Key

Pricing Practice Problems
Updated: Spring 2012

Equations to remember:

$$Markup = \frac{(Price - Cost)}{Cost} \Rightarrow Price = Cost(1 + Markup)$$

$$Markup = \frac{1}{|\eta| - 1}$$

1. Suppose the cost of a paperback book is $4.00.
    a. If it sells for a price of $6.00, what is the markup?
    b. Suppose the firm would like the markup to be 70%, what price should it charge?

2. The Therma-Stent company produces graft stents. Managers set price by estimating the average costs of production and then add 40 percent markup. If the ATC = $2,300 (at production of 20,000), what price does the company charge?

3. The Humphrey Corporation sells office furniture. One of Humphrey's major products is a metal desk which costs the company $76 per desk to buy (including transportation and other related costs). An economic consultant estimated the elasticity of demand for this product to be -2.5. Humphrey Corp currently charges $100 per desk.
    a. What is their current markup on metal desks?
    b. What should their markup be?
    c. Should they raise their price or lower their price? (Be sure to state the price they should charge).
    d. If they currently sell 1,000 of these desks, approximately how much money are they losing by not charging the correct price? (Be careful to take into account the effect of any change in price on quantity demand.)

4. The Barnegat Light Fish Company sells their product, a special blend of crab cake, in a market where managers think two types of consumers exist: "rich" (denoted, "r") and "average income" (denoted "a for "average"). An economic consultant estimates that the price elasticity for crab cakes of the rich consumers is -2 but for the average income consumers it is -5. The crab cakes cost $2 per bag and sell for a price of P (dollars per unit).
    a. Explain the intuition behind why and how the two elasticities differ.
    b. If the Company only sold to "rich" types, what markup and price would they use?
    c. If the Company only sold to "average income" types, what markup and price would they use?
    d. Suppose the Company decides to run coupons in the paper for $X off the sales price on the belief that only "average income" types would clip and use such coupons. How much should the coupon be for?

5. (#1 in Mansfield 7th edition, pages 277-278) Managers at the Ridgeway Corporation produce a medical device that they sell in Japan, Europe, and the United States. Transportation costs are a negligible proportion of the product's total costs. The price elasticity of demand for the product is -4.0 in Japan, -2.0 in the United States, and -1.33 in Europe. Because of legal limitations, this medical device, once sold to a customer in one country, cannot be resold to a buyer in another country.

a. The firm's vice president for marketing circulates a memo recommending that the price of the device be $1,000 in Japan, $2,000 in the US, and $3,000 in Europe. Comment on her recommendation.
b. Her recommendations are accepted. Sales managers send reports to corporate headquarters saying that the quantity of the devices being sold in the US is lower than expected. Comment on their reports.
c. After considerable argument, the US sales manager agrees to lower the price in the US to $1,500. Is this a wise decision? Why or why not?
d. Can you be sure that managers are maximizing profit? Why or why not?

Pricing

Key !

(1) Cost = 4

(a) $P = 6$ $\quad$ Markup $= \frac{6-4}{4} =$

(b) $P = C(1+M)$

$P = 4(1+.7) = 4(1.7) =$

---

(2) $M = .4$

$ATC = 2,300$ $\quad P = C(1+M) = 2300(1+.4)$

$P = 2300(1.4) =$

---

(3) $C = 76$

$\eta = -2.5$

$P = \$100$

(a) $M = \frac{P-C}{C} = \frac{100-76}{76} =$

(b) Ideal $M = \frac{1}{|\eta|-1} = \frac{1}{2.5-1} = \frac{1}{1.5} =$

(c) If (b) > (c), then $\uparrow P$, otherwise not.

(4) $\eta_r = -2$, $\eta_a = -5$

Cost = \$2

(a) Rich people will be less sensitive to price changes since crab cakes are a smaller percent of their budget. Thus $|\eta_r| < |\eta_a|$.

(b) $P = mc\left(\frac{\eta_r}{1+\eta_r}\right) = 2\left(\frac{-2}{1-2}\right) = 2\left(\frac{-2}{-1}\right) = \boxed{\$4.00 = P_r}$

(c) $P = mc\left(\frac{\eta_a}{1+\eta_a}\right) = 2\left(\frac{-5}{1-5}\right) = 2\left(\frac{-5}{-4}\right) = \boxed{\$2.50 = P_a}$

(d) $x = P_r - P_a = \boxed{\$1.50 = \text{Coupon}}$

---

(5) $\eta_J = -4$, $\eta_{US} = -2$, $\eta_{EU} = -1.33$

(a) $P_J = \$1{,}000$, $P_{US} = \$2{,}000$, $P_{EU} = \$3{,}000$

They are charging the most where demand is least elastic, EU, and the least in J where demand is most elastic. This makes sense . . .

(b) $MR_{US} = MR_J \Rightarrow P_{US}\left(\frac{1-2}{-2}\right) = P_J\left(\frac{1-4}{-4}\right)$

$P_{US}\left(\frac{1}{2}\right) = P_J\left(\frac{3}{4}\right)$

$P_{US} = P_J\left(\frac{3}{2}\right)$

So, if $P_J = 1000$ then P_{US} should be $P_{US} = 1{,}500$

But they are charging $P_{US} = 2P_J$ which is too high and thus they are losing sales.

#5

(c) Yes. see answer to (b)

(d) We don't have MC, so while MR is equal across countries, we don't know if $MR \gtreqless MC$.