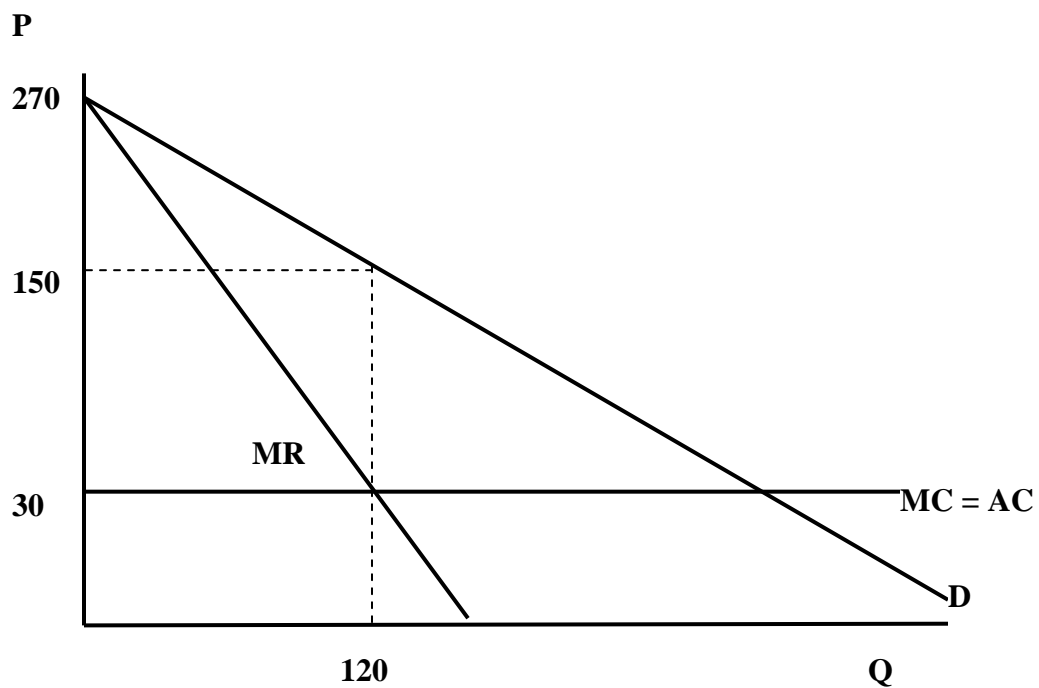


**EC111 Class Exercise 7 Week 9
Outline Answers**

1) a

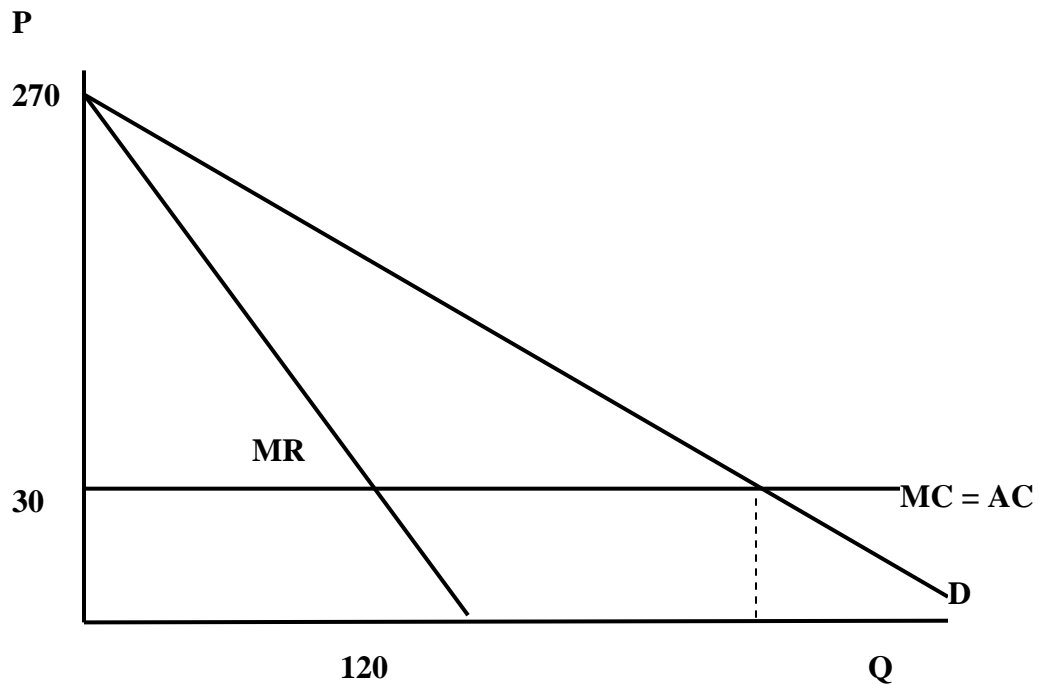
If the two firms collude to maximise their joint profits then they act as if they were a single monopolist.



From the demand curve we have $P = 270 - Q$ and $MR = 270 - 2Q$
Setting $MR = MC$ gives $270 - 2Q = 30$; $Q = 120$, If the firms divide output equally then they produce 60 each.
From the demand curve $P = 150$. Industry profit is $(P - AC) \times Q = (150 - 30) \times 120 = 14400$.

1) b

Under Bertrand duopoly, firms compete on price rather than on quantity. They drive the price down to marginal cost.



At $P = MC$ we have $Q = 270 - 30$; $Q = 240$. Since $P = AC$, there are zero profits.

1) c.

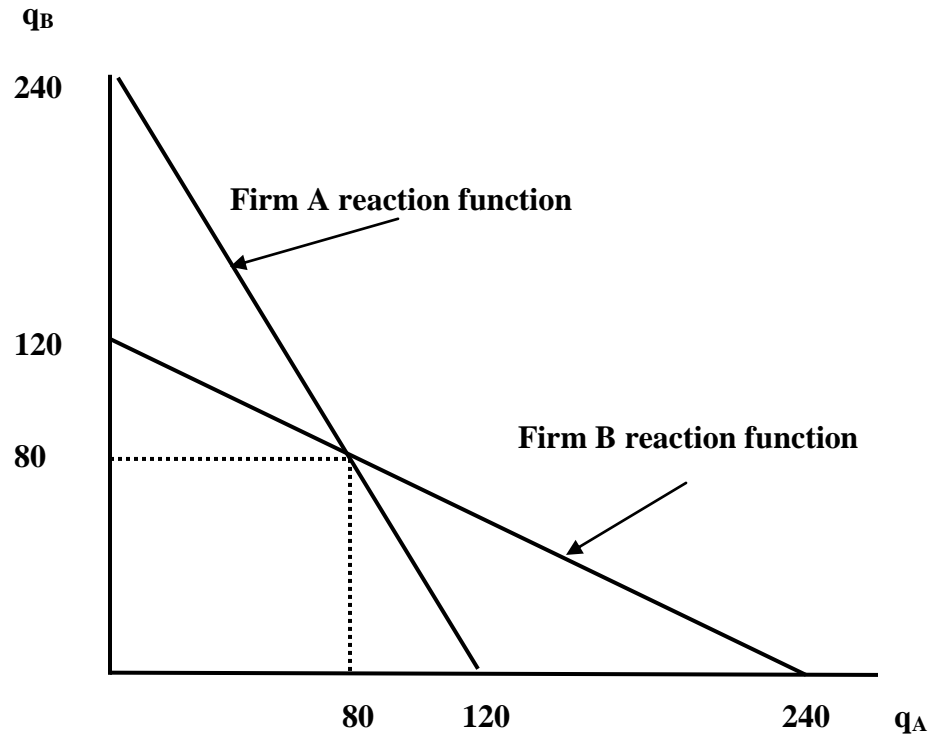
In a Cournot equilibrium each firm produces its 'best response' output, given the other firm's output. Recall that:

- If firm A produces nothing, then firm B is essentially the only firm and it will produce the monopoly output.
- If Firm A produces the perfectly competitive (or Bertrand) industry output then firm B will produce zero.

Thus the firm B reaction function is: $q_B = 120 - \frac{1}{2} q_A$

Similarly firm A's reaction function will be: $q_A = 120 - \frac{1}{2} q_B$

The reaction functions look like this:



We can find the equilibrium by substituting the Firm A reaction function into the firm B reaction function.

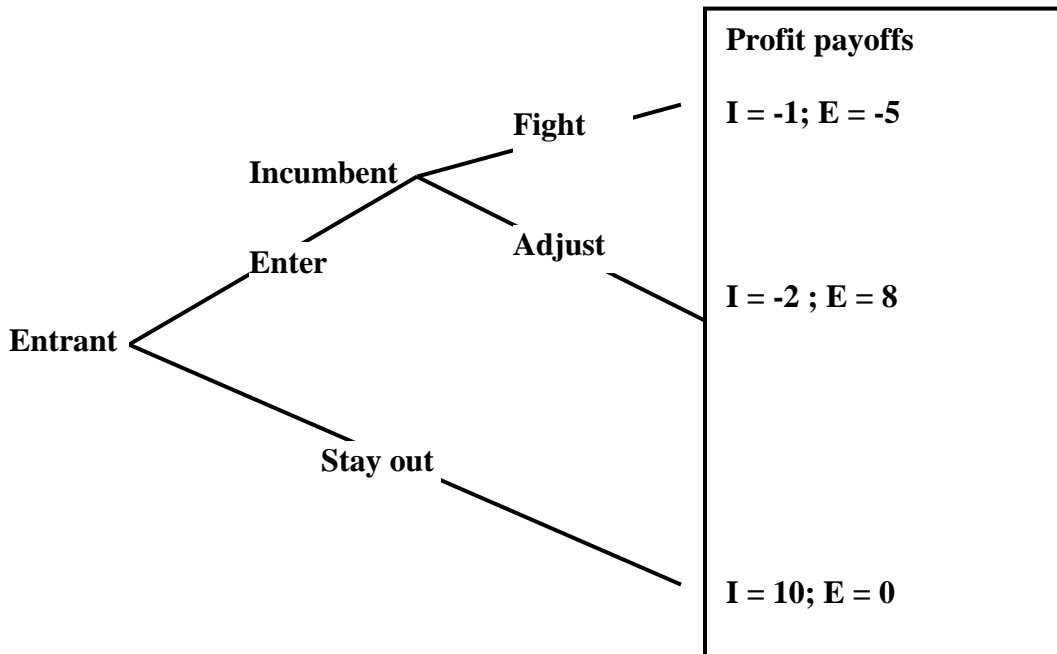
$$q_B = 120 - \frac{1}{2}(120 - \frac{1}{2}q_B) = 120 - 60 + \frac{1}{4} q_B ; q_B = 80.$$

Similarly we have $q_A = 80$, since the firms are identical, and industry output is: $Q = q_A + q_B = 160$.

From the demand curve price is $P = 270 - 160 = 110$. Total industry profit is $(P - AC) \times Q = (110 - 30) \times 160 = 12800$.

2)

The incumbent firm could simply threaten to lower the price if another firm enters, to a level that would inflict losses on the entrant. But if that threat is not credible the potential entrant will not believe it and will enter. From the lecture we have a situation with the following payoffs.



The key result is that the incumbent will fight if it is in its interest to do so. Here the incumbent makes greater losses if it does not fight (-2) than if it does (-1). Since the potential entrant knows that, it will not enter.

How can the incumbent make the threat credible? It must take actions in order to make the payoff from fighting greater than the payoff from adjusting.

- By making an irreversible commitment, e.g. investing in spare capacity that is a sunk cost. This effectively 'ties the hands' of the incumbent so that it will always fight off an entrant.
- Acquire a reputation for fighting. Even if the potential entrant cannot observe the payoffs, it may know that the incumbent has a reputation for fighting back. But how to acquire such a reputation? Mainly by demonstration (e.g. actually fighting) that may be costly and is therefore also a kind of commitment device.