ECONOMICS 2

Tutorial 4

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http://personal.lse.ac.uk/BATTISTO/T4_slides.pdf

Questions 2,6,8,9,10

Price Discrimination

- Monopolist
- Different types of price discrimination
  - Which one is used depends on the ability to "separate" consumers
- The idea is to "extract the Consumer Surplus"

Question 2

Why does a profit-maximizing monopolist never produce on an inelastic portion of the demand curve? Would a revenue-maximizing monopolist ever produce on the inelastic portion of the demand curve?

Profit Maximizer in the inelastic part:

- ↑P, and Q will not fall much
- Cost decreases (you produce less)

$\Longrightarrow$ Keep raising price

Question 2

Why does a profit-maximizing monopolist never produce on an inelastic portion of the demand curve? Would a revenue-maximizing monopolist ever produce on the inelastic portion of the demand curve?

Revenue Maximizer in the inelastic part:

- ↑P and Q will not fall much
- ~~Cost decreases (you produce less)~~

$\Longrightarrow$ Keep raising price until $\Delta\%P = -\Delta\%Q$

(i.e. until elasticity = -1)

In solutions: from $MR = P'Q + Q = 0$, you get $\varepsilon = -1$

Types of Price Discrimination

Third Degree

- Monopolist can separate two groups of consumers
- Just treat each group as a separate market and charge a (different) price for each one

Question 8

The demand by senior citizens for showings at a local cinema has a constant price elasticity equal to -4. The demand curve for all other patrons has a constant price elasticity equal to -2. If the marginal cost per patron is £1 per showing, **how much should the cinema charge members of each group?**

Mark-up formula of monopolist:

$$\frac{P}{MC} = \frac{1}{1 - \frac{1}{|\varepsilon|}}$$

P_1 = £1.33 and P_2 = £2

Types of Price Discrimination

Hurdle Discrimination

- Form of third degree discrimination
- You don’t know if consumer belongs to a group
- **Idea:** Offer lower price if consumer “pays some hurdle”
    - E.g. fill a form and send it by post to get discount

Question 9

Harry, a monopolist, has a total cost curve given by $TC = 5Q + 15$. He sets two prices for his product, a regular price, P_H, and a discount price, P_L. Everyone is eligible to purchase the product at P_H. To be eligible to buy at P_L, it is necessary to present a copy of the latest newspaper ad to the salesclerk. Suppose the only buyers who present the ad are those who would not have been willing to buy the product at P_H.

a. If Harry's demand curve is given by $P = 20 - 5Q$, what are the profit-maximizing values of P_H and P_L?

b. How much economic profit does Harry make?

c. How much profit would he have made if he had been forced to charge the same price to all buyers?

d. Are buyers better or worse off as a result of Harry's being able to charge two prices?

How to approach this exercise

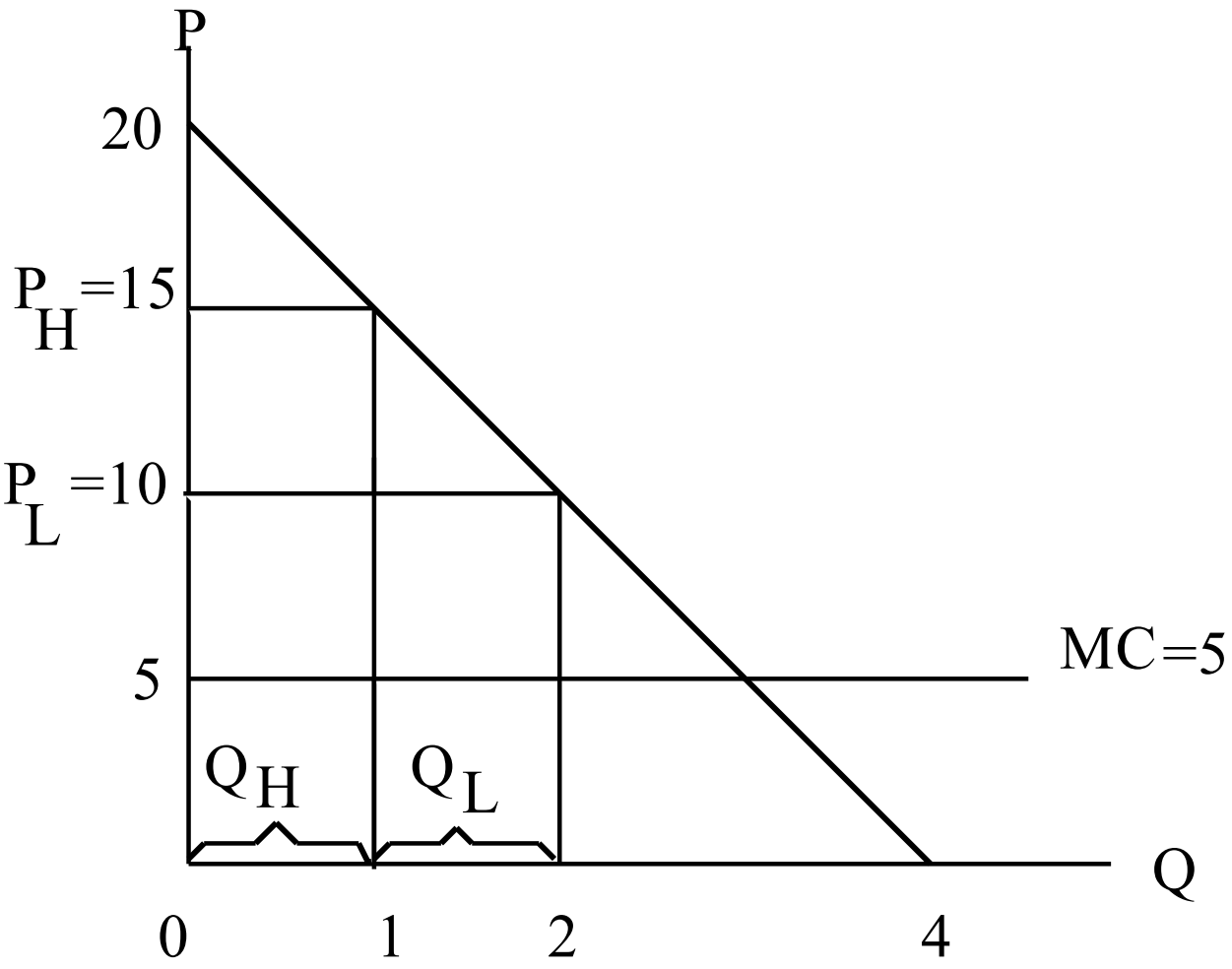
- Useful to think it in two steps (see graph):
  1. Set $\mathrm{P_H}$, some people demand $\mathrm{Q_H}$ at this price
  2. Offer $\mathrm{P_L}$ to remaining consumers who buy $\mathrm{Q_L}$

- $P_H = 20 - 5Q_H$ and $P_L = 20 - 5(Q_H + Q_L)$

- Profits:

$$\pi = P_H Q_H + P_L Q_L - [5(Q_H + Q_L) + 15]$$

Then just replace P_H and P_L and maximize π


P
20
P_H=15
P_L=10
5
MC=5
Q_H
Q_L
Q
0
1
2
4

b. How much economic profit does Harry make?

$$\pi = P_H Q_H + P_L Q_L - [5(Q_H + Q_L) + 15]$$

$$= 15 \times 1 + 10 \times 1 - [5(1 + 1) + 15]$$

$$= 0$$

c. How much profit would he have made if he had been forced to charge the same price to all buyers?

Standard Rule of Monopolist

$$MC = MR$$

$$5 = 20 - 10Q$$

$$Q = 1.5$$

From the demand, P = 12.5

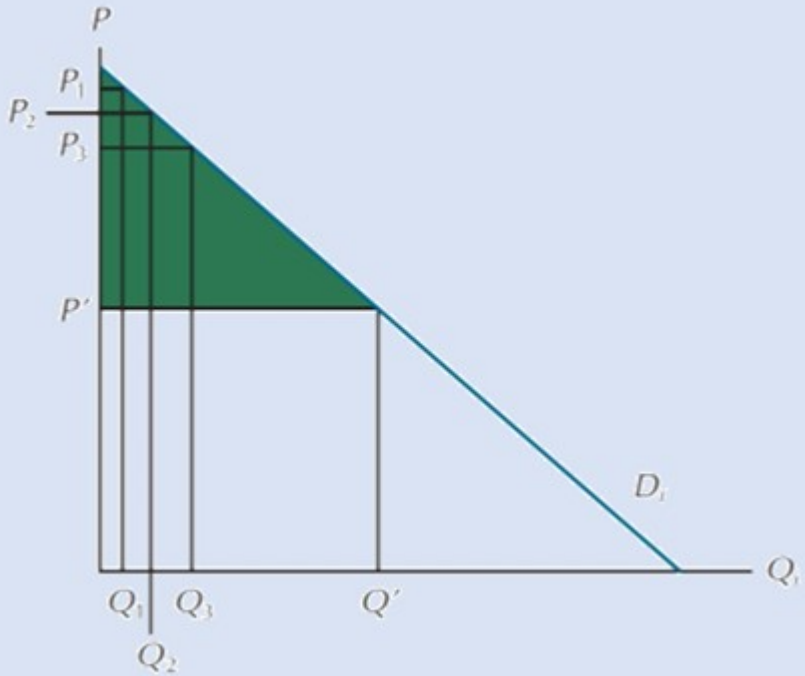
$$\text{Profits} = P \times Q - TC$$

$$= -3.75$$

Types of Price Discrimination

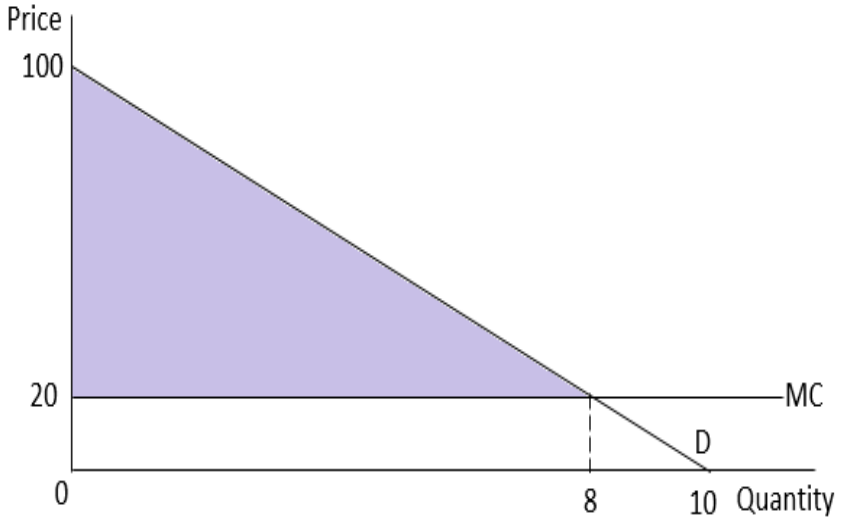
First Degree

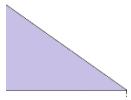
- Monopolist knows consumer's willingness to pay for every unit
- Can charge a different price for every unit
- ..or charge Fee =  and P=MC



Question 6

Suppose a perfectly discriminating monopolist faces market demand P = 100 - 10Q and has constant marginal cost MC = 20 (with no fixed costs). How much does the monopolist sell? How much profit does the monopolist earn? What is the maximum per-period license fee the government could charge the firm and have the firm still stay in business?



Profits = Area of  = 320

This is also the max the gvmnt can charge

Types of Price Discrimination

Second Degree

- We can't tell groups of consumers apart. Create two "bundles" that extract most CS

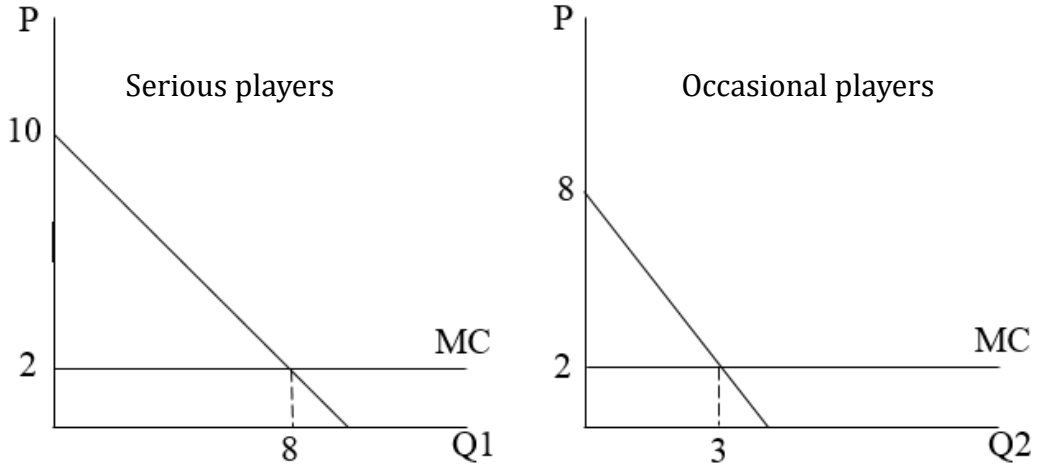
  E.g. **Bundle 1 (aimed for students):** Fee of £10 and 5 units
  Bundle 2 (aimed for families): Fee of £50 and 20 units

Important Issue!

- We need to check that families don't jump into bundle 1
- Next exercise (parts b and c is about that)

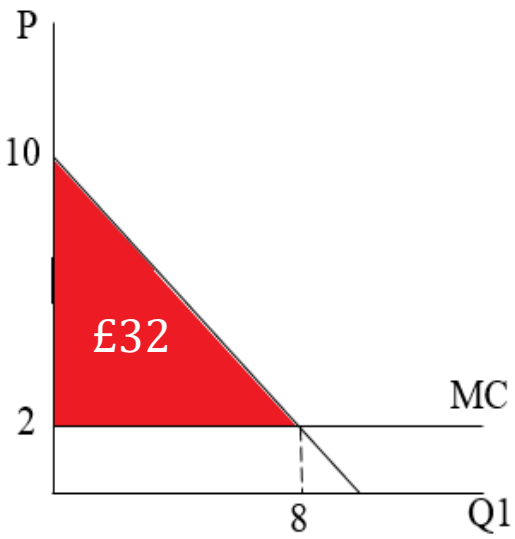
Question 10

You are the owner of the only tennis club in an isolated wealthy community. There are two types of tennis players. "Serious" players have demand: $Q_1 = 10 - P$. There are also "occasional players" with demand: $Q_2 = 4 - 0.5P$. Q is in court hours per week and P is the fee in £ per hour for each individual player. Marginal cost of court time is £2 per hour.

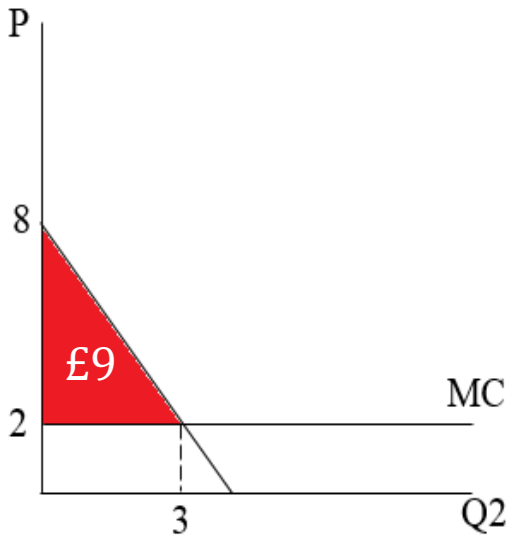


a) If you <u>can distinguish</u> between serious and occasional players, which two packages, consisting of weekly membership dues and court fees, will you offer

Answer: Use First Degree discrimination, set P = 2 and a fee for each group



"Expensive" bundle:
8hs and fee of £32



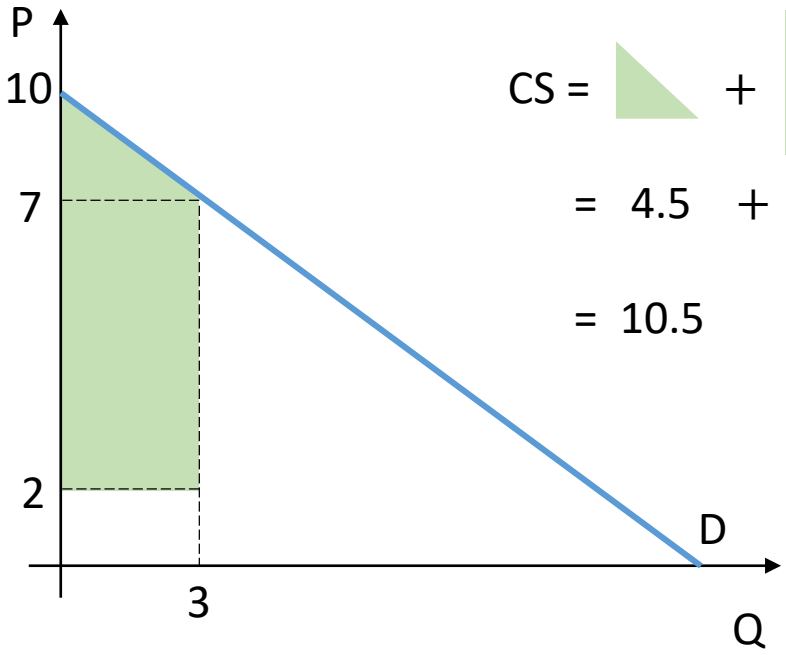
"Cheap" bundle:
3hs and fee of £9

- All consumers have 0 surplus

b) Now if you <u>can't distinguish</u> between the two types of players, will both packages be on the market? Explain.

Answer:

- Check whether "serious" prefer the cheaper bundle
- **How?** Calculate benefit of serious players if they buy that bundle



CS = ▲ + ■ − Fee of cheap bundle

= 4.5 + 15 − 9

= 10.5

Serious players prefer the "cheap" bundle as the "expensive" gives them CS = 0

c) If you can't distinguish between the two types of players, which two packages should you offer so that both are on the market?

Answer:

- Keep the cheap bundle
- Design a bundle that gives a surplus of 10.5 to "serious"
  - (So they will not buy the cheap one)

Easy: Expensive package but reduce the fee to $32 - 10.5 = 21.5$

Check that:

- Profits in b) = 9+9
- Profits in c) = 9+21.5
- Occasional users won't buy the expensive bundle