

Pricing Solutions

Break even point

Given the following data:

- Fixed costs = \$90,000
- Variable costs per unit:
 - Direct material = \$5
 - Direct Labor = \$2
 - Direct overheads = 100% of Direct Labor
- Selling price = \$12

Compute:

1. Compute the contribution per unit
 - a. $Cpu = 12 - 5 - 2 - 2 = \$3$
2. Break-even volume (e.g. number of products to sell to reach the break-even point)
 - a. $90,000 / (12 - 9) = 30,000$
 - b.
3. Break-even sales (e.g. the amount of sales to reach the break-even point)
 - a. $30,000 * 12 = 360,000$
4. Sales required to earn a net profit of \$450,000
 - a. $(90,000 + 450,000) / (12 - 9) = 180,000$ so sales = 2,160,000
5. If sales are 10% and 25% above the break-even sales, determine the net profit
 - a. $Bes = 360,000$
 - b. $+ 10\% = 396,000$
 - c. So unit sold = $396,000 / 12 = 33,000$
 - d. Profit = contribution per unit x q – fixed costs = $(33,000 * 3) - 90,000 = \$9,000$
 - e. $Bes = 360,000$
 - f. $+ 25\% = 450,000$
 - g. So unit sold = $450,000 / 12 = 37,500$
 - h. Profit = contribution per unit – fixed costs = $(37,500 * 3) - 90,000 = \$22,500$
6. What should be the selling price per unit, if the break-even point should be brought down to 20,000 units?
 - a. $90,000 / (x - 9) = 20,000 \rightarrow x = (90,000 + (20,000 * 9)) / 20,000 = \13.5

Supply and demand

1. Suppose that there is an announcement that chocolate causes cancer. What would happen to equilibrium price and quantity in the market for Godiva chocolate? Draw the graph that illustrates your answer.
 - a. Demand decreases (shifts left) because of a change in consumer tastes. Equilibrium price decreases, and equilibrium quantity decreases.

2. Suppose that the price of Hershey's chocolate, a competitor of Godiva chocolate, increases. What would happen to equilibrium price and quantity in the market for Godiva chocolate? Draw the graph that illustrates your answer.
 - a. Demand increases (shifts right) because the price of a substitute good increases. Equilibrium price increases, and equilibrium quantity increases.

3. Suppose that the price of sugar increases. What would happen to equilibrium price and quantity in the market for Godiva chocolate? Draw the graph that illustrates your answer.
 - a. Supply decreases (shifts left) because the price of an input increases. Equilibrium price increases, and equilibrium quantity decreases.

4. Suppose that a company invents a better machine for mixing the ingredients to make chocolate candies. What would happen to equilibrium price and quantity in the market for Godiva chocolate? Draw the graph that illustrates your answer.
 - a. Supply increases (shifts right) because of better technology. Equilibrium price decreases, and equilibrium quantity increases.

5. Suppose the equation for demand can be expressed as $P = 20 - Q$. The equation for supply can be expressed as $P = Q$. Find the equilibrium price and quantity. Draw the graph that illustrates your answer.
 - a. $Q = 20 - Q$
 - b. $2Q = 20$
 - c. $Q = 10$
 - d. $P = Q$, so $P = 10$

6. Suppose the equation for demand can be expressed as $P = 40 - 2Q$. The equation for supply can be expressed as $P = Q$. Find the equilibrium price and quantity. Draw the graph that illustrates your answer.
 - a. $Q = 40 - 2Q$
 - b. $3Q = 40$
 - c. $Q = 40/3 = 13.3$
 - d. $P = Q$, so $P = 40/3 = 13.3$

7. Suppose the equation for demand can be expressed as $P = 30 - Q$. The equation for supply can be expressed as $P = 2Q$. Find the equilibrium price and quantity. Draw the graph that illustrates your answer.
 - a. $2Q = 30 - Q$
 - b. $3Q = 30$
 - c. $Q = 10$
 - d. $P = 2Q$, so $P = 2 * 10 = 20$

Price and Cross-price elasticity

1. Yesterday, the price of envelopes was \$3 a box, and Julie was willing to buy 10 boxes. Today, the price has gone up to \$3.75 a box, and Julie is now willing to buy 8 boxes. Is Julie's demand for envelopes elastic or inelastic? What is Julie's elasticity of demand?

$$\text{SOL: \% Change in Quantity} = (8 - 10)/(10) = -0.20 = -20\%$$

$$\text{\% Change in Price} = (3.75 - 3.00)/(3.00) = 0.25 = 25\%$$

$$\text{Elasticity} = |(-20\%)/(25\%)| = |-0.8| = 0.8$$

Her elasticity of demand is the absolute value of -0.8, or 0.8. Julie's elasticity of demand is inelastic, since it is less than 1.

2. When the price of cheese increases by 20%, the quantity demanded of sausage decreases by 40%. What is the cross-price elasticity of demand for sausage and cheese?

SOL: -2 complements

3. The makers of a brand of potato chip know that the prices of other products might increase soon. The cross-price elasticity of potato chips and four other goods are given below.
 - a. Product W: -2
 - b. Product X: -0.5
 - c. Product Y: 1
 - d. Product Z: 3

Which product is the most complementary for chips?

SOL: W