 – FIRM ANALYSIS AND STRATEGY

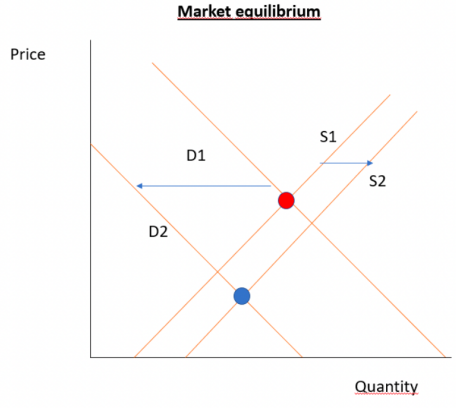
PROBLEM SET ONE QUESTIONS

1. If the demand for sugar decreases when the price of tea increases, are tea and sugar complements, substitutes or unrelated to each other? Explain.
   Tea and sugar are complements. When the price of tea increases, the demand for sugar decreases. This is because as the price of tea increases, the cost of consuming tea also increases, and some consumers may choose to consume less tea or switch to a different product. As a result, the demand for sugar, which is often used as a sweetener for tea, also decreases

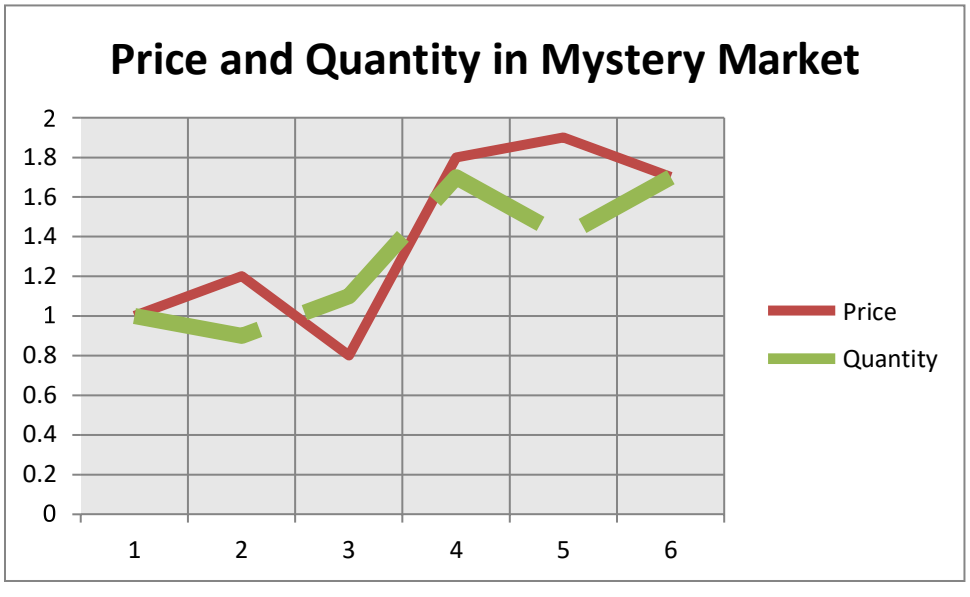
2. Researchers have just discovered that antibacterial agents in toothpaste are harmful to human health. At the same time, the price of toothpaste-making equipment has fallen. What definitely happens in the toothpaste market after these events occur (i.e., what are the new equilibrium price and quantity of toothpaste? Higher, lower, or the same)? Show with graphs.

   The new discovery will lower the quantity demanded of toothpaste, while the drop in price of toothpaste-making equipment will increase production and quantity supplied of toothpaste. The new equilibrium price will be lower than the previous one. The new equilibrium quantity supplied will be higher while the new equilibrium quantity demanded will be lower.





3. Based on the graph below, and knowing nothing else about the Mystery Market, the mostly likely cause of the structural change between periods 1-3 and periods 4-6 is due to what market force?



Between 1-3 a raise in price has a slight decrease in demand because it looks like it was an elastic stage. Between 4-6 a raise in price has a huge impact on demand because it looks like it was in an inelastic stage.

This uncertain change in market forces may be driven by a seasonal market where for instances weather is a key factor and whenever it is rainy the demand is more elastic than if not.

4. The demand for cat treats is represented by the following equation: $QD(P) = 300 - 50P$, where QD represents the quantity demanded for boxes of cat treats and P represents the price of a box of cat treats in dollars. The supply of cat treats is represented by $QS(P) = -100 + 50P$, where QS represents the quantity supplied of cat treats and P represents the price. What is the market equilibrium price and quantity of cat treats?

QD(P) = QS(P) 300-50P=-100+50P P=4

Q=300-50*4=100
The market equilibrium price is 4 dollars and the quantity for cat treats is 100

5. Demand for umbrellas has increased due to above average precipitation during the rainy season. As a result of this shift, the total revenues earned by umbrella suppliers will (explain your answer):

a) Increase - Since umbrellas are an essential commodity needed for the monsoon, the price remains the same, but due to the above average demand, the revenue will increase
b) Decrease
c) Increase only if the supply curve is relatively elastic, and decrease otherwise
d) Decrease only if the demand curve is relatively elastic, and increase otherwise

6. A consultant has estimated your firm's price elasticity of demand to be -1.25. You are advising the Board about the likely effects of a price increase, based solely on this estimate. You advise the Board that (explain your answer):

a) Raising price increases revenue but has an ambiguous effect on profit.

b) Raising price decreases revenue but has an ambiguous effect on profit. - An elasticity of -1.25 implies that the demand for the firm's product is elastic, meaning that a small change in price will result in a relatively large change in the quantity demanded. Therefore, increasing the price of the firm's product will result in a decrease in the quantity demanded, which means that the total revenue will decrease. However, the effect on profit is not clear as the change in revenue will also depend on how much the price is increased and how much the cost of production changes. In general, when the demand for a good or service is elastic, increasing the price will decrease the quantity demanded, which will lead to a decrease in revenue. However, the effect on profit will depend on the relationship between the change in revenue and the change in the cost of production.

c) Raising price increases revenue and profit.

d) Raising price decreases revenue and profit.

7. Your firm receives revenue of $40MM per year from Product A and $90MM per year from Product B. The own-price elasticity of demand for Product A is -1.5. The cross-price elasticity of demand between Product A and Product B is -1.8. Suppose you increase the price of Product A by two percent:

a. How much will Product A's revenue change? [40 (-0.5)] x (2%) = -0.4 MM dollars

b. How much will Product B's revenue change? [90(-1.8)] x (2%) = -3.24 MM dollars

8. Consider the market for branded designer dog tags. Economic consultants have estimated a linear approximation to the market demand curve: QD(P) = 120 – 30P. The intercept and slope terms are in millions. The industry association, which coordinates the marketing efforts of the firms in the market, is considering a 10% increase in its marketing efforts from $40MM to $44MM. For the campaign to be successful it must increase revenues by at least $8MM given the costs of production. Assume that the current price of $1 per unit would be unlikely to change in reaction to the marketing efforts. To make the marketing campaign worthwhile, what is the smallest magnitude that the advertising elasticity of demand could be?

QD(P) = 120 – 30P
10% increase in its marketing efforts ($4M) increase revenues by at least $8MM
price of $1 per unit to make the advertising campaign worthwhile, the change in demand or in this case the revenues should be equal to the change in advertising expense i.e., 4MM. Hence the elasticity will be +1.
Advertising elasticity = (Increased demand - Initial demand) / (Initial demand) divided by
(Increased advertising expenditure - Initial advertising expenditure) / (Initial advertising expenditure)

Initial demand = 120 - 30(1) = 90MM
Increased demand = 90 + 8 = 98MM
Initial advertising expense = 40MM
Increased advertising expense = 44MM
Advertising Elasticity = (98 - 90) / (90) divide by (44 - 40) / (40) = 0.89